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Self-efficacy and motivation to quit marijuana use among young women

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Abstract

Assessing motivation to quit substance use is recommended as part of brief interventions. To determine correlates of desire to quit marijuana use among young adult women enrolled in a brief motivational intervention trial, 332 marijuana users, aged 18-24, rated their current desire to quit using a single item change ladder. We hypothesized self-efficacy and prior quit attempts will interact in this population to increase motivation to quit. Participants had a mean age of 20.5 years, 67.7% were non-Hispanic Caucasian, and 60% had some desire to quit marijuana use. Using multivariate linear regression, quit desire was significantly lower among Caucasians ($b = -.256$; 95% CI $-.489$; $-.037$) and more frequent marijuana users ($b = -.268$; 95% CI $-.372$; $-.166$), and higher among those with previous quit attempts ($b = .454$; 95% CI $.235$; $.671$), and greater marijuana problem severity ($b = .408$; 95% CI $.302$; $.514$). Greater refusal self-efficacy was associated with greater quit desire among participants with previous quit attempts, but not among those without prior quit attempts ($b = .241$; 95% CI $.050$; $.440$). Understanding the factors relating to quit desire among marijuana users may allow clinicians to tailor counseling so as to increase readiness and decrease use and its associated consequences.

1. Introduction

Compared with other age groups, young adults aged 18-25 have the highest rates of marijuana use¹; about 1 in 6 have used in the past month and over half have used in their lifetime. Marijuana abuse and dependence are the most prevalent illicit substance use disorders in young people¹. Although men use marijuana at higher rates than women, more women than men were categorized as “early initiators”, beginning use at a younger age than men, in a study of adolescents and young adults from a community sample². There is evidence to suggest that early initiation of marijuana use puts young adults at even greater risk than their peers who initiate when older. These risks include developing marijuana

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dependence³⁻⁴, and problems with other substances². Rates of past month marijuana use have generally increased among females, especially adolescent females during the past two decades⁵.

Marijuana use, even at levels below diagnosable abuse or dependence, is associated with acute and long-term medical and psychosocial problems⁶⁻⁸. Several researchers have argued that relative to males, females carry heightened risk for the adverse physical, mental and social consequences of substance use, including marijuana use⁹⁻¹⁰, largely due to increased co-morbid psychiatric disorders. In addition, marijuana-using young women may experience gender-specific consequences, including increased risk of sexual assault¹¹ and unprotected sex, leaving them vulnerable to unwanted pregnancy and sexually transmitted infections¹²⁻¹³.

Young adults who use marijuana regularly may not seek or perceive a need for treatment¹⁴. A study assessing marijuana risk perceptions, consequences, and use among 725 first-year college students found individuals who used marijuana ascribed fewer negative consequences and lower risk to marijuana use than non-users¹⁵. Additionally, a study of 548 college students with a substance use disorder reported that 83.2% failed to recognize the need for help with their substance use¹⁴. Qualitative interviews with a small sample of marijuana users, and reports from a sample of 842 continuation high school students indicate marijuana users may believe formal substance abuse treatment is unnecessary and quitting on one's own is the most effective way to stop problematic use¹⁶⁻¹⁷.

Prior studies investigating motivation to quit as a predictor of subsequent drug use behavior have yielded inconsistent findings. In a non-intervention study of community-based marijuana users followed naturalistically, initial change goal was a poor predictor of outcome¹⁸. And in a sample of incarcerated adolescents, greater motivation to change predicted higher severity of marijuana use three months after release¹⁹. However, in a sample of adolescents attending an intensive outpatient treatment program for marijuana use, motivation to abstain significantly predicted fewer use days during follow-up²⁰.

Greater self-efficacy has been shown to be positively associated with motivation to change behavior in non-substance using populations²¹ and is an important predictor of outcome success in treatment-seeking marijuana users²²⁻²⁵. Pre-treatment self-efficacy has been related to temptation and the likelihood of using coping strategies²⁴, as well as increases in coping skills usage²⁶. However, the relationship between self-efficacy and motivation to change has not been studied in marijuana-using populations that are not seeking formal substance use treatment, a group that may be highly heterogeneous with respect to prior quit attempts and current desire to quit.

