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THE EFFECTS OF PSYCHIATRIC AND PHYSICAL CANNABIS USE
MOTIVATIONAL CATEGORIES ON THE DEVELOPMENT OF CANNABIS
USE DISORDER

by

KASSIDY JACQUES

A thesis submitted in partial fulfillment of the requirements
For the Honors in the Major Program in Psychology
In the College of Sciences
And in the Burnett Honors College
At the University of Central Florida
Orlando, Florida

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Thesis Chair: Robert Dvorak, Ph.D.

The legalization of cannabis is increasing across the United States, for both recreational and medical use. This has resulted in a change in public opinion regarding the risks of cannabis use. This is particularly true for the current generation of older adults, which experiences a greater prevalence of cannabis use than previous members of this cohort. Due to decreased perception of risk and medical or emotional issues associated with old age, older adults increasingly use cannabis to cope with their psychiatric and medical symptoms. Current studies provide evidence of an association between using cannabis for medical symptoms and the development of a Cannabis Use Disorder (CUD). However, there is a lack of literature addressing the association between types of symptoms treated with medical marijuana and developing symptoms of CUD. This study developed a survey using the Cannabis Use Disorder Identification Test (CUDIT) and measures for motives and symptoms of cannabis use. This was done to evaluate the presence of CUD symptoms in older adults (ages 55+) who used cannabis in the past six months while owning a Medical Marijuana License (MML). Data preparation included an examination of outliers, multicollinearity, and data distributions. The primary analysis regressed cannabis use pathology onto psychiatric motives and physical motives. The results of this study suggest that those utilizing cannabis for anxiety symptoms experience more symptoms of a cannabis use disorder. At the same time, there was a negative association between using cannabis order for medical symptoms and developing cannabis use disorder symptoms. Additionally, there was no correlation between the amount of cannabis used and its use for physical symptoms.

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INTRODUCTION

Cannabis is the most widely accepted illicit substance in the United States (*Cannabis*). Those who use cannabis run the risk of becoming dependent, and of developing cannabis use disorder (CUD). This is particularly relevant since cannabis is being legalized across the United States for medicinal and recreational purposes, particularly among the older population, which is increasing its access to medical marijuana licenses (MML). Those with MMLs use to cope with a myriad of physical and psychological symptoms. Currently, available evidence suggests that using cannabis with coping motives is tied to the development of maladaptive cannabis use patterns and poor cannabis-related outcomes (Buckner, 2013). In particular, studies show a link between the use of marijuana for medical purposes and the development of a Cannabis Use Disorder (CUD), particularly when a concurrent psychiatric disorder is present (N.S. Gendy et al, 2023). There is a need for research that identifies the link between the likelihood of cannabis dependence and motivation for alleviating, specifically, physical symptoms, psychological symptoms, or both. This proposal reviews previous research on cannabis use disorder, including its impact on cannabis users. It also explains the potential for medicinal cannabis among older adults, the associated issues, and the need for additional research given the increasing legalization of cannabis across the US.

Over-reliance on a substance can lead to drug dependence; drug dependence is a complicated and prevalent issue with limited effective treatment options for those inflicted, and often becomes a chronic syndrome. A drug dependence syndrome, otherwise known as a substance use disorder, is an aggregation of physical and psychological symptoms present with a specific substance's regular use. One of these substance use disorders is cannabis use disorder. The symptoms of Cannabis Use Disorder (CUD), similarly to those of other substance use

disorders, encompass a wide range of psychological, physiological, and behavioral symptoms (Roffman & Stephens, 2006). Some of these symptoms include impaired cognitive functioning, psychiatric symptoms, and withdrawal symptoms (Hasin et al, 2017). Currently, no drugs on the market can successfully treat CUD. Cognitive behavioral therapy, motivational enhancement therapy, and contingency management are all tools used to reduce the prevalence of use in those with CUD but permanent abstinence is an infrequent outcome, at best (Connor et. al, 2021). The limited availability of effective treatments for CUD marks the need for additional research, especially with the growing incidence of CUD in those with medical marijuana licenses.

