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Short Communication

Marijuana and self-regulation: Examining likelihood and intensity of use and problems

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HIGHLIGHTS

- Examined likelihood and frequency and marijuana use and problems
- Behavioral self-regulation was primarily associated with use.
- Emotional self-regulation was primarily associated with problems.

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ABSTRACT

It is important to understand the individual differences that contribute to greater frequency or intensity of marijuana use, or greater frequency of experiencing marijuana-related problems. The current study examined several elements of behavioral and emotional self-regulation as predictors of the likelihood and intensity of both marijuana use and marijuana-related problems. As predicted, indices of behavioral self-regulation (self-control, sensation seeking) were better predictors of marijuana use, while indices of emotional self-regulation (affect, distress tolerance, and emotional instability) better predicted marijuana-related problems. Surprisingly, urgency was not related to use but was predictive of problems, and there were no significant interactions between behavioral and emotional self-regulation in predicting either use or problems. From these findings we conclude that while behavioral dysregulation may put individuals at risk for using marijuana, or using it more frequently, it is those individuals with difficulty in emotional self-regulation that are at risk for experiencing negative consequences as a result of their marijuana use. Clinically, these data are relevant; clinicians might focus more on addressing emotional regulation in order to lessen or eliminate the consequences of marijuana use.

1. Introduction

Marijuana is the most commonly used illicit substance in the US (SAMHSA, 2010), and the level of involvement with marijuana has been shown to predict greater academic, occupational, psychological, and health-related problems (Brook, Stimmel, Zhang, & Brook, 2008). Understanding individual differences that contribute to marijuana use and marijuana-related problems is an important area of research. Studies have shown that various aspects of self-regulation predict indices of marijuana involvement (Simons & Arens, 2007; Simons, Dvorak, & Lau-Barraco, 2009).

Carver (2003) has proposed that self-regulation broadly involves the regulation of affective experiences and behavioral actions. Both behavioral self-regulation and emotional self-regulation have been used effectively as predictors of substance use behavior (Wills, Pokhrel, Morehouse, & Fenster, 2011). Behavioral self-regulation involves processes associated with the initiation or inhibition of pre-potent patterns of behavioral responses (see Carver, 2005). These processes are frequently referred to as impulsivity, effortful/self-control, (dis)inhibition, and constraint. Research has shown that these processes form two separate, but related, systems. The first system, often referred to as the "hot" or "impulsive" system, is heuristic in nature and influenced by emotional states. Recent theory suggests that this system is comprised of two separate processes: an appetitive process linked to reward drive or sensation seeking, and an impulsive process linked to emotion-based rash action, what has been termed "urgency" (Dawe, Gullo, & Loxton, 2004). Interestingly, the two processes appear to be differentially related to marijuana use (Xiao, 2008). The second system, frequently referred to as the "cool" or "effortful" system, is slower and relatively uninfluenced by emotion. Research indicates that the effortful system is associated with decreased marijuana use (Creemers et al., 2010). In contrast, the impulsive system appears to have associations with marijuana use, although associations with marijuana problems

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have been more complex, with both positive (Day, Metrik, Spillane, & Kahler, 2013) and negative (Simons & Carey, 2006) relationships. This may be related to the conceptualization of the impulsive mode as a single factor model.

Emotional self-regulation involves a set of complex skills or affective processes which serve to influence emotional experience, timing, and expression (Gross, 1998). Previous research has linked negative emotional functioning to various indices of marijuana involvement (Simons & Carey, 2002; Zvolensky et al., 2009). Emotional self-regulation has several components, including tonic or trait levels of affect, the degree and magnitude of emotional instability, and individual differences in one's ability to endure, tolerate, or cope with negative emotions. Previous research supports associations between problematic marijuana use and these sub-components of emotional self-regulation (Buckner, Keough, & Schmidt, 2007; Simons, Gaher, Correia, Hansen, & Christopher, 2005; Zvolensky et al., 2009). The current study examines associations between indices of behavioral and emotional self-regulation in the prediction of marijuana use and marijuana-related problems.

2. Methods

2.1. Participants

Participants ($n = 817$; 64.50% female) ranged in age from 18 to 33 ($M = 20.14$, $SD = 2.36$). Participants were 92.04% Caucasian, 3.79% Asian, 1.22% African American, and 2.95% other. All participants were treated in accordance with the APA ethical guidelines for research.

2.2. Measures

2.2.1. Marijuana use intensity

Marijuana use intensity over the last 6 months was assessed via a grid containing four time periods per day for each day of the week. Participants indicated if they typically used marijuana during each time period. Previous research supports the validity and test–retest reliability of this measure of use intensity (Williams, Adams, Stephens, & Roffman, 2000).