Non-treatment-seeking marijuana users often make multiple quit attempts, even over relatively short time frames^{17-18, 27-28}, suggesting that those uninterested in formal treatment are often self-initiating change, even if they do not have a stated goal of abstinence. These findings are consistent with the smoking cessation literature, where previous quit attempts are predictive of greater motivation to quit²⁹ and behavior change³⁰.

The intersection of motivation to quit, self-efficacy, and previous quit attempts may be partially explained by components of Social Learning theory³¹ and Transtheoretical Models of Change³² which suggest a complex relationship between the three constructs. Stages of change models assert that quit attempts made during the preparation stage (intending to initiate behavior change in the near future) build skills, enhance confidence in quit ability, and increase quit motivation as individuals move into the action stage (overt, observable attempts to change behavior) of change³²⁻³³. For example, in a study of cigarette smokers, Grove³⁴ found that baseline self-efficacy and perceived success of previous quits were significantly associated and that those with high self-efficacy perceived that their previous quit failures were related to factors controllable and changeable in future quits. Social Learning Theory argues that situational mastery is an important demonstration of increasing self-efficacy³¹. Specifically, the process of practicing and mastering a task or situation builds confidence and may be important in increasing refusal self-efficacy and motivation to quit.

Some researchers have speculated that, in addition to self-efficacy and past quit attempts, perceived marijuana-related problems may increase motivation to quit, as has been described in young adults who experience problems related to other substances³⁵⁻³⁶. When controlling for severity and frequency of drug use, problems from use remain strongly correlated with motivation among a wide range of alcohol and drug users³⁷⁻³⁸. Despite this, a link between motivation to quit and problem severity has not been consistently reported in the marijuana literature. In two studies, adverse marijuana use consequences was associated strongly and positively with desire to change marijuana use¹⁶⁻¹⁷. But a third study found no association between adverse marijuana use consequences and desire to quit³⁹. All three studies sampled non-treatment seeking individuals. However, roughly half of high school seniors who use marijuana report a desire to quit, and additionally, concerns about psychological and physical damage were reported most frequently as reasons to quit⁴⁰. Understanding the link between recognized, or potential problems from marijuana use, and motivation to quit, could be useful in primary care, or treatment setting interventions.

Based on the conceptual models identified above, we hypothesized that refusal self-efficacy, defined as the perceived ability to resist marijuana use in tempting situations, and previous quit attempts will be associated positively with desire to quit marijuana use. We further hypothesized that the effect of refusal self-efficacy on desire to quit will be moderated by prior quit attempts. In particular, we expected the effects of refusal self-efficacy on quit desire to be potentiated by prior quit attempts among young marijuana-using adult women enrolled in a health behaviors trial known as the MAPLE study.

2. Materials and methods

2.1. Procedures

As previously described, the study sample was recruited from the community through newspaper and radio advertisements for a “research study about the health behaviors of young adult women”⁴¹. Women responding to the ads were screened for eligibility with a brief phone interview, and if eligible and interested were scheduled for an in-person comprehensive assessment.

Inclusion criteria included: 1) smoking marijuana at least 3 times in the past three months, 2) aged 18-24, 3) living within 20 miles of Providence RI and planning to remain in the geographic area for the next 6 months, 4) English comprehension, 5) not meeting criteria for substance dependence other than marijuana, alcohol, or nicotine within the past year.

Although the consent form indicated that participants could be randomized to an intervention condition in which they would receive two sessions with a clinician to discuss their health behaviors, an explicitly stated commitment to reduce or quit marijuana use was not an enrollment criterion. The MAPLE study was approved by the Institutional Review Board of Butler Hospital.

