Perceptions of Harms Associated With Tobacco, Alcohol, and Cannabis Among Students From the UK and Norway

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Abstract

Introduction: International drug policy used to be based on the premise that illegal drugs are more harmful than legal substances. Here, we investigate how students in the UK and Norway now perceive possible harms related to tobacco and alcohol - which are legal; and cannabis - which is illegal.

Methods: Social science undergraduates at a university in the UK (N = 473) and Norway (N = 472) completed an anonymous survey. They were asked to rate the harms of the three substances across five domains: (i) physical harms; (ii) mental health conditions; (iii) dependence; (iv)injuries; and (v) social consequences. Bivariate and multivariate analyses were used to compare the relative harms of the three substances across all the domains, as well as possible differences between participants from the UK and Norway.

Results: Tobacco was rated as most harmful with regard to physical harm and dependence; alcohol as most harmful with regard to injuries and social consequences, while cannabis was rated as most harmful with regard to mental health. The total harms scores for alcohol were highest, slightly above those of cannabis. British students reported higher tobacco and alcohol harm scores than Norwegian students, while the opposite pattern was true for cannabis.

Conclusions: The legal substance alcohol rated as more harmful than the illegal substance cannabis. The findings may imply that young people in the years to come may be less supportive of a traditional drug policy based on criminalization, at least when it comes to cannabis. At the same time, one may hypothesize that neither a very liberal alcohol policy may receive much support, as they were well aware of the possible harms associated with alcohol.

Key words: Drug harms, harm scale, tobacco, alcohol, cannabis, alcohol policy, drug policy

Introduction

International drug control used to be justified by the presumed harms of the use of psychoactive substances, as described in various UN conventions (Room, 2006). Based on these conventions, a variety of substances has been labelled as illegal and came under international control. As a result, they have typically been treated and described through a different rhetoric than those surrounding legal substances such as tobacco and alcohol. However, during the last couple of decades increasing pressure has built up against the so-called "war on drugs", and it has been argued that the previous international consensus eventually fractures (Bewley-Taylor, 2012). In this process, the presumed harms of different substances has also been investigated and discussed, and in two recent articles David Nutt and co-workers developed so-called "rational drug harm scales", where panels of experts rated substance harm using "multi criteria decision analyses" (Nutt, King, & Phillips, 2010; Nutt, King, Saulsbury, & Blakemore, 2007). The main finding from the studies was the poor correlation between the legal classification of drugs and experts' harm scores. Alcohol was rated as the most harmful substance, well above the most prevalent illegal substance, cannabis. To a large degree, the high score of alcohol was related to harms experienced by others rather than the users themselves. The study was later replicated with drug experts from different countries throughout the EU with basically the same results (van Amsterdam, Nutt, Phillips, & van den Brink, 2015)(Bourgain et al., 2012). A research group from the Netherlands (van Amsterdam, Opperhuizen, Koeter, & van den Brink, 2010) also reported similar results.

All these studies have been criticized on a number of grounds (see e.g.: Caulkins, Reuter, & Coulson, 2011; Fischer & Kendall, 2011). One type of criticism is related to the method's vulnerability to experts' subjective judgements, another to the failure of the ratings to disaggregate harms related to the drugs themselves from those resulting from the policy in question (e.g. the criminalization of use and possession of cannabis). Nonetheless, most scholars

have welcomed this line of research as a fruitful corrective to typical perceptions of legal and illegal drugs and their associated harms.

Drug users' own perceptions of harm have also been investigated. A web-based survey of a sample of active drug users from the UK (Morgan, Muetzelfeldt, Muetzelfeldt, Nutt, & Curran, 2010), found results similar to those of Nutt and co-workers (Nutt et al., 2010; Nutt et al., 2007) , with alcohol ranked among the more dangerous substances while cannabis was ranked among the least dangerous. Few studies have investigated drug harm perceptions outside expert groups and such highly selected samples. Norway is an exception; as such perceptions have been monitored in population-based studies from the mid-1960s (Brun-Gulbrandsen, 1970; Skretting, 1990; Skretting & Rise, 2011). Contrary to the reports by Nutt et al. and in line with the ideas behind the UN conventions, in these studies illegal substances have always been rated as substantially more harmful than legal substances. Indeed, the illegal substances which have been rated have changed over time, reflecting historically changing patterns of prevalence, with morphine and LSD being included in the 1960s, while heroin was first introduced in the 1980s. Cannabis has been rated throughout all the studies and has remained in the "dangerous" illegal substance group, well ahead of alcohol and tobacco. However, a recent study of a selected sample of Norwegian students indicates possible changes: In the urban Oslo area, students rated harms associated with cannabis as slightly lower than those related to the use of alcohol, even if this pattern was not as clear among students in a rural area of the country (author citation removed).

