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Normative perceptions of cannabis use amongst European University students: associations between perceived peer use and peer attitudes with personal use and attitudes.

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## Abstract

### Objective

Perceptions of peer behavior and attitudes exert considerable social pressure on young adults to use substances. This study investigated whether European students perceive their peers' cannabis use and approval of cannabis use to be higher than their own personal behaviors and attitudes, and whether estimations of peer use and attitudes are associated with personal use and attitudes.

### Method

University students ( $n = 4131$ ) from Belgium, Denmark, Germany, the Slovak Republic, Spain, Turkey and the United Kingdom completed an online survey as part of the Social Norms Intervention for Polysubstance use in students (SNIPE) project, a feasibility study of a web-based normative feedback intervention for substance use. The survey assessed students' (1) personal substance use and attitudes, and (2) perceptions of their peers' cannabis use (descriptive norms) and attitudes (injunctive norms).

### Results

Although most respondents (92%) did not personally use cannabis in the past two months, the majority of students thought that the majority of their peers were using cannabis and that their peers had more permissive attitudes towards cannabis than themselves. Controlling for students' age, sex, study year and religious beliefs, perceived peer descriptive norms were associated with personal cannabis use (OR: 1.42; 95% CI: 1.22, 1.64) and perceived injunctive norms were associated with personal attitudes towards cannabis use (OR: 1.46; 95% CI: 1.09, 1.94).

## Conclusions

European students appear to possess similar discrepancies between personal and perceived peer norms for cannabis use and attitudes as found in North American students. Interventions which address such discrepancies may be effective in reducing cannabis use.

Keywords: cannabis, social norms, student health, social influence

### Introduction

Globally, cannabis is the most frequently used illicit substance (WHO, 1997). Initiation of cannabis use typically occurs in late adolescence and early adulthood, a period in the lifespan which is also associated with the peak of cannabis usage (Degenhardt & Hall, 2012; Degenhardt et al., 2008). After alcohol and tobacco, cannabis is one of the most commonly used substances by university students (Arbour-Nicitopoulos et al., 2010; Webb et al., 1996). Indeed, young adulthood and studying at university have been identified as time periods where there is a potential high exposure to illicit substances and the opportunity to use substances (Arria et al., 2009). The exact rates of cannabis use by students can also differ between countries with higher rates of use noted in more developed nations (Hall & Degenhardt, 2009; Smart & Ogborne, 2000). Cannabis use by university students is typically heaviest in the first year of study and tends to reduce over the course of academic studies and in the years post-graduation (Caldeira et al., 2008). Nevertheless, students who develop and maintain regular cannabis use prior to university, or during their studies, are more likely to use cannabis at a heavy rate in their post-university life and are at a heightened risk of various negative mental and physical health outcomes (Caldeira et al., 2012).

Negative cannabis use outcomes include poor student academic attainment, executive and cognitive deficits, the use of other illicit substances, increased risk of respiratory impairments, physical injury, and driving under the influence of substances (Caldeira et al., 2008, 2012; Grant et al., 2012; Hall & Degenhardt, 2009; Hall, 2009; Webb et al., 1996). Longer term regular cannabis use can also be associated with the heightened risk of developing psychotic symptoms in students (Skinner et al., 2011), with the risk of experiencing psychotic symptoms increasing with heavier use (Moore et al., 2007). Young adults appear to be at a particularly high risk of

engaging in heavy levels of cannabis use and experiencing adverse effects of using cannabis (Hall, 2009).

Compared to other substances, cannabis may be associated with largely transient negative consequences and also with a number of perceived positive experiences, including increased relaxation, positive affect, enhanced sensory experiences and creativity (Hall & Degenhardt, 2009; Hammersley & Leon, 2006). The lack of immediately experienced negative consequences could mean that some individuals who begin to use cannabis may not be initially discouraged from continued use. For young adults, the continued use of cannabis poses a significant risk to maintaining regular usage patterns that could lead some individuals to become cannabis dependent (Le Strat et al., 2009). Therefore, intervening early is necessary in order to prevent sustained and/or problematic levels of cannabis use by young adults, particularly university students, and the experience of associated negative outcomes (Caldeira et al., 2012).