While today cannabis use disorder is officially recognized as a drug abuse syndrome, research on CUD is relatively new and, as a result, is more limited than research available in similar fields. This lack of research is due to historical debate over the negative impacts of cannabis use and the existence of CUD. The identifiers of CUD can be ambiguous due to various reasons. The diversity of cannabis preparations and administration methods utilized worldwide results in unique addiction profiles across cultures, making it difficult to create universal diagnostic criteria (Roffman & Stephens, 2006). Another contributor to this ambiguity is the difficulty in pinpointing the symptoms of Cannabis Withdrawal Syndrome (CWS) in cannabis users (Bahji et. al, 2020). The finding compounds this ambiguity that not all individuals with a cannabis use disorder experience the same overt withdrawal symptoms observed in those with related disorders. Many symptoms of CWS are covert rather than overt and manifest as symptoms of anxiety and depression, making them difficult to identify and tie to a direct cause (Bahji et. al, 2020). These factors all contributed to the ambiguity of CUD and resulted in much debate and, finally, in the formal acknowledgment of CUD as a substance use disorder. CUD was not formally recognized as a substance use disorder until it was added to the *Diagnostic and*

Statistical Manual of Mental Disorders, 5th edition, which was published in 2013 (Hasin et. al, 2013). Research on the addictive potential of cannabis began well before the publishing of the DSM-V. However, the DSM-V established universal criteria psychologists can use to distinguish CUD in patients. Characteristics of the diagnostic criteria listed in the DSM-V include frequency of use, the persistence of craving, negative psychosocial effects, and performance of high-risk behaviors (Hasin et. al, 2013).

There are limited treatment options available for those inflicted with symptoms of cannabis use disorder, and this is cause for discussion, given the damaging impact drug abuse has on cognition and social outcomes. To begin with, an accumulating body of evidence suggests that chronic and heavy use of cannabis is related to short-term cognitive decline, including impairment in learning, attention, and working memory (Volkow et. al, 2013). However, there are conflicting results pertaining to the effects of cannabis on long-term neuropsychological impairment. For example, one study shows that regular cannabis use results in neuropsychological impairment that exceeds acute intoxication (Meier et. al, 2012). However, another study shows that these effects are not noticeable after one month of abstinence (Volkow et. al, 2013). One commonly used measure of cognitive ability is the intelligence quotient (IQ). One study utilized the IQ quotient as a measure to determine the effects of cannabis on cognition. The findings of this study, a longitudinal study including 1,037 participants who were studied from birth to approximately 38 years of age, showed that long-term cannabis use was strongly correlated with IQ decline (Meier et. al, 2012). Additionally, those who were more cannabis-dependent experienced more significant problems with attention and memory (Meier et. al, 2012). The main finding of research that studies the effects of cannabis on cognition reveals there is some correlation. However, while research has been performed studying the

potential cognitive effects of cannabis, very little of this research has been performed on adults over age 65. The effects of cannabis on cognition in this cohort is relevant considering this group's propensity to cognitive decline independent of substance use and this group's tendency to develop terminal illness whose primary symptoms include cognitive decline and impairment, such as dementia and Alzheimer's disease (Akyol et. al, 2020).

Those with CUD will continue to use it despite experiencing negative consequences in their personal lives, which generate adverse social outcomes for users. One study that utilized nationally representative samples suggests that people with cannabis use disorder are two to four times more likely to have interpersonal, financial, legal, and health-related problems than those with no substance use disorder (Gutkind et. al, 2021). Additionally, those with CUD have higher rates of unemployment than those with alcohol use disorder (AUD), contributing to financial insecurity in those with CUD (Gutkind et. al, 2021). The average age of retirement in the United States is 65; however, not everyone can afford to retire at that age, and many older adults continue working into their retirement years when social security cannot provide adequate living expenses. The development of CUD can lead to increased financial insecurity in this subpopulation of older adults. However, the issue that is most relevant to this population is the evidence suggesting that those with CUD are at increased risk for a concurrent psychiatric disorder, particularly when using medical marijuana (Hasin et. al, 2020). This is important to consider because members of this cohort are already more prone to comorbid psychological illness as they experience solitude due to abandonment from society and family members, and long-term illnesses that lead to inactivity and chronic discomfort (Kourkouta et. al, 2015). The presence of psychological illness, particularly psychosis, can exacerbate the already-existing issues of isolation from community and family. Therefore, the impact of cannabis on psychiatric

illness in this population needs to be examined. The potential for deleterious effects of cannabis use disorder on cognition and social outcomes is significant, given the recent growth in the incidence of cannabis use disorder.

