Author:
Foster, Daniel J

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Harm Reduction Focused Drug Education

Evaluating and Informing Services

Harm Reduction Focused Drug Education: Evaluating and Informing Services

Daniel J. Foster

University of Bristol
School of Psychological Sciences
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ABSTRACT

Current research favours taking a harm reduction approach to reducing drug-related harm. University students tend to use more drugs and binge drink more often than the general UK population. However, there is a lack of research in the field of harm reduction-focused drug education interventions targeting university students. The purpose of this thesis was to help inform the development of harm reduction-focused drug education services, targeting university students, at the University of Bristol and other universities. To do so, I assessed the feasibility of evaluating these services. I found it was not feasible to evaluate a harm reduction-focused drug education service under the circumstances I experienced. However, future evaluations, conducted without Covid-19 restrictions, could be feasible. This thesis makes a series of recommendations for: improving recruitment capability, increasing the appropriateness of study procedures and developing outcome measures. I also investigated students' attitudes towards drug use, harm reduction techniques and harm reduction-focused drug education services. Results showed that: students' perceptions of the relative risk of harm from drug use were not rational; frequency of drug use (for alcohol and cannabis users) and perceived risk of harm from drug use (for alcohol, cannabis and cigarette users) were positively associated with concern over drug use; increased concern over drug use did not predict increased likelihood to engage with a harm reduction-focused drug education service. This thesis discusses these findings and their implications for improving the engagement of university students with, and conducting evaluations of, harm reduction-focused drug education services.

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I would also like to thank Sorcha Ryan, conductor of The Drop, for allowing me to evaluate her intervention and the help she offered in implementing the evaluation. I am also grateful for the feedback she gave during this process.

AUTHOR’S DECLARATION

I declare that the work in this dissertation was carried out in accordance with the requirements of the University's *Regulations and Code of Practice for Research Degree Programmes* and that it has not been submitted for any other academic award. Except where indicated by specific reference in the text, the work is the candidate's own work. Work done in collaboration with, or with the assistance of, others, is indicated as such. Any views expressed in the dissertation are those of the author.

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CHAPTER 1: INTRODUCTION

1.1. Drug Use

Human's relationship with drugs throughout history is well documented. The Sumerians used opium as a medicine; the Aztecs consumed mushrooms during religious ceremonies, and hashish has had long routes in Islamic societies as a recreational drug (Carod-Artal, 2015; Crocq, 2022). From morning coffees to after-work drinks, drug use is still as prevalent as ever in our lives.

1.1.1. Drug Use Prevalence

In England and Wales, it was estimated that 9.4% of adults (between the ages of 16 to 59) had taken at least one non-prescription illicit drug in the past year (Office for national statistics; ONS, 2020). For adults aged 16 to 24, this figure increased to 21%. With regards to frequent drug use (defined by the ONS as the use of any drug more than once a month), an estimated 2.1% of adults aged 16 to 59 used drugs frequently. For adults aged 16 to 24, this figure was 4.3%. Interestingly, the survey also reports that the most common occupation of drug users was a full-time student (19.7% of drug users). Considering that students at higher education UK institutions account only for approximately 4% of the UK population (House of Commons Library, 2022), this suggests illicit drug use is more prevalent in student populations compared to the general population. Furthermore, the estimations of the ONS may be underestimating student drug use (Charles, Heron, Hickman, Brown & Hines, 2021) as these reports require individuals to self-report on potentially illegal behaviour to a government body. The ONS suggests that this finding may not be due to a direct relationship between students and drug use but instead to students being generally younger than the average individual.

However, data from Release (2018) suggests that students are more likely to use drugs than individuals of a similar age in the general population. The Taking the Hit survey

reported that 39% of UK-based students currently use some form of illicit drug; this is near double the proportion of adults aged 16-24 that have used drugs in the past year. The five most commonly reported drugs used were: cannabis (72% of those who reported being a drug user currently use cannabis), ecstasy (50%), cocaine powder (37%), nitrous oxide (36%) and ketamine (around 25%).

In terms of licit drug use, a National Union of Students' (NUS, 2018) alcohol impact report found that 55% of UK-based students currently drink alcohol every week. Like illicit drug use, this is greater than the proportion of adults aged 16-24 that report weekly alcohol consumption, which the ONS (2018) finds to be 46%. However, it is in line with the proportion of adults aged 16-70 that have consumed alcohol within the past week (57%). Binge drinking, defined as consuming an excess of 6 or 8 units of alcohol (for women and men respectively) in a single drinking session, is also far more prevalent in student populations. The ONS (2018) estimates that 16% of the population had binged on alcohol in the past week, for adults aged 16 to 24 they estimated this figure to be 20%. Concerningly, UK students' binge drinking levels are estimated to be as high as 70% (Craigs et al., 2012).

As to why students are much more likely to use drugs, the Taking the Hit survey suggests that students' motivation for using illicit drugs is primarily recreational (Release, 2018). With other students citing the enhancement of social experiences, coping with stress and peer pressure from friends as additional reasons why they have used illicit drugs (NUS, 2021). Regarding alcohol use, students report that the drinking culture at UK universities leads to pressure to drink alcohol. Peer pressure, cheap drink deals and social facilitation also play a part in motivating students to drink (NUS, 2021)

1.1.2. Drug-Related Harm

Despite the widespread recreational use of both licit and illicit drugs, the use of drugs can result in a range of harms. Some consider alcohol to be the most harmful drug of all

(Nutt, King & Phillips, 2010). During 2020, in England and Wales, alcohol misuse accounted for 8,900 deaths (ONS, 2021). Its use is associated with cancer, pancreatitis, miscarriage and liver cirrhosis (WHO, 2000). In the NUS (2021) alcohol impact report, students shared some of the harms they experienced while using alcohol. Some of these responses are collected in Table 1.1.

Table 1.1: Students reported harms associated with alcohol use and the domains to which they correspond

Domain	Harm
Health	Vomiting; No memory of the night before; Injured self; Had unprotected sex
Social	Feel embarrassed about behaviour during drinking session; Argued with friends; Regretted sexual activity
Occupational	Missed a lecture; Arrived late to work; Missed an assignment deadline
Criminal	Caused damage in a public place; Stolen possessions; Got a criminal record; drove drunk

In England and Wales, during 2020, approximately 4,500 deaths were due to illicit drug poisoning (ONS, 2021). The majority of these deaths were attributed to heroin and crack use. Regarding recreational drug use, 777 were during cocaine use, 82 were due to MDMA use and 36 occurred during the use of cannabis. Furthermore, the Crime Survey for England and Wales (Home Office, 2017) found that illicit drug use was associated with lower happiness, lower life satisfaction and increased anxiety. However, the direction of this association is unknown. Students' illicit drug use can also impact academic performance, lead to disciplinary proceedings from their universities and risk criminal records (NUS, 2021).

1.2. Drug Policy

Governments have often sought to tackle the recreational use of drugs. From 1378 when the Emir Soudoun Sheikhouni decreed that cannabis users could have their teeth pulled out, to the 1600s when the first of the Romanov Tsar's declared smoking of tobacco could be punished by having one's lips cut off, to the 1920s when the USA banned alcohol (Crocq,

2022). Evidently, most attempts to tackle drug use have taken a "Just say no" approach. The "Just say no" approach to tackling drug use, otherwise known as the abstinence approach, is primarily focused on reducing the harms drugs can cause by stopping people from consuming drugs (Strang et al., 2012), with the secondary aims being to reduce the age of onset of drug use or to prevent regular drug use. This long history of tackling drug use through abstinence continues today, with former President Nixon carrying the torch of "Just say no" into the modern era.

1.2.1. The War on Drugs

In 1971, Richard Nixon declared a "War on Drugs". Fuelled by concerns over the USA army's use of opiates and cannabis during the Vietnam war and the use of cannabis and psychedelics in the civilian flower power movement, Nixon sought to bring about a drug-free world (Nutt, 2012). To do so, Nixon targeted the supply and demand of illicit drugs. To target supply, he enforced the destruction of drug-growing facilities and the seizure of the drugs they produced. To target demand, he enforced harsher criminal penalties on those who used drugs and education programmes that taught citizens about the dangers of drug use. The then president hoped these measures combined would eradicate the drug use behaviour of the USA's citizens.

This has not been the case. Nutt (2012) concludes that the "War on Drugs" has failed to reduce the supply and demand for drugs or minimise the harm they cause. Instead, he argues that this abstinence approach has increased the harm from drug use (e.g. through racial discrimination and reduced access to drug health care) and that potentially important medical research has been prevented.

1.2.2. The Dame Carol Black Report and UK Drug Policy

The "War on Drugs" continues in the UK today. In 2021 the UK government set forward their ten-year plan to tackle drug-related harm in the UK (Home Office, 2021). The

main aims of this strategy are to: disrupt the supply of drugs into and within the UK, provide an exemplary treatment system for problematic drug users and reduce the demand for illicit drugs through increased penalisation and prevention-focused education. This strategy has been criticised by Release (2021) for its backwards-facing approach to minimising drug harm. Release is a UK-based charity that provides the public with expert information and advice on drug use and drug law. In their report responding to the UK government's drug policy, Release (2021) note that while this strategy may work for problematic drug users, the increased criminalisation of drug use may lead to poorer outcomes for recreational drug users (who account for the majority of the drug using population). And even in the case of problematic drug users, they highlight that the goal of creating a world-class treatment programme will fail if there is no increase in housing and social services investment. Release (2021) concludes that the UK government has chosen an outdated prohibitionary path that defies evidence that such approaches to tackling drug harm do not work.

This UK government's new drug policy came in response to the government-funded independent review of drug use by Dame Carol Black (Health and Social Care, 2021). The independent review of drug use put forward that drug policy in the UK was failing, and that to rectify this, the government should: appoint a drug policy minister responsible for organising drug policy in the UK across multiple movement departments, put greater funding into treatment programmes as well as investment into wellbeing services (such as housing and job searching) to increase the chance of recovery being successful and to tackle recreational drug use. Amongst the recommendations that Black puts forward, she states that authorities should commission evidence-based harm reduction services to tackle harm from drug use. Like the abstinence approach, the harm reduction approach is a way of tackling harmful behaviour. However, the purpose of this approach is not to prevent a behaviour from occurring but to lower the chance of harm occurring when carrying out the behaviour (Leslie,

2008). In relation to drug use, the harm reduction approach does not encourage abstinence from drug use but does aim to lower the chances of harm occurring through drug use. Mentions of harm reduction are notably absent from the government's ten-year plan to tackle drug use.

