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The Dualistic Model of Passion Applied to Recreational Marijuana Consumption

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Abstract

This study was designed to evaluate the application of the dualistic model of passion (Vallerand, 2015; Vallerand et al., 2003) to recreational marijuana consumption. Using a web-based recruitment and data collection procedure, an online sample of 524 frequent marijuana consumers were administered a modified version of the Passion Scale (Marijuana-Harmonious and Obsessive Passion Scale; M-HOPS) and other questionnaires. Results from a canonical correlation analysis indicated that obsessive passion scores were significantly positively associated with past 30-day consumption, average number of sessions per day, craving, and number of consumption-related problems, while controlling for gender, ethnicity, and harmonious passion scores. Additionally, harmonious passion scores were significantly negatively associated with consumption-related problems and positively associated with life satisfaction, while controlling for ethnicity, gender, and obsessive passion scores. Future research could evaluate whether obsessive passion is associated with future problems related to consumption and the development of a cannabis use disorder. Clinicians and prevention specialists could use the M-HOPS as a means to understand and address the dualistic experience of passion for marijuana consumption, which might contribute to persistent use over time.

Keywords

passion; marijuana; cannabis; obsessive; harmonious; substance use; theory; model

Introduction

Marijuana is the most frequently consumed illicit substance in the United States and other countries (United Nations Office on Drugs and Crime, UNODC, 2014; Johnston et al., 2014). Although some people experience negative somatic, psychological, and social effects after consuming marijuana (Simons et al., 2012), most report desirable outcomes, such as feelings of euphoria, relaxation, and decreased inhibition (Green et al., 2003). Additionally, the majority of people who consume marijuana will not develop a substance use disorder (Farmer et al., 2015); however, some people consume marijuana so frequently and in such

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The author has no conflict of interest to declare in terms of any financial, or personal, relationships which could have influenced this work.

large amounts that they could be considered as having what Vallerand (2015, Vallerand et al., 2003) has called a 'passion' for a highly valued activity.

According to Vallerand's dualistic model of passion, the more time and energy one devotes to engaging in a favored activity (e.g., reading, playing sports), the more likely it is that one might develop a passion for it. As part of this theory, there are two types of passion: harmonious and obsessive. Harmonious passion refers to engaging in an activity in ways that enhance, and are integrated in one's life, wherein the activity is an important but not overwhelming aspect of one's identity. Conversely, an obsessive passion refers to engaging in an activity that has become so compelling that it causes conflict with other activities or creates dissonance between the activity and one's values.

To assess passion for a favored activity, Vallerand et al. (2003) developed and evaluated the psychometric properties of the Passion Scale. The scale is comprised of 14 statements that load on one of two subscales (7 items assess harmonious passion and 7 assess obsessive passion). Although the generic version of the scale has utility if investigators want to evaluate a sample of participants engaged in a variety of activities, Rousseau et al. (2002) argued that investigators should evaluate the scale by modifying items to refer specifically to one target behavior. For example, investigators have employed modifications of the Passion Scale to assess passion for gambling (Ratelle et al., 2004; Rousseau et al., 2002), gaming (Lafreniere et al., 2009; Stoeber et al., 2011; Wang & Chu, 2007), and pornography (Rosenberg & Kraus, 2014). Overall, this body of evidence suggests that obsessive passion for the potentially addictive behaviors noted above is typically associated with negative outcomes (e.g., frequency and duration of behavioral engagement, negative affect, behavior-related consequences), and is unrelated to life satisfaction. Whereas harmonious passion is typically associated with positive outcomes (e.g., positive affect, life satisfaction) and sometimes, although not always, related to frequency of behavioral engagement.

Applying the dualistic model of passion to recreational substance consumption implies that substance users could develop both a harmonious and obsessive passion for this behavior, depending on the degree to which consuming the substance is central in one's life and how much control he or she retains over consumption. However, only two published reports were found regarding the application of the model to recreational substance consumption (Davis & Rosenberg, 2015; Steers et al., 2015). In the first published report, Davis and Rosenberg (2015) evaluated passion for consuming MDMA/ecstasy with behavioral and psychological aspects of consumption among an international sample of recreational users. Results indicated that participants endorsed harmonious passion more strongly than obsessive passion. Additionally, both harmonious and obsessive passion scores were negatively associated with one's self-confidence they could refuse offers of MDMA/ecstasy in a variety of contexts, and positively associated with consuming the substance to cope with worries and problems. Additionally, higher obsessive passion scores were related to consuming the substance more throughout one's lifetime, and related to consuming the substance more frequently over the six months prior to study enrollment. Harmonious passion was unrelated to these variables.

