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ScienceDirect

Procedia - Social and Behavioral Sciences 205 (2015) 261 – 270

Procedia
Social and Behavioral Sciences

6th World conference on Psychology Counseling and Guidance, 14 - 16 May 2015

The Pattern of Direct and Instrumental Motivation for Illicit Substance Use

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Abstract

Understanding the motivation for illicit substance use seems to be one of the most important contemporary issues that may improve prevention strategies. This study examines the structure of motivation for using illicit substances among undergraduates. The study sample comprised 458 lifetime drug users among second-year university students. Data on use of illicit substances in the last month, in relation to motives and socio-demographic covariates (i.e., gender, faculty, living arrangements, and place of residence), revealed numerous significant effects. The outcomes of logistic regression showed that distinction between direct and instrumental motivation can be useful in predicting psychoactive substance use.

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Peer-review under responsibility of Academic World Research and Education Center.

Keywords: Drugs; Psychoactive substances; Motivation for illicit substance use; Motivational pattern; Undergraduate students.

1. Introduction

Drug use and excessive alcohol drinking seem to be a part of student life. According to current statistics, approximately 50% of college students report lifetime illicit substance use, 35-40% of them have used drugs in the past year, and 15-30% in the last month (e.g., Dennhardt & Murphy, 2013; Ford & Arrastia, 2008; Johnston et al., 2012; Murphy et al., 2013; Redonnet et al., 2012). The most popular drug among young people is marijuana, and its lifetime use has increased continuously (Ford & Arrastia, 2008). Recent statistical reports (Malczewski, 2011; Sieroslawski, 2004) have shown that the lifetime prevalence of cannabis use among Polish respondents aged between 15-24 was approximately 30%. Malczewski (2011) also showed that cannabis use during the last 12 months was two times more prevalent among males (12.4%) than females (6.8%). Among socio-demographic variables,

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beside male gender, membership of a social sciences faculty, living in a dorm, and in an urban area, were also found to be associated with higher use of psychoactive substances (Andersson et al., 2007; Ford & Arrastia, 2008; Hibell et al., 2009; Johnston et al., 2012; Settertobulte et al., 2001; Wicki et al., 2010).

Understanding the motivation for illicit substance use seems to be one of the most important contemporary issues that may improve prevention strategies to reduce the use of drugs and associated harm amongst the younger population. Motives or reasons are usually the final common pathway to substance use and abuse (Comeau et al., 2001). Moreover, different motives are associated with unique patterns of use and use-related consequences (Cox & Klinger, 1988, 1990; Terry-McElrath et al., 2009).

Many studies have revealed that students use psychoactive substance chiefly during social gatherings and for social and enhancement motives (e.g., Demers et al., 2002; Wicki et al., 2010). Boys et al. (2001) found that different drugs are related to distinct functions: stimulant, sedative or hallucinogenic. Current findings from research on motivation for nonmedical use of prescription drugs (Silva et al., 2013) indicated that the most frequent functions of their use were: to change mood (e.g., to relax), to facilitate activity (e.g., to concentrate), and to monitor the intake of other substances (e.g., to improve the effects of other substances). Silva et al. (2013) suggested that motivations underlying prescription drug misuse may include general reasons (e.g., to get high, underlying prescription drug misuse), and quasi-medical or self-medication motives linked to specific types of prescription drugs, such as opioids to relax or relieve tension or pain, tranquilizers to decrease anxiety, or stimulants to increase alertness and moderate the negative effects of other substances. Scott et al. (2013) found that ecstasy users used the drug to reduce depression or worry, or to escape.

The most frequently reported reasons for using cannabis among adolescents included enjoyment or fun, conformity, experimentation, social enhancement, boredom, and relaxation (Lee et al., 2007). Additionally, experimentation was consistently associated with less use and fewer problems, whereas enjoyment, habit, activity enhancement, and altered perception or perspectives were associated with heavier use and more problems. However, somewhat different pattern of marijuana use was revealed in Lee et al.'s (2009) study of college students: enjoyment, boredom, altered perception, relative low risk, and sleep were each associated with greater frequency of use, whereas the experimentation and availability motives were associated with less use. Generally, coping, enhancement, and conformity motives appear to be associated with a relatively risky pattern of marijuana use, whereas social motives seem to be associated with a relatively lighter, less problematic style of substance use (Bonn-Miller et al., 2007; Comeau et al., 2001; Lee et al., 2007, 2009; Simons et al., 2005).

