

Control of Recreational Cannabis in a New Zealand University Sample: Perceptions of Informal and Formal Controls

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ABSTRACT: An increasing number of countries have, or are moving towards, reforming cannabis policies. New Zealand is also moving in this direction and the government will hold a referendum on the legalization of recreational cannabis in September 2020. To inform imminent public and political discussions it is important to understand how current cannabis use is controlled. Research suggests that cannabis law has been ineffective in NZ. Internationally, informal controls, rather than the law, have been found to shape cannabis use by creating a threshold for normalization, but the attitudes shaping this threshold are unknown. This study aimed to examine drug acceptability attitudes, specifically students' attitudes towards the illegal use of cannabis and their attitudes towards peers who abstain, sometimes use, or are heavy users of cannabis, to identify the factors that control cannabis use. Using a mixed methods approach, university students recruited their peers (N = 535) to complete a pen and paper survey investigating perceptions towards 3 cannabis user prototypes (abstainers, moderate users, heavy users), concern for legality of cannabis use, and the integration of cannabis into the student culture (perceptions of peers' use, ease of acquisition, and availability). Perceptions of peers' lifetime and regular use were 82% and 38.5%, respectively. Participants rated cannabis as easy to acquire and likely to be available at a typical student social occasion. The majority stated that the law does not deter use (92.7%); participants perceived the law to be soft and that they are unlikely to get caught. Participants' descriptions of the 3 cannabis user prototypes revealed a threshold for normalization. For instance, abstaining was perceived to be associated with positive attributes (such as being studious), linked to being less sociable, and linked to being less likely to be judged. Moderate use of cannabis was perceived to be normal and sociable. Heavy use was perceived to be associated with having negative attributes, such as being addicted, unhealthy, and an underachiever, and negative drug labels. Our findings revealed that cannabis use is not controlled by the law, but by informal thresholds of control. Moderate cannabis use is accepted whereas heavy cannabis use is not. We extended research by identifying the attitudes shaping these thresholds, in particular that negative outcomes associated with heavy use deters the normalization of this behavior. We argue that policy must be informed by, and build on, these informal controls. The negative perceptions associated with heavy use also raise concerns regarding the well-being of heavy users, and coupled with the ineffectiveness of cannabis law, lend support towards a health model for regulating cannabis. Furthermore, insights into the negative perceptions associated with heavy use could inform health interventions on the types of concerns that will resonate with users.

KEYWORDS: Cannabis, Marijuana, Policy, University Students, Threshold for Normalization, Cannabis Law, Informal Control, Social Norms

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Introduction

The legal status of cannabis is changing around the world, including in New Zealand (NZ). In December 2018, the NZ government passed an amendment to the Misuse of Drugs Act¹ to make medicinal cannabis more accessible to palliative care patients and to declassify cannabidiol (CBD) and CBD products as controlled drugs. Subsequently, the NZ Government has announced that it will hold a referendum in September 2020 on whether or not recreational cannabis use should become legal. Researchers in the United States have argued that the legalization of medical cannabis has paved the way for the legalization of non-medical cannabis.² Indeed, internationally, there has been a transition from the legalization of medical cannabis to the legalization of non-medical, recreational cannabis; to date, recreational cannabis has been legalized in a number of countries, most notably Uruguay,³ Canada,⁴ and selected states in the United States.⁵ Polling in NZ ahead of the referendum has shown that the NZ public are aware that

cannabis is used widely and that cannabis law has been ineffective.⁶ To understand the potential consequences of legalizing cannabis it is important to understand how current recreational cannabis use is controlled. Thus, we will examine perceptions of the extent to which formal controls (the law) and informal controls (prototypes of peers based on cannabis use) influence cannabis use. Our findings will inform potential law reform in NZ and internationally given that public views towards cannabis legalization are becoming increasingly more liberal⁷ and further movement from prohibition to legalization is likely. We focus on the student culture given that adolescents are particularly prone to the adverse consequences of cannabis.⁸

Internationally, there is dissatisfaction on the “war on drugs.” The United Nations Office on Drugs and Crime (UNODC)⁹ reports that drugs and drug markets are diversifying and expanding worldwide. Arguably, cannabis prohibition has also been dissatisfactory in NZ; amongst a cohort of 16-21-year-olds, although two-thirds reported having used cannabis,



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arrests were relatively uncommon (5.1%) and discriminatory, penalties were mild and, of those arrested, 95% continued their use.¹⁰ The authors concluded that cannabis laws are ineffective at deterring use. Similarly, a study involving cannabis growers in New Zealand revealed that only 16% of the sample had had contact with police.¹¹ Research in other countries has shown that the law shapes when and how cannabis is used, but does not deter use. For instance, in Canada, before recreational cannabis was legalized, experienced adult cannabis users perceived acquiring cannabis to be easy, that the law did not work, and that police enforcement was weak, however the law did cause users to be discrete.¹² Amongst a similar sample in Canada, the law modified how individuals used cannabis to avoid detection; users took precautions to minimize the risk, such as limiting the amount on their person and avoiding smoking cannabis in public.¹³

Leading international authors in Canada have concluded that informal social controls are the most effective way to regulate cannabis use and, importantly, policy discussions must be informed by and build on these informal controls in order to achieve their mission.^{12,14} Research on social controls has been explored through social norms associated with use and/or prototypes of users. Norms involve social expectations of behavior and typically include descriptive norms (perceptions of the prevalence of a behavior) and injunctive norms (expectations of what ought to be done, measured through approval/disapproval) for engaging in a certain behavior.¹⁵ Past research has shown that social norms¹⁶⁻¹⁸ and injunctive norms, in particular, are strong predictors of cannabis attitudes and use.¹⁹ However, because injunctive norms focus on the approval/disapproval of specific behaviors, findings are limited in their ability to identify the attitudes behind the norms. Prototypes, on the other hand, explore perceptions of attributes associated with individuals who engage in certain behaviors and, thus, can provide insights into the factors associated with approval/disapproval for a behavior.²⁰ Participants are typically asked to think of a person who does, or does not, engage in a particular behavior and to rate that person according to a number of attributes. Prototype research has informed research on alcohol²¹ and is an emerging area of research in the context of cannabis. For example, Lewis et al.²² found that individuals' favorable perceptions of a typical cannabis user were associated with increased willingness to use cannabis themselves.

Importantly, international research shows that informal controls are not only associated with use but also provide a threshold for normalization. Amongst adult drug users in Great Britain, Canada, and America, controlled recreational use is accepted whereas immoderate use is not.²³⁻²⁵ Similar to the normalization amongst regular-using adult samples, research in Canada shows that university students perceived cannabis use to be "normal" and unremarkable, despite cannabis use being illegal at the time.²⁶ Moreover, there is preliminary evidence of a threshold for normalization amongst

university samples and this threshold has been found to be linked to students' perceptions of the saturation of cannabis use amongst their peer networks. Researchers exploring normalization amongst university students in Canada have found that although having peers who use cannabis is associated with greater use, students whose peers "all use" cannabis are less accepting towards the drug.²⁷ The authors suggested that this threshold for acceptability might be due to students in peer groups where "all of their peers use" being exposed to more of the problems associated with cannabis use. Because the authors measured acceptance through a dichotomous question, however, the nature of students' attitudes were unclear. The authors have called for future research to explore the important area of drug acceptability attitudes.