The incidence of cannabis use disorder is increasing in the United States. The National Comorbidity Survey, which compares the epidemiology of dependence on tobacco, alcohol, and controlled substances in the United States, found in 1990-1992 that the likelihood of a cannabis user developing CUD in their lifetime was approximately ten percent (Leung et. al, 2020). However, when data points were compared between two national surveys conducted in 2001-2002 and 2012-2013, the percentage of cannabis users who developed dependence rose from ten percent to thirty percent (Hasin et. al, 2015). These increases were found across all demographic subgroups, including: sex, age, ethnicity, education, marital status, income, and region. However, these numbers are not absolute: all studies and surveys have their limitations. That being said, a more recent meta-analysis published in 2020 compared results across 21 studies and revealed that, among the members of the general population who use cannabis, 13% have cannabis dependence, while 22% experience symptoms of cannabis use disorder (Leung et. al, 2020). Finally, another national survey finds that cannabis users who smoke daily have a risk of 30-40% of developing CUD symptoms (Hasin et. al, 2017). There is a multitude of evidence that supports the idea that the incidence of CUD has increased over time. This poses the question: why? The main reasons involve change in public opinion surrounding the risks of cannabis use, and increased legalization of cannabis around the country.

Public opinion is changing in regard to the use of cannabis. In the 1970s, as part of his War on Drugs campaign, the Nixon Administration classified cannabis as a Schedule I drug, making it illegal for medical and recreational purposes (Rosenthal et. al, 2020). This makes

sense, given the context of the time. During the early 1980s, attitudes surrounding the use of cannabis were more disapproving due to an aggressive media campaign sponsored by the Nixon Administration's War on Drugs. This campaign both characterized and increased awareness of the nature of illegal substances: the laws punishing cannabis possession reflected these negative attitudes (Felson et. al, 2019). Public acceptance of cannabis can be difficult to assess, given its illicit nature. However, American attitudes about the nature of cannabis use have changed dramatically over the past twenty-five years. This is reflected in the growing legalization of cannabis for medical and recreational purposes in the States (Felson et. al, 2019). As of 2020, thirty-five states in the US have legalized medical marijuana (Rosenthal et. al, 2020). The reasons for this change in attitude are largely unknown. However, it could be said that the prevalence of cannabis use and legalization in the States has increased partly because of the growing perception that its adverse effects are minimal (Hughes et. al, n.d.). The perceptions that cannabis is not harmful often form at younger ages and prevail over time. Longitudinal studies in adolescents reveal an inverse relationship between patterns of use and risk perception – that is, those who see marijuana as harmless have a higher prevalence of use (Hughes et. al, n.d.). The perception that cannabis is not harmful is not limited to the young. Cannabis is prevalent among older adults and is the fastest-growing user bracket compared to other age groups. This is, in part, due to the popularity of cannabis in the 1970s and 1980s, when members of the geriatric population were young adults (Felson et. al, 2019). (Yes, despite its classification as a Schedule I substance and the War on Drugs campaign. Attitudes surrounding cannabis frequently changed during this time) (Felson et. al, 2019). However, despite its popularity among this group, the perception of the potential for harm in cannabis use changes in older adults depending on their level of cannabis dependence. One study showed that older adults with CUD were 3.5 times

more likely to perceive that cannabis use is risky than those who were not dependent on cannabis (Khoury et. al, 2022). However, by the time these individuals realize the potential for harm caused by cannabis, it is too late; they have developed a substance use disorder and become worse off than they were before receiving medicinal cannabis, and have more limited options available to them for treatment.

The prevalence of cannabis dependence and cannabis use disorder is likely to increase as the acceptability of use changes, leading to an increase in states legalizing cannabis for medical and recreational purposes. However, to fully understand the impact of legalization on the prevalence of cannabis use disorder, it is important first to understand the types of laws cannabis is subject to and, therefore, the different environmental conditions between users of different states. Three different categories of law that regulate cannabis legalization include decriminalization, medical legalization, and full legalization. Decriminalization refers to policies that categorize a substance's possession or non-monetary distribution, under a specified amount, as a non-criminal offense (Khoury et. al, 2022). Decriminalization policies are put in place to improve outcomes for drug abusers and to encourage them to seek help and recovery without fear of obtaining a criminal record while maintaining the act's illegality. Decriminalization is different from full legalization, which removes all legal consequences for the possession and use of a substance. Full legalization would allow for the public sale of cannabis, similar to tobacco and alcohol. States that pass medical marijuana laws remove financial and criminal penalties for using or possessing cannabis under specified conditions. This usually involves obtaining a medical marijuana license through a primary care physician and signing up for a state's medical marijuana registry. The user would then obtain cannabis through a dispensary (Loconti, n.d.).