As demonstrated Boys et al. (2001), the most frequent functions of psychoactive substances in general, were: to relax (96.7%), to become intoxicated (96.4%), to keep awake at night while socializing (95.9%), to enhance an activity (88.5%), and to alleviate depressed mood (86.8%). Substance use functions also differed by age and gender (Boys et al., 2001). Terry-McElrath et al. (2009) showed that social (recreational) reasons were the most commonly reported reasons for the use of most drugs. However, while social usage reasons predominated, for psychotherapeutic drugs, coping with negative affect and physical needs reasons were also commonly mentioned. Males were more likely to report social and drug effect usage reasons, whereas females were more likely to report coping with negative affect and physical needs reasons (Terry-McElrath et al., 2009).

Relatively little research has evaluated motives for using illicit substances, in comparison to the rich literature on motivation for drinking alcohol. Moreover, most assessments of motivation for illicit substance use have primarily been adapted from previous research on alcohol use motives. However, there are numerous differences between alcohol and illicit substances, for example: greater diversity among drugs and their biochemical influence and functions (e.g., stimulant, sedative, hallucinogenic, pain reduction) in comparison to alcoholic beverages, accessibility (legal versus illegal), smoking and other method of ingestion or injection, and current context in which a substance is available, circumstance and environmental factors related to culture (e.g., country and family history, religion, traditions), and acquiescence to use (on a public, environmental, and individual level). Taking these differences into consideration, the simple adaptation of drinking motives measurement for illicit substances (Cooper et al., 1992; Mueser et al., 1995; Simons et al., 1998; Scott et al., 2013) does not seem to be particularly appropriate.

Furthermore, the validation of versions of measurement for illicit substances adapted from alcohol motives measures has revealed inconsistent outcomes. A five-factor marijuana motives model was assessed by Simons et al. (1998; Zvolensky et al., 2007), resulting in enhancement, conformity, expansion, coping, and social motives, whereas the original Drinking Motives Questionnaire included four factors (Cooper, 1994). Five distinct functions of illicit substances were derived from the 17-item scale of Boys et al. (2001; Silva et al., 2013), as follows: changing mood, physical effects, social purposes, facilitating activity, and managing effects from other substances.

A more current study by Lee et al. (2007) showed 19 distinct motives, using the Comprehensive Marijuana Motives questionnaire. However, when an adapted version of Drinking Motives Questionnaire (Cooper, 1994; Simons et al., 1998) was used together with the Comprehensive Marijuana Motives questionnaire, the factor analysis showed 12 dimensions of motivation for illicit substance use, including enjoyment, conformity, coping, experimentation, boredom, alcohol, celebration, altered perception, social anxiety, relative low risk, sleep, and availability.

Due to these great disparities among studies in terms of factor structures and subscales, as well as in various prevalence and distinct predictor variables (e.g., Bonn-Miller et al., 2007; Boys et al., 2001; Comeau et al., 2001; Cooper, 1994; Cooper et al., 1992; Lee et al., 2007, 2009; Simons et al., 1998, 2005; Terry-McElrath et al., 2009), it seems necessary to continue explorative research on the nature of motivation for illicit substance use. Thus, the present study was designed to extend previous research and identify the structure of illicit substance use motives, and its determinants among socio-demographic variables, in a sample of undergraduate students. Finding relatively strong and easily identifiable predictors illicit substance use has important practical implications for both the theory and intervention approaches.

As a first step, the structure of motivation (items included) was examined using hierarchical cluster analysis, and the structure of the sample (subjects involved) was explored during the second step of the structural analysis. Furthermore, the association between current illicit substance use, motivational pattern, and socio-demographic variables was examined using a *Chi*-square test and logistic regression analysis. This study was rather exploratory and, therefore, did not include specific hypotheses.