The present study addresses the call to action by Kolar et al.²⁷ to extend knowledge on thresholds for normalization and to identify perceptions that shape thresholds by conducting the first study to explore students' prototypes of peers who abstain, sometimes use, or are heavy users of cannabis through an exploratory study. In the present study, we also examine whether the elicited prototypes are gender-specific because past research has found that compared to females, males have stronger internalized cannabis norms²⁸ and more accepting attitudes towards cannabis.²⁷ Moreover, to inform our understanding of informal (versus formal) controls, students' perceptions of whether the illegality of cannabis influences individuals' use will be explored. Given previous research in NZ revealing that arrests are unlikely, penalties are mild, and that prosecution does not deter subsequent use,¹⁰ we anticipated students' attitudes to be similar to those found in international research on adult cannabis users,¹²⁻¹³ namely that the law is soft and modifies use, for instance, shaping where, rather than whether, one uses cannabis.

To understand the context that governs perceptions of informal and formal control, in the present study we measured the integration of cannabis into the student culture. Despite cannabis for recreational use being illegal in NZ, reports (although varied) show that cannabis is widely available and used, especially amongst young people. In 2017/18 (pre Medicinal Cannabis Bill), and 2018/19 (post Medicinal Cannabis Bill), The Ministry of Health²⁹ reported that 24.2% and 28.6%, respectively, of adolescents (15-24 years of age) in NZ had used cannabis for recreational (non-medical) purposes in the past year. Note, however, that regulations to support the Medicinal Cannabis amendment Bill only came into force in April 2020.³⁰ Presumably, if use for medical purposes was included, past-year use might arguably have been higher given that growers in NZ report growing for both their personal use and to supply others for medical purposes.¹¹ Furthermore, a longitudinal study in NZ following a cohort from age 15 to 35 years revealed that 80% had used cannabis at least once in their lives, 33.6% had used cannabis regularly, and individuals in their twenties were the most likely to both try and to

regularly use cannabis.³¹ Thus, examining cannabis integration and control of cannabis amongst a university sample will provide invaluable insights because this age group are the most likely to be exposed to cannabis.

To avoid social desirability responding by participants in the present study, perceptions of peers' use and attitudes were assessed in a number of the questions. Although the influence of peers decreases from adolescence into the mid to late twenties, perceived peer behavior remains an important influence on cannabis use³² and correlates with actual use.^{27,33} It should be noted, however, that there is a tendency for students to overestimate their peers' use³⁴ and these normative discrepancies can lead to misconceptions that certain risk behaviors are more common than they actually are,^{18,35,36} resulting in greater engagement in the behavior.¹⁶ Given the influence of peers, and to a lesser extent gender, integration and perceptions of informal and formal controls were also examined as a function of gender and whether or not students had a large number of regular-using peers. Overall, this study explores students' attitudes towards the illegal use of cannabis and their attitudes towards peers who abstain, sometimes use, or are heavy users of cannabis, in order to identify the perceptions that shape cannabis use and to address the gap in knowledge surrounding the attitudes that control cannabis use.

Methods

Sample

This was a cross-sectional study of 535 university students enrolled in an NZ University in 2018. The sample ranged in age from 18 to 27 years, with the mean age being 20.75 years ($SD=1.14$ years). Gender was measured by asking students to indicate their gender using four response options. On average, 43.9% of participants identified as male, 55.5% as female, 0.4% ($n=2$) as transgender, and 0.2% as other ($n=1$). Ethnicity was measured by asking students to indicate the ethnic group they most identified with on five response options. The sample identified predominantly as European (80.3%), followed by NZ Māori (7.1%), Asian (5.4%), Pacific Peoples (3.2%), other ethnicities (3.2%), and Middle Eastern-Latin American-African (0.7%).

Procedure

Participation involved completing a pen and paper survey including closed and open-ended questions and took approximately 20 minutes to complete. The study had ethical approval from the University of (removed for review), and participants gave their written and informed consent. Data collection was conducted by 114 students enrolled in a third-year marketing course. They recruited their peers/friends as participants, informing them that the study was on cannabis in the student culture, that there were no right or wrong answers, and that their responses would be anonymous. Social network recruitment

strategies have been effectively employed in previous research on health and sensitive research areas.^{37,38} Furthermore, other researchers have recommended using peer interviewees to reduce social desirability responding³⁹ and this technique has been found to facilitate open and frank responses.²¹ The only criterion for eligibility was that participants had to be 18 years or older, in line with the ethical requirements for the study.

Measures

Integration. Integration was measured through perceived use and accessibility of cannabis. Perceived peer cannabis use was examined by asking students to estimate the percentage of their peers who used cannabis at least once in their lifetime, and the percentage of their peers who use cannabis regularly. We assessed accessibility of cannabis by asking students about the ease of acquisition (how easy the acquisition of cannabis is from 0 = *not at all easy* to 5 = *very easy*) and the likelihood of cannabis being available at the next social occasion (please rate the likelihood of cannabis being available at a typical student social occasion from 1 = *very unlikely* to 7 = *very likely*) because there is a strong link between offers to use cannabis and subsequent use.⁴⁰ The majority of questions were adapted from Link⁴¹ whose items were based on the Monitoring the Future Study.⁴²

Perceptions of the effectiveness of formal controls. The effectiveness of prohibition as a formal control was measured by asking students to describe, in a couple of sentences, the extent to which they believed students who use cannabis are concerned that it is illegal, and the extent to which they believed students who use cannabis are concerned about getting caught.

Perceptions of informal controls. Cannabis prototypes were measured using three open-ended questions that asked students to write a list of words to describe how their peers would perceive a student of the same gender as themselves based on the hypothetical student's cannabis use (never uses, sometimes uses, is a heavy user) (adapted from Lewis et al.;²² Robertson & Tustin²¹).