The use of substances by influential peers is one of a number of social factors which can exert pressure on individuals to use substances (Hawkins et al., 1992). There is convergent evidence that students tend to overestimate their peers' substance use, in terms of the quantity and frequency of substance use (descriptive norms) and their peers' attitudes regarding the acceptability of substance use (injunctive norms) (e.g. Perkins et al., 1999). Research to date has largely focused on the role of normative perceptions on alcohol use, typically by North American students, with evidence to suggest that students tend to overestimate their peers' alcohol consumption and attitudes towards alcohol use (e.g., McAlaney et al., 2015; Neighbors et al., 2006; Perkins et al., 1999).

In terms of cannabis use, there is evidence that perceived peer norms are predictive of personal cannabis use (e.g. Lewis & Clemens, 2008; Neighbors et al., 2008) and students'

perceptions that cannabis use is a normative behaviour on-campus associated with an increased risk of use (Page & Scanlan, 1999). A number of studies have reported that university students tend to overestimate their peers' cannabis use (Arbour-Nicitopoulos et al., 2010; Bertholet et al., 2013; Franca et al., 2010; Kilmer et al., 2006; LaBrie et al., 2009; Martens et al., 2006; Page & Roland, 2004; Perkins et al., 1999), with such overestimations associated with increased personal cannabis consumption amongst US students (Buckner, 2013; LaBrie et al., 2009). There is also evidence that more frequent student users of cannabis tend to overestimate how often students at their university use cannabis (Kilmer et al., 2006; Page & Roland, 2004). In addition to US studies, overestimation of peer cannabis use has been associated with greater cannabis use in the last month in Swiss young males (Bertholet et al., 2013), and by French (Franca et al., 2010) and Canadian university students (Arbour-Nicitopoulos et al., 2010).

There is also evidence that students overestimate peer injunctive norms, perceiving that their peers are more approving of cannabis use than themselves (LaBrie et al., 2010), with such injunctive norm perceptions associated with increased usage amongst US cannabis-using students (Neighbors et al., 2008). Students' own personal cannabis approval is strongly influenced by perceived injunctive norms of typical students, close friends and parents, with personal approval then being a significant predictor of personal cannabis use (LaBrie et al., 2010). However, only the perceived approval of typical students and close friends had a direct effect on personal use in LaBrie et al.'s (2010) study, suggesting that perceived peer norms may be the more powerful influence on cannabis use. In addition, students may also underestimate their peers' experience of cannabis-related problems, with such underestimations associated with more personally experienced cannabis-related problems (Ecker et al., 2014). Furthermore, both perceived peer descriptive and injunctive norms have been associated with increased personal use

(Ecker et al., 2014). Perceptions of peer cannabis use, attitudes and associated experiences appear to be important influences in predicting personal cannabis use and attitudes, however there is little research into the role of social norms perceptions on cannabis use in students from across Europe.

The presence of these misperceptions for alcohol and other substances has led to the development of the “Social Norms Approach” as a means of early intervention (McAlaney et al., 2011). Interventions based on this approach attempt to address commonly held misperceptions of peer norms and reduce the perceived social pressure to engage in heavy consumption by providing feedback comparing students’ perceptions of social norms at their university with actual campus norms (McAlaney et al., 2011). There is evidence that social norms focused feedback interventions are effective in reducing student alcohol use and perceptions of peer norms (e.g., Neighbors et al., 2010). Whilst few social norms interventions have focused on reducing cannabis use, preliminary research has indicated the potential benefits of web-based personalised normative feedback on reducing perceived peer descriptive and injunctive cannabis use norms (Elliott & Carey, 2012; Lee et al., 2010).