2. Methods

2.1. Participants and procedure

A self-administered survey was distributed among a total of 458 students from a large, public technical university in the south of Poland, during class hours, with the agreement of the professors to participate. Participants represented second-year undergraduate students of all faculties, who indicated that they had used an illicit substance at least once in their life. All students were Caucasian and White, aged between 19 and 25 years ($M = 21.24$, $SD = 1.15$), with a prevalence of men ($n = 335$, 73%). Among the students, those who studied social sciences predominate ($n = 249$, 54%); those living at home with family ($n = 228$, 51%); and who live in an urban area ($n = 271$, 59%).

Table 1. Prevalence of current illicit substance use in students ($N = 458$).

Illicit drugs use (last month)	n	(%)
Marijuana (hashish)	144	31.4
Amphetamines (speed)	20	4.4
Ecstasy	12	2.6
Psychedelic mushrooms	8	1.7
Anabolic steroids	8	1.7
Cocaine	7	1.5
Crack	6	1.3
Polish heroin (kompot)	6	1.3
Heroin (brown sugar)	5	1.1
LSD	5	1.1
Inhalants	4	0.9
Medycation without needing a doctor's prescription	4	0.9
Any other illicit drug	10	2.2

2.2. Measurement

Illicit substance use and motivation for it was assessed using the Questionnaire for Substance Use by Students (QSUS), which was used previously in Sieroslowski's (2004) study of a random sample of 1,545 university students at 71 universities in Poland. Three key questions concern substance use in regard to lifetime, past 12 months, and past 30 days. The frequency of use of each illicit substance was marked on 7-point scale (from 1 = "never use", to 7 = "40 times or more"). The prevalence of illicit substance use is shown in Table 1.

Table 2. Prevalence of motives for illicit substance use among students ($N = 458$)

Motives for substance use	<i>n</i>	(%)
For enjoyment	247	53.9
To relax, chill out, unbend	225	49.1
To experience something extraordinary	99	21.6
I wanted to forget about my problems	66	14.4
I had nothing else to do, out of boredom	64	14.0
To have more energy to play	60	13.1
In order not to stand out from the group	28	6.1
To gain courage in dealing with others	26	5.7
I had to learn something quickly	22	4.6
Not to sleep	16	3.5
To attract attention in the group	11	2.4
To eat less	4	0.9

Additionally, several demographics were assessed, including age, gender, faculty, living arrangements, and place of residence. One question concerned motivation for illicit substance use (MISU), and included 12 categorical items (see Table 2). The total score of the MISU was the sum of items selected by the participant as appropriate for his or her experience. The internal consistency of the scale was satisfactory (Cronbach's $\alpha = .77$).

3. Results

3.1. Structure of motivation for illicit substance use

Table 2 provides the percentage of students who reported a specific motive for illicit substance use regardless of which substance was used. Enjoyment and relaxation motives predominated, being the two top reasons reported by approximately half of respondents. A significant number of students reported using psychoactive substances in order to experience something extraordinary (22%), to forget about problems (14%), because of boredom (14%), and to have more energy to play (13%). A smaller percentage of students reported using substances for reasons related to socializing (in order not to stand out from the group, to gain courage in dealing with others, to attract attention in the group) and for physical reasons (to stay awake, to eat less, to learn something quickly).

For the present study, the agglomerative hierarchical cluster analysis was used with Ward's method of amalgamation and Euclidean distance, to explore the structure of motivation for illicit substance use (see Fig. 1). The result of the analysis seems to reflect two distinct function of substance use, described in terms of direct and instrumental motivation. The first cluster seems to be related to enhancement and direct self-use of illicit substances to change mood, to feel better and to have a good time, including the following six items: "For enjoyment," "To relax, chill out, unbend," "To experience something extraordinary," "To have more energy to play," "I wanted to forget about my problems," and "I had nothing else to do, out of boredom."

In the second cluster, illicit substances appeared to be used instrumentally and indirectly for the self but seemed to be helpful for realizing other goals. As such, the second cluster concerns the following motives: "I had to learn something quickly," "Not to sleep," "To eat less," "To attract attention in the group," "To gain courage in dealing with others," and "In order not to stand out from the group." Each cluster consisted of six items, thus two scales of direct and instrumental motivation were created by computing the sum of questions included within the scale, with a range 0-6 for each scale. The reliability of the scales was satisfactory, with Cronbach's alpha .77 and Gutmann's spilt-half coefficient .84 for direct motivation, and with coefficients $\alpha = .66$ and spilt-half reliability .68 for

instrumental motivation.