Data analysis

Survey responses were quantitative and qualitative. The quantitative data were entered into SPSS (demographic and integration variables).¹

Coding schemes. The open-ended survey responses regarding perceptions of the effectiveness of formal controls were entered into the software program QSR NVIVO to manage and code the data. Grounded theory⁴³ was used to code perceptions using inductive coding. To make sense of the data and to ensure the validity of the emerging themes, responses were read several times before emergent themes were identified and a coding

scheme developed. The primary author developed the coding scheme in consultation with a second experienced coder. The two coders met regularly to clarify and refine the emerging codes and to identify patterns in the data. This process was iterative until both coders were in complete agreement. Every part of the open-ended question was systematically coded. Thus, participant responses could be coded into several mutually-exclusive codes. Subsequently, codes with related meanings were grouped into themes. Only themes and sub-themes endorsed by 10% or more participants were included in the analysis. Responses to the questions regarding the extent to which students who use cannabis are concerned that it is illegal, and the extent to which they are worried about getting caught, were similar and thus were coded together. During the coding, two overarching themes became evident ("Legality is of little or no concern" and "Legality is of concern"), and nine sub-themes emerged from within the main themes (see Table 1). These data were then entered into SPSS for quantitative analysis.

The descriptive words used to describe cannabis prototypes were entered into SPSS. This process was exhaustive; all descriptive words were entered and then the transcripts were coded using dummy variables (descriptive word present or absent). The two coders grouped descriptive words into themes with related meanings. Only themes that were mentioned by 10% of participants in response to one or more of the three user prototypes are reported (see Table 2).

Classifications. Because males have been shown to have stronger internalized cannabis norms and more accepting attitudes towards cannabis than do females,^{27,28} integration and perceptions of informal and formal controls were examined as a function of gender.² Extending Kolar et al.'s²⁷ categorization of peer network cannabis saturation, which focused on the perceived prevalence of cannabis abstainers within students' peer networks, we measured peer network cannabis saturation as a function of the number of regular users students had within their peer network. A Kmeans cluster analysis of students' reports of the percentage of their peers who used cannabis regularly was used to classify students into two groups; those who had fewer friends who were regular users ($n=325$; mean percentage of regular-using friends = 24.4%) and those who had more friends who were regular users ($n=209$; mean percentage of regular-using friends = 60.8%) to explore whether perceptions of their peers' behavior influenced students' perceptions of the ease of acquiring cannabis, its availability and, most importantly, students' concern for legality, or perceptions of prototypes.

Results

Integration

Prevalence of cannabis use. Perceptions of peers' lifetime and regular use ranged from 0-100% with averages of 82.0%

($SD=18.0\%$) and 38.5% ($SD=21.4\%$), respectively. Univariate analyses revealed that there was no difference by gender in lifetime use, $F(1, 529)=1.36, P>.05$, but that males were more likely to report that their peers used cannabis regularly ($M=40.8\%$, $SD=22.5\%$) than were females ($M=36.7\%$, $SD=20.3\%$), $F(1, 529)=4.85, P<.05, \eta^2=.01$.

Ease of acquiring cannabis. On the scale of 0 = *not at all easy* to 5 = *very easy*, participants rated the ease of acquiring cannabis at 4.00 ($SD=0.90$), on average. A total of 77.9% of the sample indicated the ease of acquisition to be either 4 or 5. A 2 (Gender) \times 2 (Regular-using friends: Fewer regular-user friends, more regular-user friends) ANOVA revealed no effect of gender on the perceived ease of acquiring cannabis, $F(1, 522)=1.01, P>.05$. Students who had more peers who were regular users were more likely to report acquisition to be easy ($M=4.21, SD=0.77$) than were those who had fewer regular-user friends ($M=3.87, SD=0.95$), $F(1, 522)=18.63, P<.001, \eta^2=.03$. There was no interaction, $F(1, 522)=0.15, P>.05$.

On the scale of 1 = *very unlikely* to 7 = *very likely*, participants rated the likelihood of cannabis being available at a typical student social occasion at 5.24 ($SD=1.44$), on average. A total of 73.3% indicated 5 or higher on the scale. A 2 (Gender) \times 2 (Regular-using friends) ANOVA revealed an effect of gender on the perceived likelihood of cannabis being available at social events, $F(1, 525)=5.25, P<.05, \eta^2=.01$; females were more likely to report greater likelihood of cannabis availability at social events ($M=5.32, SD=1.45$) than were males ($M=5.12, SD=1.42$). In addition, participants who had more regular-user friends rated the likelihood of cannabis being available at the next social occasion higher ($M=5.71, SD=1.35$) than did participants who had fewer regular-user friends ($M=4.93, SD=1.41$), $F(1, 525)=39.06, P<.001, \eta^2=.07$. There was no interaction, $F(1, 525)=1.50, P>.05$.

Perceptions of the effectiveness of formal controls

The majority of students stated that the law does not deter use (92.7%, $n=496$) and a smaller percentage mentioned that the law was of concern (11.0%, $n=59$).³ Examples of the sub-themes and percentages are presented in Table 1. The sub-themes falling under each of the main two themes are presented as a percentage of participants classified into each of the respective main themes.

Chi-square analyses were performed for each sub-theme by gender for participants who identified as either male or female. There were no differences by gender for any of the sub-themes, largest $\chi^2(1, N=493) = 2.50, P>.05$. Chi-square analyses were also performed for each sub-theme based on whether students had fewer or more peers who were regular users. There were no differences by participants' number of regular-user friends for any of the sub-themes, largest $\chi^2(1, N=495) = 2.02, P>.05$.

Table 1. Sub-themes, descriptions, and examples of students' concern for the legality of recreational cannabis use.

SUB-THEME & DESCRIPTION - EXAMPLES	PERCENT
LEGALITY OF LITTLE OR NO CONCERN	92.7%
Doesn't seem illegal Forget it's illegal; feels legal; not a crime; not a drug	16.1%
<i>I believe many students forget it is illegal. Seen as very legal. . . .it is not viewed as a crime. Not really seen as a drug. . . .it doesn't really cross their minds.</i>	
Easily accessible Easy to get; available	14.7%
<i>Easy to get, more affordable than cigarettes. Just as easy to get as alcohol. It is basically purchased in as open a space as a liquor store all over [anonymized] every day. . . .scores are everywhere. Weed is accessible to virtually anyone who looks for it.</i>	
Use is normalized Accepted; popular; common; normal	21.6%
<i>A lot of the time it feels very normal to see it in everyday life, and I associate it the same as seeing alcohol. It's such a normal thing.everyone does it. It is so embedded in NZ culture. . .</i>	
Use discretion Don't smoke in front of police / in public; carry small amounts; sensible where and when they do it; use it at home	21.2%
<i>Obviously won't take [a] bong to the library but will [a] have scenic J on the beach. It's done behind closed doors. Generally, students keep the amount of weed on them minimal, so if they do get caught it won't amount to anything. No concern as long as your buy and sale are discrete. Just don't smoke in front of cops or in stupid places at stupid times.</i>	
Should be legal	9.7%
<i>It is a plant, so why is it illegal anyway? Wasted tax dollars are spent incarcerating innocent people for using a plant that should be legal. We know it shouldn't be illegal. It isn't harmful enough to warrant being illegal especially compared to the harmful side effects of other legal substances like alcohol or cigarettes.</i>	
Soft law Few penalties; police turn a blind eye; no consequences /ramifications; don't care if they get caught	29.8%
<i>I think many believe it is a soft law similar to jaywalking. Even with possession charges are slaps on the wrist, pre-charge warnings etc. There is just no concern there will be ramifications for using it. The consequences for marijuana use are so minor that students don't care Cops tend to turn a blind eye to it. I have been in instances of where myself and others have been using marijuana in front of the police with no issues. Punishments are minimal, not enough to deter use.</i>	
Unlikely to get caught Rarely / unlikely / hard to get caught; very few arrested	23.4%
<i>It is quite hard to get caught. Don't think there is a slight possibility of getting caught. Don't think they will get caught; police have bigger problems to deal with. Unless you were walking the streets with a bong I don't know how you would get caught.</i>	
Concern if dealing or a large amount Dealing / selling / have a lot of marijuana	20.8%
<i>Not concerned at all unless they're dealing. Not concerned unless they have high quantities on them. Only the students who regularly sell it are concerned about it being illegal. Only concerned when buying at least an ounce.</i>	