Research into the influence of social norms perceptions on student cannabis use has typically been limited to samples of students from North American universities and there has been a lack of European studies into the associations between perceived peer norms and cannabis use. Findings from previous US college student studies may not be wholly generalisable to European university students due to potential differences in regional, cultural and local country cannabis use norms. Whether university students across Europe display similar discrepancies between their own personal cannabis use and personal attitudes with their perceptions of their peers’ attitudes and cannabis usage is unclear. Nor is it known if such perceptions are associated



with heavier use of cannabis and more permissive personal cannabis use attitudes in European university students.

The current study investigated the relationship between European university students' personal cannabis use and their perceptions of cannabis use amongst their student peers. The study had two aims; first, to investigate whether European students perceive that their peers use cannabis more frequently and have more positive attitudes towards cannabis compared to their personal reported cannabis use and attitudes. Second, the study aimed to investigate whether perceived peer descriptive and injunctive norms are associated with personal cannabis use and attitudes. It was hypothesised that both perceived descriptive and injunctive peer norms would be associated with personal cannabis use and attitudes in European students. The data analysed in the current study was taken from the baseline survey of the Social Norms Intervention for the prevention of Polydrug use (SNIPE), a collaborative European feasibility study of a web-based social norms feedback intervention for polysubstance use in university students (Pischke et al., 2012).

### Method

Institutional ethical approval was obtained from all sites involved in the SNIPE project.

Electronic informed consent to take part in the study was obtained from all participants prior to completion of the baseline survey.

### *Participants*

The SNIPE baseline survey sampled a total of 4482 students enrolled at higher education institutes from seven countries in the European area. Analyses for the present study were conducted on 4131 students (Mean age = 22.40 years, SD = 4.13) after the removal of

participants with missing responses on the cannabis items (See Table 1 for a full summary of the sample's demographic characteristics).

### *Measures*

Participants completed a baseline survey that included questions on their personal use of substances (alcohol, tobacco, cannabis and other illicit substances), their personal attitudes towards the use of these substances, negative consequences associated with their personal substance use, their perceptions of the substance use and attitudes of their student peers (i.e. the perceived descriptive and injunctive norms), and their demographic characteristics. Data on alcohol, tobacco, and use of other illicit substances are reported in other papers (Helmer et al., 2014; McAlaney et al., 2015; Pischke et al., 2015). Participants rated their personal use and perceived peer use of natural forms of cannabis (e.g., marijuana, pot, hash, grass) in the past two months on a ten-point ordinal scale from “never in my/their life” to “every day or nearly every day in the past two months”. The two month timeframe was chosen to assess term-time use of substances (Pischke et al., 2012). Personal attitudes and perceived peer attitudes relating to the acceptability of cannabis use were rated on a five point nominal scale from “never OK to use” to “OK to use frequently if that is what the person wants to do”. The baseline survey items were based on previously established measures of substance use (Humeniuk et al., 2010). The survey questions for the perceived peer descriptive and injunctive norms were institution- and sex-specific, requiring students to state their perceptions for the majority (i.e. greater than or equal to 51%) of same-sex students at their university.

### *Procedure*

Further details of the SNIPE project can be found in the protocol paper (Pischke et al., 2012).

Advertisements for the study included emails, in-class announcements, on-campus information stalls and plasma screen notices, all of which invited students to register their email addresses on the study website where an electronic information sheet and consent form were displayed. After consenting to participating in the study, students completed the survey items online in one sitting. The data analysed in the current study was taken from the baseline SNIPE survey which participants completed in the native language of their host country.

### *Data Analysis*

Descriptive analyses were conducted to calculate the percentages of students in each country who perceived that the majority of their peers used cannabis at the same, lower or higher level than their own reported use, and perceived that their peers have the same, less or more permissive towards cannabis use than themselves. Sex differences in cannabis use were investigated using Chi-Squared tests.

