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Utility of the comprehensive marijuana motives questionnaire among medical cannabis patients

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HIGHLIGHTS

- We examined the factor structure of the CMMQ among medical cannabis patients.
- We also evaluated relationships between motives and cannabis use and functioning.
- Findings support the utility of the CMMQ among those using cannabis medically.
- Adults using cannabis for medical purposes appear to have diverse reasons for use.

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ABSTRACT

Background: Little is known about motives for cannabis use among the population of adults using cannabis medically. Therefore, we evaluated the performance of the 12 factor, 36-item Comprehensive Marijuana Motives Questionnaire (CMMQ) among a sample of medical cannabis patients.

Methods: Study participants were adults ages 21 years or older with scheduled appointments to obtain new or renewed medical cannabis certification from clinics in one Midwestern state (n = 1116). Confirmatory factor analysis was used to evaluate properties of the CMMQ. Multiple regressions were used to estimate associations between motives and cannabis use, physical health functioning, and mental health functioning.

Results: Fit indices were acceptable, and factor loadings ranged from 0.57 to 0.94. Based on regression analyses, motives accounted for 7% of the variance in recent cannabis use, and independent of cannabis use, accounted for 5% and 19% of physical and mental health functioning, respectively. Regression analyses also revealed that distinct motives were associated with cannabis use and physical and mental health functioning.

Conclusions: Among adults seeking medical cannabis certification, the factor structure of the CMMQ was supported, and consistent with prior studies of adolescents and young adults using cannabis recreationally. Thus, individuals who use cannabis medically may have diverse reasons for use that extend beyond the management of medical symptoms. In addition, coping and sleep-related motives may be particularly salient for this population. Findings support the utility of the CMMQ in future research on medical cannabis use; however, expansion of the scale may be needed to address medical motives for use.

1. Introduction

After alcohol and tobacco, cannabis is the most commonly used substance in the United States (US). Among adults ages 18 years or older, lifetime prevalence is an estimated 46.9%, past-year prevalence is an estimated 13.6%, and past-month prevalence is an estimated 8.4% (Center for Behavioral Health Statistics and Quality, 2016). According to federal law, cannabis use remains illegal; however, since 1996, over half of US states and the District of Columbia have passed legislation allowing for the use of cannabis by individuals with qualifying medical conditions (State Medical Marijuana Laws, 2017). As the policy landscape shifts allowing for increased access to cannabis, it is critical to gain a better understanding of the growing population of individuals who use cannabis for medical reasons. Recently published literature

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now provides data on the demographic, substance use, and other health characteristics of individuals who use cannabis medically (Bohnert et al., 2014; Fischer et al., 2017; Ilgen et al., 2013; Lankenau et al., 2017; Lin, Ilgen, Jannausch, & Bohnert, 2016). Despite this accumulating knowledge base, many gaps remain, including the absence of data on what motivates cannabis use among those who use medically.

Cannabis use motives are critical to understand because, in research on adolescents and young adults who use cannabis recreationally, motives are related to negative consequences, including the development of cannabis use disorder (Benschop et al., 2015; Schlossarek, Kempkensteffen, Reimer, & Verthein, 2016). Furthermore, motives have been shown to change following cannabis-focused intervention, and such changes in motives are associated with intervention outcomes (Blevins, Banes, Stephens, Walker, & Roffman, 2016a). Thus, research examining motives among medical cannabis patients may inform harm reduction interventions in this population.

Early work on motivational models of substance use focused on reasons individuals consumed alcohol; these models were later adapted to cannabis. The initial motivational model posited that individuals used alcohol to either reduce negative affect or enhance positive affect, by way of four distinct motivations: enhancement (i.e., increasing positive mood), social (i.e., increasing enjoyment of a social event), conformity (i.e., fitting in with others), and coping (i.e., decreasing depression/anxiety) (Cooper, 1994; Cooper, Frone, Russell, & Mudar, 1995). When Simons and colleagues adapted the motivational model to cannabis use during the development of the Marijuana Motives Measure (MMM), they included a fifth motive, i.e., "expansion," to account for the psychedelic properties of cannabis that may enhance perceptual or cognitive awareness (Simons, Correia, Carey, & Borsari, 1998). Further research in this area indicated that additional factors may motivate cannabis use (Lee, Neighbors, & Woods, 2007). These motives included boredom, rebellion, and relaxation, as well as medical reasons (e.g., to alleviate pain), which were not specifically captured by the initial MMM (Lee et al., 2007). Subsequently, Lee and colleagues developed a more extensive measure of cannabis use motives, namely, the Comprehensive Marijuana Motives Questionnaire (CMMQ) (Lee, Neighbors, Hendershot, & Grossbard, 2009).