Several other research groups have also presented alternatives to the perspectives underling the UN conventions, even though these reports have got limited public attention. For example, in the late 1990s, a group of researchers compared the severity of health effects for "heavy users of different substances". Alcohol ranked highest, with tobacco and heroin ranked in the middle and cannabis ranked at a clearly lower level (Hall, Room, & Bondy, 1999). At the

same time, a French research committee ranked substances according to their "toxicity". Alcohol, tobacco, cocaine and heroin were rated as "very strong", while cannabis was rated as "very weak". However this report resulted in heated public debate, due to the sensitivity of the topic (Room, 2006). Another approach when comparing the risk of different substances is called the margin of exposure (MOE) approach. The MOE is defined as the ratio between the toxicological threshold or median lethal dose and estimated typical human intake. A recent study based on this approach identified alcohol as the only substance posing "high risk" at a population level, while cannabis was associated with "low risk" (Lachenmeier & Rehm, 2015).

Generally, there seems to be an increasing disjunction between what scientists are willing to agree with, and what the political process is willing to accept in the drug policy area. For example, a WHO committee twice suggested downgrading THC (an active ingredient in cannabis) as a medication under the 1971 convention, but both times the Commission on Narcotic Drugs rejected the recommendation (Room & Lubman, 2010). Nevertheless, drug policy reform is higher on the international policy agenda than ever before, and in 2016 the United Nations will have a special session on drug policy (UNGASS 2016). More than one in three U.S. states have now legalised cannabis in medical programmes, while four US states, as well as Uruguay, have also legalised cannabis "for pleasure" (Room, 2014). Furthermore, an increasing proportion of opiate addicts are enlisted in opioid maintenance programmes, creating new concepts of "harm reduction" and "illness" to replace "crime" (Gowan, Whetstone, & Andic, 2012). Even in the cannabis domain, a harm reduction approach has been advocated (Lau et al., 2015). Thus, there are signs of a deep paradigm shift in drug policy, as well as a shift in perceptions of the dangers associated with illegal drugs in general, and cannabis specifically.

Context of the study

The aim of this study is to investigate harm rankings of the three most prevalent psychoactive substances – tobacco, alcohol and cannabis – among university students from the UK and Norway. In both countries tobacco and alcohol are legal, whereas cannabis is illegal. Although the prevalence of smoking is considerably higher among adults (Ng et al., 2014) and adolescents (ESPAD, 2012) in the UK than in Norway, today both countries are among those with the most restrictive tobacco policies - even though Norway started out with an intense control policy earlier than the UK (Joossens & Raw, 2006). Also, smoking has become increasingly denormalised in both countries (Hammond, Fong, Zanna, Thrasher, & Borland, 2006; Sæbø, 2015). Indeed, tobacco consumption in Norway is currently shifting to snus, a smokeless, low-nitrosamine product, regarded by experts as considerably less harmful than cigarettes (author citation removed). Snus is banned in all EU countries except Sweden.

The UK and Norway are both situated in the cultural North-West of Europe. Here, heavy drinking is more common than the typically frequent consumption of low quantities of alcohol found in the Mediterranean countries (E Kuntsche, Rehm, & Gmel, 2004). In both countries, about a third of drinking occasions among adolescents lead to intoxication (Babor et al., 2010, p. 35). Still, per capita alcohol consumption in Norway is clearly lower than in the UK (WHO, 2014, pp. 228, 246). Even though it has gone in a more liberal direction in the last few years, alcohol policy in Norway is still rather strict (Karlsson & Österberg, 2007), compared to the UK (Nicholls & Greenaway, 2015). The cornerstones in Norwegian alcohol policy are high prices, restricted access and a state monopoly for the sales of wine and spirits, and there is good support for the effectiveness of this policy at the population level (Rossow & Storvoll, 2014). Still, the public concern regarding "binge drinking" that has pervaded the UK in the last decade or so is unmatched in Norway (Plant & Plant, 2006; Szmigin et al., 2008).