Two binary logistic regressions were conducted to investigate the association between personal cannabis use (no use versus use in the past two months) and personal attitudes towards cannabis use (non-permissive versus permissive attitudes) by perceived peer descriptive and injunctive norms. Given that responses to the cannabis use items were concentrated on 0 (i.e. non-use), we opted to dichotomise the outcome variables and analyse by binary logistic regression. The use or non-use of cannabis by students in the past two months, and non-permissive (“*Never OK to use cannabis*”) versus permissive attitudes towards cannabis use (for responses collapsed across “*OK to use occasionally if it does not interfere with study or work*” to “*OK to use frequently if that is what a person wants to do*”) were treated as the outcome variable for the respective models. Demographic variables, including students’ age, sex, year of study,

residence arrangement, religious beliefs and importance of religious beliefs were controlled for in the analysis with personal cannabis use and attitudes treated as the outcome variables. Given prior research demonstrating that demographic factors such as stronger religious beliefs and living with parents and family are associated with lower likelihoods of using cannabis amongst students (e.g., Bell et al., 1997; Suerken et al., 2014; White et al., 2006), religious beliefs and students' residential status were included as independent categorical variables in the analyses. Personal cannabis use in the past two months was added as additional independent variable when investigating the association between perceived peer attitudes with personal attitudes. Interaction terms between perceived peer norms (behaviors and attitudes for the respective analyses) with participant sex or country were also included in both models to test whether the observed associations differed by sex or country. Given the small number of countries sampled in this study, differences in sample sizes across countries, and to account for the nested nature of the data, the logistic regressions were modelled with robust standard errors which was deemed more preferable to conducting an explicit multi-level analysis (Bryan & Jenkins, 2013; Stegmuller, 2013). Stratified analyses were conducted where the interaction terms indicated a significant interaction between country or sex with perceived norms in predicting personal cannabis use or attitudes.

## Results

Table 1 displays the demographic characteristics of the study's sample. Data analyses indicated that 8.0% of the sample reported using cannabis in the last two months, whilst 70.4% of students reported never using cannabis in their lifetime and 21.6% reported previously using cannabis but not within the last two months. Across countries, the percentages of sampled students who reported recent cannabis use within the two months timeframe of the survey ranged from 4.3%

in the Slovak Republic to 25.2% in Germany (see Table 2). In terms of sex differences in cannabis use, 13.9% of male students reported using cannabis in the past two months compared to 6.0% of female students,  $\chi^2(1) = 78.260, p < .001$ .

Across countries, the majority of surveyed students (52.4%) perceived that the majority of their peers had used cannabis in the previous two months (see Table 2). On closer inspection, the majority of students in Turkey reported not using cannabis in the last two months and perceived that the majority of their peers used cannabis at the same rate as themselves. Although, as shown in Table 3, a substantial proportion of the Turkish sample (40.5%) perceived that their peers had heavier cannabis consumption than themselves. In terms of attitudes towards cannabis use, the majority of students across countries reported perceiving that the majority of their peers approved of cannabis use (see Table 2). The percentage of surveyed students who personally reported approving of cannabis use was below 50% of the sample from each country, except for German students. In terms of perceived peer attitudes, the majority of students in Belgium, the Slovak Republic, Spain and the UK perceived that their peers had more permissive attitudes towards cannabis use than themselves (see Table 3). The majority of Turkish and Danish students perceived that their peers had similar attitudes to themselves, whilst similar proportions of German students perceived that their peers had similarly permissive or more permissive attitudes towards cannabis use.

The logistic regression analyses indicated that the association between perceived peer descriptive norms with personal cannabis use was significant (OR: 1.42; 95% CI: 1.22, 1.64), while perceived peer injunctive norms were not significantly associated with personal cannabis use (OR: 0.98; 95% CI: 0.86, 1.10). Perceived peer injunctive norms were significantly associated with personal attitudes (OR: 1.46; 95% CI: 1.09, 1.94) as were perceived peer

descriptive norms (OR: 1.10; 95% CI: 1.05, 1.15) and personal cannabis use (OR: 16.25; 95% CI: 10.91, 24.20). In both analyses, the association between perceived peer descriptive/injunctive norms with personal cannabis use and personal cannabis use attitudes remained significant after controlling for participant ages, sex, year of study, religious beliefs and residential status. The association between perceived peer attitudes and personal approval of cannabis use also remained significant after controlling for personal cannabis use in the past two months. No significant interaction between sex and perceived descriptive ( $p = .40$ ) or injunctive norms ( $p = .39$ ) was noted for the respective models.