(Continued)

Table 1. (Continued)

SUB-THEME & DESCRIPTION - EXAMPLES	PERCENT*
LEGALITY OF CONCERN	11.0%
Some concern but unlikely to prevent use Criminal record; fine; affecting future employment	88.1%
<i>I think people are relatively concerned about being caught so are careful how they use, e.g., only at home. ...students are still buying and will continue to buy marijuana regularly whether it is illegal or not. Students are only concerned about getting caught because it is illegal. Therefore you can receive a criminal record if caught. However, this doesn't prevent students from frequently consuming it.</i>	

Note. * The sub-themes falling under each of the main two themes (main themes are in **bold text**) are presented as a percentage of participants classified into each of the respective main themes. Only sub-themes endorsed by 10% or more participants are included in the table.

Table 2. Themes, examples, and percentage of students endorsing each theme as a function of user prototype (abstainer, sometimes user, heavy user).

THEME	USE AND EXAMPLES OF THEMES	PERCENT*	COCHRAN'S Q TEST**
Don't Judge	Abstainer: All good; don't care; don't judge Sometimes: All good; don't care; don't judge; each to their own Heavy: Don't judge	20.4% 10.7% 2.4%	$\chi^2 = 98.97, P < .01$
Relaxed / Chilled	Abstainer: [no responses fitted this theme] Sometimes: Chiller; relaxed Heavy: Chiller; relaxed	0% 23.9% 8.2%	$\chi^2 = 173.81, P < .01$
Positive Social Attributes	Abstainer: Social Sometimes: Friend; legend; partier; social Heavy user: Friend; legend; partier	0.4% 29.5% 11.0%	$\chi^2 = 193.71, P < .01$
Negative Social Attributes	Abstainer: Antisocial; boring; goodie good; lame; lower; narc; nerdy; square; uncool; weird Sometimes: try-hard wannabe Heavy: Antisocial; boring; drop kick; loser; low life; try hard	41.5% 1.9% 13.5%	$\chi^2 = 275.24, P < .01$
Positive Attributes	Abstainer: Studious; strong-willed; good; healthy; independent; intelligent; mature; motivated; responsible; sensible Sometimes: Balanced lifestyle; independent; intelligent; sensible; strong-willed Heavy: [no responses fitted this theme]	25.8% 7.9% 0%	$\chi^2 = 186.48, P < .01$
Negative Attributes	Abstainer: Inexperienced; scared; uptight Sometimes: Lazy; not good; unattractive; young Heavy: Addicted; concerning; depressed; dumb; failure; gross; money waster; not a serious student; slow; underachiever; unattractive; unhealthy; unreliable; useless	21.7% 3.2% 36.8%	$\chi^2 = 174.15, P < .01$
Negative Drug Label	Abstainer: [no responses fitted this theme] Sometimes: Hippie; stoner Heavy: Cooked; dope/pothead; drugo; wasted; tripper	0% 8.0% 68.2%	$\chi^2 = 641.82, P < .01$
Normalized	Abstainer: Normal Sometimes: Normal; scarfie; student Heavy: Normal	31.8% 49.9% 3.7%	$\chi^2 = 304.65, P < .01$

Note. * Percentages are based on all N=535 students. ** For all tests, N=535 and $df=2$.

Perceptions of informal controls

Recall that participants were asked to describe how their peers would perceive a student of the same gender as themselves based on the hypothetical student's cannabis use (never uses, sometimes uses, is a heavy user). Eight main themes were identified for these three user prototypes. The themes, examples of each theme, and percentage of students endorsing each theme are presented in Table 2.

A series of Cochran's Q tests were performed for each of the eight main themes to determine whether participants' endorsements of the themes differed as a function of the three user prototypes. As shown in Table 2, there were significant differences in participants' endorsements of all eight themes as a function of user prototypes. Pairwise post-hoc Dunn tests with Bonferroni adjustments were significant between all pairs of user prototypes (abstainers, sometimes users, heavy users) for each main theme, largest $P < .05$. For example, participants