The prevalence of cannabis use has also traditionally been higher in the UK than in Norway; however over the last decade the gap between the two countries has decreased somewhat (EMCDDA, 2015b). Cannabis policy in the UK was the subject of an attempt to reclassify the drug from a class B to a class C drug in 2004: this was reversed in 2009 (Monaghan, 2014). In contrast, Norway has had, and still has, a clearly stricter cannabis policy than the UK, (Hauge, 2013). In Norway, use and possession of cannabis is still regarded as a crime, and a recent population-based longitudinal study revealed that a surprisingly large proportion (one in four) of regular cannabis users in their early 20's would get a drug-related conviction before they turned 30 years (Pedersen & Skardhamar, 2010).

Thus, generally there seems to be a somewhat higher level of the use of all three substances in the UK than in Norway, and the UK traditionally has had a somewhat more liberal policy in relation to all three substances even if these differences have diminished somewhat.

Aim of the study

In this study, we ask:

1. How do students from the UK and Norway rank the three most prevalent psychoactive substances - tobacco, alcohol and cannabis - on different dimensions of harm?
2. Are there significant differences in harm perceptions between students from the UK and Norway?
3. To what degree do harm ratings reflect students' own substance use?

Methods

Sample and procedure

The sample consisted of social science undergraduates at two large universities in the UK and Norway. The universities are situated in cities of approximately the same size. In the break between introduction lectures in basic courses in psychology, sociology or criminology, where many students were present, attending students were asked to complete a short questionnaire about "students' opinions on, among other things, harms associated with different substances". The researchers were present themselves, and informed about study aims, the anonymous nature of the study, and that participation was voluntary. The information was as well presented on the first page of the questionnaire. A total of 945 students participated, 473 from the UK and 472 from Norway. We did not register non-participants but attrition was negligible based on our observations. The study was approved by the Internal Review Board for Research of the Department of Psychology at the Norwegian university.

Measures

Based on Nutt et al. (Nutt et al., 2010), we measured five domains of possible drug harms, with the following introduction: "We are interested in your opinion on how harmful tobacco, alcohol and cannabis can be in different areas of life. Answer on a scale from 1 to 6, from "Not harmful" to "Very harmful". We then listed the following areas: (i) physical harms (e.g. cancer, cardio-vascular diseases, lung diseases, liver diseases); (ii) mental health conditions (e.g. learning disabilities, apathy, anxiety, depression, psychosis); (iii) dependence (e.g. problems with quitting use, despite serious consequences); (iv) injuries (e.g. drowning, falls or traffic accidents, quarrels, violence); and (v) social consequences (e.g. break-up of family relations, educational problems, problems with the police). One score was given for each substance on each domain. We also

calculated a mean score for each substance. Internal consistency was 0.67, 0.75 and 0.82 for tobacco, alcohol and cannabis harm ratings, respectively.

We then asked: "Do you smoke?" Response options were on a 5-point scale: 1 – "No, never"; 2 – "Have never smoked regularly and do not smoke at all now"; 3 – "Have smoked regularly, but have quit altogether now"; 4 – "Smoke, but not daily"; and 5 – "Smoke daily". Smoking was dummy-coded so that those who had never smoked, or only smoked irregularly previously, were contrasted with those who had smoked regularly in the past but not now, those who reported non-daily smoking, and those who reported daily smoking. We also asked: "How many times did you drink alcohol in the course of the previous 12 months?" Response options were on a 5-point scale from "Never" to "More than three times a week". For some analyses, we dummy-coded alcohol use by contrasting respondents who had not drunk any alcohol in the previous 12 months with those who had drunk alcohol a few times a month or less, approximately once a week, and more than once a week, respectively. Finally, we asked two questions about cannabis: "Have you ever used cannabis?", with response options from "No" to "More than 50 times", and "How many times have you used cannabis in the course of the past 12 months?", with response options from "None" to "More than 50 times". Again, dummy coding was used to contrast respondents with no prior experience with cannabis use and those who had used cannabis previously but not during the last 12 months, with those who had used it once during the last 12 months, 2–10 times, 11–50 times, or more frequently during the last 12 months. We also asked to what religion or denomination the respondent belonged, with response options: "No religion"; "Christianity"; "Islam"; or "Other religion". In all analyses, we dummy-coded religious affiliation, contrasting no religion with the other three response options.