Between January 2005 and May 2009, 1,728 individuals were screened by phone and 1,213 were excluded for not meeting eligibility criteria for the following reasons: had not smoked marijuana in the last 3 months (n=958) or marijuana use frequency was too low (n=60); did not meet secondary criteria (e.g., were pregnant, non-English speaking, older than 24, lived too far from the study site or were drug dependent, n=140); did not provide enough information to determine eligibility (n=55). Of the 515 eligible women, 183 refused or were unable to enroll. A total of 332 women were enrolled in the trial. Eligible persons provided informed consent and were enrolled in a randomized clinical trial comparing a 2-session motivationally-focused intervention (MI) to assessment only (AO). Participants were compensated \$30 for the baseline assessment, an hour-long, researcher-administered questionnaire, on which this analysis is based.

2.2. Measures

2.2.1 Background Characteristics—Age, race, educational attainment, and marital and employment status were assessed through self report.

2.2.2 Substance Use History—Duration of regular marijuana use was derived from the participant's current age and the self-reported age they began using regularly (once weekly or more). Past quit attempts was assessed with the question, "Have you ever tried to quit using marijuana? If yes, how many times have you tried to quit?" Previous quit attempts were dichotomized yes/no due to a highly skewed distribution. Past 90-day marijuana and alcohol use was assessed using the Timeline Follow-Back - TLFB⁴²⁻⁴³. Participants reported for each calendar day whether they had used whether alcohol or marijuana (yes/no) and whether they had sex with a main or casual partner. Research assistants used recognized holidays, and participant generated important dates to aid in accurate recall. Problems associated with marijuana use were assessed using the Marijuana Problems Scale - MPS⁴⁴⁻⁴⁵. This 19-item scale asks participants to rate a list of marijuana problems on a 3-point scale ranging from 0 (no problem) to 2 (serious problem), indicating whether marijuana had caused them the problem in the previous 90 days. Scores which could range from 0-38 were scored dichotomously to assess for presence/absence and therefore range from 0-19, providing a count of total problems, consistent with the scoring originally used by the scale developers^{39, 44-45}. Relatively few participants described problems as "serious" and zero-order correlation between the 0-19 index and the 0-38 summated-rating scale was .97; results were both substantively and statistically consistent using either scoring protocol. Internal consistency for the MPS in this cohort was .79; Stephens et al.,^{39, 45} reported alphas

of .90 and .84. Past 90-day opioid and cocaine use were assessed using the Addiction Severity Index⁴⁶; participants indicated the number of days in the past 90 they had used each substance. Marijuana abuse and dependence was measured using the Structured Clinical Interview for Axis I disorders⁴⁷.

2.2.3 Motivation Measure—Desire to quit marijuana was measured as a single item change ladder⁴⁸⁻⁴⁹ with wording adapted from the Thoughts About Abstinence scale⁵⁰. Participants were asked to rate their current desire to quit with the question, “On a scale from one to ten, with one representing no desire to quit, give yourself a rating. Choose the number between 1 and 10 that best describes your own desire to stop using marijuana at this time. Remember, the higher the number, the greater your desire.” Data on motivation to quit were missing for 4 participants who were excluded from subsequent analysis.

2.2.4 Refusal Self-Efficacy—Refusal self-efficacy for marijuana use in a number of situations was measured with an 8-item version of the Situational Confidence Questionnaire adapted for marijuana users⁵¹. Participants rated their confidence to refuse marijuana use in multiple high-risk situations on a scale of 0% (“not at all confident”) to 100% (“totally confident”). The item was scored continuously.

2.3. Analysis Plan

Descriptive statistics are presented to summarize the background characteristics of the sample. The observed distribution of motivation to quit was very skewed (Figure 1) and the modal response was at the lower limit; 39.6% ($n = 140$) of the participants reported no quit desire. Examination of studentized residuals suggested the assumptions of OLS regression were not well approximated. Therefore, as a robust alternative we used bias-corrected and accelerated bootstrap confidence interval estimates (10,000 replications) to assess statistical significance; 95% confidence interval estimates which do not include zero were considered statistically significant at the .05 level. This confidence interval estimate has been shown to have good coverage of population parameters even when the sampling distribution of bootstrap estimates is skewed⁵². All continuous variables were standardized to zero mean and unit variance prior to estimation; coefficients estimating the effect of continuous predictors are fully standardized while coefficients estimating the effect of categorical predictors are y-standardized⁵³. To test the hypothesis that prior quit attempts moderate the effect of refusal self-efficacy on motivation to quit, we included the first order prior quit attempts by self-efficacy interaction effect.