1.3. Types of Drug Harm Interventions

The strategies employed to tackle the harm relating to drug use can take many forms. From global strategies to individual ones and from strategies focusing on abstinence to ones focusing on harm reduction. Here I discuss some examples of drug harm interventions and their effects on reducing drug-related harm.

1.3.1. Drug Education

Project D.A.R.E. (Drug Abuse Resistance Education) is one of the most extensive abstinence-focused drug education programmes. Conceived in the 1980s, the intervention involves 17 weekly lessons focusing on giving school pupils information regarding drugs, alternatives to drug use and workshops focusing on self-esteem and decision-making (Ennett, Tobler, Ringwalt & Flewelling, 1994). Despite its popularity, the programme is widely viewed as being ineffective. A follow-up study by Lynam et al. (1999) compared individuals who had taken part in the programme ten years prior with individuals that had not. The two groups were compared regarding their cigarette, alcohol and cannabis use (and their beliefs that these drugs would lead to positive or negative consequences). There was no significant effect of taking part in the D.A.R.E. programme on the use of these substances nor the beliefs regarding the outcomes of their use. The study also compared the peer-pressure resistance and self-esteem of the two groups. Again, there was no significant difference between the two groups regarding peer-pressure resistance. However, there was a significant negative effect of participating in the D.A.R.E. programme and self-esteem. In line with this, a meta-analysis of the effectiveness

of project D.A.R.E. found the intervention had no significant effect on alcohol, tobacco or illicit drug use (West & O'Neal. 2004).

Drug education interventions focusing on harm reduction have proven more successful. The School Health and Alcohol Harm Reduction Project (SHAHRP), is a harm reduction-focused education programme that teaches school children how to identify and reduce the harms associated with alcohol use, through classroom-based activities, delivered across a two year period (McBride et al., 2004). Compared to a control group, those participating in SHAHRP were less likely to engage in risky drinking and less likely to experience harm associated with alcohol use. Another harm reduction-focused drug education programme, Drug Education in Victorian Schools (DEVS), provides further evidence that drug education following this approach can find greater success (Midford et al., 2014). This programme involved 18 lessons on drug-related topics (ranging from learning what a drug is to learning strategies to reduce harm during drug use) across two years (ten lessons in the first year and eight lessons in the second). In addition to alcohol, this intervention also included topics on tobacco and cannabis. The study's authors found that, compared to controls who received their school standard drug education, those who received DEVS showed greater knowledge about drug issues, greater protection from alcohol-related harm and, for risky drinkers, a reduction in alcohol consumption following the programme.

It should be noted that the goals of these approaches (abstinence and harm reduction) differ significantly, and as such, the means by which we evaluate interventions using these approaches must also. For example, evaluations of abstinence approaches focus on frequency of drug use and age of onset of drug use as their primary outcome measures. However, for harm reduction-focused interventions these are not appropriate as the goal is not to change frequency of drug use. As the principles of harm reduction emphasise reducing drug related-harm, a focus on health outcomes is more appropriate.

University students also favour harm reduction-focused drug education, when asked to give their opinions on abstinence drug education, UK university students described their university's drug policies as inappropriate (as they are mainly focused on those with substance use disorders) and very dissatisfying (Release, 2018). However, students were much more in favour of drug education that places emphasis on reducing the harms associated with drug use. It is essential that these calls for more harm reduction-focused drug education, delivered to university students, are met. Presently there is a lack of harm reduction-focused drug education interventions delivered to university student populations, but lessons could be learned from the aforementioned drug education interventions given to schoolchildren. However, it should be noted that the needs of University students differ from those of schoolchildren as university students are likely to have a greater understanding of/ familiarity with drug use, and engaging university students with the education can be much more difficult as it cannot be easily incorporated into a classroom curriculum (as is the case with schoolchildren).

1.3.2. Drug Checking

Another harm reduction approach is drug checking. This involves checking the content of an illicit substance prior to its intended consumption. Throughout Europe, a number of lab-based drug checking services exist, such as: Check!n, WEDINOS and energy control. These sites have seen substantial success, with the benefits being twofold (Brunt, 2017). Firstly, individuals can find out the exact composition of the drug they are taking, allowing them to make a much more informed decision about their use (i.e. if the substance is not as expected, they can dispose of it). Secondly, the data from these tests can be used by health authorities to monitor the quality of drugs that are being sold and to act if there is believed to be a significant threat to public safety. This form of pharmacovigilance has led to governing bodies issuing warnings regarding bad batches of pills. Drugs from countries with drug-checking services have fewer contaminants than drugs from countries without checking services.

Within the UK, on-site drug testing at festivals was piloted and has shown initial success (Measham, 2019). During the pilot, individuals at festivals could submit a proportion of any illicit substances they were about to use to find out their contents. They were then given the test results and the option to dispose of their drugs in light of the findings. Some of the initial findings showed that rates of drug-related injury were lower than at other UK festivals. Measham (2019) suggest that the availability of drug checking on the festival site led to a feedback loop, which resulted in drug dealers at the festival providing a higher quality product to consumers. However, there is great variability in the types of drug testing available. While laboratory testing can provide a detailed breakdown of what is contained within a substance, others, such as reagent testing kits, can only tell an individual if the substance they are testing for is in the compound being tested. This has led to some criticism of this particular form of drug checking. Winstock, Wolff and Ramsey (2001) state that this method of drug checking only provides a "shrine of safety", giving users false confidence in the quality of the drug they intend to consume. However, there is limited research on the effects of testing kits on drug consumption.

1.3.3. Harm Reduction Techniques

On a smaller scale, individuals can use harm reduction techniques during drug use sessions to help reduce the risk of harm. Drug-related harm reduction techniques are behaviours that can be conducted during drug use sessions to reduce the likelihood of negative drug-related consequences occurring (Martens et al., 2004). Examples of such techniques include: drinking fluids, reducing activity if feeling overheated, flushing nostrils with water if consuming substances nasally and beginning drug use sessions with a small dose. Preliminary evidence suggests that employment of HRT during drug use does have a significant effect on reducing drug-related harm. Vidal Giné, Fernández Calderón and López Guerrero (2016) found that ketamine users who spaced out drug use sessions, spaced out doses and set a limit on the

amount of drug they intended to take during a drug use session were less likely to experience memory impairment, engage in risky behaviours and require medical assistance. More evidence is needed to show that employing these strategies, when using other drugs, can reduce drug-related harm.

1.4. The University of Bristol's Approach to Tackling Drug Use

As mentioned above, university students in the UK are much more likely to engage in recreational drug use than the rest of the UK population. This recreational drug use has the potential to cause harm. As such, university bodies (responsible for their students' welfare) must develop a strategy to ensure that the negative outcomes, of drug use, are reduced.

Whilst many UK universities employ a zero-tolerance approach to their student's drug use, the University of Bristol has taken a harm reduction stance (UoB, n.d.). The university's drug policy states that the university will not punish students who engage in recreational drug use and aim to provide students with access to quality support and useful drug advice.

As part of this stance, the University of Bristol's Student Union has collaborated with the recreational drugs branch of the Bristol Drug Project (BDP; a Bristol-based drug charity) called The Drop to engage their students with drug advice. The Drop has taken a multi-faceted approach to this by holding seminars, one-on-one drug education sessions and conducting welfare events after nights out. Of particular interest to my study, were the drug education sessions provided to students. Students interested in engaging with The Drop's drug education service, can choose to sign up to a one-on-one session with one of their team's expert advisors. These sessions provide students with harm reduction-focused, confidential, personalised and judgement-free advice regarding their (or potentially a family member or friend) drug use with students being signposted to other services if they need further support (BDP, n.d.). A free reagent drug testing kit acts as an incentive for students to sign up for these sessions and students can choose to collect those following the completion

of the drug education session. Provision of the testing kit is given alongside instructions on how to use it and an explanation of the test's limitations.

As mentioned previously, research has focused on harm reduction-focused drug interventions delivered to school children as part of their teachings (non-voluntarily). In the case of this intervention, the target is university students (who will have additional needs compared to schoolchildren), and the service is voluntary. It is therefore important to research the effect an intervention of this type has on this populace, the barriers that may prevent students from carrying out harm reduction behaviours, how to get university students to voluntarily engage with drug advice services and to see if the provision of a reagent testing kit leads to any unintended consequences. I have taken the opportunity to evaluate this service to help further research into these areas.

1.5. Thesis Objectives

1.5.1. Methodology

I have employed a mixed methods design to help inform the development of harm reduction-focused drug education services at the University of Bristol and other universities. Specifically, Chapter 2, which aims to evaluate a harm reduction-focused drug education programme targeting university students, follows a quasi-experimental design. Whilst Chapter 3, which aims to understand students' attitudes towards drug use, harm reduction behaviour and harm reduction drug education services, follows a cross-sectional observational design.

1.5.2. Aims and Hypotheses

The main aims of this thesis are as follows:

I. To understand the effects of harm reduction-focused drug education on university student's drug-related attitudes and behaviours

II. To understand the factors motivating university students to engage with a harm reduction-focused education service

III. To understand the factors that may limit university students from practicing harm reduction during drug use sessions

Chapters 2 and 3 will discuss the specific research questions and hypotheses made to address these aims.

CHAPTER 2: EVALUATING A HARM REDUCTION-FOCUSED DRUG EDUCATION SERVICE

2.1. Introduction

This chapter will discuss an evaluation of a harm reduction-focused drug education service that targeted university student populations. Through this evaluation, I hoped to help inform the development of harm reduction-focused drug education services at the University of Bristol (and other universities), and to address the three main aims of the thesis.