Statistics

T-tests were conducted to examine differences in harm ratings according to gender and country. Analyses of variance (ANOVA) were utilised to examine whether harm ratings differed for different drugs and between genders and countries. Moreover, by means of ANOVA, we investigated whether drug type, gender and country interacted in predicting harm ratings. Finally, multiple linear regression analyses were conducted to investigate the combined effects of gender, country, participants' own substance use and religion on harm ratings. As standard analytical methods require data to be normally distributed, the Kolmogorov-Smirnov test was conducted to examine for potential deviation from normal distribution for the three total harm rating scales. Results showed significant deviations from normality for all three measures ($p < .001$). Therefore, bias corrected and accelerated bootstrap standard errors, based on 5,000 bootstrap samples, were estimated for all analyses in the present study, as such standard errors are robust to deviations from normality (Efron & Tibshirani, 1993). As bootstrapping was not available for the rather complex ANOVA conducted in this study, we estimated standard ANOVA and then re-run parts of the model with bootstrapped standard errors to validate the findings.

Results

In Table 1, descriptive statistics of use of drugs are presented. Note that more participants from the UK were regular smokers compared to Norway, and that they also had a considerably higher level of cannabis use. Participants from Norway had a slightly higher prevalence of regular alcohol use. However, the dispersion of alcohol use differed between the two countries: In the UK, more persons had abstained completely from alcohol in the last 12 months compared to Norway (21.1 % compared to 8.1% of the Norwegian sample), while at the same time a larger

percentage had used alcohol 2-3 times a week or more (28.0 % versus 13.2 % in the Norwegian sample).

In Figure 1, mean harm ratings for all three substances across all five domains are shown for participants in both countries. We note that tobacco was rated as most dangerous when it comes to physical harm and dependence. Alcohol had the highest score with regard to injuries and violence and cannabis was ranked as more dangerous than alcohol when it comes to mental health consequences. On the total harm score, alcohol was rated slightly higher than cannabis. When comparing total harm scores between the two countries (using t-tests with bootstrapped standard errors), we found that participants from the UK rated tobacco and alcohol as more harmful than participants from Norway ($p < 0.01$), while the opposite pattern was true for cannabis ($p < 0.01$).

As a next step, ANOVA were conducted to examine differences in harm ratings according to drug type, country and gender in greater detail. By including drug type, country and gender as factors, main effects of these three variables on total harm ratings and harm ratings in all five domains were investigated. The analyses thus provided information about differences in the level of harm ratings between drug types, country and gender. As shown in Table 2, for all six measures, ratings of harm differed significantly according to drug (i.e. the main effects of drug type were significant). Additional Bonferroni post-hoc tests showed that ratings of harm differed significantly between all three drug types for all six measures ($p < .001$). We note that physical harm and dependence scores were highest for tobacco. Mental health consequences were regarded as most severe for cannabis use, while injuries and damages as well as social consequences were regarded as most serious in relation to alcohol use. Overall, alcohol was regarded as most harmful.

All main effects of gender were also significant, indicating that women considered all three drug types to be more harmful than did men, across all six harm rating measures. However, such findings must be interpreted in the context of the significant interaction effects between gender and drug type for all six harm ratings, as revealed by the ANOVA (see drug type * gender interaction effect in Table 2). The interaction effects indicate that the gender difference in harm ratings differed according to drug. More detailed analyses were conducted by means of t-tests with bootstrap estimated standard errors, showing that gender differences in overall harm ratings were substantially higher for cannabis (mean difference = 0.74, $p < 0.001$) than for tobacco (mean difference = 0.13, $p = 0.022$) and alcohol (mean difference = 0.18, $p = 0.003$). Similar results were found across the five specific domains.