We also present the endorsement rates of the 19 individual MPS index items. To explore the relative degree to which individual marijuana problems were associated with desire to quit, we present Cohen’s⁵⁴ standardized difference in means, d , to compare those who endorsed the item as a mild or severe problem to those who reported it was not a problem. The standardized difference in means provides a measure of effect size that does not depend on the rates of problem endorsement.

3. Results

Mean age was 20.5 ($\pm$ 1.8) years, 66.3% reported attending some college or had completed a college degree, and 80.1% were employed either part- or full-time. Two-hundred-twenty-five (67.7%) participants were non-Hispanic Caucasian, 35 (10.5%) were African-American, and 38 (11.4%) were Hispanic. Most (96.4%) participants had never been married and only 9 (2.7%) were married or living with a partner. On average, participants had used marijuana for 3.9 (SD = 2.6) years, 39.5% met SCID diagnostic criteria for marijuana dependence, and 52.7% met SCID criteria for marijuana abuse. Mean marijuana self-efficacy score was 59.2 (SD = 24.96). The mean proportion of days on which participants used marijuana prior to baseline was .57 (SD = .34), and .21 (SD = .19) for alcohol. The mean score on the MPS index was 4.08 ($\pm$ 3.24, Median = 3.0) and 43% (n = 143) reported one or more marijuana quit attempts. Almost half (48.8%) were current cigarette smokers, 54 (16.3%) reported the use of opioids in the past 90 days, and 47 (14.2%) had used cocaine in that same period.

A regression model estimating the adjusted effects of predictor variables on desire to quit using marijuana is reported in Table 1. The full model explained 36.9% of the variance in quit desire ($F_{13,314} = 14.14$, $p < .001$). Controlling for all covariates listed in Table 1, Caucasians had significantly lower average scores on desire to quit using marijuana ($b = -.256$, 95% CI $-.489$; $-.037$, $p < .05$). Current opioid users had significantly lower average desire to quit ($b = -.248$, 95% CI $-.462$; $-.041$, $p < .05$) than non-users. Desire to quit using marijuana was inversely and significantly ($b = -.268$, 95% CI $-.372$; $-.166$, $p < .05$) associated with proportion of days using marijuana, but positively associated with marijuana problem severity scores ($b = .414$, 95% CI $.307$; $.521$, $p < .05$).

The first-order quit attempts by refusal self-efficacy interaction was statistically significant ($b = .214$; 95% CI $.050$; $.440$; Figure 2). Since continuous covariates were standardized prior to analysis, the main effect for any quit attempts ($b = .454$, 95% CI $.235$; $.671$) was evaluated at the mean of refusal self-efficacy. The main effect of refusal self-efficacy ($b = .032$, 95% CI $-.083$; $.140$) indicates the effect of refusal self-efficacy on desire to quit was weak and not statistically significant among those with no prior quit attempts. The coefficient for the first order interaction ($b = .241$, 95% CI $.050$; $.440$) indicates the predicted standardized effect of refusal self-efficacy was .241 units stronger among those with prior quit attempts than for those with no prior quits. Desire to quit using marijuana was not associated significantly with education, employment status, years of regular marijuana use, frequency of alcohol use, being a current cigarette smoker, or current use of cocaine (Table 1). Unadjusted associations (not reported here) indicated a pattern of associations between predictor variables and desire to quit using marijuana consistent with the full regression model.