2.2.2. Marijuana problems

Marijuana problems were assessed by the Marijuana Adult Consequences Questionnaire (MACQ; Simons, Dvorak, Merrill, & Read, 2012). The MACQ is a 50-item, dichotomously scored (i.e., yes/no) measure that assesses 8 dimensions of marijuana consequences. Participants endorse items they have experienced in the last 6 months. The MACQ has shown high convergent validity, good internal consistency, and test–retest reliability (Simons et al., 2012).

2.2.3. UPPS-P impulsive behavior scale

UPPS-P impulsive behavior scale is a 59-item measure assessing 5 facets of behavioral self-regulation: negative urgency (12 items, $\alpha = .88$), positive urgency (14 items, $\alpha = .93$), premeditation (11 items, $\alpha = .85$), perseverance (10 items, $\alpha = .81$), and sensation seeking (12 items, $\alpha = .86$). Participants respond on a 4-point Likert-type scale ranging from *strongly agree* to *strongly disagree*. The UPPS-P has shown adequate reliability as well as convergent, discriminant, and predictive validity (Cyders, Flory, Rainer, & Smith, 2009; Cyders & Smith, 2007; Cyders et al., 2007). Previous research indicates that the five facets load on three higher order constructs: conscientiousness (i.e., self-control), urgency, and sensation seeking (Cyders & Smith, 2007). In the present study, three higher-order factors were formed to serve as measures of behavioral self-regulation. Positive and negative urgency formed a mean standardized "urgency" indicator ($\alpha = .82$); perseverance and premeditation formed a mean standardized "self-control" indicator ($\alpha = .68$); the sensation seeking facet served as the final indicator.

2.2.4. Positive and negative affect

Positive affect and negative affect were assessed by the 20-item positive and negative affect scales of the Positive and Negative Affective Schedules — X (PANAS-X; Watson & Clark, 1999). The PANAS was administered using the "in general" instructions to assess trait level positive and negative affective functioning. Participants rate the extent to which they generally experience each positive and negative affect item on a 4-point Likert-type scale (1 = *very slightly or not at all* to 5 = *extremely*). Considerable research supports the use of the PANAS to assess trait affectivity (Watson & Clark, 1999).

2.2.5. Emotional instability

Emotional instability was measured by the 18-item Affect Lability Scale — Short Form (ALS-SF; Oliver & Simons, 2004). All items were measured on a 4-point Likert-type scale ranging from *very undescriptive* to *very descriptive*. The ALS-SF has shown adequate validity, internal consistency, and 30-day test–retest reliability (Oliver & Simons, 2004).

2.2.6. Distress tolerance

Distress tolerance was assessed by the 15-item Distress Tolerance Scale (DTS; Simons & Gaher, 2005). This measure is rated on a 5-point Likert-type scale ranging from *strongly agree* to *strongly disagree*. The DTS has shown adequate internal consistency and test–retest reliability (Simons & Gaher, 2005).

2.3. Procedures

Participants were recruited via campus wide email for a study examining "Emotion, Personality, and Risk among College Students." Participants received course credit for participation. After completing informed consent, participants completed online questionnaires assessing basic demographics, behavioral and emotional self-regulation, and marijuana involvement. The university IRB approved this study.

Table 1
Descriptive statistics and bivariate correlations among all study variables.

Analysis variables	1	2	3	4	5	6	7	8	9	10	11	Range	Mean	*SD*	Skew
1. Age	–											18 to 33	20.14	2.36	2.01
2. Sex	.01	–										0 to 1	0.36	0.48	0.61
3. Urgency	**.10**	−.06	.82									−1.54 to 3.28	0.00	0.92	0.47
4. Self-control	−.03	.04	**−.41**	.68								−3.71 to 1.80	0.00	0.87	−0.51
5. Sensation seeking	**.23**	**−.09**	**.24**	−.02	.86							12 to 48	33.89	7.36	−0.33
6. Emotional instability	**−.08**	−.01	**.43**	**−.14**	.02	.86						−1.15 to 2.73	0.00	0.89	0.76
7. Distress tolerance	.06	.05	**−.47**	**.16**	.03	**−.41**	.89					−2.06 to 1.61	0.00	0.87	−0.34
8. Positive affect	−.02	−.06	**−.22**	**.34**	**.22**	**−.17**	**.28**	.89				1 to 5	3.41	0.71	−0.46
9. Negative affect	−.06	.04	**.47**	**−.20**	−.03	**.46**	**−.46**	**−.16**	.89			1 to 4.3	1.94	0.67	0.89
10. Mj. use intensity	**.16**	.03	**.15**	**−.13**	**.13**	.03	**−.07**	−.03	**.12**	.92		0 to 23	0.83	2.59	4.84
11. Mj. problems	**.12**	−.03	**.24**	**−.18**	**.16**	**.08**	**−.14**	**−.09**	**.15**	**.62**	.94	0 to 36	1.63	4.34	3.97

Note. Mj. = Marijuana. Significant correlations ($p < .05$) are in bold for emphasis. Cronbach's alphas for multi-indicator variables are listed on the diagonal. Gender was dummy-coded (0 = women, 1 = men).