Main effects for country also showed several significant differences in harm ratings between Norway and the UK. However, again, significant interaction effects between drug type and country for all six harm rating measures have to be taken into consideration. For instance, the interaction effect for the overall harm score showed that cannabis was rated as more harmful in Norway than the UK whereas both tobacco and alcohol were rated as less harmful in Norway, compared to harm ratings from the UK.

As the ANOVA presented here could not be conducted with bootstrapping, we performed additional analyses. More specifically, ANOVA with bootstrapped standard errors were conducted for harm ratings for each type of drug separately. Results showed no substantial differences to the results obtained with the original ANOVA.

Finally, a series of multiple linear regression analyses with bootstrapped standard errors were conducted to investigate the possible effects of participants' own substance use and their religion on harm ratings. For this purpose, total tobacco, alcohol and cannabis harm ratings were used as dependent variables and country, age, gender, religion and respondents' substance use

were included as independent variables. The results are presented in Table 3. Current daily smoking was strongly and negatively associated with tobacco harm scores and a somewhat weaker association was found with previous smoking. The two highest levels of alcohol use were associated with reduced alcohol harm ratings compared with non-use. Increasing level of cannabis use was related to reduced cannabis harm ratings. Women provided higher scores on alcohol and cannabis harm measures. Being Muslim was related to rating tobacco and cannabis as more harmful than those who reported not belonging to any religion. Types of faith, other than Christianity or Islam, were related to higher harm ratings for tobacco and alcohol. After controlling for religion and earlier cannabis use, country still significantly predicted tobacco and alcohol harm rating scores. We also compared the change in R^2 when including substance use in the three models shown in Table 3. Here, the increase when including cannabis (0.14) was considerably stronger than when including tobacco (0.04) or alcohol (0.03). Thus, own experiences with cannabis played a more prominent role in cannabis harm perceptions than did the use of tobacco or alcohol on perceived harm of those two substances.

Discussion

The study revealed that tobacco was regarded as most harmful with regard to physical health and dependence; alcohol was perceived as having the largest impact on injuries and violence; while cannabis was rated as most harmful with regard to mental health-effects. The total harm score of alcohol was slightly above that of cannabis. Hence, while international drug policy used to be based on the premise that illegal drugs are more dangerous than legal substances, this perspective does not seem to be the dominant frame of reference among the students in these samples. There were, however, differences between students from the two countries. Students from the UK rated tobacco and alcohol as more harmful than did those from Norway, while students from Norway

perceived cannabis as more harmful than those from the UK. Gender also played a role, as women rated all three substances as more harmful than did men, with the largest gender difference for cannabis. Finally, the students' own use of substances was associated with reduced harm scores for all substances. With regard to cannabis harm scores, this reduction was considerable. A common belief has been that young people are unaware of the real risks associated with smoking, drinking and use of illegal substances, and hence may be lured into potential damaging use (Orphanides & Zervos, 1995). Our findings point in another direction: By and large the students held realistic views as to the harms associated with these substances.

A main limitation of the study is using student samples; as such samples differ from the general population. Research shows that participants in student samples may be more open-minded, have less-crystallized attitudes and stronger cognitive skills than participants in population-based samples (Sears, 1986). Moreover, recent studies suggest that positive attitudes to cannabis legalization are more widespread among subgroups of urban and liberal students than in the general population (Palamar, 2014). Our sample consisted of students in social sciences, and particularly such students may be somewhat more left-leaning and critical of authorities than other students and the population in general. Their perceptions may as such to a lesser degree be influenced by the legal status of substances compared to other students, as, e.g., students in law. Moreover, women comprised the majority of the sample, mirroring the gender-bias at universities in the UK and Norway, particularly in the social sciences and humanities. Hence, the study needs be replicated using more representative samples. Another limitation is the cross-sectional character of the study. As we do not have longitudinal data, we are not able to determine the direction of the association between risk perceptions and own substance use (Lundborg & Lindgren, 2004). What we did observe, was that use of all substances was associated with lower risk perceptions. This may indicate that the students, to some extent, take expected costs of use

into account when deciding upon their use, and that they do not ignore the future consequences of current behaviour (Lundborg & Lindgren, 2002: 166). Alternatively, the association may be explained by people changing their cognitions about the danger of a substance when frequently using it (Gerrard, 1996).