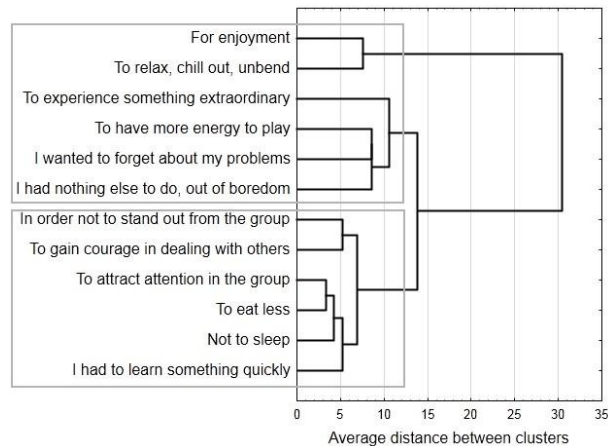


Fig. 1. Hierarchical cluster analysis for motivation to illicit substance use ($N = 458$).

3.2. Motivational pattern for illicit substance use

Exploration of the motivational pattern in the present sample was conducted using the k -means clustering method. The k -means method produces exactly k -different clusters of greatest possible distinction. Cluster analysis was used to classified the detected patterns into two types according to two dimensions of motivation: direct and instrumental. The hypothesis was supposed that clustering will spilt the group of students into two samples: one type those who prefer direct motivation, and the second type those who prefer instrumental motivation. However, the results of the clustering were inconsistent with expectations (see Fig. 2). The first cluster included those students ($n = 148$) who declared several direct motives for substance use ($M = 3.75$, $SD = .98$) and single instrumental motives ($M = .60$, $SD = 1.04$), $F(1, 456) = 1185.41$, $p < .0000$. The second cluster consisted of those students ($n = 310$) who did not use illicit substances for instrumental motives ($M = .05$, $SD = .35$) but declared single direct motives ($M = .66$, $SD = .85$), $F(1, 456) = 67.95$, $p < .0000$. The association between motivational patterns and illicit substance use was then examined further.

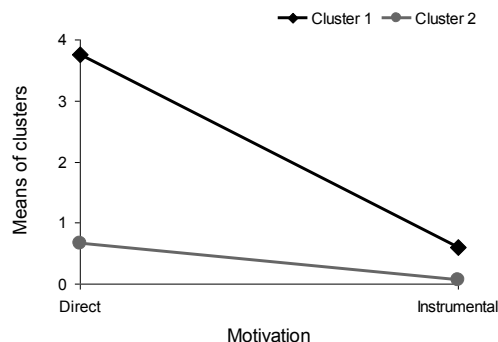


Fig. 2. Pattern of motivation to illicit substance use as an result of k -means cluster analysis.

3.3. Association between motivation, socio-demographic variables and illicit substance use

3.3.1. Correlation analysis. The first cluster of students seems to be characterized by more risky behavior related to

substance use. Many direct reasons for illicit substance use, together with some instrumental motives, may indicate stronger motivation and can effect a higher degree of illicit substance use. This hypothesis was tested using correlation analysis. Because a Kolmogorov-Smirnov test showed non-normal distribution of scales, a nonparametric Spearman's rho was performed to examine the association between the strength of motivation and the frequency and quantity of illicit substance use (Table 3). As expected, students who declared more motives used illicit substances in a wider scope (i.e., various drugs, more frequent use, in larger quantities). The more direct motivations that students declared, the greater use of psychoactive substances they demonstrated, especially during the last year.

Table 3. Correlation between illicit substance use and motives to use ($N = 458$)

Motives	Illicit substance use			
	Lifetime	Last year	Last month	Total
Direct	.52***	.81***	.57***	.69***
Instrumental	.30***	.36***	.31***	.33***
Total	.52***	.82***	.59***	.77***

Note. Spearman's rho are significant on *** $p < .0000$.

