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Psychometric properties of a valuations scale for the Marijuana Effect Expectancies Questionnaire

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HIGHLIGHTS

- The MEEQ-V assesses desirability of marijuana effect expectancies.
- MEEQ-V scales had adequate internal consistency and convergent validity.
- Most MEEQ-V scales were correlated with their corresponding MEEQ scale.
- MEEQ-V scales were differentially related to marijuana use and use-related problems.
- Most MEEQ-V scales were related to use after controlling for MEEQ scale.

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ABSTRACT

Given that marijuana remains the most commonly used illicit substance, identification of the role of potentially malleable cognitive factors in marijuana-related behaviors remains an important goal. The Marijuana Effect Expectancies Questionnaire (MEEQ; Schafer & Brown, 1991) assesses marijuana effect expectancies that are differentially related to marijuana use and use-related problems. Evaluation of the desirability of marijuana effect expectancies may provide additional information regarding cognitions related to marijuana use behaviors. The present study examined the psychometric properties of the *Marijuana Effect Expectancy Questionnaire—Valuations Scale* (MEEQ-V) which was developed for this study to assess the desirability of marijuana effect expectancies. The sample was comprised of 925 (73.0% female) undergraduate participants, 41.9% of whom endorsed lifetime marijuana use and 24.7% of whom reported current (past three-month) use. The MEEQ-V scales demonstrated adequate internal consistency. Most (but not all) MEEQ-V scales were correlated with their corresponding MEEQ scale. There was some support for convergent validity. MEEQ-V scales were differentially related to frequency of marijuana use and use-related problems. Most MEEQ-V scales were related to frequency of marijuana use above and beyond variance attributable to corresponding MEEQ scales. Results suggest that assessment of desirability of marijuana's effects could provide unique and important information about cognitions related to marijuana use behaviors.

1. Introduction

Marijuana is the most commonly used illicit drug in the U.S. and more than one in four users experiences distress and/or impairment related to use that is substantial enough to warrant a diagnosis of cannabis use disorder (CUD; Substance Abuse & Mental Health Services Administration, 2010). Marijuana use has been linked to numerous negative health and psychological consequences (see Sussman, Stacy, Dent, & Simon, 1996). Given the high rates of marijuana use and use-related problems, it is important to better understand cognitive factors related to marijuana use and use-related problems. Such understanding could inform treatment and prevention efforts.

One promising area is that of marijuana effect expectancies, or expectations regarding the effects of using marijuana. The Marijuana Effect Expectancies Questionnaire (MEEQ; Schafer & Brown, 1991) is the most frequently used measure of marijuana effect expectancies. The MEEQ assesses the degree to which a person expects effects to occur as a result of using marijuana. The MEEQ was developed to be used by those with and without experience using marijuana. MEEQ items were derived by asking community adult volunteers with varying levels of marijuana use (no experience to daily use) what effects they expected from the use of a moderate amount of marijuana. Based on exploratory factor analysis, six subscales were identified: Cognitive/Behavioral Impairment, Relaxation/Tension Reduction, Social/Sexual Facilitation, Perceptual/Cognitive Enhancement, Global Negative Effects, and Craving/Physical Effects (Schafer & Brown,

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1991). This factor structure has been confirmed (Aarons, Brown, Stice, & Coe, 2001).

Primary marijuana users tend to endorse less Cognitive/Behavioral Impairment and Global Negative Effects and more Relaxation/Tension Reduction and Social/Sexual Facilitation than those who primarily use other substances (Aarons et al., 2001). MEEQ subscales were positively correlated with similar alcohol outcome expectancies (e.g., MEEQ—Cognitive/Behavioral Impairment related to Cognitive/Behavioral Deterioration alcohol outcome expectancy) among adolescents (Aarons et al., 2001). There is evidence of temporal stability of MEEQ subscales over a two-year period (Aarons et al., 2001).

MEEQ subscales are differentially related to frequency of marijuana use (Schafer & Brown, 1991). Nonusers tend to report more Global Negative Effects expectancies than users (Aarons et al., 2001; Buckner & Schmidt, 2008; Galen & Henderson, 1999). However, the nature of the relations of other MEEQ subscales to use is unclear. Among adults, current users tend to endorse more Relaxation/Tension Reduction expectancies than nonusers, past-users, or less frequent users (Buckner & Schmidt, 2008; Galen & Henderson, 1999; Hayaki et al., 2010), although this does not seem to be the case with adolescents (Aarons et al., 2001). Cognitive/Behavioral Impairment expectancies were negatively related to use among adolescents (Aarons et al., 2001) but unrelated to use among adults (Buckner & Schmidt, 2008; Galen & Henderson, 1999). Social/Sexual Facilitation expectancies were positively related to use among college students (Buckner & Schmidt, 2008) but not adolescents or adults receiving inpatient substance use disorder treatment (Aarons et al., 2001; Galen & Henderson, 1999). Craving/Physical Effect expectancies were related to use in some samples (Aarons et al., 2001; Buckner & Schmidt, 2008; Galen & Henderson, 1999) but not others (Hayaki et al., 2010).