The intervention carried out by The Drop has taken a novel approach to drug education. When carrying out an evaluation of a novel intervention, it is necessary to develop outcome measures that are appropriate to the subject of the intervention (Orsmond & Cohn, 2015). One such novel measure I proposed to use was the rationality of participant's perceptions of the perceived risk of harm from drug use. Evaluations of abstinence-focused drug education interventions, such as Project D.A.R.E., often use participant's perceptions of the risk of harm (to both themselves and others) from drug use as an outcome measure. Interventions with this approach view an increase in the participant's perceived risk of harm as an indication of success as, it is assumed that, this attitude will reduce their likelihood to use drugs. This is because increases in the risk individuals perceive in drug use is associated with reduced drug use, the main goal of abstinence-focused drug education interventions (Bachman, Johnston & O'Malley, 1990). I speculate that drug education of this type may lead to irrational beliefs about the harms of drug use.

Interestingly, Nutt, King and Phillips (2010) developed a rational scale of drug harm by an independent group of drug experts. Their findings suggested that current UK drug classification overestimates the harm of some drugs (such as cannabis) and underestimates the harm of others (such as alcohol). I propose that a measure of rationality of perceived risk could be made, using the perceived risk questionnaire of Johnston, O'Malley and Bachman

(2001), by comparing individual's perceived risk of harm of harm scores with the mean perceived risk of harm scores from a group of experts. I will investigate the potential of this outcome measure in this chapter. It should be noted that the term rational is derived from the rational scale of drug harm (Nutt, King & Phillips, 2010) with the perception of what is a rational view of drug-related harm coming from the perspective of a panel of research experts. Other stakeholders in the field, such as social workers, may perceive a rational perception of the risk of drug use differently.

Unlike drug education following this paradigm, harm reduction-focused drug education interventions do not aim to inflate the risk of harm individuals perceived in using drugs. Instead, services such as The Drop aim to provide individuals with a truer understanding of the risk of drug use. I speculate that the success of a harm reduction-focused drug education service could be measured by assessing if individuals, engaging with the service, leave with a more rational perception of the risk of harm from drug use.

As discussed in Chapter 1, drug-related harm reduction techniques are behaviours that can reduce the negative consequences of drug use (Martens et al., 2004). The Drop, as part of its education sessions, teaches students how to use techniques that relate to their drug use. I proposed that use of harm reduction techniques would be a useful outcome measure to evaluate The Drop because increased use of these techniques, following engagement with their service, would indicate that The Drop had a positive effect on use of harm reduction behaviour. The capability opportunity and motivation behaviour model (COM-B) is a model that suggests an individual's likelihood to engage in a behaviour is influenced by: their physical and psychological capability; the social and physical opportunities available; the automatic and reflective motivation they have (Michie, Atkins & West, 2014). Therefore, it is not only important to assess how a harm reduction focused drug education service affects the use of harm reduction behaviours, it is also important to assess how drug education effects

attitudes towards these behaviour to gain a better understanding of the mechanisms of the education. I proposed to evaluate how The Drop effected participant's opinions regarding the feasibility of carrying out harm reduction techniques, as this would indicate if the service left individuals more capable of practicing harm reduction behaviour. I also investigated the effect The Drop had on participant's opinion regarding the likelihood of their use of harm reduction techniques. This was done in case the length of the study period did not allow enough time for a significant change in use of harm reduction behaviours to be detected.

As an incentive to engage with The Drop, participants who completed the session could choose to receive a free drugs reagent testing kit. This was considered a good incentive for university students because it was a product considered to be of interest to drug users (the targeted group for the intervention) and, by making the product free to those that had completed the education, this would counter student concerns over the time and effort required to take part in the education. I investigated the role the provision of the reagent testing kit played in incentivising students to engage with The Drop. These kits allow users to assess the content of drugs (e.g., the kit contains a number of reagents that together test for the presence of various drugs, such as whether a sample contains MDMA or PMA). However, they do not indicate the purity of the substance and may not identify the presence of other contaminants. This has led to speculation that reagent testing kits may lead individuals to have false confidence in the substances they consume (Winstock, Wolff & Ramsey, 2001). Despite this, there is limited research on the impact of these reagent testing kits on drug use behaviour. Research is required to investigate how individuals use the testing kit and what effects it has on drug use both in the short and long term. Furthermore, given that the circumstances under which a reagent testing kit is used will not be in a laboratory or under the purview of an experimenter, it is important to examine the means by which surveys assessing testing kit use can be delivered to the user.

To help inform the further development of The Drop, and other harm reduction-focused drug education services, I also investigated participant's opinions of The Drop and their experience of the education.

2.2. Aims

The objective of Chapter 2 was to evaluate a harm reduction-focused education service conducted by BDP's The Drop. The primary research questions I aimed to asses were as follows:

I. What effect does The Drop education have on perceived risk of drug use?

For each drug assessed (alcohol, cannabis, nicotine and MDMA), it was hypothesised that drug using individuals who had received The Drop education would have a more "rational" perceived risk of harm from drug use compared to those who had not. Rationality of perceived risk of harm from drug use was determined by comparing the individuals perceived risk of harm from drug use with the perceived risk of harm from drug use rating by a panel of experts (*see 2.3.4. Measures and Materials*).

It was also hypothesised that participants' ratings of perceived risk of harm from drug use after receiving The Drop education would be more "rational" than their rating before receiving The Drop education.

II. What effect does The Drop education have on use of and attitudes towards harm reduction techniques?

For users of each drug assessed (alcohol, benzodiazepines, cannabis, cocaine, GHB/GHL, Ketamine, LSD, magic mushrooms, MDMA, Nitrous Oxide, and 2C-B), participants were presented with a list of harm reduction techniques (*see 2.3.4. Measures and* Materials). It was hypothesised that the number of times each harm reduction technique was used per drug use session would be greater for individuals who had received The Drop education compared to those who had not received the education.

It was also hypothesised that those who had received The Drop education would give a higher mean rating of likelihood to use each harm reduction technique and a higher mean rating of the feasibility of using each harm reduction technique compared to those who had not received the education.

Furthermore, it was hypothesised that participants' mean ratings of likelihood to use harm reduction techniques after receiving The Drop education would be higher than their rating before receiving The Drop education.

III. How effective is the provision of reagent testing kits as an incentive to engage in the drug education?

IV. What are the behavioural consequences of testing kit provision on drug use?

V. What are students' experience with the scheme?

2.3. Methods

2.3.1. Participants

Participants were to be recruited from the University of Bristol student population; third party referrals, poster advertisement an email lists were to be used as means of recruitment. To take part, individuals were required to: be a student at the University of Bristol and have used either alcohol, nicotine or some form of illicit drug within the past 12 months (12 months was chosen to allow users of drugs that may only be used once a month or less, such as LSD or MDMA, to be included within the sample). For those in the experimental group, individuals were required to have engaged with The Drop. For those in the control group, individuals were required to have not engaged with The Drop. Participants that completed the entire study could choose to enter into a randomised prize draw. Prizes available to participants included: 2 x £50 vouchers and 5 x £20 vouchers. Ethical approval for the study was granted by the Faculty of Science Human Research Ethics Committee at the University of Bristol (reference: 113673).

2.3.2. Design

To answer my research questions, I used a mixed methods survey design. This comprised one within subject factor of The Drop education (before receiving the education, after receiving the education) and one between subject factor of engaging with The Drop education (yes, no). Participants were asked to completed a series of online questionnaires about their: drug use, perceived risk of harm from drug use, use of and attitudes towards harm reduction techniques, experience engaging with The Drop and their experience using a drugs reagent testing kit. The study was conducted online, with surveys hosted on the online platform Qualtrics (https://www.qualtrics.com/uk/).

2.3.3. Measures and Materials

2.3.3.1. Demographic Variables

Participants were asked to provide their: gender, age, whether they were an undergraduate or postgraduate student and the number of years they had spent in university education.

2.3.3.2. Drug Use

To assess drug use, participants were shown a list of licit and illicit drugs (alcohol, caffeine, nicotine, cannabis, MDMA, ketamine, cocaine powder, nitrous oxide, LSD, magic mushrooms, 2C drugs, amphetamines, tranquilisers, crack cocaine, heroin, methamphetamines, mephedrone, legal cannabinoids, methadone, methoxetamine, DMT and 4-aco-DMT) and asked to select the drugs that they had used within the previous 12 months. For each drug selected, participants were asked to provide their Frequency of Drug Use. Frequency of Drug Use was determined by participant estimates of the number of days, within the previous 12 months, on which they had used the drug in question.

2.3.3.3. Perceived Risk of Harm From Drug Use

To assess participants' Perceived Risk of Harm From Drug Use, all participants were asked to give their responses to several questions. All of which took the following form, "How much do you think you risk harming yourself (physically or in other ways) if you use *drug* (e.g. alcohol) *at drug use condition described* (e.g. occasionally)?". This question was asked for four licit and illicit drugs (alcohol, cannabis, MDMA and nicotine) and there were three drug use conditions described (rarely, occasionally, regularly and alongside the use of other drugs). Responses fell on a 4-point Likert scale (1 = No Risk, 2 = Slight Risk, 3 = Moderate Risk, 4 = Much Risk). I adapted these questions from the perceived risk questionnaire in the Monitoring the Future Study (Johnston, O'Malley & Bachman, 2001) by adapting the drug use conditions described to be consistent across all drugs assessed.

For participants that had engaged with The Drop, participants were asked to provide their Perceived Risk of Harm From Drug Use following The Drop education and their Perceived Risk of Harm From Drug Use before they had received The Drop education.

2.3.3.4. Harm Reduction Techniques

To assess participants' use of and attitudes towards harm reduction techniques, participants were shown a list of techniques that can reduce the harm (resulting from their use) for a range of drugs (alcohol, benzodiazepines, cannabis, cocaine, GHB/GHL, Ketamine, LSD, magic mushrooms, MDMA, Nitrous Oxide, and 2C-B). Techniques were only shown for drugs participants had reported using. These harm reduction techniques were informed by BDP (n.d.) and are shown in Table 2.1. For each technique, participants were asked: how many times they had used the techniques, how likely they were to use the techniques on a 5-point Likert scale (1 = Highly Unlikely; 5 = Highly Likely) and how feasible they believed it was to use the technique on a 5-point Likert scale (1 = Always; 5 = Never).