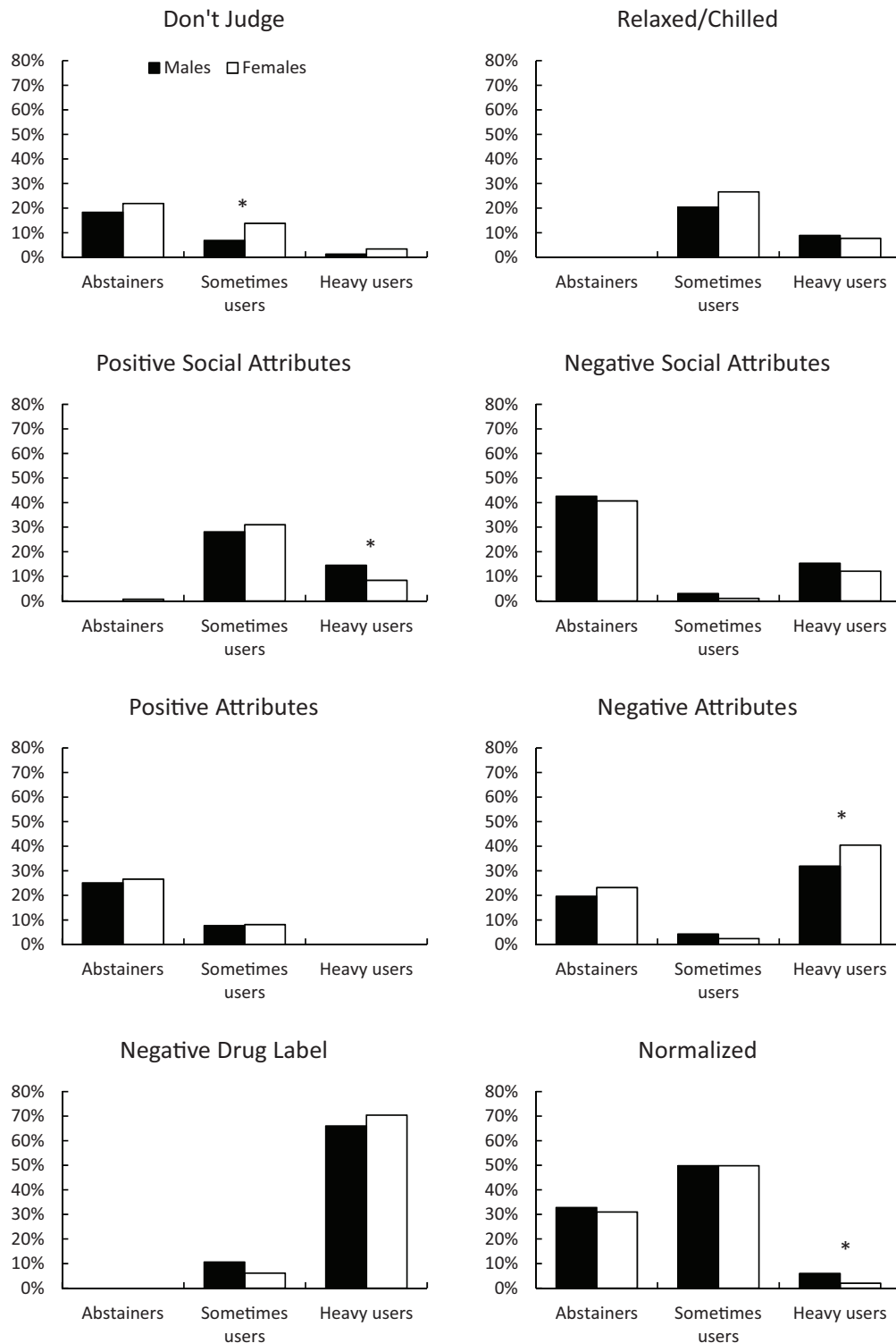


Figure 1. Percentage of students (y-axes) endorsing each theme as a function of user prototype (x-axes: abstainers, sometimes users, heavy users) and gender.

* Asterisks indicate significant differences ($P < .05$).

were least likely to judge abstainers and were most likely to ascribe positive attributes to them but were also most likely to describe them as having negative social attributes compared to sometimes users and heavy users. Participants were most likely to describe sometimes users as relaxed/chilled, as having positive social attributes, and as being 'normal' compared to

abstainers and heavy users. In contrast, participants were most likely to use negative attributes and negative drug labels to describe heavy users compared to abstainers or sometimes users.

Chi-square analyses were performed by gender for participants who identified as either male or female. As shown in Figure 1, females were more likely than were males to say that

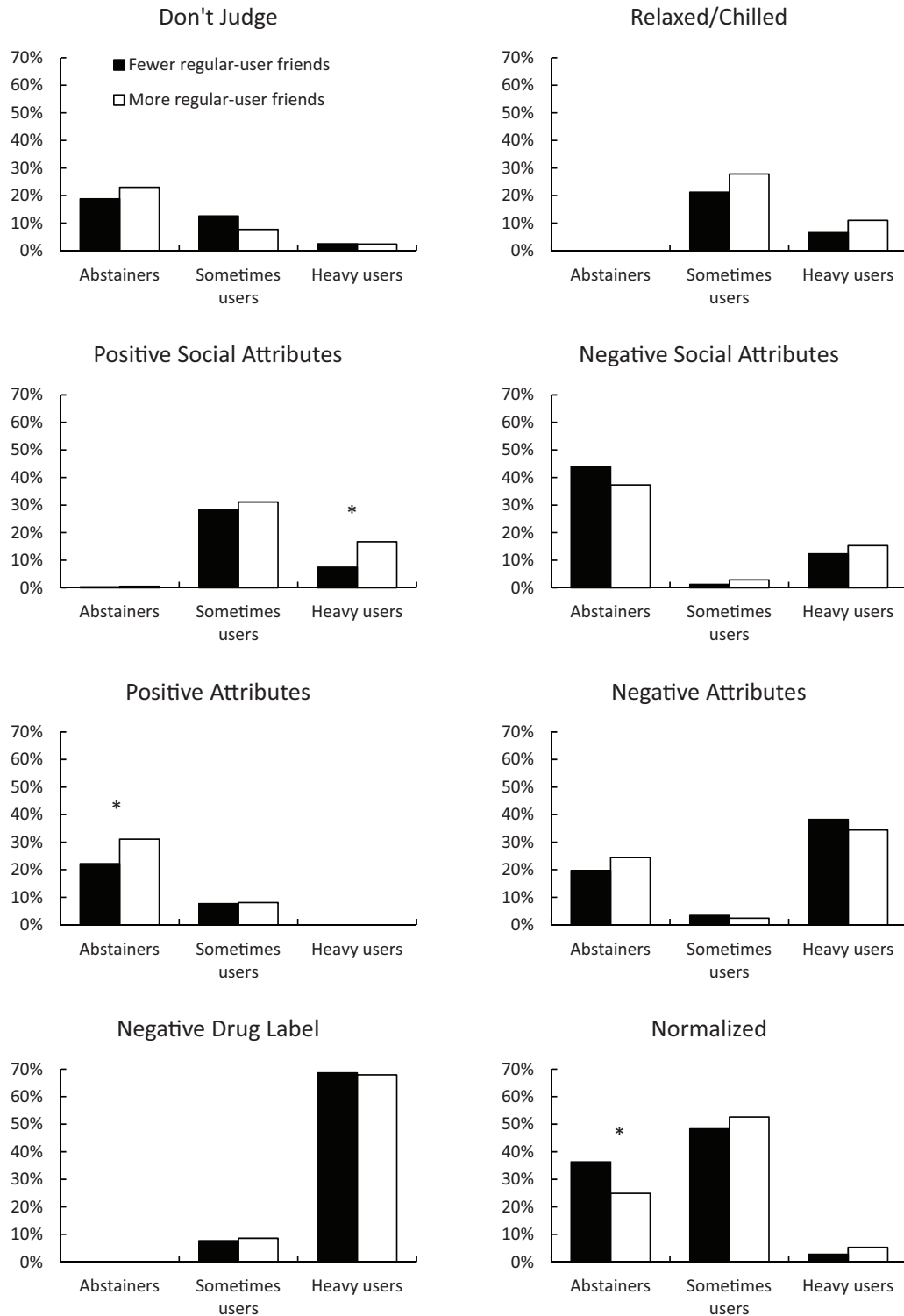


Figure 2. Percentage of students (y-axes) endorsing each theme as a function of user prototype (x-axes: abstainers, sometimes users, heavy users) and number of regular-user friends.