Over half of the participants in this cohort reported that use of marijuana caused them to procrastinate, to have lower energy levels, or to have a loss of memory (Table 2). Other relatively frequently endorsed marijuana-related problems were having lower productivity, feeling bad about use, having financial difficulties, and difficulties sleeping. Only 5 (1.5%) reported any legal problems, and fewer than 10% said marijuana use contributed to job loss, having blackouts or flashbacks, having medical problems, or having problems with friends. The standardized effects (Cohen's d) provide insight into the degree to which individual

problems are associated with desire to quit using marijuana (Table 2). Respondents who endorsed feeling bad about their marijuana use ($d = .951$), or who said marijuana use lowered their self-esteem ($d = .871$) or caused them to lack self-confidence (.847), had higher motivation to quit. Although only 6.7% endorsed blackouts or flashbacks as a marijuana-related problem, those who did reported greater desire to quit ($d = .964$). Other marijuana problems with moderately strong standardized effects on quit desire included difficulty sleeping ($d = .646$), having problems with a partner (.610), and reporting withdrawal symptoms ($d = .641$). The most frequently endorsed problem, procrastination, was only weakly ($d = .129$) and not significantly ($p > .05$) associated with desire to quit using marijuana.

4. Discussion

Sixty percent of participants in this cohort of young women endorsed some desire to quit marijuana use. Motivation to quit is a potentially important intermediate outcome that may be amenable to brief behavioral interventions. Several earlier studies have investigated motivation to change marijuana use as a predictor of subsequent outcomes. Although previous findings have been inconsistent¹⁸⁻²⁰ in our MAPLE trial, the subgroup that expressed a desire to quit at baseline and received the motivational intervention had a significantly lower frequency of marijuana use than all other subgroups at one, three and six months follow-up⁴¹. Among those with no motivation to quit, the intervention effect was weak and did not approach statistically significant levels at any of the three follow-up assessments. These findings suggested the importance of identifying factors associated with desire to quit in this young adult population.

Drawing on Social Learning Theory³¹ and Transtheoretical Models of Change³² our hypothesis that the association between refusal self-efficacy and motivation to quit would be stronger among persons with prior quit attempts was confirmed. Among those with no previous marijuana quit attempts we found the association between refusal self-efficacy and quit desire substantively weak and not statistically significant. But we found this same association to be moderately strong and significant among those who had previously attempted to quit using marijuana.

We speculate that prior quit attempts enhance situational mastery and provide experiences which bolster the effect of refusal self-efficacy on motivation to quit. In a study of persons attempting to quit cigarette smoking, a positive association between duration of prior quit attempts and baseline self-efficacy was reported⁵⁵. Even unsuccessful quit attempts may provide young people with skills and experiences to build on for future quit attempts and give them the confidence to resist using marijuana in high-risk situations in-line with concepts from Social Learning Theory³¹ and Stage of Change Models³³. In clinical settings, assisting persons who've never made a quit attempt to do so (by discussing barriers and expectations), even if unsuccessful, may enhance self-efficacy in later attempts. For persons who have previously attempted to stop using marijuana, exploring reasons for past attempts, the duration of past successes, and reasons for relapse, may enhance motivation to quit and produce novel strategies to achieve prolonged abstinence.

Alternatively, past quit attempts could be interpreted as a proxy for a disapproving social environment or an accumulation of marijuana-related problems that influence desire to quit⁵⁶.

Consistent with prior studies¹⁷ we also found that motivation to quit was positively associated with severity of marijuana-related problems. Perceived severity of marijuana problems was relatively low in this cohort. While 90% of the participants endorsed marijuana-related problems, the mean problem count was 4 which is substantially lower than in marijuana treatment samples which typically have mean endorsements counts close to 10^{39, 45}. Additionally, the mean problem count in our cohort was also lower than in other community-recruited samples, perhaps related to gender and the briefer duration of use given the age of our participants^{39, 57}. Our exploratory analysis investigating the relationship between endorsement of individual marijuana-related problems and quit desire suggested that the most frequent problems did not necessarily have the strongest association with quit motivation, although problems related to lower confidence or self-esteem, and guilt about use may be particularly useful as components of future motivational interventions. Indeed, reviewing the full array of potential marijuana-related problems may affect the decisional balance process in any intervention designed to increase motivation to quit.