There is a growing interest in cannabis as a therapeutic agent in medical applications. A report published in 1999 by the National Academy of Sciences, Engineering, and Medicine advocated for the use of medical marijuana, which led to an uptake of medical cannabis prescriptions to patients (Pratt et. al, 2019). Since then, it has been used to treat a variety of conditions. However, a growing body of evidence suggests a higher incidence of problematic use in patients using medicinal cannabis. Studies have shown that those with MMLs use cannabis more frequently and more severely than those who use it recreationally, which are two factors attributed to cannabis dependence (Richmond et. al, 2015). Another study utilized three cross-sectional national surveys over twenty years to identify the relationship between medical marijuana laws (MML) and cannabis use disorders. They found that states that passed MMLs had a higher increase in the risk of CUD over time than those without (Hasin et. al, 2017). This suggests that prescribing medical cannabis to patients could potentially increase their chances of developing a dependence disorder. However, the promising medicinal properties of cannabis has piqued the scientific community's interest in medical cannabis, despite the increased risk of drug dependence. This relationship needs to be further investigated before widespread medical legalization of marijuana occurs.

The addiction potential of medicinal cannabis is of particular significance to the older adult population, which has issues with polypharmacy. Polypharmacy is common in individuals over sixty-five, broadly defined as taking multiple medications (Masnoon et al, 2017). Excessive medication lists can lead to adverse drug interactions and poor health outcomes. According to one study, approximately 20% of individuals within this cohort have been prescribed ten or more medications (Carroll et. al, 2017). Older patients taking more than eight medications are four times more likely to have an adverse drug-related event, often ending in a hospital visit (Carroll

et. al, 2017). Medicinal cannabis is thought to have treatment potential for medical conditions that older adults use prescribed medications to relieve. This could reduce polypharmacy and, in turn, reduce the occurrence of adverse drug events. Some of the conditions that, theoretically, can be treated with medical cannabis include chronic pain, nausea, insomnia, multiple sclerosis, cancer-related symptoms, and mood disorders, all of which have complicated drug treatments that induce side effects and run the risk of crossover effects (Minerbi et. al, 2019). Induction of side effects from medications results in even more complexity in prescription profiles as older adults are given new medications to cope with side effects from the prescriptions they are already taking.

Cannabis is used to help older adults cope with a host of medical problems, including both physical and psychiatric conditions. For one, older adults experience a large variety of psychiatric issues as they attempt to cope with emotions that arise from significant life changes, like the loss of a friend or relative, movement to a nursing home, and cognitive decline (Sabrina et. al, 2002). Many older adults use cannabis to cope with anxiety or trauma-related disorders (Minerbi et. al, 2019). It is also used to cope with physical changes associated with chronic diseases, such as nausea, vomiting, and weight loss in cancer patients (Abrams et. al, 2015). Most significantly, medicinal cannabis is seen as a potential substitute for opioids in pain management. This is very relevant as 20% of older adults in the United States experience chronic pain, and current treatments for chronic pain induce risk and become less effective over time as tolerance builds (Li et. al, 2019). The over-prescription of opioids has contributed to a great financial burden in healthcare by initiating adverse side effects, interactions with other medications, addiction and misuse, and the risk of overdose (Li et. al, 2019). Medical cannabis is

recognized as a potential substitute for opioids and could reduce the financial costs of healthcare and the incidence of opioid dependence among the public.

While cannabis is thought to be useful in the treatment of certain medical contexts, medical cannabis use is also associated with negative effects for older adults. A study on a sample of combat veterans found that those who used marijuana medically experienced greater PTSD symptoms and greater arousal following a prompt related to combat experiences (Loflin et. al, 2017). Additionally, a body of evidence supports the risk of concurrent psychiatric illnesses to the use of cannabis and CUD (Hasin et. al, 2020). Some studies suggest that a CUD diagnosis is associated with more opioid refills in patients that utilize both to treat pain, potentially perpetuating the problem that is the opioid epidemic (Hasin et. al, 2020). Cannabis use is also linked to higher incidence of cardiovascular and pulmonary illness, such as: hypertension, coronary artery disease, and chronic obstructive pulmonary disease (Khoury et. al, 2022).