In the second report, Steers and colleagues (2015) evaluated two versions of the Passion Scale to apply specifically to alcohol and marijuana consumption among a sample of college students at a university on the western coast of the United States. Harmonious passion to consume alcohol was the strongest predictor of alcohol consumption among heavy drinking college students and obsessive passion was the strongest predictor of alcohol-related problems endorsed on the Rutgers Alcohol Problem Index (White & Labouvie, 2000). Unlike the findings for alcohol, obsessive and harmonious passion were both significantly and equally related to marijuana use-related problems endorsed on the Rutgers Marijuana Problem Index (White et al., 2005), although harmonious passion to consume marijuana was the strongest predictor of marijuana consumption. Although Steers et al. (2015) found that passion was associated with marijuana consumption, they evaluated the associations of passion with only frequency of consumption and consumption-related problems, and they recruited a sample of American college students who consumed marijuana relatively infrequently (i.e., average of three days in the previous month). Given the paucity of research in this area, further evaluation of a marijuana-specific version of the Passion Scale using a large community sample of marijuana consumers could help expand our understanding of the psychology of one's marijuana consumption.

The present study has two hypotheses. Firstly, growing evidence suggests that obsessive passion is associated with a variety of problems related to substance consumption (e.g., frequency of marijuana, alcohol, and MDMA/ecstasy use; Davis & Rosenberg, 2015; Steers et al., 2015) and frequency of engagement in other addictive behaviors (e.g., frequency of gaming, viewing pornography, and gambling; Lafreniere et al., 2009; Ratelle et al., 2004; Rosenberg & Kraus, 2014; Rousseau et al., 2002; Stoeber et al., 2011; Wang & Chu, 2007). Additionally, because obsessive passion is theoretically indicative of an unhealthy, compulsive engagement in an activity (Vallerand, 2012) and thus might share some features with symptoms of a substance use disorder (e.g., attempts to reduce consumption, consumption-related problems, craving; American Psychiatric Association, 2013), it was expected that obsessive passion to consume marijuana would be significantly associated with a variety of other indicators of problematic consumption. Specifically, it was hypothesized that obsessive passion would be positively associated with marijuana craving, past 30-day consumption, average number of consumption sessions per day, consumption-related problems, trying to reduce consumption in the past, and current intoxication.

Evidence regarding the associations of harmonious passion and frequency of substance use and engagement in other addictive behaviors is mixed. For example, although Steers et al. (2015) found that harmonious passion was positively associated with alcohol and marijuana consumption among university students, Davis and Rosenberg (2015) found that harmonious passion was unrelated to frequency of MDMA/ecstasy consumption among a community sample of recreational users. Additionally, frequency of engaging in addictive behaviors is sometimes related to harmonious passion (e.g., for pornography and gambling), and other times unrelated to harmonious passion (e.g., for gaming). Furthermore, given the theoretical conceptualization that harmonious passion is indicative of a healthy, value-based engagement in a behavior, such that it is congruent with other life values (Vallerand, 2012), it was expected that harmonious passion would not be positively associated with several indicators of problematic consumption among a sample of frequent marijuana users.

Specifically, it was hypothesized that harmonious passion would *not* be positively associated with frequency of marijuana consumption (i.e., past 30-day consumption, average number of sessions per day), marijuana craving, consumption-related problems, trying to reduce consumption in the past, or current intoxication. Additionally, based on prior research (Lafreniere et al., 2009) showing a positive association between gaming and life satisfaction, it was expected that harmonious passion would be positively associated with life satisfaction in the present study.