3.3.2. Motivation for illicit substance use and socio-demographic characteristics. A nonparametric Mann-Whitney U test was performed for three dimensions of motivation (total, direct and instrumental) as a dependent variable, and socio-demographic variables as an categorical independent variable. Instrumental motivation did not differentiate the student sample by gender, faculty, living arrangement, or place of residence. Males scored higher than females in direct motivations ($z = 2.45, p = .01$) and total motivation ($z = 2.35, p = .02$). Students of social sciences endorsed more direct motivation ($z = 2.43, p = .02$) and total motivations ($z = 2.41, p = .02$) than engineers. Students living in a dorm or apartment had higher scores in direct motivation ($z = 2.09, p = .04$) and total motivation ($z = 2.22, p = .03$) than those living at home with family. Urban area citizens declared a greater number of direct ($z = 3.16, p = .002$) and total ($z = 3.14, p = .002$) motives than residents from rural areas.

The association between the motivational pattern and socio-demographic variables (i.e., gender, faculty, living arrangement, and place of residence) was tested using the 2×2 Chi-square test of independence. Faculty and living arrangement were insignificant for motivational pattern. Among students representing the first type of motivation for illicit substance use (high direct with low instrumental), males predominated, in comparison to the gender proportion among representatives of the second type of motivation (low direct without instrumental), $Chi^2(1) = 4.38, p = .04$. In addition, residents of urban area significantly prevailed over those from rural area in the first type of motivational pattern, $Chi^2(1) = 12.95, p = .0003$. According to the previous results of the Mann-Whitney U test, gender and place of residence remained significant, what means that these variables are associated with the strength and prevalence of direct motivation. Faculty and living arrangement appeared to be related to strength of direct motivation, but not prevalence.

3.3.3. Association between illicit substance use and other variables. For the next statistical analysis all categorical variables were repeatedly compared to examine the association between illicit substance use, motivational pattern, and demographic characteristics of undergraduates. The 2×2 Chi-square test of independence was used to compare frequencies of demographic variables (i.e., gender, faculty, living arrangement, and place of residence) across three categories of illicit substance use: cannabis (i.e., marijuana or hashish), other drugs than cannabis (i.e., inhalants, amphetamines or speed, ecstasy, LSD, psychedelic mushrooms, crack, heroin or brown sugar, Polish heroin – kompot, cocaine, anabolic steroids, non-prescription medications), and total illicit substance use (use of any illicit substance without distinction by type). Because last month use of these substances indicates a relatively higher risk of regular use, all statistical analyses were performed regarding the past 30 days before examination.

As shown in Table 4, men were more likely to use illicit substances than women. However, when the analysis was performed separately for cannabis and other drugs, only cannabis revealed a significant association with gender. The significantly greatest use of illicit drugs was found in social sciences students, when compared with the engineering faculty. Similarly to gender, faculty was related to cannabis use but not to other drugs. There were no differences between students living in a dorm or apartment, and those living with family. More users of illicit substance were found among students living in urban area, in comparison to those living in rural areas. The first type

of motivational pattern (high direct motivation with low instrumental) was more frequent among current illicit substance users, whereas the second type of motivational pattern (low direct motivation without instrumental) predominated in students who did not use drugs during the past month.

Table 4. Association between motivation to illicit substance use, demographic characteristics, and current drugs use ($N = 458$).

Demographic characteristics	Last month illicit substance use n (%)					
	All drugs		Cannabis		Other drugs	
	No-user	User	No-user	User	No-user	User
Gender						
Female	91 (19.9)	31 (6.8)	94 (20.6)	28 (6.1)	116 (25.4)	6 (1.3)
Male	212 (46.4)	123 (26.9)	220 (48.1)	115 (25.2)	306 (67.0)	29 (6.4)
$2 \times 2 \text{ Chi}^2$	5.12*		5.38*		1.77	
Faculty						
Engineering	154 (33.6)	55 (12.0)	158 (34.5)	51 (11.1)	197 (43.0)	12 (2.6)
Social science	150 (32.8)	99 (21.6)	157 (34.3)	92 (20.1)	226 (49.4)	23 (5.0)
$2 \times 2 \text{ Chi}^2$	9.20**		8.33**		1.97	
Living arrangement						
At home, with family	158 (35.0)	70 (15.5)	163 (36.1)	65 (14.4)	211 (46.7)	17 (3.8)
In an apartment, without family	143 (31.6)	81 (17.9)	148 (32.7)	76 (16.8)	208 (46.0)	16 (3.5)
$2 \times 2 \text{ Chi}^2$	1.51		1.55		0.02	
Place of residence						
Rural	169 (37.1)	104 (22.8)	137 (30.1)	48 (10.5)	248 (54.4)	25 (5.5)
Urban	133 (29.2)	50 (10.9)	176 (38.6)	95 (20.8)	173 (37.9)	10 (2.2)
$2 \times 2 \text{ Chi}^2$	5.68*		4.24*		2.11	
Pattern of motivation to substance use						
Type 2: Low direct without instrumental	251 (54.8)	59 (12.9)	254 (55.5)	56 (12.2)	303 (66.2)	7 (1.5)
Type 1: High direct & low instrumental	53 (11.6)	95 (20.7)	61 (13.3)	87 (19.0)	120 (26.2)	28 (6.1)
$2 \times 2 \text{ Chi}^2$	91.53***		77.35***		39.40***	