It is evident that more and more members of the older adult population are using medicinal cannabis to help them cope with physical and mental conditions. On one hand, medicinal cannabis has the potential to reduce the complexity of pharmaceutical profiles amongst older adults and reduce the incidence of adverse drug events. On the other hand, cannabis use can open the door to new medical issues, and the patient can end up worse off than they were previously, particularly if they develop a cannabis use disorder. There are a limited number of studies examining the motivations of cannabis use in older adults with medical marijuana licenses; given the previously described issues, there is a need to examine the relationship between medicinal cannabis use in older adults and the development of cannabis use disorder symptoms.

THE CURRENT STUDY

Evidence from previous research suggests that those who use cannabis for medicinal purposes have higher rates of cannabis dependence disorder among various cohorts. Additionally, evidence suggests that the growing legalization of cannabis for medical purposes, the changing attitudes of older adults regarding cannabis, and the physical and psychological challenges associated with aging have led to increased medical cannabis use among older adults. Previous research suggests that cannabis use for medicinal purposes is associated with a higher probability of developing a cannabis use disorder versus those who use it for recreational purposes. However, despite the increased incidence of medical cannabis use in older adults, there has not been much research on the relationship between the motivational factors of cannabis use and the development of dependence among older adults who use cannabis medically. This begs the question: is there a difference in the likelihood of developing cannabis use disorder between those who use cannabis for physical and psychological symptoms? Thus, the purpose of this study is to examine the relationship between motivational categories associated with cannabis use in adults and the development of CUD symptoms in individuals over the age of 50. This study will utilize multiple regression, examination of outliers, multicollinearity, and data distributions to interpret results. This study postulates two separate hypotheses. Our first hypothesis is that those who use for psychological symptoms will positively associate with scores on the Cannabis Use Disorder Identification (CUDIT) test. The second hypothesis is that those who use it to cope with physical symptoms will show no relationship with CUDIT scores. We predict that groups who use cannabis to cope with psychological symptoms will have more cannabis use pathologies than those who use it for physical symptoms.

METHODOLOGY

Participants

Data was collected from 380 adults who reported possessing a valid cannabis prescription card. The participants were between the ages of 55 and 82 years (mean [M] age = 61.32, standard deviation [SD] = 5.023). The sample consisted of 37.4% ($n = 142$) males and 62.1% ($n = 236$) females while .3% answered as intersex, and .3% did not wish to disclose. The majority identified as Caucasian ($n = 335$, 88.2%), then as multiracial ($n = 15$, 4.1%), African American ($n = 11$, 2.9%), Other ($n = 7$, 1.8%), American Indian or Alaskan Native ($n = 6$, 1.6). Six participants did not wish to disclose their race (1.6%). Of the sample, 4.5% of individuals identified as Hispanic/Latinx ($n = 17$) while .3% did not wish to disclose ($n = 1$).

Procedures

This study was advertised nationally through the use of social media. Advertisements recruited individuals age 55 or older possessing a medical cannabis card. The social media advertisement contained a link to a secure online survey, and participants logged onto this secure survey. They read an online consent form and could only progress to the survey if they consented to the research procedures. After providing consent, the research participants completed a series of assessments. Based on responses to assessments, some participants were contacted to participate in a larger EMA study. The current study is limited in scope and uses only data from the screening portion of the more extensive EMA study. All participants were treated in accordance with APA ethical guidelines.

Demographics: During the screening phase of the study, participants reported basic demographic information, including biological sex, gender, sexual orientation, age, race,

ethnicity, occupation, socioeconomic status, and the length of time they owned prescription cannabis cards.

Cannabis Use Baseline: A baseline measure of cannabis use patterns were taken at the start of the study. This questionnaire utilizes a combination of sliding-scale and multiple-choice questions to assess the frequency and intensity of cannabis use, across various modalities, among participants. A culmination of factors determines this. These include the age of first-time use, frequency of cannabis use within two weeks and one month, strength and intensity of cannabis highs, source of cannabis, and the number of grams utilized per weekday. Picture references were provided to control for cannabis amount measurements.