Method

Procedure

Following approval from an institutional review board, respondents were recruited using online message postings and advertisements on Facebook's website (www.facebook.com). The postings directed those who were interested in the study to the web-based survey site (hosted by surveygizmo.com). Potential respondents were informed that they had to be at least 18 years of age, had to understand and read English, and had to have used marijuana at least once per month in each of the previous six months. After providing informed consent, respondents then completed the Marijuana Harmonious and Obsessive Passion Scale (M-HOPS) and all remaining study questionnaires (see below). All items within each questionnaire were presented in random order except for the Drug Use History Questionnaire, Obsessive and Compulsive Drug Use Scale-Cannabis, and the Rutgers Marijuana Problem Index due to the structure of questionnaires and limitations in the online survey program. Finally, the program informed each respondent that a donation in the amount of \$150.00 had been made to Bluelight.org (an international forum for drug users that is committed to reducing the harm associated with substance use) as way of "paying it forward" for his or her time responding to the survey. The survey took approximately 20 minutes to complete and is available from the corresponding author.

Measures

Marijuana-Harmonious and Obsessive Passion Scale (M-HOPS)—The original 14 items of Vallerand et al.'s (2003) Passion Scale were used to assess two types of passion for consuming marijuana: (a) harmonious passion (e.g., retention of control over marijuana use; integration of marijuana consumption with other activities) and (b) obsessive passion (e.g., compulsion to engage in marijuana use; preoccupation with acquiring and using marijuana; conflict between desire to use and problems associated with use). Specifically, the words "this activity" were replaced with the word "marijuana," in each item. Respondents were asked to rate each item on a 7-point scale ranging from 1 (*do not agree at all*) to 7 (*completely agree*).

In order to evaluate whether this modified version of the Passion Scale resulted in the two subscales operationalized above, a Principal Components Analyses with Direct Oblimin rotation was conducted as an exploratory factor analytic method. The results of this analysis revealed that six of the seven intended harmonious passion items loaded strongly on one component and all seven of the intended obsessive passion items loaded strongly on a second component. One item originally intended to measure harmonious passion loaded

strongly on the obsessive passion subscale and was thus removed from the scale entirely. In the present sample, internal consistency reliability of the 7-item obsessive passion subscale was .82 and of the 6-item harmonious passion subscale was .73. Table 1 displays the modified wording, component loadings, and means (SDs), for each item.

Rutgers Marijuana Problem Index—This questionnaire (White et al., 2005) asks respondents to rate the frequency with which they have experienced each of 17 specific marijuana-related problems (e.g., neglected responsibilities, felt that you needed more than you used to use in order to get the same effect, kept using marijuana when you promised yourself not to) over the last year using a 5-point scale ranging from 0 (*never*) to 4 (*10 or more times*). Internal consistency in the current sample was .84.

Obsessive and Compulsive Drug Use Scale for Cannabis—A cannabis-specific version of the Obsessive Compulsive Drug Use Scale (Van Nimwegen et al., 2008; Dekker et al., 2010) was administered to assess for marijuana craving. The scale was modified by replacing the word “cannabis” with “marijuana” so that it was consistent with the substance was referred to in the other study measures. The Obsessive Compulsive Drug Use Scale-Cannabis is comprised of three subscales: 1) craving/urge (e.g., “How strong was the drive to use marijuana in the past week?”), 2) resistance (e.g., “How much of an effort do you make to resist the use of marijuana?”), and 3) impact (e.g., “If you do not use marijuana, how much time of the day do you feel the urge or drive to use marijuana?”). Respondents were asked to rate their responses to each item using a 5-point scale with response anchors that reflected the specific content of each item. Internal consistency reliability was .86 for the craving subscale, .64 for the resistance subscale, and -.19 for the impact subscale. Due to the unacceptably low reliability of the resistance and impact subscales, only the craving subscale was used in the analyses.

Marijuana Use History—This questionnaire was designed to assess selected aspects of respondents’ marijuana consumption experience and their history of consuming this substance. Specifically, the questions assessed quantity and frequency of marijuana consumption (e.g., number of days per month, number of sessions per day, number of typical sized joints consumed per session), current intoxication, means of consumption (e.g., pipe, bong, vaporizer), stability of consumption over the past six months, and number of lifetime attempts to reduce consumption.