Table 2.1: Harm Reduction Techniques shown to participants by the drug they correspond to

Alcohol	Benzodiazepines	Cannabis	Cocaine	GHB/GHL	Ketamine	LSD	Magic Mushrooms	MDMA	Nitrous Oxide	2C-B
I eat a filling meal before drinking/ make sure to remain hydrated during a drinking session	I begin sessions with low doses and wait for a sufficient period of time before taking another dose	I have avoided smoking cannabis (e.g. using a vape or edibles instead)	I use my own snorting tube	I have used a pipette or syringe to measure doses	I have avoided taking too many doses of Ketamine in a short time span	I have begun by taking a lower dose and waiting for the effects to kick in	I have made sure to be in a good mindset and setting before taking the drug	I have avoided mixing MDMA with other drugs	I have always dispended Nitrous Oxide into a balloon and avoided taking it straight from a whipped cream dispenser	I have used milligram scale to measure the dose of the drug
I do not go out alone when drinking/ have a plan to get home safely	I do not take more than 1 dose when using benzos	If consuming edibles, I have waited for effects to appear before re-dosing	I make sure to chop up the cocaine finely before use	I have mixed doses with a soft drink (instead of taking it straight)	I have made sure to take Ketamine when in a safe environment	I have made to take the drug when in a good mindset and environment	I have begun by taking a lower dose and waiting for the effects to kick in	I begin sessions with low doses and wait for a sufficient period of time before taking another dose	I have not inhaled from the same balloon more than a few times	I have made to take the drug when in a good mindset and environment

I avoid taking other drugs when drinking alcohol	I avoid using alcohol when taking this drug	I have avoided consuming cannabis with tobacco	I make sure to alternate my nostrils during a session	I have waited at least 2 hours between taking doses	I have avoided taking does of Ketamine in a dark room (as this may lead to taking a greater than intended dose)	I have had someone I trust act as a 'trip sitter' (a sober individual who can provide assistance if needed), when taking the drug	I have had someone I trust act as a 'trip sitter' (a sober individual who can provide assistance if needed), when taking the drug	I have made sure to remain hydrated and taken breaks (if dancing) to avoid overheating	I have been seated when inhaling nitrous oxide	I have had someone I trust act as a 'trip sitter' (a sober individual who can provide assistance if needed), when taking the drug
I have carried contraception (such as condoms) on my person, when using this drug	I avoid snorting this drug	I have not driven a vehicle when using this drug	I have washed my nose after a session using cocaine	I have avoided taking other depressant drugs (i.e Ketamine, Alcohol...) when using this drug	I have avoided having multiple Ketamine sessions in a short time span	I have removed a tab from my mouth after suspecting the tab was not LSD (i.e if the tab had a chemical or bitter taste)	I have avoided going mushroom picking to source magic mushrooms	I weigh a dose (possibly using a milligram scale) before taking it	I have avoided using nitrous oxide too frequently	I have not snorted 2C-B

I avoid drinking every day	I avoid using benzos on multiple occasions within a short time span	I have avoided using cocaine and alcohol together	I have only taken this drug amongst people I trust	I have stayed well hydrated when using Ketamine	I have not driven a vehicle when using this drug	I have not driven a vehicle when using this drug	I have not taken MDMA more than once in a 3-month period	I have made sure to be in a good mindset and environment (if using whilst under the effects of psychedelics)	I have made sure to remain hydrated and taken breaks (if dancing) to avoid overheating
I have not driven a vehicle when using this drug	I have not driven a vehicle when using this drug	I begin sessions with low doses and take time between re-dosing	I have carried contraception (such as condoms) on my person, when using this drug	I have washed my nose after a session using Ketamine			I have not driven a vehicle when using this drug		I have not driven a vehicle when using this drug
		I have not driven a vehicle when	I have not driven a vehicle when using this drug	I have avoided mixing Ketamine with other drugs (i.e. alcohol, benzodiazepines...)					

using this drug		
	I have stored GHB/ GHL in a labelled safe container	I have not driven a vehicle when using this drug

2.3.3.5. Experience with The Drop

To assess participant experience with The Drop, the client satisfaction questionnaire was used (CSQ; Larsen, Attkisson, Hargreaves & Nguyen,1979). In addition to this participants asked to provide factors that may have influenced their engagement with The Drop and rate them in terms of their importance (in deciding to engage) on a 5-point Likert scale (1 = Not at all important; 5 = Extremely Important). “To increase my knowledge of drugs”, “To learn more about drug harm reduction techniques” and “To redeem the drug reagent testing kit” were provide as example factors. Participants were also asked: “Do you feel the session provided you with information you weren't previously aware of? If yes, please describe, in further detail, what new information the session made you aware of and if you found it useful?”; “Were there any topics of information you wish had been discussed during the session, that was not discussed? If yes, please describe what topics you wish had been discussed and the reason why you think this was not the case.”; “Following the session, do you still feel you need help relating to your drug use? If yes, please describe what help you still require and why you think it was not provided during the session?”. Participants answered these questions in the form of free-text responses.

2.3.3.6. Experience Using a Drugs Reagent Testing Kit

To assess participant experience using a drugs reagent testing kit, participants were asked to complete a series of questions upon each use of the drugs reagent testing kit they received after engaging with The Drop. The questions regarded the results of their reagent test and the effect it had had upon their behaviour. These questions are shown in Table 2.2.

Table 2.2: Questions used to assess experience with drug reagent testing kit and corresponding response type

Question	Response Type
How long since you did the reagent test?	Free-text
Prior to using the testing kit, what did you think the drug was?	Free-text

Now you've done the reagent test, what do you think the drug is?	Free-text
How confident are you in the reagent test result?	5-point Likert scale (1 = Not at all confident; 5 = Very confident)
What do you plan to do with the drug now?	I will take it (I have taken it); I will get rid of it (I have got rid of it); Other – free-text
How did the results of the test affect how much of the drug you will (or you did) take on this occasion?	3-point Likert scale (1 = Take less, 2 = No change, 3 = Take more)
How did the results of the test affect over what time period you will (or you did) take the drug on this occasion?	3-point Likert scale (1 = Shorter time period; 2 = No change; 3 = Longer time period)
How did the results of the test affect how likely will you be (or you were) to mix it with other drugs including alcohol?	3-point Likert scale (1 = Less likely; 2 = No change; 3 = More likely)
Will you tell others about the quality of the product the dealer has sold you?	Yes; No; Other – free-text
Will you buy from the same dealer again?	Yes; No; Other – free-text
How do you think the reagent testing kit has changed your behaviour or attitudes towards taking drugs, if at all?	Free-text

2.3.4. Procedures

For individuals who had received The Drop education, they were informed of the study, by the person delivering the education session, immediately after the session had concluded (hereafter referred to as Day 0). Individuals that expressed an interest in taking part were given a URL to the consent to be contacted form. This form asked participants to provide their email address and provide consent for this to be used to contact them with later studies. Those that did so were then given a QR code sticker (to be attached to the drug reagent testing kit received after the session), to scan with each use of the reagent testing kit, which directed participants to the experience using a drugs reagent testing kit assessment. Responses to this survey were collected for the duration of the study period.

If participants had given consent to be contacted, the next working day (hereafter referred to as Day 1), participants were emailed the participant information sheet and invited to contact the researcher if they had any questions. If individuals met the inclusion criteria and wished to engage further, they were asked to complete the consent form. Once informed

consent was given, participants then proceeded to the Day 1 survey. Participants were also provided with a participant number, which they were to use for the reagent testing kit survey and follow-up surveys.

Approximately a month after completing the Day 1 survey (hitherto referred to as Day 30), participants were to be emailed the Day 30 survey. Following completion of this survey, participants were debriefed and directed to another survey page where they could opt to enter a voucher prize draw by entering their email address.

Individuals who had not received The Drop education and had learned of the study, either through poster advertisement or email lists, could choose to express interest in taking part by clicking the URL link to my online survey. Once they had clicked the link, they were directed to and shown the participant information sheet and invited to contact the researchers if they had any questions. If individuals met the inclusion criteria and wished to engage further, they were asked to complete the consent form. Once informed consent was given, participants then proceeded to the main survey. After participants had completed the survey, participants were shown a written debrief and could opt to enter a voucher prize draw.

Table 2.3 shows a summary of the questionnaire delivery timeline and the content of the survey for those who had not engaged with The Drop.

Table 2.3: Survey timeline and included measures

Stage of Delivery	Questions Sent
Day 0	Consent to be Contacted Form
Day 1	Participant Information Sheet*; Consent Form*; Demographic* Variables; Drug Use*
Day 1+	Experience using a drugs reagent testing kit
Day 30	Perceived Risk of Harm from Drug Use*; Harm Reduction Techniques*; Experience with The Drop

*Note – Items with * indicate their inclusion in the survey delivered to participants who had not engaged with The Drop*

2.4. Conversion to Feasibility Study

Recruitment for this took place from November 11th 2020, until June 30th 2021. During this time, only one person recruited through The Drop had provided informed consent to take part in my study; reasons for such low recruitment will be discussed below. A decision was made between myself and my supervisors that the present study should be stopped in order to protect the Master's project, that this experiment was formulated for, so that I could conduct another study that would have the participants required to conduct data analysis.

Although I could not complete the main aim of this chapter, to evaluate a harm reduction-focused drug education service, I believe that the knowledge acquired by attempting to evaluate The Drop has provided knowledge that can contribute to this thesis's main aim of helping to inform the development of harm reduction-focused drug education services at the University of Bristol and other universities. This will be discussed below in the form of a feasibility assessment and divided into three parts. These will discuss the recruitment capability, study procedures and outcome measures of my study.

2.5. Feasibility Discussion

This discussion is based on Orsmond and Cohn's (2015) suggested objectives for a feasibility study. The objectives I will address are as follows: evaluating recruitment capability, evaluating the acceptability of study procedures used and developing appropriate outcome measures. Due to the low recruitment into the study, I will not address the following objectives: assessing sample characteristics, evaluating the appropriateness of the data collection procedures, evaluating acceptability of the intervention, evaluating resources needed to implement the study and evaluating preliminary responses to the intervention.