Psychiatric and Physical Use Motives: Participants were asked about the motivations for their cannabis use via a Likert scale. This study developed 7 items to code for physical symptoms and another 7 items to code for psychiatric symptoms. Examples of these items include, “I use cannabis to experience less pain”, or “I use cannabis to experience less anxiety”. From this, two motives variables (physical use motives and psychiatric use motives) were calculated using the mean of the seven items for each motive.

The Cannabis Use Disorder Identification Test–Revised (CUDIT-R): Participants completed an 8-question worksheet to test for the presence of cannabis use pathology. The CUDIT test asks participants about their cannabis use patterns over the course of the past six months. Each question is rated on a scale from 0 (Never) to 4. At the end of the test, the points are totaled. Scores can range from a total of 0 to 32. Any score over 8 points or more indicate maladaptive cannabis use, while scores of 12 points or more indicate a possible cannabis use disorder. The higher the score, the more maladaptive cannabis use patterns present. This measure has strong internal consistency ($\alpha = .80$) and predictive validity (Adamson et. al, 2010).

RESULTS

Descriptive and Bivariate Analyses

Descriptive statistics and bivariate correlations are listed in Table 1. Age was positively correlated with cannabis use and CUDIT scores, meaning that older individuals had more cannabis use and higher CUDIT scores. Age was negatively correlated with physical and psychological motives for use, meaning that younger individuals were more likely to use for physical or psychological reasons. There was a negative correlation between sex and physical motives, psychological motives, cannabis use, and CUDIT scores. This means that men were more likely to use cannabis regardless of their reasons and rated higher on the use disorder identification test. There was a direct correlation between using for psychological and physical motives. This means that those who used for psychological reasons also tended to use to treat physical symptoms. There was a positive correlation between cannabis use and the treatment of physical symptoms and cannabis use for the treatment of psychological motives. CUDIT scores directly correlated with physical symptoms, psychological symptoms, and cannabis use.

Primary Analysis

The primary analysis used a regression model to examine the association between psychiatric and physical use motives and cannabis use disorder symptoms (assessed via the CUDIT). At step 1, the demographic variables of age and biological sex were regressed onto CUDIT scores, $F(2, 377) = 5.20, p = .006, R^2 = .03$. At step 2, cannabis use was added to the model, $F(3, 376) = 16.36, p < .001, R^2 = .12$. At step 3, psychiatric and physical motives were added to the model, $F(5, 374) = 10.98, p < .001, R^2 = .13$. The final model, depicted in Table 2, accounted for 13% of the variance in CUDIT scores. In the final model, male sex and cannabis

use was associated with higher CUDIT scores. Neither age nor physical use motives were associated with CUDIT scores. However, psychiatric use motives (using to cope with anxiety, depression, trauma, etc.) was positively associated with CUDIT scores.

DISCUSSION

The use of marijuana for medical purposes is increasing throughout the United States, particularly among older adults. This is concerning, given the lack of literature studying the effects of cannabis on this cohort. Current evidence suggests that medical use of cannabis is associated with developing cannabis use disorder (Carliner et. al., 2017). However, it is currently unclear if using for different types of symptoms puts people differentially at risk of developing a cannabis use disorder. To test this hypothesis, this study examined physical and psychiatric use motivation as predictors of cannabis use disorder in individuals with a medical marijuana license. This study predicted that, in older adults, using cannabis to cope with psychiatric symptoms will be positively associated with cannabis use disorder. It was also hypothesized that there would be a negative correlation between individuals who use cannabis to cope with physical symptoms and symptoms of a cannabis use disorder (after controlling for psychiatric motives). These findings are discussed in detail below.

This study found a small but significant correlation between psychiatric motives of use for anxiety and developing CUD symptoms. This is relevant because symptoms of cannabis use disorder include increased maladaptive psychological symptoms not directly tied to cannabis use. People who use cannabis for psychiatric symptoms expect that cannabis will reduce these symptoms, which may be true acutely. However, this study presents evidence of a relationship between patients who use it for psychiatric motives and a potential worsening of these symptoms in the long term. At the very least, they develop symptoms consistent with an addictive process. This is concerning if individuals use cannabis to cope with psychological symptoms, as it can potentially increase the frequency and intensity of cannabis use, two factors associated with developing CUD. This could result in a positive feedback loop where people use cannabis in

greater frequency and intensity of use as their psychological symptoms return, some of which may unknowingly manifest as symptoms of cannabis use disorder. The results of this study support this idea: there is a positive correlation between psychiatric motives and the amount of cannabis used.