Satisfaction with Life Survey—This 5-item survey (Pavot & Diener, 2008) was administered to assess respondents’ satisfaction with life. Respondents are asked to rate their agreement with each item (e.g., “In most ways my life is close to my ideal,” “The conditions of my life are excellent,” “I am satisfied with my life.”) on a Likert scale from –3 (*Strongly disagree*) to 3 (*Strongly agree*). Internal consistency in the current sample was .84.

Substance Use History—This measure was designed to assess respondents’ use of substances other than marijuana. Respondents were asked to indicate recent (past six months) consumption of a variety of licit and illicit substances.

Demographics—This questionnaire assessed basic demographic data including age, gender, sexual orientation, ethnicity, and employment status.

Results

Respondent Characteristics

During the recruitment period (March and April, 2015), 3232 individuals clicked the link to the online study website. Of these individuals, 746 consented to participate and clicked “Submit” at the end of the survey. Of these, 58 respondents identified themselves as being less than 18 years old, 2 respondents indicated they were 66 or older, 10 respondents had not used marijuana in the previous 30 days, 106 respondents did not complete all items on the M-HOPS, and 29 respondents completed less than one-half of any of the remaining measures, and thus were excluded from analyses. An additional 16 participants’ scores on the harmonious and obsessive passion subscales were more than three standard deviations above or below the mean and therefore were removed so that these scores did not affect statistical assumptions for the main analyses. The final sample was comprised of 524 frequent marijuana consumers.

As examination of Table 2 reveals, the majority of respondents were Caucasian (85.9%) and male (87.7%), with a mean age of 23.8 ($SD = 9.0$). Overall, respondents reported consuming marijuana an average of 23.8 ($SD = 9.0$) days in the previous month, with an average of 2.3 ($SD = 1.2$) sessions per day. In addition to marijuana, most reported having consumed alcohol (85.1%) and nicotine (71.4%) during the previous six months. Due to an error in the online survey, country of residence was not assessed.

Comparison of M-HOPS Subscale Scores

Next, scores on the two subscales of the modified M-HOPS were compared. The paired t -test revealed that respondents had significantly lower scores on the obsessive passion subscale ($M = 2.5$, $SD = 1.3$) compared to scores on the harmonious passion subscale ($M = 5.2$, $SD = 1.1$), $t(523) = 38.11$, $p < .001$. Additionally, scores on the harmonious passion subscale were not significantly associated with scores on the obsessive passion subscale, $r(522) = .04$, $p = .410$.

Associations of M-HOPS Scores with Marijuana Consumption, Craving, and Marijuana Use-related Problems

A Canonical Correlation Analysis (CCA) was conducted to evaluate the associations of harmonious and obsessive passion with marijuana consumption and other consumption-related outcomes. Because of the distribution of gender and ethnicity in the sample, these variables were controlled for in the analysis. CCA was utilized because it is a form of multiple regression that evaluates the relations between a set of at least two independent variables with a set of at least two dependent variables, and allows one to interpret the dimensional associations that may exist among two sets of constructs (Tabachnick & Fidell, 2007). The independent variables in this analysis included harmonious passion and obsessive passion subscale scores, ethnicity, and gender. The dependent variables included craving, past 30-day marijuana consumption, average number of marijuana consumption

sessions per day, consumption related problems, past attempt to reduce consumption, current intoxication, and satisfaction with life.

First, an inspection of kurtosis and skewness indices for all of the independent and dependent variables proved to be normal (values ranged from -1.012 to 0.854 for skewness and from -1.41 to 0.961 for kurtosis). An evaluation of Table 3 reveals that there were two significant canonical correlations. The first significant canonical correlation was 0.74 , $F(27, 1743) = 17.71$, $p < .001$. For the independent set, the canonical variate was represented primarily by obsessive passion (-0.997), and for the dependent set, the canonical variate was represented primarily by craving (-0.91), marijuana consumption-related problems (-0.70), past 30-day marijuana consumption (-0.52), and the average number of marijuana consumption sessions per day (-0.49). The redundancy coefficient for the independent set was 0.25 and was 0.30 for the dependent set. Taken together, these results indicate that high scores on the obsessive passion subscale, while controlling for gender, ethnicity, and harmonious passion scores, were associated with higher levels of marijuana craving, more consumption of marijuana during the past 30 days, more marijuana consumption-related problems, and a higher average number of marijuana consumption sessions per day.