The CMMQ was developed among a sample of 346 college students who had used cannabis at least once in the past year, and it encompassed 12 distinct factors: enjoyment, conformity, coping, experimentation, boredom, alcohol-related use, celebration, altered perception, social anxiety, relative low risk, sleep, and availability (Lee et al., 2009). Of note, the initial item pool for the CMMQ included items in the domain of medical use; however, these items did not comprise a significant factor and were therefore not included in the final scale. In this original sample, motives were differentially related to frequency of cannabis use, with enjoyment, boredom, relative low risk, altered perceptions, and sleep motives related to higher use and experimentation and availability motives related to lower use (Lee et al., 2009). In addition, coping and sleep-related motives were positively associated with cannabis use consequences; whereas, enjoyment was associated with fewer consequences (Lee et al., 2009). Recently, Blevins and colleagues replicated the factor structure of the CMMQ among 252 high school students with relatively frequent cannabis use; however, they found somewhat different patterns in the relationships between motives and frequency of cannabis use and consequences (e.g., only alcohol and sleep motives were significantly associated with greater frequency of use), possibly reflecting unique characteristics of this younger sample (Blevins, Banes, Stephens, Walker, & Roffman, 2016b).

While these studies provide an important foundation for understanding cannabis use motives among adolescents and young adults who use cannabis recreationally, there has been little research examining motives for cannabis use among the population of adults using cannabis medically. In addition to using cannabis to manage medical complaints (Haug et al., 2017), qualitative research suggests that adults who use cannabis for medical purposes also do so for other reasons such as stress relief, sleep, and relaxation (Pedersen & Sandberg, 2013). One prior study used the CMMQ in a sample of 217 patients receiving medical cannabis; however, it did not evaluate the psychometric structure of the scale (Bonn-Miller, Boden, Bucossi, & Babson, 2014). In the study, 9 of the 12 motives, excluding sleep, conformity, and relative low risk, were positively associated with cannabis use problems; however, social anxiety was the only motive associated with perceived helpfulness of cannabis (Bonn-Miller et al., 2014). To extend this line of work, in present study, we test the performance and utility of the CMMQ among medical cannabis patients. Specifically, we examined the psychometric properties, including the factor structure, of the CMMQ among a large sample of patients seeking medical cannabis certification. We also evaluated relationships between motives and frequency of cannabis use and physical and mental health functioning.

2. Methods

2.1. Design and sample

Data come from the screening sample of an ongoing study of medical cannabis patients. Eligible study participants included adults ages 21 years or older with scheduled appointments for medical cannabis certification or recertification at participating medical cannabis clinics in Michigan. Patients were approached by research assistants (RAs) in clinic waiting areas. RAs provided a brief overview of the study and obtained written informed consent for screening. Consenting participants completed a 20–30 min self-administered screening survey via touchscreen tablet computer or paper-and-pencil. The study was approved by the University of Michigan Medical School Institutional Review Board (IRB).

Of the 2569 eligible adults who presented to the study sites during recruitment from February, 2014 to June, 2015, 1485 (57.8%) completed the screening survey. For the present study, the sample included all participants who completed the screening survey, endorsed cannabis use in the past 6 months, and had complete data on cannabis motives, frequency of cannabis use, and functional health and well-being (n = 1116).

2.2. Measures

2.2.1. Cannabis motives

Cannabis use motives were assessed via the Comprehensive Marijuana Motives Questionnaire (CMMQ) (Lee et al., 2009). The measure comprises 36 items that assess 12 domains of motivations for cannabis use. Participants rated the frequency with which they used cannabis for each of the 36 items (i.e., "how often do you use marijuana for the following reasons?") on a scale from 1 (almost never/never) to 5 (almost always/always).

2.2.2. Frequency of Cannabis use

Using an item from the National Institute on Drug Abuse-Modified Alcohol, Smoking, and Substance Involvement Screening Test Version 2.0 (NIDA-Modified ASSIST V2.0), participants were asked: "In the past 3 months, how often have you used Cannabis (marijuana, pot, grass, hash, etc.)?" Response options included: never; once or twice; monthly; weekly; daily or almost daily, which were recoded to reflect the number of days of use in the past 3 months (i.e., 0; 1; 3; 13; 90 days, respectively).

2.2.3. Functional health and well-being

The Short Form-12 Health Survey (SF-12) was used to measure general health status and functioning in the past 4 weeks (Ware, Kosinski, & Keller, 1996). The SF-12 assesses 8 domains: physical functioning, physical role functioning, bodily pain, general health, vitality, social functioning, emotional role functioning, and mental health. Per recommended scoring guidelines, t-scores were calculated