2.5.1. Recruitment Capability

In this study, I aimed to recruit a total of 100 individuals that had engaged with The Drop within a 12 month period. Recruitment of participants into the study was a great

challenge. From the start of the study period (11//11/2020) till the time the study closed (30/06/2021), eight individuals had completed the Day 0 survey, one had completed the Day 1 survey and four responses were collected for the Day 1+ survey. It should be noted that of those that completed the Day 1+ survey, none had completed the consent form in the Day 1 survey and so, it would not be possible to use these responses.

One of the barriers to recruitment was the number of Bristol students engaging with The Drop. My study launched shortly after The Drop with the aim to maximise recruitment of individuals that engaged with the education. Due to the novelty of the service offered by The Drop, it was difficult to estimate – prior to the study's launch – how many individuals would engage with the service. It was anticipated that five individuals would use the service per week. In reality, around two individuals per week attended an education session. In total, 60 individuals engaged with The Drop during the study period. Therefore, it would not have been possible to meet my recruitment goal, and a significant extension of the study period would have been required to do so. Such an extension would not have been possible within the constraints of the master's thesis. Despite this, the fact that only eight of 60 individuals completed the Day 0 survey (13.3%) and one individual completed the Day 1 survey (1.7%) suggests that the number of individuals that engaged with The Drop was not the only barrier to recruitment in my study.

Following discussion with The Drop, regarding the factors they felt had led to issues in recruitment to the study, they highlighted that it was possible students were concerned about providing and the handling of sensitive information about their drug use (after having already provided a large amount of personal information relating to their drug use to The Drop). I speculate that these concerns could have been exacerbated by not being able to have a researcher present at the site of The Drop, due to Covid-19 related restrictions. Although information regarding the use and handling of data collected in the study was explained in the

participant information sheet, research presence at the site of the intervention would have allowed the researcher to dispel participant concerns around confidentiality and to explain, in full, the nature of the study face to face.

2.5.2. Study Procedures

This study was conducted amid the context of the Covid-19 pandemic and due to Covid-19 restrictions, I was unable to attend The Drop sessions to explain the purpose of the study to individuals and answer any questions they may have had regarding it. Also, it was not possible for the person conducting sessions of The Drop to discuss the study at length during sessions. Therefore, it was not possible for the criteria of informed consent to be met at the time when participants attended a session at The Drop and so, extra steps were taken within the study procedure to account for this. The Drop advisor was asked to inform individuals of the study, after finishing their session, and then direct them to a consent to be contact form so I could then email the participant information sheet and consent form the following day. I speculate that this study procedure was not acceptable to participants and effected the recruitment capability of my study; shown by the recruitment attrition that led to only one of the eight individuals (12.5%), that completed the Day 0 survey, going on to complete the Day 1 survey.

During the study, to reduce the steps required in the study procedures, I asked The Drop to share the contact information (which they collected) of those that had attended their education as this would have prevented the need for a consent to be contacted form. However, it was not possible to implement this due to the data management policies of The Drop.

For the completion of the Day 1+ survey, I asked The Drop advisor to attach QR code stickers (that directed participants to the survey when scanned) to the drug reagent testing kits of individuals that expressed interest in the study. Interestingly, four respondents completed

the Day 1+ survey, and of these, none completed the Day 1 survey. Suggesting that this element of the study procedure was more acceptable to individuals than the onboarding procedure for the study.

2.5.3. Outcome Measures

In the introduction of this chapter, I highlighted that due to the novelty of harm reduction focused drug education interventions, such as The Drop, there is a lack of appropriate outcome measures that may be used to evaluate such services. This section will discuss potentially appropriate outcome measures and how they may be incorporated into future evaluation studies.

2.5.3.1. Perceived Risk of Harm From Drug Use

Perceived risk of harm from drug use is an outcome measure usually adopted by abstinence-focused drug education. For example, project DARE success was evaluated by assessing if it had increased school pupil's perceptions of the risk of harm from drug use (Ennett, Tobler, Ringwalt & Flewelling, 1994). I have attempted to repurpose this measure so it can be used to assess services such as The Drop, which don't aim to scare individuals away from drug use but do aim to educate individuals about the honest risks of drug use.

As outlined in this chapter's introduction, this study proposed to use a measure of the rationality of participants perceived risk of harm from drug use. This measure would be determined by comparing an individual's perceived risk of harm from drug use with the aggregate score of perceived risk by a panel of experts in the field of drugs. I speculated that a successful harm reduction focused drug education service would lead individuals who had engaged with the service to have a more rational perception of the risk of harm drug use compared to those who had not engaged with such a service.

Unfortunately, I was not able to assess the appropriateness of this outcome measure in my study. I suggest that future studies should investigate if engagement with a harm

reduction focused drug education service does lead to a more rational perception of the risk of harm resulting from drug use. As this measure may be a useful tool for evaluating drug interventions in this paradigm.

2.5.3.2. Harm Reduction Techniques

Harm reduction techniques are behaviours that can be conducted during drug use to reduce the harms associated with the drug's use. For ketamine users, the use of harm reduction techniques has been shown to reduce the negative effects experienced during drug use (Vidal Giné, Fernández Calderón and López Guerrero, 2016). As The Drop teaches the use of harm reduction techniques as part of its harm reduction focused drug education, I suggested that participant's use of harm reduction techniques, their perceived likelihood of using them and how feasible they believed it was to use them could be appropriate measures for an evaluation study. I speculated that increased use of harm reduction techniques, higher ratings of likelihood to use techniques and higher ratings of how feasible it would be to carry out these techniques would be evidence of the success of an intervention.

Again, I was unable to assess the appropriateness of this outcome measure. Future studies should continue to investigate how harm reduction techniques may be appropriately implemented as a measure of the effectiveness of a harm reduction focused drug education service. Upon reflection, I would not suggest for future evaluations to make direct comparisons between different groups in terms of the number of time they have employed the use of harm reduction techniques. This is because harm reduction techniques are not all equal in importance. For example, it is not possible to objectively state that a ketamine user that stays hydrated throughout their drug use session and a ketamine drug user that carries contraception with them during the drug use session are practicing the same level of harm reduction despite the fact that both users are employing the same number of harm reduction techniques.

A recent paper by Palmer and Maynard (2022) has suggested that one way to include use of harm reduction techniques as a measure would be for participants to rate the importance of differing harm reduction techniques and using this to created score of the techniques that they have used. Future evaluations could assess if those who have engaged with a harm reduction focused drug education service are using harm reduction techniques (of greater importance) more frequently than those who have not engaged with a service.

2.5.3.3. Drug Related Harm

The majority of the research in the drug harm-reduction domain focuses on interventions for non-recreational drug use. An example of these are supervised injection facilities (SIFs), these are facilities that provide drug users with clean equipment and space in which to carry out drug use (Kennedy, Karamouzian & Kerr, 2017). Evaluations of these services often use outcome measures relating to drug-related harm such as rates of HIV infection and overdoses. These are not appropriate to evaluate harm reduction interventions focusing on recreational drugs, such as The Drop, as it is unlikely that users of these types of drugs will experience these harms. However, other measure of drug related harm could be appropriate for evaluating a harm reduction focused drug education service like The Drop.

McBride, Farringdon and Midford (2000) developed an instrument for measuring the harm experienced by individuals due to their use of alcohol. This measure presents participants with a list of harms they might experience when using alcohol and asks them to indicate how many times they have experienced them in the previous 12 months. This instrument could be adapted to assess harm experienced during use of other recreational drugs (such as cannabis or ketamine) and would provide a useful means of assessing how successful a harm reduction focused drug education service is in reducing drug related harm. Unfortunately, given the short time frame of the study (participants were only tested over a month period), this measure could not be used. However, studies looking to evaluate a drug

intervention over a longer time period may find this measure useful as a more objective means of evaluating a harm-reduction intervention. Future studies should look to adapt this inventory to assess harm resulting from use of other drugs.

2.6. Conclusion

This chapter concludes that it was not feasible to conduct an evaluation of a harm reduction focused drug education intervention, delivered by an external body to university students, under the circumstances I experienced. This was due to a number of factors, including: individuals concerns about the use of sensitive information, the number of stages in the recruitment process and the number of sessions held by The Drop during the study period. I suggest that many of the barriers to feasibility were due to the unique circumstances under which this study was conducted. Future studies will hopefully not need to account for Covid-19 restrictions and so, research presence should be possible at the site of an external bodies intervention. This should help to address individuals concerns about the use of sensitive information and reduce the number of stages needed in the recruitment process. Furthermore, future studies, conducted outside the time constraints of a master's thesis, should extend their study period to allow for a sufficient number of individuals to take part in the intervention and so, have a greater sample population to draw from.

I also conclude that individuals perceptions of the risk of harm drug use, use of harm reduction techniques and drug related harm may all be appropriate outcome measure for conducting evaluations of harm reduction focused drug education services. However, more research is required to develop these measures.

CHAPTER 3: STUDENT'S ATTITUDES TOWARDS DRUG USE, HARM REDUCTION TECHNIQUES AND HARM REDUCTION-FOCUSED DRUG EDUCATION SERVICES

3.1. Introduction

This chapter will investigate students' attitudes toward drug use, harm reduction techniques and harm reduction focused-drug education services. Through this investigation, I hoped to address two of the main aims of this thesis: to understand the factors motivating university students to engage with a harm reduction-focused drug education service and to understand the factors that may limit university students from practising harm reduction during drug use sessions.

In Chapter 2, I discussed individuals' perceptions of the risk of harm from drug use and how the work of Nutt, King and Phillips (2010) suggests that commonly held views of these risks might not be "rational". I also discussed how the rationality of perceived risk of harm from drug use might be used to evaluate harm reduction-focused drug education services. Understanding students' perceived risk of harm from drug use could also be used to help harm reduction-focused drug education services engage university students.

Firstly, it would allow services to see how students' perceived risk differs from a "rational" view. Services could then use the information to focus education on drugs where the view of their risk - by students - is particularly irrational. While there is research on the perceived risk of harm from drug use of individuals aged 19 to 22 (Schulenberg et al., 2020), the population sampled is based in the USA and is not specific to university students. Due to the lack of literature in this area, I believe it is necessary to investigate how UK university students' perceive the risk of harm from drug use.