The second significant canonical correlation was 0.28 , $F(18, 1369) = 2.86$, $p < .001$. For the independent set, the canonical variate was represented primarily by harmonious passion (-0.976), and for the dependent set, the canonical variate was represented primarily by marijuana consumption-related problems (0.53) and satisfaction with life (-0.51). The redundancy coefficient for the independent set was 0.25 and was 0.14 for the dependent set. Taken together, these results indicate that high scores on the harmonious passion subscale, while controlling for gender, ethnicity, and obsessive passion scores, were associated with fewer marijuana consumption-related problems and greater life satisfaction.

Discussion

The present study is one of the few to have evaluated the dualistic model of passion for recreational substance consumption (Davis & Rosenberg, 2015; Steers et al., 2015). The findings from the current study largely supported the first hypothesis, which highlights the significant associations between obsessive passion and a variety of indicators of problematic marijuana consumption (i.e., craving, past 30-day frequency of consumption, average number of sessions per day, and consumption-related problems). This pattern of results is consistent with several other studies (Steers et al., 2015; Davis & Rosenberg, 2015) that found significant associations between obsessive passion and frequency of substance consumption (e.g., for marijuana, alcohol, and MDMA/ecstasy), and consumption-related problems (e.g., related to marijuana and alcohol consumption), and extends the previous work by documenting the association of obsessive passion and problematic substance consumption among a large online sample of frequent marijuana consumers.

It was also hypothesized that obsessive passion would be associated with two other indicators of problematic consumption (i.e., current intoxication and past marijuana reduction attempts). However, using Canonical Correlation Analysis allowed for statistical control of the intercorrelations among all dependent measures. Additionally, this statistical

procedure maximized the relations among both independent and dependent variables, contributing to a pattern of results suggesting that current intoxication and past marijuana reduction attempts are not the strongest predictors of the dimension of problematic indicators of marijuana consumption, insofar as these variables relate to one's experience of obsessive passion.

Results from the present study also largely supported the second hypothesis, demonstrating that harmonious passion was unrelated to all of the indicators of problematic marijuana consumption, with the exception of being negatively associated with consumption-related problems, and harmonious passion was positively related to life satisfaction. These findings are consistent with several other studies that found harmonious passion to be unrelated to frequency of MDMA/ecstasy consumption (Davis & Rosenberg, 2015), length of time gambling and number of games played (Rousseau et al, 2002), and positively related to life satisfaction among gamers (Lafreniere et al., 2009). Overall, this pattern of results supports the theoretical construct of harmonious passion (Vallerand, 2012) and extends previous work to an online sample of frequent marijuana consumers. Although it is possible that marijuana users with a harmonious passion for consumption are likely better able to balance marijuana use with other life activities (e.g., in academic, social, and occupational settings), this hypothesis awaits future research.

The finding that harmonious passion was negatively associated with consumption-related problems is inconsistent with Steers et al. (2015), who found a positive association between these variables. There are several factors that could have influenced these differences. Firstly, Steers and colleagues evaluated passion for marijuana consumption among relatively infrequent users (i.e., subjects used marijuana an average of three days in the month prior to the study), and the current study included individuals who consumed marijuana much more frequently (i.e., an average of 22 days in the month prior to the study). Secondly, their sample was comprised of young college students ($M_{\text{age}}=18$), and the current study recruited a large online sample of relatively older marijuana users ($M_{\text{age}}=24$). Assuming that passion for marijuana consumption, and the associated consequences of use, evolves over time and with increasing exposure to the psychoactive effects of intoxication, it should be expected that the associations of passion and consequences would also evolve over time. However, whether this hypothesis is supported awaits further evaluation using a longitudinal design.

Similar to both previously published reports using samples of recreational substance users (Davis & Rosenberg, 2015; Steers et al., 2015), the respondents in this study agreed more strongly with statements indicating their consumption of marijuana was a harmonious passion than they did with statements suggestive of an obsessive passion. This likely reflects the recruitment of samples of recreational consumers rather than clinical samples, who would probably, and more strongly, endorse statements indicative of an obsessive passion. However, this latter hypothesis awaits future research with treatment-seeking or other clinical samples of marijuana consumers.