Meanwhile, this study found a negative correlation between medical symptoms and scores on the CUDIT test, though these scores did not rise to the level of statistical significance. This is relevant given the potential of cannabis to assist in resolving the issue of polypharmacy among older adults, particularly with opioid prescriptions. Opioids are highly addictive and require higher doses to be effective as individuals build tolerance. Similarly, the amount of cannabis used is one factor associated with cannabis use disorder. However, in this study, there was no correlation between the amount of cannabis used and the treatment of physical symptoms. This suggests there is no tie between using cannabis to cope with physical symptoms and developing a substance use disorder. That being said, cannabis is still linked to various other pulmonary and cardiovascular issues, which could exacerbate the problem of existing pharmaceutical profiles in the older adults. Regardless, if cannabis is an effective substitute to opioids for pain management, this could alleviate some of the financial burden placed on the healthcare system.

There are a few limitations to this study. To begin, this study did not utilize random sampling to gather participants. Instead, participants were self-selected through the use of a social media campaign. Additionally, this study sought out participants already possessing a medical marijuana license. Individuals already possessing an MML may be more inclined to cite its benefits, though this is not always true. Additionally, this study utilized cross-sectional data from participants before participating in a more extensive study and did not examine any changes over time. Finally, it is necessary to consider that addictive and psychological processes are

inherently nested within each other. Individuals with psychiatric disorders are more prone to developing a substance use disorder. The symptoms measured by the CUDIT test may overlap with any symptoms of underlying psychological illness.

That being said, there is a solid case for future research of the relationship between motivational use categories and the development of cannabis dependence. Cannabis has the potential to assist in the treatment of chronic pain in older adults and to reduce their complex pharmaceutical profiles. This study showed no relationship between use for physical symptoms and the development of cannabis use disorder symptoms. If this holds true, then the addition of cannabis as a potential treatment of physical conditions will give older adults more agency over their medical care. Studies such as this one can guide practitioners who consider prescribing medicinal cannabis to their patients. This study also found that there was a significant relationship between psychological symptoms and development of cannabis dependence symptoms. If this holds true across more extensive studies, and individuals continue to use cannabis to treat their psychological symptoms, this could worsen their symptoms and lead to a comorbid cannabis use disorder. Identifying the nature of this relationship will provide both older adults and their practitioners agency to make informed decisions over their medical care.

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TABLES

Table 1. *Descriptive Statistics and Bivariate Correlations*

	Descriptive Statistics				Bivariate Correlations				
	%	<i>Mean</i>	<i>SD</i>	Range	1.	2.	3.	4.	5.
1. Age	--	61.3	5.02	55-82	--				
2. Sex (female = 2)	62.1	--	--	--	*.149	--			
3. Phys Motives	--	13.4	.839	4.00	*-.105	*-.268	--		
4. Psych Motives	--	13.8	.884	4.00	*-.137	*-.212	*.604	--	
5. Cannabis Use	--	.002	.711	3.09	*.116	-.013	.064	*.115	--
6. CUDIT Scores	--	9.94	4.33	28.0	*.152	-.038	.049	*.130	*.315

Note. **CUDIT** = Cannabis Use Disorder Identification Test, **Phys** = Physical Motives, **Psych** = Psychological Motives.

* $p < .05$

Table 2. *Regression Model*

Predictors	Coefficient	<i>Robust Standard Error</i>	<i>t</i>	P > t	95% Confidence Interval
Sex	1.20	.464	5.02	.010	(0.29 to 2.12)
Age	-0.03	.040	-0.83	.405	(-0.11 to 0.05)
Phys Motives	-0.24	.336	-0.73	.464	(-0.91 to 0.41)
Psych Motives	0.67	.285	2.35	.019	(0.11 to 1.23)
Cannabis Use	1.74	.337	5.16	.000	(1.08 to 2.40)
Intercept Constants	9.47	.264	35.89	.000	(8.96 to 9.99)

Regression of predictor variables onto cannabis use pathology ; **Phys** = Physical Motives, **Psych** = Psychological Motives.