Secondly, increases in individuals' frequency of drug use are associated with decreased perceived risk of harm from drug use (Johnston, O'Malley & Bachman, 1990). This relationship may be explained through the theory of cognitive dissonance as a person who uses drugs but perceives the risk of harm from using drugs to be high would experience dissonance (Harmon-Jones & Mills, 2019). The dissonance could be reduced by the drug user changing their cognition to perceive the risk of harm from drugs as lower. This could prove problematic for engaging student drug users with drug education services, as students who use drugs may not perceive the risk of harm of their behaviour enough to engage with a harm reduction focused-drug education service. Therefore, it is necessary to investigate if drug use and student perceptions of the risk of harm from drug use affect their likelihood to engage with such services; so that services may target this when trying to engage with student populations. I also investigated if increases in the frequency of drug use predicted increases in perceived risk of harm from drug use to confirm this was true for my sample.

It is essential that students, concerned about their drug use, engage with harm reduction-focused drug education services. If individuals concerned about their drug use do not engage with services, this would be an important factor for drug education services to target. Therefore, it is necessary to investigate if students' concern over their drug use is related to their likelihood of engaging with harm reduction-focused drug education services.

As mentioned in Chapter 2, the COM-B model suggests that an individual's likelihood to engage in a behaviour may be influenced by their motivation to do so (Jatau et al., 2019). Concern over drug use could motivate engagement with a harm reduction-focused drug education service. Therefore, I speculate that individuals with greater drug use concern, will be more likely to engage with harm reduction-focused drug education services.

I have devised my own measure for concern over drug use as I am unaware of the existence of a standardised measure in the literature. To help better explain the relationship concern over drug use might have with the likelihood of engagement with a harm reduction-focused drug education service, I will investigate how drug use concern relates to drug use frequency and perceived risk of harm from drug use.

One element of drug education can be the teaching of harm reduction techniques. Understanding students' practice of these techniques and their attitudes towards them could help guide teaching by harm reduction-focused drug education services. For example, by understanding what techniques students are already practising, services could focus teaching on techniques less commonly used. Or, by learning about the barriers students have in engaging with harm reduction techniques, services could teach students how to overcome them. And so, I investigated how students viewed harm reduction techniques in terms of their likelihood to use them, how effective they thought the techniques to be and how difficult they thought it would be to use them. I also explored what students thought could prevent them from engaging with harm reduction techniques.

3.2. Aims

The objective of this chapter was to understand students' attitudes towards drug use, harm reduction techniques and harm reduction-focused drug education services. The primary research questions I assessed were as follows:

I. To understand student's drug use and perceived risk of harm from drug use:
    a. What proportion of drug-taking university students use different drugs and what is their frequency of drug use (for each drug)?
    b. What are student's perceived risk of harm from drug use?

c. How does a student's use of a drug affect their perceived risk of harm from drug use?

For each drug assessed (alcohol, cannabis, cigarettes, cocaine, ketamine, LSD, MDMA and nitrous oxide), I hypothesise that participants who have used the assessed drug will give lower scores of perceived risk than those who haven't.

II. To understand student's concern over their own drug use:

a. To what extent are students concerned by their drug use?

b. How does a student's frequency of drug use and perceived risk of harm from drug use effect their ratings of concern for their drug use (for different drugs)?

III. To understand student's attitudes towards harm reduction techniques, for the drugs they report using:

a. How do students rate harm reduction techniques in terms of their: likelihood to use them, effectiveness of reducing harm through their use and difficulty of using them?

b. What do students view as the barriers preventing them from carrying out harm reduction techniques during drug use sessions?

IV. To understand student's attitudes towards harm reduction-focused drug education services:

a. How likely are students to state they would sign up to a general harm reduction-focused drug education service or a specific harm reduction-focused drug education service, such as The Drop?

b. How does a student's frequency of drug use, perceived risk of harm from drug use and concern over their own drug use effect their likelihood of stating they would sign up to The Drop service?

For each drug assessed, I hypothesise that increases in frequency of drug use, concern over own drug use and decreases in perceived risk of harm from drug use will predict increases in the likelihood of student's stating they would sign up to a harm reduction-focused drug education service

c. What do students cite as reasons that influence their decision to sign up with a harm reduction focused drug education service?

3.3. Methods

3.3.1. Participants

A total of 324 participants completed the survey. Participants were recruited from university student populations throughout the UK; poster advertisements and email lists were used as means of recruitment. To take part, individuals were required to: be a student in a UK university, be aged 18 or over and have used either alcohol, nicotine or some form of illicit drug within the past 12 months (12 months was chosen to allow users of drugs that may only be used once a month or less, such as LSD or MDMA, to be included within the sample). Informed consent was acquired before participants' involvement in the study. Participants that completed the study could choose to enter into a prize draw for a £50 online shopping voucher. Ethical approval for the study was granted by the Faculty of Science Human Research Ethics Committee at the University of Bristol (reference: 118579). The study protocol was pre-registered on the Open Science Framework (doi:10.17605/OSF.IO/X734S).

3.3.2. Design

To answer my research questions, I employed a cross-sectional observational survey design. Participants were asked to complete an online questionnaire about their: drug use, perceived risk of harm from drug use, concern over their drug use, attitudes towards harm reduction techniques, likelihood of engaging with a harm reduction-focused drug education

service and the reasoning for their likelihood of engaging with a harm reduction-focused drug education service.

3.3.3. Measures and Materials

3.3.3.1. Demographic variables

Participants were asked to provide: gender, age, nationality, whether they were an undergraduate or postgraduate student and the number of years they had spent in university education. Gender descriptors were informed by Ng (2020).

3.3.3.2. Drug Use

To assess drug use, participants were shown a list of 20 licit and illicit drugs (alcohol, amphetamines, cannabis, cocaine, DMT, Heroin, Ketamine, LSD, Magic Mushrooms, MDMA, Mephedrone, Methadone, Methamphetamine, Methoxetamine, Nicotine, Nitrous Oxide, Spice, Tranquillisers, 2C Drugs and 4-aco-DMT) and asked to select the drugs that they had used within the previous 12 months. The variable, Number of Drugs Used, was determined by the number of drugs participants had indicated using in the previous 12 months. For the drugs they selected, participants were asked to estimate the number of days, within the previous 12 months, on which they had used the drug chosen. The variable, Frequency of Drug Use (for the drug stated), was determined by participants' responses to this question. Participants were also asked to estimate the number of days, within the previous 12 months, on which they would have used the selected drug if not for the Covid-19 pandemic. This was done to check if pandemic-related drug use differences could influence the analyses conducted.

3.3.3.3. Perceived Risk of Harm from Drug Use

To assess participant's perceived risk of harm from drug use, all participants were asked to give their response to the question, "How much do you think people risk harming themselves (physically or in other ways), if they use *Drug* (e.g. MDMA) *at Level of Drug*

Use Described (e.g. occasionally)?". This question was asked for eight licit and illicit drugs (alcohol, cannabis, cocaine, ketamine, LSD, nicotine, MDMA and nitrous oxide). There were three Levels of Drug Use Described (once or twice, occasionally and regularly). Responses fell on a 7-point Likert scale (1 = To an extremely small extent; 7 = To an extremely large extent). These questions were adapted from the perceived risk questionnaire in the Monitoring the Future study (Johnston, O'Malley & Bachman, 2001) by altering Level of Drug Use Described to be consistent for all drugs assessed. The variable, Perceived Risk of Harm from Drug Use, was determined by calculating the mean of the scores given at each Level of Drug Use Described (for each drug).

Participants were also asked to estimate how often they thought an occasional and regular user of each drug would do so in a 12 month period. Responses were given in terms of the number of days in a year on which the drug would be used. This was done to explore if participants' interpretations of the meaning of occasional and regular drug use influenced their rating of Perceived Risk of Harm from Drug Use.

3.3.3.4. Concern Over Drug Use

To determine the variable Concern Over Drug Use, participants were asked to respond to the question, "How concerned are you by your use of this drug?", for each drug they had used within the previous 12 months. Responses fell on a 7-point Likert scale (1 = To an extremely small extent; 7 = To an extremely large extent).

3.3.3.5. Harm Reduction Techniques

To assess participants' attitudes towards harm reduction techniques, participants were shown a list of techniques that can reduce the harm (resulting from their use) for a range of drugs (alcohol, cannabis, cocaine, ketamine, LSD, MDMA and nitrous oxide). The harm reduction techniques were informed by information on the BDP website (BDP, n.d.) and are shown in Table 3.1. Techniques were only shown for drugs participants had stated the use of,

in the previous 12 months. For each technique, participants were asked to rate: how likely they were to use the technique on a 5-point Likert scale (1 = Extremely unlikely; 5 = Extremely likely), how difficult they thought it was to carry out this technique on a 5-point Likert scale (1 = Very Difficult; 5 = Very Easy), and how effective they believed each technique is in regards to reducing drug-related harm on a 5-point Likert scale (1 = Not at all; 5 = Extremely). They were also asked to note anything that may cause difficulty in carrying out these harm reduction techniques via free text response.