Emerging data suggest that scales are also differentially related to marijuana-related problems (Buckner & Schmidt, 2008; Hayaki et al., 2010). Among college students, Global Negative Effects and Cognitive/Behavioral Impairment expectancies were positively related to marijuana problem severity (Buckner & Schmidt, 2008). However, among female community marijuana users, Global Negative Effects and Relaxation/Tension Reduction expectancies were related to marijuana problem severity (Hayaki et al., 2010).

One factor that may contribute to these disparate findings is that the MEEQ does not assess whether users want the expected effect to occur. In fact, we know of no measure that assesses valuation of marijuana effect expectancies. Yet, it may be that only those individuals who desire an expected effect are motivated to use more frequently or to use in a manner that is associated with marijuana-related problems. To illustrate, social anxiety and social anxiety disorder (SAD) were related to MEEQ—Cognitive/Behavioral Impairment and this expectancy mediated the relation between social anxiety and marijuana problems (Buckner & Schmidt, 2008, 2009). One interpretation of these seemingly puzzling results is that people who experience more marijuana-related impairment (in this case, socially anxious users) come to expect impairment when they use marijuana. Yet, Buckner and Schmidt (2008) tested this hypothesis and found that marijuana-related problems failed to account for the relation between social anxiety and Cognitive/Behavioral Impairment expectancies. It may therefore be that some individuals use marijuana because they want marijuana to slow their anxiety-induced racing thoughts and/or to make things around them seem less real and, perhaps, less anxiety-provoking. In other words, examination of whether users value particular expectancies may provide valuable insight into cognitive factors related to marijuana use behaviors. Valuations of the effects of other substances (alcohol) seem to increase the predictive utility of alcohol outcome expectancies (e.g., Fromme, Stroot, & Kaplan, 1993; Ham, Stewart, Norton, & Hope, 2005).

In light of the potential contribution that could be made by understanding of the role of valuations of expectancies in marijuana use behaviors, we developed the *Marijuana Effect Expectancy Questionnaire—Valuations Scale* (MEEQ-V). The aim of the current study was to examine the psychometric properties of the MEEQ-V. First, correlations between MEEQ-V scales and their corresponding MEEQ scale were conducted. Given the MEEQ was developed to be used by those with and without experience using marijuana, correlations were examined among the entire sample as well as among current users. Second, convergent validity was examined by conducting correlations between MEEQ-V scales and relevant marijuana motives and alcohol outcome expectancies' valuation scales. Third, concurrent validity was examined by testing whether MEEQ-V scales were correlated with marijuana use frequency and marijuana-related problems. Fourth, incremental validity was tested by examining whether MEEQ-V scales remained related to marijuana use and use-related problems after controlling for variance attributable to corresponding MEEQ scales. Fifth, we tested whether MEEQ-V scales interacted with their corresponding MEEQ scale to predict marijuana use and use-related problems. Sixth, given the dearth of studies explicitly examining the psychometric properties of the 48-item MEEQ, we also conducted relevant analyses for the MEEQ.

The sample consisted of undergraduates, a group well-suited to examine marijuana use given that college students and young adults are at risk for marijuana problems (Caldeira, Arria, O'Grady, Vincent, & Wish, 2008; Johnston, O'Malley, Bachman, & Schulenberg, 2007) and age of CUD onset peaks at 18–19 (Stinson, Ruan, Pickering, & Grant, 2006). Also, marijuana use rates are similar between college and non-college peers, although the rate of marijuana use is increasing among college students but not non-college peers (SAMHSA, 2010).

2. Method

2.1. Participant selection and procedures

Participants were recruited through the psychology undergraduate participant pool from September to November 2011. This study was approved by the university's Institutional Review Board and informed consent was obtained prior to data collection. Participants completed computerized versions of study measures using a secure, on-line data collection website (surveymonkey.com). Computerized and paper-and-pencil versions of self-report measures are highly correlated (Gwaltney, Shields, & Shiffman, 2008). The last page of the survey contained contact information for university-affiliated outpatient clinics that provide psychosocial treatment for substance use and/or mental health disorders. Participants received research credit for completion of the survey.

Of the 969 participants that began the survey, 2.5% were deemed ineligible. Reasons included being under 18 years of age ($n=2$), incomplete responses ($n=18$), and questionable validity ($n=4$; detailed below). Age range was restricted to students under 25 years old to more accurately reflect factors related to use among more traditional undergraduates, excluding an additional 20 participants. Thus, the final sample consisted of 925 participants aged 18–24 ($M=19.5$, $SD=1.4$). Consistent with the demographics of psychology students at this University more broadly that year, the sample was 73.0% female. Participants were asked to indicate their ethnicity (i.e., Hispanic/Latino or Non-Hispanic/Non-Latino) and the majority of the sample was 95.5% non-Hispanic/Latino. Next, participants were asked to indicate their race and the racial composition was 9.2% African American/Black, 0.4% Native American, 3.1% Asian American, 83.0% Caucasian/White, 2.7% “mixed”, and 1.5% “other”.

2.2. Measures

2.2.1. Marijuana Expectancies Questionnaire (MEEQ)

As described above, the MEEQ is a 48-item list of expectations regarding marijuana use (Aarons et al., 2001; Schafer & Brown, 1991). In