Note. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

3.3.4. Prediction of illicit substance use. Table 5 shows the odds ratios from logistic regressions, performed for last month illicit substance use as a dependent variable, and for the following predictor variables: motivational pattern, gender, faculty, and place of residence. Because living arrangements was found to be not associated with illicit substance use in the previous *Chi*-square tests, this variable was excluded from the regression analysis.

Bivariate models of logistic regression revealed that the type 1 motivational pattern was 7.6 times more likely in the sample of total drug users. When the analyses were performed separately for cannabis and other illicit substances, type 1 motivation was 6.5 times more likely among cannabis users, and 10 times more likely among other drug users. Also, demographic variables increased the likelihood of illicit substance use twofold generally, especially in the case of cannabis use. However, for drugs other than cannabis, gender, faculty and place of residence were revealed to be insignificant. In the multivariate model, gender and faculty slightly strengthened their significance, whereas motivational pattern had a weakened influence on general illicit substance use, especially cannabis use. Place of residence totally fell out of the regression model. For drugs other than cannabis, only the type 1 motivational pattern remained significant, increasing its prevalence 9.5 times.

4. Discussion

The prevalence of motivation for illicit substance use is mostly consistent with previous research, in which social or recreational reasons for drug use (such as “to relax,” “to get high,” “to have a good time,” “to feel better,” “to experiment,” “to decrease boredom,” and to “enhance activity”) have consistently remained the most frequently cited reasons for the use of most substances (e.g., Bonn-Miller et al., 2007; Boys et al., 2001; Comeau et al., 2001; Lee et al., 2007, 2009; Simons et al., 1998, 2005; Silva et al., 2013; Terry-McElrath et al., 2009; Zvolensky et al., 2007). Based on the results of the current study, the implications for prevention programs at universities are that they should stress non-drug alternatives for having a good time, decreasing boredom and feeling good.

Table 5. Bivariate and multivariate models of logistic regression for illicit substance use as dependent variables ($N = 458$)

Variables	Last month illicit substance use OR (95% CI)					
	Bivariate model			Multivariate model		
	Total drugs	Cannabis	Other drugs	Total drugs	Cannabis	Other drugs
Gender						
Female	1	1	1	1	1	-
Male	1.70 (1.07-2.71)	1.75 (1.09-2.84)	1.83 (0.74-4.54)	1.90 (1.10-3.26)	1.95 (1.13-3.36)	-
	$p=0.02$	$p=0.02$	$p=0.19$	$p=0.02$	$p=0.02$	ns
Faculty						
Engineering	1	1	1	1	1	-
Social science	1.85 (1.24-2.76)	1.82 (1.21-2.73)	1.67 (0.81-3.45)	2.12 (1.33-3.40)	2.05 (1.28-3.28)	-
	$p=0.003$	$p=0.004$	$p=0.16$	$p=0.002$	$p=0.003$	ns
Place of residence						
Rural	1	1	1	-	-	-
Urban	1.54 (1.03-2.31)	1.54 (1.02-2.33)	1.54 (0.73-3.23)	-	-	-
	$p=0.04$	$p=0.04$	$p=0.25$	ns	ns	ns
Pattern of motivation						
Type 2	1	1	1	1	1	1
Type 1	7.63 (4.91-11.85)	6.47 (4.17-10.02)	10.10 (4.29-23.80)	7.33 (4.65-11.57)	6.12 (3.89-9.62)	9.45 (3.95-22.61)
	$p<0.0000$	$p<0.0000$	$p<0.0000$	$p<0.0000$	$p<0.0000$	$p<0.0000$