The findings from this study should be considered in light of several methodological limitations. For example, an online recruitment and data collection procedure was used, and marijuana consumers who do not access Facebook, or those who are unwilling or unable to

participate in online research, might report differences in their experience of passion for consuming marijuana. Additionally, the sample was comprised of primarily young, Caucasian, and male respondents. One possible explanation for this is that the recruitment ads used in this study appealed more strongly to young Caucasian males. Because it is important that the model be extended to other types of marijuana consumers (e.g., women, individuals from a diverse background, older marijuana consumers), future research should evaluate different types of recruitment advertisements in order to find those that appeal to a variety of individuals across age, gender and ethnicity. The study is also limited by the fact that, due to a mistake in the online survey, it was impossible to determine where the respondents currently lived and therefore it is difficult to draw conclusions about the generalizability of these findings. However, a previously published study of marijuana consumers that employed similar recruitment methodology (Davis et al., 2014), found that the majority of subjects were from the United States, and it is possible that this sample was similarly comprised. Lastly, this study is limited by the use of a cross-sectional design and future studies should evaluate passion for consuming marijuana using longitudinal and/or controlled designs.

Conclusions

The most consistent evidence thus far supports the associations among obsessive passion and several indicators of problematic marijuana consumption (i.e., frequency of use, number of sessions per day, consumption-related consequences, and craving). Although there is initial evidence suggesting that harmonious passion is sometimes related to, and other times unrelated to, indicators of problematic consumption, this likely indicates a need to further study the dimension of harmonious passion among diverse recreational and clinical samples of marijuana consumers. Additionally, the construct of harmonious passion for marijuana consumption would benefit from research evaluating a variety of other characteristics, such as positive affect, motivations for use, social functioning, work productivity, academic success, and other indicators of subjective well-being. However, whether one's degree of harmonious or obsessive passion for consuming marijuana changes over time, and whether passion for consuming marijuana is influenced by other substance consumption-related factors (e.g., biology, environment, the consumption of other substances), awaits future research. Based on the large body of evidence suggesting that obsessive passion is associated with addictive problems (Vallerand, 2015), researchers could also evaluate whether obsessive passion is a risk factor for future problems associated with marijuana consumption, including the development of a cannabis use disorder. In terms of clinical application, clinicians and prevention specialists could use the M-HOPS as a means to understand and address the dualistic experience of passion for marijuana consumption, which might contribute to persistent use over time.

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Table 1

Component Loadings and Means (SDs) for Each Item of the Marijuana-Harmonious and Obsessive Passion Scale (n = 524)

Scale Item	Component Loadings		<i>M (SD)</i>
	1	2	
1. Using marijuana allows me to live a variety of experiences	.03	.72	5.2 (1.7)
2. The new things that I discover while using marijuana allow me to appreciate it even more	-.01	.73	5.5 (1.5)
3. Using marijuana allows me to live memorable experiences	.05	.73	4.9 (1.7)
4. Using marijuana reflects the qualities I like about myself	.17	.60	4.2 (2.0)
5. Using marijuana is in harmony with the other activities in my life	.04	.54	5.4 (1.6)
6. For me, using marijuana is a passion that I still manage to control	-.23	.53	6.0 (1.5)
7. I am completely taken with using marijuana	.55^a	.19	3.4 (2.1)
8. I cannot live without using marijuana	.56	.19	2.0 (1.6)
9. The urge is so strong, I can't help myself from using marijuana	.74	-.21	2.0 (1.6)
10. I have difficulty imagining my life without using marijuana	.59	.28	3.1 (2.1)
11. I am emotionally dependent on using marijuana	.75	-.06	2.3 (1.8)
12. I have a tough time controlling my need to use marijuana	.77	-.16	2.4 (1.8)
13. I have almost an obsessive feeling for using marijuana	.76	-.06	2.7 (1.9)
14. My mood depends on me being able to use marijuana	.61	.06	2.8 (1.9)
Eigenvalue	3.7	2.7	
% variance accounted for by component	26.6%	19.5%	

Note. Respondents were asked to rate each item on a 7-point Likert scale ranging from 1 = *do not agree at all* to 7 = *completely agree*

Note. Items 1-6 comprise the final harmonious passion subscale and items 8-14 comprise the final obsessive passion subscale.