While Nutt et al. (2010) weighted their criteria so as to obtain what they considered to be "a scientifically based" total harm score, our aim was not to measure "objective" or "rational" harm scores, but rather to gauge subjective perceptions of the harms associated with tobacco, alcohol and cannabis. One should also note that there has been much debate about what people really mean when they rate risks and whether they are accurate in their risk assessment (Slovic, 1987, 2000b; Viscusi, 1990). For instance, it is well known that individuals typically overestimate risks for rarely occurring phenomena, such as risks related to natural disasters, and that they may underestimate risks of more frequent phenomena, such as the risks of cardiovascular diseases and cancer (Viscusi, 1998). Moreover, research has shown that participants' risk perceptions regarding their own health often differ from their "objective risk" across a variety of health domains (Rothman, Klein, & Weinstein, 1996). Increasingly, it has also become clear that risk perceptions are formed by a variety of sources, such as age, ethnicity, socioeconomic background, perceived control, degree of empirical knowledge, misconceptions and stereotyping (Larsman, Eklof, & Torner, 2012).

The issues of how to measure risk perceptions has as well been debated, and even though we in our study used risk measures consisting of different dimensions, our approach does not capture all aspects of how people may interpret and understand the risk associated with the use of substances. Moreover, whereas we used Likert scales ranging from "Not harmful" to "Very harmful", other researchers asks participants to provide probabilistic information about risks of drugs, by typically asking about percentages of substance users being exposed to certain

conditions (Lundborg & Lindgren, 2002; Viscusi, 1990). Our research may thus be replicated using other operationalisations of risk perceptions. Further, risk perceptions are typically seen as a being formed by different sources, such as social background, life events, early information about health problems related to e.g. smoking, observed consequences of own or others' smoking, and finally direct transmission of information stemming, for instance from education campaigns (Lundborg & Lindgren, 2004). However, our study is limited by the fact that only few potential predictors of risk perceptions were included.

Finally, there are different opinions as to what degree risk perceptions in fact influence behaviours (Slovic, 1987, 2000a; Viscusi, 1990), and the present study does not provide information about this issue either. However, note again that the present study's emphasis is not on the individual's personal perception of own risk, and how such risk perception influences behaviour. In this study, we were primarily interested in how people evaluated the risk of substances on a general population level, as we avoided asking participants about their own specific risk when using drugs.

Both in the UK and in Norway, students ranked alcohol as the most dangerous substance, echoing findings from several research groups' evaluations (Room & Lubman, 2010). One could question whether this high level of perceived alcohol-related harm is reflected in the current regulation of alcohol in European countries. Risks associated with psychoactive substances are often divided into two groups – risks for users and risks for third persons who are involuntarily exposed to danger. A recent study showed that the morbidity and mortality risk associated with one's own alcohol consumption exceeds the risk of other comparable lifestyle factors. In addition, involuntary risks for third persons associated with alcohol also far exceed the acceptable thresholds for other comparable risks (such as those associated with, for example, traffic, polluted air, contaminated water or food) (Rehm, Lachenmeier, & Room, 2014). Hence, it is noteworthy

that alcohol has never internationally been regulated in the same manner as, for example, illegal substances, tobacco and pharmaceuticals (see: Bruun, Pan, & Rexed, 1975). A reason for this may be the general lack of knowledge among lay people and politicians about the risks of alcohol on various health outcomes, such as cancer and numerous other diseases, injuries and violence (Rehm et al., 2010). Another factor may of course simply be associated with the large perceived benefits and pleasures linked to alcohol consumption (Peele & Brodsky, 2000).