*Asterisks indicate significant differences ($P < .05$).

they do not judge sometimes users, $\chi^2(1, N=532) = 6.71$, $P < .05$, $V = .11$. Males were more likely to describe heavy users as having positive social attributes, $\chi^2(1, N=532) = 4.87$, $P < .05$, $V = .10$, and as being normal, $\chi^2(1, N=532) = 5.62$, $P < .05$, $V = .10$, but were less likely to describe them using negative attributes, $\chi^2(1, N=532) = 4.07$, $P < .05$, $V = .09$, than

were females. There were no gender differences for prototypes of abstainers.

Chi-square analyses were also performed based on whether students had fewer or more peers who were regular users. As shown in Figure 2, students who had more regular-user friends were more likely to describe abstainers using positive attributes,

$\chi^2(1, N=534) = 5.34, P < .05, V = .10$, and less likely to describe them as normal, $\chi^2(1, N=534) = 7.65, P < .01, V = .12$, than were students who had fewer regular-user friends. Students who had more regular-user friends were also more likely to describe heavy users as having positive social attributes than were students who had fewer regular-user friends, $\chi^2(1, N=534) = 11.34, P < .01, V = .15$. For prototypes of sometimes users, there were no differences in responses based on whether students' peers were more likely or less likely to be regular users.

Discussion

The present study aimed to identify perceptions of factors that regulate the illegal use of recreational cannabis in a university student population. Specifically, we examined the effectiveness of formal controls by measuring perceptions of concern for using cannabis illegally and the consequences of being caught, and we examined perceptions of informal controls by examining attitudes towards peers who abstain, sometimes use, or are heavy users of cannabis. To provide context to our findings we also explored the integration of cannabis into the student culture. We found that cannabis is integrated into the student culture but, more importantly, informal social controls provide a threshold for cannabis use, and the law does not deter individuals' use of cannabis. Of importance, the study furthered our understanding of informal thresholds of control by revealing that students' approval of cannabis use varied based on different levels of use, and the attitudes that shape this approval or disapproval.

The integration of cannabis into the student culture was shown by perceptions of the prevalence of their peers' lifetime use (82%) and regular use (40.8% males, 36.7% females), the reported ease of acquiring cannabis, and students' perceptions that cannabis is likely to be available at a typical student party. Despite past research showing that students overestimate their peers' use of cannabis,^{18,34-36} our reported rates of prevalence align closely with those reported from a robust NZ longitudinal study (lifetime use = 80%, regular use = 34%),³¹ suggesting that students' perceptions of their peers' cannabis use might not have been overestimated in our sample. The examination of ease of acquisition and availability of cannabis as a function of whether students had more or less regular-using peers revealed that peers influence cannabis use, in accordance with Goldstick et al.³² Having a larger proportion of friends who are regular users increases the reported ease of acquisition and the reported likelihood of cannabis being available at a typical social occasion. Gender only had a small influence on these rates, with females being more likely than males to report that cannabis is readily available at typical social occasions. The finding that cannabis is integrated into the student culture is not surprising given that cannabis is one of the most widely-used drugs worldwide.⁹

In line with public opinion in NZ,⁶ the current findings show that cannabis law is ineffective. The vast majority of students stated that the law does not deter cannabis use (92.7%).

The reasons given included cannabis law being 'a soft law' and that one is 'unlikely to get caught.' There was a perception that police tend to turn a blind eye to cannabis (e.g., treating it similar to jaywalking) and, if one is caught with cannabis, the consequences are minimal (e.g., similar to a 'slap on the wrist'). These perceptions align with the self-reported arrest rates found by Fergusson et al.¹⁰ who showed, amongst a similarly-aged NZ sample, that only a minority of cannabis users were arrested and the penalties were mild. Similar to international research examining the attitudes of experienced adult cannabis users, we found that while the law does not deter cannabis use, it does shape how and where cannabis is used in order to avoid detection.^{12,13} In the present study, students stated that cannabis users employ discretion, for example not using in public spaces and/or limiting the amount in their possession. Students did reveal, however, that there would be some concern if they were dealing cannabis. A novel finding in this study was that cannabis law is not even considered by some. For instance, some students reported forgetting that recreational cannabis is illegal, perceiving cannabis use to feel legal, and that they do not view cannabis use as a crime. Similarly, some students stated that it should be legal, referring to cannabis as "just a plant" or as less harmful than other legal substances. Indeed, some students compared cannabis to alcohol and stated that it was as easy to acquire. Furthermore, amongst the minority of students who expressed some concern for the law, the majority still perceived that the law does not deter use. Importantly, these attitudes did not vary as a function of gender, or students' perceptions of the extent of regular cannabis users in their peer networks, suggesting that attitudes towards the law were almost unanimous amongst the student culture. Clearly then, current cannabis law in NZ does not deter use.

The current findings show that while the law does not deter cannabis use, informal controls might. Similar to international research on adult drug users²³⁻²⁵ and students,²⁷ we found that, amongst a student sample in NZ, informal controls provide a threshold for normalization. Moreover, addressing the call by Kolar et al.²⁷ to explore drug acceptability attitudes further, we were able to identify the attitudes shaping this threshold. The use of prototypes revealed that students' perceptions of cannabis users vary as a function of cannabis use (abstinence, moderate use, heavy use) and exemplify the importance of future prototype research controlling for levels of use, rather than limiting perceptions to those pertaining to "typical use." Of note, the differing perceptions as a function of these prototypes provide evidence of social control of cannabis and, specifically, that moderate cannabis use is accepted whereas heavy cannabis use is not.

Using cannabis "sometimes" was perceived to be normal. These findings align with international research showing that students find cannabis use to be normal and unremarkable.²⁶ Importantly, abstaining from cannabis was also accepted, with students stating that abstainers are not judged for their decision. The examination of perceptions as a function of whether

students had more or less regular-using peers suggests, however, that in peer-groups where regular use is more common, abstinence is perceived to be less normal, again highlighting the influence of peers on cannabis use at university. Furthermore, the findings revealed that moderate use of cannabis was linked to positive social attributes whereas abstinence was associated with negative social attributes. Abstaining was, however, more likely than the other prototypes to be associated with positive attributes, such as being studious and responsible, suggesting that abstainers are perceived to be more focused on academic rather than social pursuits. Note also that students with more regular-using peers were more likely than were others to assign positive attributes to abstainers. It is possible that being in a social network with a greater proportion of regular users may expose students to the potential negative outcomes of regular cannabis use (see also Kolar et al.²⁷). Importantly, normalization and acceptance did not extend to heavy cannabis use, with heavy users being the most likely to be perceived negatively.