^aThis item loaded strongly on the component representing obsessive passion. Because this item was used to assess harmonious passion, it was not included in either subscale used in statistical analyses.

Table 2

Demographic, Marijuana Use, and Drug Use History

Characteristic	<i>M (SD) or %</i>
Age	23.8 (9.0)
Gender	
Male	88%
Female	12
Sexual Orientation	
Heterosexual	87%
Homosexual/Bisexual	11
Other	2
Ethnicity	
White/Caucasian	86%
Other (Hispanic/Latino/a Asian, Black/African, Native American)	14
Current Employment Status	
Employed Full-time	41%
Student & Employed	18
Student & Unemployed	17
Employed Part-time	11
Currently Unemployed	10
Disabled	2
Retired	1
Education Level	
Some High School or HS Degree	45%
Associates or Bachelor's Degree	50
Post-graduate Degree	4
Relationship Status	
Single	55%
Married/Partnered	45
Frequency of marijuana use (past 30 days)	21.4 (10.6)
Average number of marijuana use sessions per day	2.3 (1.2)
Average amount of marijuana used per session ^a	4.5 (1.9)
Ever made an attempt to reduce marijuana consumption	
Yes	73%
No	28
Typical means of marijuana use	
Joint	40%
Bong	27
Bowl	17
Vaporizer	6
One-hitter	6
Other (e.g., ingestion, blunt, spliff, capsules)	5

Characteristic	<i>M (SD) or %</i>
Typical forms of marijuana used	
Leafs/Buds/Stems	98%
Hashish	50
Resin	40
Use of marijuana primarily alone or with others	
Alone	40%
With others	60
Recent stability of marijuana consumption	
Decreased	22%
Stayed about the same	64
Increased	14
Drug Use History (past three months)	
Alcohol	85%
Nicotine	71
Psychedelics/Hallucinogens	28
MDMA/Ecstasy	23
Cocaine	20
Prescription Opiates	16
Amphetamines	11
Tranquilizers	8
Synthetic Cannabinoids (e.g., Spice/K2)	5
Inhalants	4
Sedatives	2
Synthetic Cathinones (e.g., Bath Salts, MDPV)	1
Heroin	1
Other ^b	27
Ever diagnosed with a Substance Use Disorder ^c	
Yes	10%
No	90
Currently Intoxicated	
Yes	19%
No	81

Note. Totals may not sum to 100% due to rounding

^aTo assess this variable I provided 7 images of a rolled joint ascending in size from very small to very large and asked respondents to choose the image closest to the average amount of marijuana they consumed per session.

^bTypes of “other drugs” varied considerably and included research chemicals, ketamine, steroids, dimethyltryptamine, cold medicine, prescription psychotropic medications, caffeine, and happy gas.

^cRespondents reported the following substances for which they had been diagnosed with having a substance use disorder: marijuana, various opioids, MDMA, ketamine, heroin, cocaine, and alcohol.

Table 3Means, Standard Deviations, and Canonical Correlations ($n = 524$)

	Canonical Variate	
	1	2
Canonical Correlations ^a	.74 *	.28 *
	<i>M</i>	<i>SD</i>
Obsessive Passion	2.46	1.26
Harmonious Passion	5.19	1.09
Gender ^b	0.12	0.33
Ethnicity ^c	0.14	0.35
Redundancy Coefficient	0.25	0.25
	<i>M</i>	<i>SD</i>
Marijuana craving	1.13	0.79
Past 30-day marijuana consumption	21.42	10.63
Average number of sessions per day	2.34	1.16
Marijuana consumption-related problems	6.00	3.81
Current intoxication ^d	0.19	0.39
Ever attempted to reduce consumption ^e	0.73	0.45
Life Satisfaction	4.62	1.47
Redundancy Coefficient	0.30	0.14

*
 $p < .001$ ^aFirst Canonical Correlation $F(28, 1743) = 17.71, p < .001$;Second Canonical Correlation $F(18, 1369) = 2.86, p < .001$ ^bFemale = 1, Male = 0^cWhite/Caucasian = 0, Other = 1^dNot Intoxicated = 0, Intoxicated = 1^eNever Attempted = 0, Attempted = 1^fValues presented with three decimal places to avoid rounding error.