While positively associated with marijuana problem severity, motivation to quit was inversely associated with frequency of marijuana use. Though not previously reported, marijuana problem severity and frequency of use were positively associated ($r = .24, p < .001$). This seeming paradox is consistent with the literature of marijuana and other substance use^{20, 37-38}. It is possible that frequent users may deny problems related to their use to reduce cognitive dissonance, even while continuing to use heavily⁵⁸. This may be especially true for those who are frequent social users, as admitting to problems from use could lead to less support for use, even among heavy using peers⁵⁹. For those who use with others, in any given situation marijuana may be more difficult to refuse when offered, so as not to risk straining important social connections, and countering descriptive and injunctive norms. Having fewer friends who use marijuana or who approve of use is predictive of cessation^{56, 60}, whereas participation in social situations in which others are using is predictive of use⁶¹. More frequent users may be more frequent social users, and translate the difficulty in refusing to a decreased motivation to quit.

Present findings also suggest a cultural or racial/ethnic component of motivation to quit marijuana. This has been found in other substance abuse studies as well^{35, 62-63}, although the direction of the effect is inconsistent. In the current study any desire to quit using marijuana is significantly lower among Caucasians than among racial and ethnic minorities. There was no difference by race/ethnicity on number of marijuana problems or other drug use (data not shown). It is unclear whether Caucasian race/ethnicity is a marker of other unmeasured variables that impede motivation, such as psychiatric diagnoses.

Several additional study limitations should be noted. Using a cross-sectional design we cannot unambiguously establish temporal order or identify causal processes, although we believe that self-efficacy and quit attempts are likely to have a complex, reciprocal relationship. The cross-sectional nature of this study however, mimics a clinical setting,

where a primary care or treatment provider would have only current self-efficacy and quit history by which to start a conversation about marijuana quit desire. Second, motivation to quit was measured using a single item⁴⁹; this item however has been validated in other populations, and in our MAPLE study, we demonstrated that this measure predicts future behavior among young marijuana-using women participating in a motivational intervention⁴¹. This item asked about desire to quit; future studies might ask about desire to cut down marijuana use in addition to desire to quit as there may be important differences between these two related, but unique constructs. Additionally, the endorsement pattern of perceived marijuana problems may be specific to this population; different patterns of problems may emerge in other samples. For example, an older sample, perhaps due to a longer marijuana use history, may endorse notably different problems, such as neglecting family, medical problems, or legal problems. Also, we did not have psychological diagnoses for this sample which may influence endorsement of motivation to quit. Finally, our reliance on a sample of young adult women may limit the generalizability of these findings to other populations. .

The current study had important strengths. The population consisted of women, who are typically underrepresented in the marijuana literature⁶⁴. Enrolling emerging adults⁶⁵, who have the highest marijuana use prevalence¹, makes our results applicable to a large number of young women. Finally, our sample was racially/ethnically diverse, whereas past marijuana research populations have been predominantly Caucasian.

Findings from this study add to the literature suggesting that substance-related problems are pivotal when individuals consider changing drug use. Understanding the positive relationship between recognizing problems related to use and motivation to change could be important for future interventions as well as in provider-directed treatment. In clinical settings, enhancing a marijuana user's attention to the wide array of marijuana-related problems may heighten motivation to quit.

Additionally, this study adds to the literature regarding self-efficacy as an important behavior change component. Refusal self efficacy has been predictive of outcome success among marijuana users seeking formal treatment²²⁻²³. Understanding that previous attempts to quit marijuana use in a non-treatment seeking sample interact with refusal self-efficacy may be important for tailoring future interventions. Individuals could potentially identify important skills, or lessons learned from previous quit attempts to boost their current self-belief and motivation to make a more permanent change in their drug use.

This study accessed a segment of the marijuana-using population that uses heavily and has tried and failed to quit in the past. As most marijuana users do not seek treatment¹⁴, and brief 'check-ins' with non-treatment seeking marijuana users have been shown feasible and efficacious^{39, 57}, developing a clearer understanding of factors associated with motivation to quit could easily be incorporated into these brief contacts with providers, and could aid in reducing the health risks of young women who use marijuana.