In the present research, several factors were consistently associated with illicit substance use among undergraduates, including socio-demographic variables, direct and instrumental motives for illicit substance use, and motivational pattern. The total number of motives for illicit substance use may be a good indicator of regular use. Generally, the more motives an individual declares for psychoactive substance use, the more likely they are to demonstrate a risky and higher-volume use of drugs. This simple measure of strength of motivation (i.e., number of motives for use), may be a useful tool for prediction of risky use independent of assessment.

This study highlights the fact that cluster analyses with a large sample may be useful for differentiating between the two types of motivation for using illicit substances: direct and instrumental. “Instrumental illicit substance use” was previously used by Boys et al. (2001) to denote drug use for reasons specifically linked to a drug’s effects, such as use of amphetamines by car drivers to improve concentration. However, it is important to note that the term “instrumental” is here understood as just “indirect,” when a user believes that the illicit substance will be a useful tool for achieving other aims, which are more important for the user, such as passing exams, winning sporting competitions, improving their career, or making friends. Illicit substances are the only the way to achieve a goal (such as winning an award or avoiding punishment), without distinction between social or any other types of motive. The direct and instrumental function of illicit substances seems to be parallel to Cooper et al.’s (1992) internal-external dimension related to alcohol drinking motivation.

The results of this research provide empirical substantiation for the first motivational pattern (i.e., high direct and low instrumental motives) being among all variables the best predictor of illicit substance use among undergraduate

students, at least with respect to current drug use (last month). Moreover, for cannabis, a useful informal value appeared to be: male gender, social sciences faculty, and urban area. The results also support intervention strategies that directly address psychoactive substance use motivations (e.g., Grossbard et al., 2010; Dennhardt & Murphy, 2013).

The present association between psychoactive substance use and socio-demographic characteristics appeared to be consistent with previous research (e.g., Ford & Arrastia, 2008; Hibell et al., 2009; Johnston et al., 2012; Malczewski, 2011; Wicki et al., 2010). Moreover, gender differences in motivational pattern seem to be at least partly consistent with previous studies (Boys et al., 2001; Terry-McElrath et al., 2009), with regard to the greater tendency of males to report recreational and drug effect motives for use. However, females did not differ from males in the present study in terms of the coping with negative affect and physical needs reasons. The other variables, such as faculty, living arrangement, and place of residence were explored here for the first time. Thus, the association with motivation for illicit substance use may be an important new indicator in the target sample for early intervention strategies at university.

Several limitations of the current study can be noted. First, the population of students was limited to a Caucasian sample of second-year undergraduates with a prevalence of men, who represented one university in a European country. Thus, the results of the present study may be of limited conceptual generalizability. Future studies should cover large subsamples of populations differentiated by age, race, and culture. Second, these data were all drawn from student self-reports. Another limitation of this study is that most variables were categorical and the statistical methods were limited to nonparametric tests. Thus, to improve outcomes, future questionnaires may include some kind of Likert scale for items concerning motivation.

In spite of these limitations, the present findings may have important implications for the identification of students at higher risk for illicit substance dependence early in their university career. Given that motivation and socio-demographic data are relatively easy to identify, it may be advisable to screen students with these variables. Students who match the higher risk pattern may need to be prioritized for intervention.

5. Conclusion

The present study extends previous research on direct-instrumental dimensions and motivational patterns for illicit substance use. The classification of motivation into direct and instrumental, as well as detection of two motivational patterns, seems to shed new light on the topic of illicit substance use. Occasional illicit substance users declared a few direct motives, whereas risky behavior related to drugs was associated with several direct motives and few instrumental ones. Furthermore, among all variables included in the present study, those most predicting risky substance use were instrumental motivation, male gender and urban area. This is important information for those who prepare early detection and prevention programs at universities. A short screening test for instrumental motivation for illicit substance use could be helpful in identifying highly risky users who need assistance. The development of such assessment and its validation seems to be necessary in the future.

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