Significant interactions between country and perceived norms were observed for the descriptive and injunctive norm analyses ( $ps < .001$ ). Stratified analyses by country (see Table 4) indicated that perceptions of peer cannabis use were associated with higher odds for personally using cannabis in the Slovak Republic, Germany, Belgium, Spain and Turkey. Perceptions of peer cannabis use behaviors and peer attitudes to cannabis use were associated with higher odd ratios of personally having more permissive attitudes towards cannabis use in the Slovak Republic, Belgium, Denmark, Spain and Turkey. Estimates for the associations between perceived cannabis use norms with personal cannabis use and attitudes remained near to 1 for the remaining countries.

### Discussion

Perceptions of peer normative behaviours and attitudes have been associated with heavier cannabis use in North American students (e.g., Neighbors et al., 2008), however few studies have investigated this relationship in European samples. The current study investigated whether European students perceive that their peers use cannabis more frequently, and have more

permissive attitudes to cannabis use than themselves, and whether normative perceptions that the majority of peers use cannabis and approve of use are associated with personal consumption and more positive attitudes towards use. Our results indicated that students from six of the seven sampled countries, excluding Turkey, perceived that the majority of their peers had used cannabis at least once in the past two months. A high proportion of students across countries, again excluding Turkey, thought that the majority of their peers had permissive attitudes towards the use of cannabis. The majority of students across countries perceived that their peers used cannabis more than themselves and had more permissive attitudes towards cannabis than their own reported behaviors and attitudes.

Based on the logistic regression analyses, perceived peer cannabis use and approving attitudes were associated with personal cannabis use and positive cannabis use attitudes whilst controlling for participants' ages, year of study, residential status and religious beliefs. Whilst there were inter-country differences in cannabis use and perceived norms, it was notable that the majority of Turkish students reported accurate perceptions of their peers cannabis use behaviours and attitudes compared to actual reported rates. In contrast to other sites, the Turkish sample included a majority of Muslim students (70.9%) who rated their religious beliefs as being important or very important. It may be that the lack of normative misperceptions in the Turkish sample relate to the inclusion of individuals with strong religious beliefs, and possibly wider campus norms of participation in religion, which can act as a protective factor against cannabis use (Bell et al., 1997; Suerken et al., 2014). Furthermore, a majority of the German students reported that they personally approved of cannabis use whilst the majority of students at the other sites reported that they did not approve of cannabis use, which may reflect more liberal local attitudes towards cannabis use amongst German students.

The current study's results are consistent with North American studies demonstrating that students overestimate their peers' cannabis use behaviours and attitudes, and that normative perceptions are predictive of personal cannabis use behaviours and attitudes (Arbour-Nicitopoulos et al., 2010; Bertholet et al., 2013; Kilmer et al., 2006; LaBrie et al., 2009; Martens et al., 2006; Neighbors et al., 2013; Page & Scanlan, 1999). Our findings are also in line with data showing similar associations between European students' personal and perceived peer use and attitudes towards using other illicit substances (including cocaine, ecstasy and amphetamines) (Helmer et al., 2014), alcohol (e.g., McAlaney et al., 2015) and tobacco (Pischke et al., 2015).