Table 3.1: Harm Reduction Techniques shown to participants by the drug they correspond to

Alcohol	Cannabis	Cocaine	Ketamine	LSD	MDMA	Nitrous Oxide
Eating a filling meal before drinking/ make sure to remain hydrated during a drinking session	Not smoking cannabis (e.g. using a vape or edibles instead)	Using your own snorting tube	Not taking too many doses of ketamine in a single session	Taking a lower dose and waiting for the effects to kick in	Beginning sessions with low doses and taking time between re-dosing	Dispensing Nitrous Oxide into a balloon and avoiding taking it straight from a whipped cream dispenser
Not going out alone when drinking	Waiting for effects to appear before re-dosing, if consuming edibles	Making sure to chop up the cocaine finely before use	Making sure to take ketamine when in a safe environment	Making sure to take the drug when in a good environment	Making sure to remain hydrated	Not inhaling from the same balloon more than a few times (without releasing the contents and refilling with a new cannister)
Having a plan to get home safely when drinking	Not consuming cannabis with tobacco	Making sure to alternate your nostrils during a session	Weighing a dose (possibly using a milligram scale) before taking it	Making sure to take the drug when in a good mindset	Taking breaks (if dancing) to avoid overheating	Only inhaling the nitrous oxide whilst seated/ lying down, not whilst standing
Carrying contraception (such as condoms) on your person, when using this drug	Not mixing cannabis with other drugs (including alcohol)	Making sure that you can see the dose before taking it. I.e. by avoiding taking does of ketamine in a dark room (as this may	Making sure that you can see the dose before taking it. I.e. by avoiding taking does of ketamine in a dark room (as this may	Having someone you trust act as a 'trip sitter' (a sober individual who can provide assistance if	Weighing doses (possibly using a milligram scale) before taking them	Not using more than 5 balloons in a single session

		lead to taking a greater than intended dose)	lead to taking a greater than intended dose)	needed), when taking the drug		
Not drinking on consecutive days (one day after another)	Not driving a vehicle when using this drug	Washing your nose after a session using cocaine	Not having multiple ketamine sessions in a short time span	Removing a tab from your mouth if you suspect the tab is not LSD (i.e if the tab had a chemical or bitter taste).	Making sure that you can see the dose before taking it. I.e. by avoiding taking does of MDMA in a dark room (as this may lead to taking a greater than intended dose)	Taking breaks of over a minute between cannisters
Not mixing alcohol with other drugs	Carrying contraception (such as condoms) on your person, when using this drug	Beginning sessions with low doses and taking time between re-dosing	Staying well hydrated when using ketamine	Not mixing LSD with other drugs (including alcohol)	Not taking MDMA more than once in a 3-month period	Not mixing nitrous oxide with other drugs (including alcohol)
Not driving a vehicle when using this drug		Not mixing cocaine with other drugs (including alcohol)	Washing your nose after a session using ketamine	Not driving a vehicle when using this drug	Not mixing MDMA with other drugs (including alcohol)	Not driving a vehicle when using this drug
Carrying contraception (such as condoms) on your person, when using this drug		Not driving a vehicle when using this drug	Not mixing ketamine with other drugs (including alcohol)	Carrying contraception (such as condoms) on your person, when using this drug	Not driving a vehicle when using this drug	Carrying contraception (such as condoms) on your person, when using this drug

	Carrying contraception (such as condoms) on your person, when using this drug	Not driving a vehicle when using this drug Carrying contraception (such as condoms) on your person, when using this drug	Not driving a vehicle when using this drug Carrying contraception (such as condoms) on your person, when using this drug	Carrying contraception (such as condoms) on your person, when using this drug

3.3.3.6. Harm Reduction Focused Drug Education Services

To assess participants' likelihood of using a harm reduction-focused drug education service, I provided participants with a general description of harm reduction-focused drug services which was as follows:

"Harm Reduction Services aim to reduce the harm people may do to themselves or others through their drug use. Harm reduction focused drug education services aim to educate people on 'safe' drug use. They do not aim to prevent people from taking drugs (Examples of harm reduction services include: Needle exchange schemes, Drug testing in clubs, Drug consumption rooms and Information on 'safe' drug use)"

I also provided participants with a description of a specific harm reduction-focused drug education service, The Drop:

"The Drop is a drug education service that provides 1 to 1 drug education sessions for students. During these sessions, students are given personalised, confidential and judgement free advice on how to use drugs more safely. For example, if a person were to attend a session of The Drop and state that they use ketamine and cocaine, the person running the session would only give advice relating to these drugs (such as reminding the person that they should clean their nose if that is how they are ingesting the drug). The advice would also be tailored to the person's current knowledge of safe drug use. Those who attend these sessions can choose to receive a free drug reagent testing kit. These kits allows you to test any substances you are planning to take, to see if they contain the drug you expect them to. Those who choose to receive these kits are given a demonstration on how to use the kit and a discussion of the limitations of it."

Following both descriptions, participants were asked to rate the likelihood that they would sign up for such a service. Responses fell on a 7-point Likert scale (1 = Extremely unlikely; 7 = Extremely likely). The variable, Likelihood of Signing up to a General Harm

Reduction-Focused Drug Education Service, was determined by participants' responses to the first description. The variable, Likelihood of Signing up to a Specific Harm Reduction-Focused Drug Education Service, was determined by participants' responses to the second description.

To assess the factors influencing the likelihood of signing up to a harm reduction-focused drug education service, participants were shown seven exemplar reasons and asked to rate how important each factor would be in determining their decision. The reasons shown were as follows:

- To learn more about drug harm reduction techniques
- To get a drug reagent testing kit
- To get drug advice for myself
- To get drug advice for a friend/ family member
- To get confidential drug advice
- To get personalised drug advice

Responses fell on a 5-point Likert scale (1=Not at all important; 5 = Extremely Important). To further assess this, participants were also asked three free text questions regarding: the reasons they would want to engage, the reasons they would not want to engage and the factors that would increase their likelihood to engage with a harm reduction-focused drug education service. For each response participants provided, they were asked to rate each response in terms of its importance. Again, responses fell on a 5-point Likert scale (1=Not at all important; 5 = Extremely Important).

3.3.3.7. Attention Checks

To assess attention, I placed two questions within my survey. One was contained within the question that asked participants to define occasional and regular drug use. The

other was contained within the question that asked participants to rate factors that could impact their likelihood of attending a drug education session. In both cases, participants were told the required response to pass the check.

3.3.4. Procedures

Individuals that learned of the study, either through poster advertisements or email lists, could choose to express interest in participating by clicking the URL link to my online survey. Once they had clicked the link, they were directed to and shown the participant information sheet and invited to contact the researchers if they had any questions. If individuals met the inclusion criteria and wished to engage further, they were asked to complete the consent form. Once informed consent was given, participants proceeded to the main survey, which contained the questions listed in 3.3.3. Measures and Materials (questions were presented in the same order as the section). After participants had completed the survey, participants were shown a written debrief and then redirected to a separate online survey where they could enter their email address, if they wished to participate in a voucher prize draw (the reimbursement for taking part in the study).

3.3.5. Sample Size Calculation

To determine my sample size for the qualitative analysis, I first estimated the illicit drug using UK university student population. At the time of calculation, there were 2.38 million undergraduate and postgraduate students in the UK (House of Commons Library, 2022), with approximately two-fifths of university students estimated to use illicit drugs (Release, 2018). Therefore, I estimated the drug-taking UK university student population to be around 952,000. Using a paper by Taherdoost (2017) - that provides recommendations on the sample size of a population based on desired precision, confidence levels and population size – I determined that, for a population of this size, to achieve a confidence level of 95% with a margin of error of five, a sample size of 384 should be recruited.

Due to the general approach I took to recruit drug users, I could not estimate how many users of each drug would be recruited. This, combined with the statistical analysis requirements of the thesis and the recruitment issues experienced in Chapter 2, meant I had to make pragmatic considerations regarding sample size determinations for analyses of users of specific drugs. Therefore, for my quantitative analysis, I determined that analyses of drugs would only be run if at least 40 participants had used them. I acknowledge that this would leave some analyses lacking in power, however, I believe any trends found in the analysis could still inform future research.

3.3.6. Statistical Analysis

All statistical analyses were conducted using IMB SPSS Statistics (version 27). Data was collected using Qualtrics and then exported to SPSS. No assumptions were violated unless otherwise stated.

3.4. Results

3.4.1. Participant Characteristics

A total of 324 participants were recruited. A total of 217 participants remained after individuals were excluded from analysis for not stating the use of any licit or illicit drug use within the previous 12 months (n=71) and for failing both attention check questions (n=36). Of those included in analyses, 142 participants identified as male (65.4%), 73 as female (33.6%), 1 as male and female (0.5%) and 1 as transgender (0.5%). Participants ranged in age from 18-50 (M=23.75, SD = 3.96). Participants' time spent in university education ranged from 1 to 15 years (M=3.7, SD = 1.5), with 149 participants being undergraduates (68.7%) and 68 being postgraduates (31.3%).

3.4.2. Understanding Student's Drug Use and Perceived Risk of Harm from Drug Use

3.4.2.1. What proportion of drug-taking students use different drugs and what is their frequency of drug use (for each drug)?

For each drug listed, Table 3.2 summarises the number of users of each drug within the sample, the mean Frequency of Drug Use (in terms of the number of days on which drug use occurred within the previous 12 months) and the mean estimated Frequency of Drug Use within a 12 month period unaffected by the Covid-19 pandemic. A series of paired sample t-tests were conducted to investigate if the Covid-19 pandemic affected estimated Frequency of Drug Use. For all drugs listed, there was no significant difference between the two Frequency of Drug Use estimates.

Table 3.2: Number of Users, Mean Frequency of Drug Use (Within and Outside of the pandemic), t-score between these types of Drug use for each drug of interest.

Drug	Number of Users (%)	Mean Frequency of Drug Use	SD	Mean Frequency of Drug Use Outside Covid	SD	t-score
Alcohol	203 (94%)	59 (n=198)	78	55 (n=193)	67	0.74 (n=191)
Cannabis	73 (34%)	85 (n=71)	121	72 (n=65)	104	1.91 (n=64)
Cocaine	29 (13%)	17 (n=26)	20	17 (n=25)	16	0.37 (n=24)
Ketamine	22 (10%)	18 (n=20)	35	20 (n=21)	23	-0.79 (n=20)
LSD	16 (7%)	13 (n=14)	18	14 (n=15)	18	-1.53 (n=14)
MDMA	34 (16%)	28 (n=31)	67	24 (n=31)	65	1.21 (n=30)
Nicotine	111 (51%)	141 (n=110)	159	132 (n=107)	157	1.37 (n=107)
Nitrous Oxide	25 (12%)	27 (n=22)	43	31 (n=23)	42	-1.27 (n=21)

Note – n = number of participants; SD = standard deviation

3.4.2.2. What are student's perceived risk of harm from drug use?

For each of the eight drugs assessed (alcohol, cannabis, cigarettes, cocaine, ketamine, LSD, MDMA and nitrous oxide), Figure 3.1 and Table 3.3 show the mean scores of Perceived Risk of Harm From Drug Use.