The negative attributes associated with heavy cannabis use in the present study demonstrate a threshold for normalization. Compared to the other user profiles (abstinence and moderate use), heavy cannabis use was the most likely to be associated with negative drug labels and negative attributes. Although males were less likely than were females to assign negative attributes to heavy users, the percentage of males assigning negative attributes to heavy users was still high (31.9%). Furthermore, heavy cannabis use was not linked to any positive attributes, revealing that heavy use is perceived to negatively impact life outcomes. Extending the work by Kolar et al.,²⁷ we found that this threshold might be shaped by concern with addiction and the negative outcomes associated with heavy use, such as, underachieving academically, or being unhealthy, unattractive, depressed, and a failure. This perception, that negative outcomes are associated with heavy, but not occasional cannabis use, aligns with a recent review from a longitudinal NZ cohort study which found a dose-response relationship between cannabis use and deleterious health outcomes, with the majority of cannabis users experiencing little or no harm.⁴⁴ It should be mentioned, however, that in the present study, a small percentage of students linked heavy use to being normal (3.7%) and to positive social attributes (11%) and these perceptions were more likely to be held by males than by females. Similar to Kolar et al.,²⁷ we found females to have less accepting attitudes than did males towards cannabis, however, this difference was predominantly in relation to perceptions of heavy use rather than cannabis use in general. In addition, students who had more regular-using friends were more likely than were others to perceive heavy cannabis users to have positive social attributes. Taken together, these findings suggest that students who use cannabis regularly, and potentially males, may be an at-risk group to whom interventions and policy should be targeted.

The findings of this study must be interpreted in light of the limitations that prevent us from making stronger inferences. First, the cross-sectional design does not allow for the examination of causal relationships. Second, the findings are limited to self-reported data and could be subject to respondent bias. Third, students were recruited through purposive sampling using friend networks which can reduce variability amongst the sample³⁷ and, thus, we do not know whether the findings generalize to all students, or to other universities. Furthermore, New Zealand Universities tend to be W.E.I.R.D, for instance, predominantly European (Ministry of Education⁴⁵), thus the extent to which findings from student samples generalize to the general population is limited. We call for future research to examine whether the present findings can be replicated in other Universities, and amongst the general population, to ascertain the external validity of our findings. Fourth, terms such as “sometimes use” and “heavy user” were not defined and might have led to subjective interpretations. Fifth, the effect sizes (where available) for a number of the significant differences between groups were relatively small. It is possible that the relatively large sample size may have allowed us to detect significant differences that may otherwise have been obscured had the sample been smaller. Another possibility is that the small effect sizes are a product of drawing the data from open-ended qualitative data and transposing these into dummy variables. Sixth, lifetime and regular use was measured through students’ self-reports of their peers’ use. Although we haven’t used psychometrically-validated measures of use, which may bias reporting, the rates of use that we did find are remarkably consistent with those reported by others in NZ who have used validated measures.²⁵ Furthermore, patterns of use were subsidiary and were explored to provide context to the main focus of this study: Perceptions of formal and informal control of recreational cannabis use.

Conclusion

The above limitations notwithstanding, the current findings provide preliminary evidence that cannabis use is part of the student culture and demonstrate how this use is controlled through informal rather than formal controls. These findings also extend our knowledge on thresholds for normalization by identifying the perceptions that shape thresholds. As such, the current study provides insights for informing discussion on the up-coming referendum on the legalization of recreational cannabis in NZ and internationally for countries considering policy reform. As argued by Hathaway,¹⁴ public policy aligned with, and informed by, informal sources of control will be able to strengthen “existing social norms for regulating substance use behaviour” (p. 607). The negative perceptions associated with heavy use raise concerns regarding the well-being of heavy users and, coupled with the ineffectiveness of cannabis law, lend support towards a harm minimization approach for regulating cannabis. Furthermore, insights into the negative perceptions

associated with heavy use could inform health interventions on the types of concerns that will resonate with users.

Author Contribution


KJR conceived and designed the study, analyzed the data, prepared tables, and authored or reviewed drafts of the paper.

KT analyzed the data, prepared tables, and authored or reviewed drafts of the paper.

Human Ethics

This study was approved by the Department of Marketing as a low risk study, under delegated authority from the University of Otago Human Ethics Committee, which reviews all studies approved under delegated authority.

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NOTES

1. Raw quantitative data is available at <https://osf.io/qt6xs/>
2. Due to low *ns*, 3 participants who identified as transgender or other were excluded from all analyses with gender as a factor.
3. For the two main categories, cases were sometimes coded into both categories if the participant stated that the law does not deter use but is of concern ($n = 36$). Participant's responses were coded into one or more sub-themes based on their responses.