Against this background, it is interesting to see how students in both the UK and Norway – possibly to a larger degree than in previous studies – now seem to be aware of the potential harms related to alcohol consumption. These perceptions seem to have developed in tandem with reduced levels of alcohol consumption in young cohorts all over Europe. Students from the UK rated alcohol harms as higher than students from Norway. One reason may be found in the clearer polarisation of alcohol use in the UK sample, with larger proportions of both abstainers and high consumers. The student groups that display excessive drunken behaviour may therefore be larger in the UK, but so will the abstaining group who may perceive this behaviour as potentially harmful. Furthermore, public concern about binge drinking among young people has probably been more intense in the UK than in Norway. "Binge drinking" has been a recurring theme in the UK media (Griffin, Bengry-Howell, Hackley, Mistral, & Szmigin, 2009; Plant & Plant, 2006; Skeggs, 2005), while Norwegian media to a lesser degree have presented such information.

Previous studies have suggested that young people are aware of the cumulative and long-term health risk associated with smoking, and they may even overestimate such risks (Lundborg & Lindgren, 2004). However, some tend to have a short-time perspective regarding smoking, and typically report no health risk from smoking "the first few years", and such a perspective may be coupled this with an underestimation of the addictive properties of tobacco (Slovic, 2000b). The

present study suggests that the students in our sample are well aware of the possible health harms of tobacco; moreover they are also familiar with the high addictiveness of nicotine.

Cannabis was rated as less dangerous than alcohol. The lower cannabis harm rating may be explained by people, and perhaps university students in particular, being aware of recent research questioning the harms of cannabis, which have received much attention in both countries and have been shared by many on social media (Maansson, 2014). However: the tendency towards decriminalisation of use and possession of cannabis in European countries (EMCDDA, 2015a); the semi-legalisation of cannabis in the Netherlands (Wouters & Korf, 2009); the drug policy reform in Portugal with decriminalization of use of all substances (Laqueur, 2015); and in particular the legalisation of cannabis in four different US states and Uruguay (Room, 2014) have also received large media coverage. The lower level of perceived cannabis harms in the UK than in Norway may possibly be related to the higher degree of normalisation of cannabis use in the UK (Measham & Shiner, 2009) than in Norway (Sandberg, 2012), as well as the considerably higher prevalence of cannabis use in the UK sample.

Women reported higher scores in all harm rankings than men. This finding echoes previous research showing that men are more prone to risky substance use behaviours than women (E Kuntsche, Knibbe, Gmel, & Engels, 2005). It also reflects men's lower perceived level of vulnerability with regard to risk-taking (Anderson & Galinsky, 2006). Typically, women are also more in favour of restrictive drug and alcohol policies than men (Moskalewicz, Wieczorek, Karlsson, & Osterberg, 2013).

To what degree are the harm scores of the students in this study in accordance with current research-based knowledge about the possible negative effects of the three substances in question? In our opinion, the scores are broadly in line with experts' ratings. For example, tobacco and alcohol are rated as two of the most critical factors for the global burden of disease

and mortality (Lim et al., 2012). The scores for alcohol, injuries and violence also correspond well with numerous research reports (Taylor et al., 2010). Students at both universities rated cannabis as the most harmful substance with regard to mental health problems. Even though the often-cited association between cannabis use and schizophrenia (Andreasson, Engstrom, Allebeck, & Rydberg, 1987) may be less certain than suggested (Hickman et al., 2009), there is little doubt than cannabis may lead to brief psychotic episodes and cognitive impairment (Degenhardt & Hall, 2012).

Conclusion

Students from the UK and Norway rated alcohol as slightly more harmful than cannabis. Their ratings are in accordance with reports from research committees over the last couple of decades, but to some degree in contrast to the ideas behind the international conventions still regulating narcotic drugs. Even though our samples were highly selected, the findings may be indicative of a decreasing legitimacy of the policy relating to narcotic drugs. There are numerous other indications that the international political consensus in this area is fracturing, partly fuelled by the fact that the key driver behind these regulations – the USA – is gradually legalising cannabis (Bewley-Taylor, 2012). Our study gives additional support to such evidence. At the same time, one should note the students' awareness of the possible harms related to the use of alcohol – which may imply that a restrictive alcohol policy in the future may come to have support in younger cohorts.