In comparison to alcohol and tobacco, the perceived social norms associated with student cannabis use are likely to be different due to the illicit status of cannabis. Alcohol consumption is a relatively common, public and visible behavior on most European university campuses, whilst cannabis, in contrast, is typically a controlled illicit substance. Cannabis-using students may therefore engage in cannabis consumption in smaller closed friendship groups in less visible and non-public settings compared to when they consume alcohol. The perceived social norms of closer friendship groups, family members and other users may be more influential on personal cannabis use behaviours compared to the perceived norms of the majority of the student population. Indeed, a limitation of the present study is the use of the wider same-sex student population as the normative reference group, particularly as recent work has indicated that perceived descriptive and injunctive norms for friends are stronger predictors of students' personal cannabis use than typical student norms (Buckner, 2013; Lewis & Clemens, 2008). Furthermore, empirical research has suggested that US students with heavier rates of cannabis use perceive that both their close peers and parents are more approving of cannabis use (LaBrie



et al., 2011), highlighting the potential power of more proximal normative feedback messages on personal cannabis use. There is also evidence to suggest that heavier student users of cannabis may identify more with typical students than other users (Neighbors et al., 2013), suggesting that students' social identification with other cannabis users may vary according to own usage and that normative feedback may need to be tailored for usage, and possibly the degree of identification with the wider social group, to ensure that the relevant discrepancies between personal behaviours and perceived peer norms are highlighted. The proximity of reference groups featured in normative feedback may be important for cannabis-use interventions focused on correcting perceived peer behaviours and attitudes, such as those based on the "Social Norms Approach" (McAlaney et al., 2011). There is, however, a lack of European-based research investigating the predictive power of close friend norms versus typical student norms in predicting student cannabis use.

There are some limitations associated with the current study. The data was based on self-reported cannabis use so over- and underreporting by students cannot be ruled out. That said, participants completed a confidential web-based survey which allowed them to answer questions on sensitive issues, such as illicit substance use, thereby minimising perceived pressures to provide socially desirable responses on the survey compared to testing in laboratory settings or in classes. There were some differences in sample sizes as study sites differed in their ability to access the local student population. Furthermore, the current analysis employed a cross-sectional design and cannot comment whether normative perceptions may predict future patterns of cannabis use or vice versa. The relationship between perceived norms and cannabis use may be a reciprocal one as suggested by prior alcohol norms research (Neighbors et al., 2006).

In conclusion, the results of the current study support previous research into the relationship between perceived peer behaviors and attitudes towards substance use with personal use and attitudes. This is the first study to report such associations in relation to cannabis use amongst a large multi-national sample of European students. Interventions focused on harm prevention, such as those based on the “Social Norms Approach”, may be effective in challenging discrepancies between personal behaviors and attitudes with perceived peer norms, and assist in preventing and reducing cannabis use amongst student populations.

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Table 1. Demographic characteristics of the sample according to country.

	Belgium	Denmark	Germany	Slovak Republic	Spain	Turkey	United Kingdom
<i>n</i>	390	434	489	1816	171	735	96
<i>Sex (%)</i>							
Female	79.0	78.0	59.1	79.5	70.2	52.5	67.7
Male	21.0	22.0	40.9	20.5	29.8	47.5	32.3
<i>Age (years)</i>							
Mean	21.38	24.48	24.78	21.69	23.15	21.37	25.26
S.D.	4.46	5.75	4.51	2.18	6.34	3.23	9.09
<i>Residence Status</i>							
<i>(%)</i>							
Living with other students	21.5	12.0	33.5	50.1	21.1	24.8	51.0
<i>Year of Study (%)</i>							
1 <sup>st</sup> Year Undergraduate	32.8	37.1	20.2	16.5	18.7	25.3	39.6
2 <sup>nd</sup> Year	25.6	28.3	21.1	27.8	21.6	25.4	17.7
3 <sup>rd</sup> Year	23.1	12.2	18.8	14.5	26.3	25.0	22.9
Other	4.9	3.9	22.7	1.3	21.1	23.7	3.1
Postgraduate	13.6	18.4	17.2	39.9	12.3	0.5	16.7