REFERENCES

1. Misuse of Drugs Medicinal Cannabis Amendment Act. Available at: <http://www.legislation.govt.nz/act/public/2018/0054/latest/DLM7518714.html>. 2018. Accessed 7 May 2020.
2. Kilmer B, MacCoun RJ. How medical marijuana smoothed the transition to marijuana legalization in the United States. *Annu Rev Law Soc Sci*. 2017;13:181–202.
3. Queirolo R, Boidi MF, Cruz JM. Cannabis clubs in Uruguay: the challenges of regulation. *Int J Drug Policy*. 2016;34:41–48.
4. Cox C. The Canadian Cannabis Act legalizes and regulates recreational cannabis use in 2018. *Health Policy*. 2018;122(3):205–209.
5. Hall W, Kozlowski LT. The diverging trajectories of cannabis and tobacco policies in the United States: reasons and possible implications. *Addiction*. 2018;113(4):595–601.
6. Boden JM. Cannabis in New Zealand: a conundrum, and some good news. *N Z Med J (Online)*. 2019;132(1500):9–11.
7. Felson J, Adamczyk A, Thomas C. How and why have attitudes about cannabis legalization changed so much? *Soc Sci Res*. 2019;78:12–27.
8. Fergusson DM, Boden JM. Cannabis use in adolescence. In: Gluckman P, Hayne H (eds) *Improving the Transition: Reducing Social and Psychological Morbidity During Adolescence: Office of the Prime Minister's Science Advisory Committee*. 2011:257–271.
9. United Nations Office on Drugs and Crime. *World Drug Report 2018*. Vienna. Available at: <https://www.unodc.org/wdr2018/>. Accessed 29 April 2020.
10. Fergusson DM, Swain-Campbell NR, Horwood LJ. Arrests and convictions for cannabis related offences in a New Zealand birth cohort. *Drug Alcohol Depend*. 2003;70(1):53–63.
11. Wilkins C, Sznitman S, Decorte T, Hakkarainen P, Lenton S. Characteristics of cannabis cultivation in New Zealand and Israel. *Drugs Alcohol Today*. 2018;18(2):90–98.
12. Brochu S, Lépine P, Patenaude C, Erickson P. Formal and informal control of cannabis: regular users' experience. *Subst Use Misuse*. 2018;53(10):1657–1665.
13. Erickson PG, Van Der Maas M, Hathaway AD. Revisiting deterrence: Legal knowledge, use context and arrest perception for cannabis. *Czech Sociol Rev*. 2013;49(3):427–449.
14. Hathaway A. Evidence-based policy development for cannabis? Insights on preventing use by youth. *Can Public Adm*. 2019;62(4):593–611.
15. Cialdini RB, Kallgren CA, Reno RR. A focus theory of normative conduct: a theoretical refinement and reevaluation of the role of norms in human behavior. In: Berkowitz L (ed.) *Advances in Experimental Social Psychology*. Vol. 24. San Diego, CA: Academic Press; 1991; 201–234.
16. Buckner JD. College cannabis use: The unique roles of social norms, motives, and expectancies. *J Stud Alcohol Drugs*. 2013;74(5):720–726.
17. Pearson MR, Hustad JT, Neighbors C, Conner BT, Bravo AJ, Marijuana outcomes study team. personality, marijuana norms, and marijuana outcomes among college students. *Addict Behav*. 2018;76:291–297.
18. Blavos AA, Glassman TJ, Sheu JJ, Thompson A, DeNardo F, Diehr AJ. Marijuana and college students: A critical review of the literature. *Am J Health Educ*. 2017;48(3):167–184.
19. Napper LE, Kenney SR, Hummer JF, Fiorot S, LaBrie JW. Longitudinal relationships among perceived injunctive and descriptive norms and marijuana use. *J Stud Alcohol Drugs*. 2016;77(3):457–463.
20. Gibbons FX, Gerrard M. Predicting young adults' health risk behavior. *J Pers Soc Psychol*. 1995;69(3):505.
21. Robertson K, Tustin K. Students who limit their drinking, as recommended by national guidelines, are stigmatized, ostracized, or the subject of peer pressure: limiting consumption is all but prohibited in a culture of intoxication. *Subst Abuse*. 2018;12.
22. Lewis MA, Litt DM, King KM, Garcia TA, Waldron KA, Lee CM. Consideration of future consequences as a moderator of the willingness-behavior relationship for young adult marijuana use and consequences. *Addict Behav*. 2018;87:8–16.
23. Askew R. Functional fun: Legitimising adult recreational drug use. *Int J Drug Policy*. 2016;36:112–119.
24. Duff C, Asbridge M, Brochu S, et al. A Canadian perspective on cannabis normalization among adults. *Addict Res Theory*. 2012;20(4):271–283.
25. Lau N, Sales P, Averill S, Murphy F, Sato SO, Murphy S. Responsible and controlled use: Older cannabis users and harm reduction. *Int J Drug Policy*. 2015;26(8):709–718.
26. Hathaway AD, Mostaghim A, Erickson PG, Kolar K, Osborne G. "It's really no big deal": the role of social supply networks in normalizing use of cannabis by students at Canadian universities. *Deviant Behav*. 2018;39(12):1672–1680.
27. Kolar K, Erickson P, Hathaway A, Osborne G. Differentiating the drug normalization framework: a quantitative assessment of cannabis use patterns, accessibility, and acceptability attitudes among university undergraduates. *Subst Use Misuse*. 2018;53(14):2339–2349.
28. Pearson MR, Bravo AJ, Sotelo M, Cross-cultural addictions study team. cross-cultural examination of college marijuana culture in five countries: measurement invariance of the perceived importance of marijuana to the college experience scale. *Addict Behav*. 2019;96:11–17.
29. Ministry of Health. *Cannabis Use 2016/17: New Zealand Health Survey*, Ministry of Health, Wellington. Available at: https://minhealthnz.shinyapps.io/nz-health-survey-2017-18-annual-data-explorer/_w_0811ceee/_w_d2f526cb/#/explore-indicators. 2018, Accessed 18 September 2019.
30. Ministry of Health. *Medicinal Cannabis Agency – Background information*. Available: <https://www.health.govt.nz/our-work/regulation-health-and-disability-system/medicinal-cannabis-agency/medicinal-cannabis-agency-background-information>. Accessed 7 July 2020.
31. Fergusson DM, Boden JM, Horwood LJ. Psychosocial sequelae of cannabis use and implications for policy: findings from the Christchurch Health and Development Study. *Soc Psychiatry Psychiatr Epidemiol*. 2015;50(9):1317–1326.
32. Goldstick JE, Heinze J, Ngo Q, et al. Perceived peer behavior and parental support as correlates of marijuana use: the role of age and gender. *Subst Use Misuse*. 2018;53(3):521–531.
33. Windle M, Haardörfer R, Lloyd SA, Foster B, Berg CJ. Social influences on college student use of tobacco products, alcohol, and marijuana. *Subst Use Misuse*. 2017;52(9):1111–1119.
34. Dempsey RC, McAlaney J, Helmer SM, et al. Normative perceptions of cannabis use among European university students: associations of perceived peer use and peer attitudes with personal use and attitudes. *J Stud Alcohol Drugs*. 2016;77(5):740–748.
35. McAlaney J, Bewick B, Hughes C. The international development of the 'Social Norms' approach to drug education and prevention. *Drugs Educ Prev Policy*. 2011;18:81–89.
36. Pearson MR, Liese BS, Dvorak RD; Marijuana Outcomes Study Team. College student marijuana involvement: perceptions, use, and consequences across 11 college campuses. *Addict Behav*. 2017;66:83–89.
37. Akhtar WZ, Mundt MP, Koepke R, et al. Prevalence of tobacco use among rural-dwelling individuals who inject drugs. *JAMA Netw. Open* 2020;3(3):e200493–e200493.

38. Brown III W, Yen PY, Rojas M, Schnell R. Assessment of the health IT usability evaluation model (Health-ITUEM) for evaluating mobile health (mHealth) technology. *J Biomed Inform.* 2013;46(6):1080–1087
39. Davies EL, Law C, Hennelly SE. You have to be prepared to drink: students' views about reducing excessive alcohol consumption at university. *Health Educ.* 2018;118:2–16.
40. Burdzovic AJ, Bretteville-Jensen AL. Ready, willing, and able: the role of cannabis use opportunities in understanding adolescent cannabis use. *Addiction.* 2017;112(11):1973–1982.
41. Link TC. Adolescent substance use in Germany and the United States: a cross-cultural test of the applicability and generalizability of theoretical indicators. *Eur J Criminol.* 2008;5(4):453–480.
42. Johnston L, O'Malley PM, Bachman JG. *Monitoring the Future: National Survey Results on Drug Use, 1975–2003* (Vol. 1). National Institute on Drug Abuse, US Department of Health and Human Services, National Institutes of Health; 2004
43. Glaser BG, Strauss AL. *Discovery of grounded theory: Strategies for qualitative research.* Routledge; 2017.
44. Poulton R, Robertson K, Boden J, et al. Patterns of recreational cannabis use in Aotearoa-New Zealand and their consequences: evidence to inform voters in the 2020 referendum. *J R Soc NZ.* 2020;50(2):348–365.
45. Ministry of Education. Statistics, Tertiary Education, Population Data. Available at: <https://www.educationcounts.govt.nz/statistics/tertiary-education/population-data>. Accessed 07 July 2020.