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Figure 1.
Observed Distribution of Desire to Quit Using Marijuana (n = 328).

Figure 2.
First-Order Refusal Self-Efficacy by Prior Quit Attempts Interaction Effect

Table 1

Linear Regression Model Estimating the Adjusted Effects of Selected Predictor Variables on Desire to Quit Using Marijuana (n = 328).

Predictor	b ^a (95% CI)
Race (Caucasian = 1)	-.256 ^{**} (-.489; -.037)
Some College or Degree (Yes = 1)	-.137 (-.353; .085)
Employed Part or Full-Time (Yes = 1)	.171 (-.044; .384)
Years Regular MJ Use ^b	.006 (-.082; .098)
Prop. of Days Used Alcohol ^b	-.081 (-.170; .012)
Current Cocaine Use (Yes = 1)	.116 (-.124; .372)
Current Opioid Use (Yes = 1)	-.281 [*] (-.493; -.075)
Current Cigarette Smoker (Yes = 1)	.065 (-.119; .242)
Prop. Days Used MJ ^b	-.268 ^{**} (-.372; -.166)
MJ Problem Severity Index ^b	.408 ^{**} (.302; .514)
Any MJ Quit Attempts (Yes = 1)	.454 ^{**} (.235; .671)
Marijuana Self Efficacy ^b	.032 (-.083; .140)
MJ Quit X MJ Self Efficacy Interaction	.241 [*] (.050; .440)

* p < .05,

** p < .01. Coefficients were considered statistically significant at the .05 (.01) level if the 95% (99%) confidence intervals estimated by bias-corrected bootstrap re-sampling with 10,000 random draws excluded 0. The 99% confidence interval estimates are not presented.

^a Desire to quit using marijuana and all continuous predictor variables were standardized to 0 mean and unit variance prior to model estimation. Coefficients for continuous predictor variables are fully standardized; coefficients for categorical predictor variables are y standardized.

^b Continuous predictors were standardized to zero mean and unit variance prior to estimation.

Table 2

Endorsement of Individual Marijuana Problem Severity Index Items and Standardized Effects on Desire to Quit Using Marijuana (n = 328).

Item ^a	n (%) Endorsed Problem		d ^b
	No	Yes	
To procrastinate	116 (35.4%)	212 (64.6%)	.129
To have lower energy level	137 (41.8%)	191 (58.2%)	.368 **
Memory loss	153 (46.6%)	175 (53.4%)	.348 **
To have lower productivity	219 (66.8%)	109 (33.2%)	.291 **
To feel bad about your use	238 (72.6%)	90 (27.4%)	.951 **
Financial difficulties	244 (74.4%)	84 (25.6%)	.283 *
Difficulty sleeping	262 (79.9%)	66 (20.1%)	.610 **
Problems between you and your partner	276 (84.1%)	52 (15.9%)	.646 **
Problems in your family	278 (84.8%)	50 (15.2%)	.444 **
To miss days at work or miss classes	281 (85.7%)	47 (14.3%)	.070
To neglect your family	285 (86.9%)	43 (13.1%)	.297
Lowered self-esteem	288 (87.8%)	40 (12.2%)	.871 **
To lack self-confidence	289 (88.1%)	39 (11.9%)	.847 **
Withdrawal symptoms	294 (89.6%)	34 (10.4%)	.641 **
Problems between you and your friends	297 (90.5%)	31 (9.5%)	.279
Medical problems	305 (93.0%)	23 (7.0%)	.017
Blackouts or flashbacks	306 (93.3%)	22 (6.7%)	.964 **
To lose a job	312 (95.1%)	16 (4.9%)	.398
Legal problems	323 (98.5%)	5 (1.5%)	.393

*
p < .05,

**
p < .01 (t-tests for differences in means).

^a items are ordered from most frequently endorsed as either mild or severe problems to least frequently endorsed.

^b Cohen's (1988) standardized effect contrasting mean desire to quit using marijuana of those endorsing the item as either a mild or severe problem to those not endorsing the item