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Table 1. Prevalence of daily and non-daily smoking, proportion typically drinking a few times per month, and proportion with lifetime ever and previous 12 months use of cannabis in Norway and the UK

	Norway (N = 472)		UK (N = 473)		Chi-square test
	n	%	n	%	of significance
Smoking					
Non-daily	59	(12.6)	80	(16.9)	
Daily	11	(2.3)	67	(14.2)	$p < .001$
Use of alcohol a few times per month or more	353	(75.1)	315	(66.7)	$p < .01$
Lifetime ever use of cannabis	190	(40.4)	247	(52.2)	$p < 0.001$
Cannabis use in previous 12 months	119	(25.3)	184	(38.9)	$p < 0.001$

Table 2. Analyses of variance and covariance results with drug type, gender, and university site as factors and drug harm ratings as dependent variables, adjusted for age.

N=945	Tobacco M (SD)	Alcohol M (SD)	Cannabis M (SD)	ANOVA main effects			ANOVA interaction effects		
				Drug type F	Gender F	Country F	Drug type * Gender F	Drug Type * Country F	Drug Type * Gender * Country F
Overall	3.50 (.78)	4.85 (.74)	4.45 (1.06)	671.31***	52.13***	4.26*	45.65***	28.64***	.38
Physical harms	5.14 (.93)	4.44 (1.09)	3.99 (1.51)	264.69***	24.22***	2.31	22.27***	23.79***	1.99
Mental health conditions	2.89 (1.42)	4.49 (1.17)	4.80 (1.23)	575.46***	30.04***	5.67*	11.64***	13.42***	.48
Dependence	5.26 (1.00)	4.68 (1.22)	4.59 (1.42)	234.28***	36.69***	5.83*	29.55***	21.53***	.41
Injuries, damages	1.92 (1.20)	5.53 (.70)	3.95 (1.53)	2025.12***	31.34***	1.16	25.12***	6.37**	1.35
Social consequences	2.28 (1.30)	5.10 (.97)	4.94 (1.18)	1626.62***	25.20***	9.21**	13.48***	9.35***	.13

Note. M = Mean; SD = standard deviation. For all six measures, significant differences between the harm ratings of all three drug types were found, as indicated by Bonferroni post-hoc tests.

Table 3: Multiple linear regression analyses with tobacco, alcohol, and cannabis harm ratings as dependent variables

	Tobacco			Alcohol			Cannabis		
	B	β	t	B	β	t	B	β	t
Gender	.09	.05	1.50	.15	.08	2.68**	.59	.24	8.32***
Country[a]	.19	.12	3.34**	.33	.23	6.47***	-.10	-05	1.48
Age	.03	.07	2.15*	.04	.12	3.60***	.02	.04	1.39
Religion	(reference: no religion)			(reference: no religion)			(reference: no religion)		
Christianity	.08	.05	1.45	-.04	-.03	.72	.06	.03	.89
Islam	.45	.18	5.18***	.00	.00	.02	.22	.06	2.05*
Other	.32	.08	2.53*	.28	.07	2.30*	.05	.01	.32
Smoking	(reference: no smoking)			--	--	--	--	--	--
Smoked earlier	-.26	-.09	2.62**	--	--	--	--	--	--
Non-daily smoking	-.43	-.15	4.62***	--	--	--	--	--	--
Daily smoking	-.34	-.16	4.78***	--	--	--	--	--	--
Alcohol use	--	--	--	(reference: not used last year)			--	--	--

A few times a month or less	--	--	--	-.17	-.11	1.69	--	--	--
Appr. once a week	--	--	--	-.42	-.25	3.97***	--	--	--
More than once a week	--	--	--	-.45	-.24	4.16***	--	--	--
Cannabis use	--	--	--	--	--	--	(reference: never used)		
Used before, but not last year	--	--	--	--	--	--	-.49	-.16	5.41***
Used once last year	--	--	--	--	--	--	-.51	-.14	4.82***
Used 2-10 times last year	--	--	--	--	--	--	-.97	-.31	10.21***
Used 11 times+ last year	--	--	--	--	--	--	-1.20	-.33	10.91***

Note. B = Unstandardized regression coefficient; β = standardized regression coefficient; *p < .05, **p < .01, *** p < .001; [a]Country is coded 1=Norway and 2=UK.

Figure 1. Perceived harms related to tobacco, alcohol and cannabis across five different domains, and in total. All participants in the sample included (N = 935).