*Religious Beliefs**(%)*

Christian	59.5	55.9	48.1	81.3	53.2	0.5	30.5
Muslim	2.6	1.6	1.6	0.1	0.6	84.5	23.2
Jewish	0.5	0.0	0.2	0.1	0.0	0.4	0.0
Hindu	0.0	0.2	0.0	0.1	0.6	0.0	0.0
Buddhist	1.8	0.7	2.2	0.7	0.0	0.1	3.2
Other	3.1	6.2	4.1	2.8	2.9	4.8	10.5
No religious	32.6	35.3	43.8	15.0	42.7	9.7	32.6

beliefs

*Importance of**religious beliefs**(%)*

Not at all	52.1	48.0	43.7	16.7	49.1	13.1	38.5
important							
Somewhat	38.5	40.0	38.6	21.1	31.0	16.0	21.9
important							
Important	6.7	9.0	11.1	34.4	12.3	36.0	13.5
Very important	2.8	3.0	6.6	27.9	7.6	34.9	26.0

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Table 2. Personal and perceived peer cannabis use descriptive and injunctive norms at the sample level across countries

	<i>Across Countries</i>			<i>Country</i>				
				Slovak Republic	Spain	Turkey	United Kingdom	
<i>Descriptive Norms (%)</i>								
Personally used cannabis	8.0	10.5	6.5	25.2	4.3	8.2	4.4	15.6
Perceived that the majority of same-sex peers use cannabis	52.4	90.3	79.0	93.7	81.9	93.0	45.4	84.4
<i>Injunctive Norms (%)</i>								
Personal approval of cannabis use	29.5	38.2	40.3	62.2	22.5	34.5	11.3	42.7
Perceived that the majority of same-sex peers approve of use	65.6	80.3	66.1	91.8	62.9	84.8	24.8	78.1

Table 3. Percentages of students with self-other discrepancies between personal use/attitudes and perceived norms across countries

	<i>Across</i>		<i>Country</i>					
	<i>Countries</i>		Slovak			United		
			Belgium	Denmark	Germany	Republic	Spain	Turkey
<i>Descriptive Norms (%)</i>								
Perceived Peer Use < Personal Use	5.5	4.7	7.0	16.2	3.1	2.2	4.4	7.8
Perceived Peer Use = Personal Use	27.6	16.8	36.6	14.9	22.0	11.6	55.1	24.5
Perceived Peer Use > Personal Use	66.9	78.5	56.4	68.9	75.0	86.2	40.5	67.6
<i>Injunctive Norms (%)</i>								
Perceived Peer Attitudes < Personal Attitude	6.4	7.2	9.6	15.2	3.4	3.5	6.0	11.0
Perceived Peer Attitudes = Personal Attitude	48.4	37.9	52.3	38.7	43.6	29.1	75.9	38.0
Perceived Peer Attitudes > Personal Attitude	45.2	55.0	38.1	46.0	53.0	67.4	18.1	51.0

Table 4. Associations between perceptions of peer attitudes and cannabis use with personal cannabis use behaviors and attitudes in the past two months stratified by country

	<i>Cannabis consumption in past</i>		<i>Cannabis attitude</i>	
	<i>two months</i>		<i>(permissive)</i>	
	<i>Odds Ratio</i>	<i>95% CI</i>	<i>Odds Ratio</i>	<i>95% CI</i>
<i>By country</i>				
Slovak Republic	1.23**	[1.07, 1.42]	1.28**	[1.11, 1.47]
Denmark	1.11	[0.67, 1.82]	1.92***	[1.42, 2.59]
Germany	1.20*	[1.01, 1.42]	1.15	[0.84, 1.57]
Belgium	1.38*	[1.04, 1.82]	1.68**	[1.23, 2.32]
Spain	1.82*	[1.12, 2.95]	1.66*	[1.06, 2.58]
Turkey	1.55*	[1.11, 2.17]	1.98**	[1.23, 3.18]
United Kingdom	1.52	[0.84, 2.74]	0.77	[0.41, 1.44]

Note: Adjusted Odds Ratios are reported controlling for participant age, sex, religious beliefs, year of study and residence status. Odds Ratios for the personal cannabis attitude outcome also control for personal reported cannabis use behaviors. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.01$