Figure 3.1: Mean Perceived Risk Score by Drug. Error bars represent 95% CI

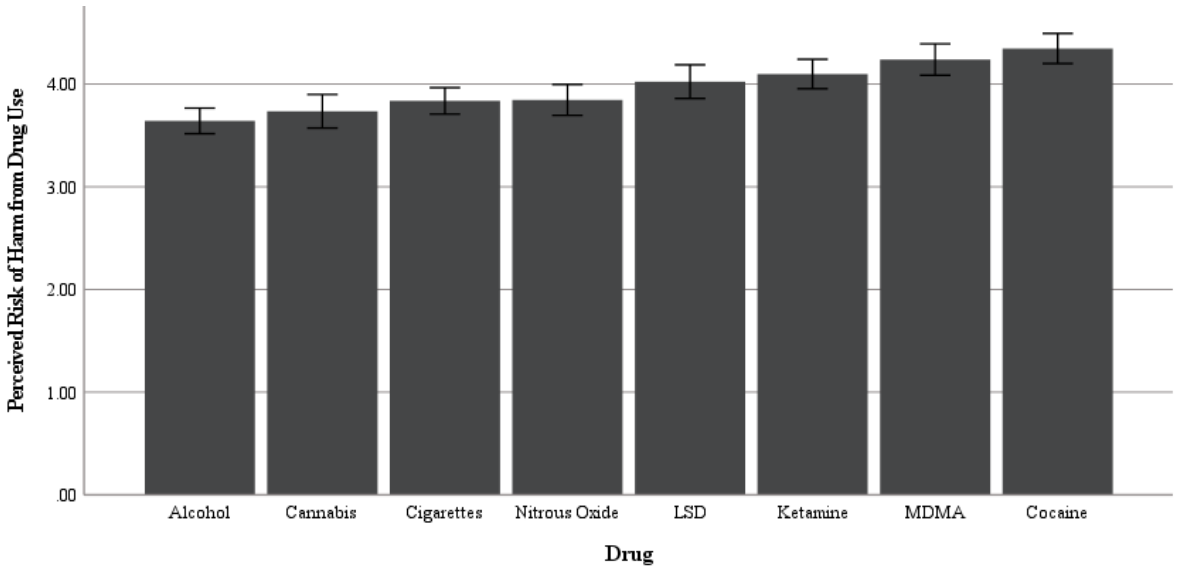


Table 3.3: Mean Perceived Risk of Harm from Drug Use and standard deviation for each drug.

Drug	Mean Perceived Risk	SD
Alcohol	3.64	0.93
Cannabis	3.74	1.22
Cigarettes	3.84	0.96
Cocaine	4.35	1.10
Ketamine	4.10	1.07
LSD	4.02	1.22
MDMA	4.24	1.15
Nitrous Oxide	3.85	1.12

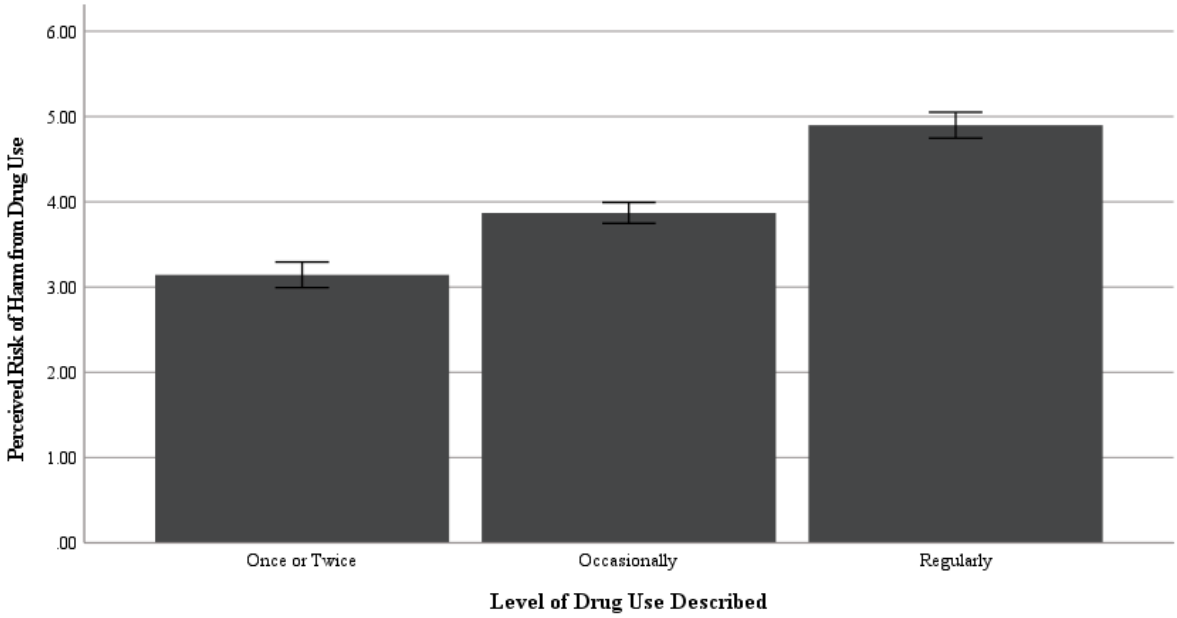
Note – n = 217

3.4.2.3. How does a student's use of a drug affect their perceived risk of harm from drug use?

A one-way within-subjects ANOVA was conducted to compare the effect of Level of Drug Use Described on participants' ratings of Perceived Risk of Harm From Drug Use.

Level of Drug Use Described had three levels (once or twice, occasionally, regularly). This was conducted to check the normality of the sample. Perceived Risk of Harm From Drug Use scores were determined by calculating the mean scores at each Level of Drug Use Described from the following drugs: alcohol, cannabis, cigarettes, cocaine, ketamine, LSD, MDMA and nitrous oxide. There was a significant effect of Level of Drug Use Described on Perceived Risk of Harm From Drug Use, $F(2, 432) = 256.71$, $p < .001$, $\eta^2_p = .54$. Participants rated drug use described as being regular ($M = 4.90$, $SE = .08$, 95% CI [4.75, 5.05]) with significantly higher perceived risks scores than drug use described as being occasional ($M = 3.87$, $SE = .06$, 95% CI [3.75, 3.99]), which in turn was significantly higher than drug use described as once or twice ($M = 3.14$, $SE = .08$, 95% CI [2.99, 3.29]). Results are displayed in Figure 3.2.

Figure 3.2: Mean Perceived Risk of Harm From Drug Use Score by Level of Drug Use Described. Error bars represent 95% CI



A series of independent t-tests were conducted to compare the effect of being a drug user on participants' mean ratings of Perceived Risk of Harm From Drug Use. As previously stated, I only intended to conduct this analysis for drugs with 40 users and non-users.

Cannabis and cigarettes met this criterion. For cannabis, Perceived Risk of Harm From Cannabis Use of cannabis users was significantly lower (M = 3.16, SD = 1.34) than non-cannabis users (M = 4.03, SD = 1.04), t (215) = 5.23, $p < .001$. For cigarettes, Perceived Risk of Harm From Cigarette use of cigarette users was significantly lower (M = 3.65, SD = 0.85) than non-cigarette users (M = 4.04, SD = 1.03), t (215) = 3.06, $p < .01$.

3.4.2.4. Exploratory Analysis

I noted that two of the Levels of Drug Use Described in the Perceived Risk of Harm From Drug Use questionnaire could be up for interpretation by participants (what the meaning of occasional or regular drug use was). Because of this, I decided to explore how participants defined occasional and regular drug use and investigate if these definitions influenced ratings of the Perceived Risk of Harm From Drugs Use. Table 3.4 summarises participants' mean definitions of occasional and regular drug use – for the drugs listed – in terms of mean days of drug use per year.

I then performed a series of exploratory linear regression analyses to investigate if participants' definitions of occasional and regular drug use predicted mean Perceived Risk of Harm From Occasional and Regular Drug Use. For occasional cannabis use, mean definition of occasional cannabis use did not explain a significant amount of the variance in mean Perceived Risk of Harm From Occasional Cannabis Use, F(1, 171) = 0.016, p = .898, R^2 = .000, R^2 adjusted = -.006. For regular cannabis use, mean definition of regular cannabis use did explain a significant amount of the variance in mean Perceived Risk of Harm From Regular Cannabis Use, F(1, 166) = 4.961, p = .027, R^2 = .029, R^2 adjusted = .023. The regression coefficient (B = -.002, 95% CI [-.004 - .000] indicated that an increase in a point of Perceived Risk of Harm From Regular Cannabis Use corresponded, on average, to a decrease in the definition of regular cannabis use by 0.002 days.

For occasional cigarette use, mean definition of occasional cigarette use did not explain a significant amount of the variance in mean Perceived Risk of Harm From Occasional Cigarette Use, $F(1, 173) = 0.104$, $p = .747$, $R^2 = .001$, R^2 adjusted = -.005. For regular cigarette use, mean definition of regular cigarette use did explain a significant amount of the variance in mean Perceived Risk of Harm From Regular Cigarette Use, $F(1, 167) = 45.046$, $p = <.001$, $R^2 = .212$, R^2 adjusted = .208. The regression coefficient ($B = .005$, 95% CI [.003 - .006] indicated that an increase in a point of Perceived Risk of Harm From Regular Cigarette Use corresponded, on average, to an increase in the definition of regular cigarette use by 0.005 days.

Table 3.4: Participant definition of Occasional and Regular Drug Use by Estimated Mean Days of Drug Use per Year for both Occasional and Regular Users of the Stated Drug.

Drug	Estimated Mean Days of Drug Use per Year for an Occasional Drug User						Estimated Mean Days of Drug Use per Year for a Regular Drug User					
	Overall		Non-Users		Users		Overall		Non-Users		Users	
	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n
Alcohol	25 (24)	199	20 (21)	11	25 (24)	188	75 (96)	195	77 (113)	9	75 (95)	186
Cannabis	19 (32)	173	13 (9)	108	30 (50)	65	89 (118)	168	33 (58)	100	170 (135)	68
Cigarettes	29 (43)	175	24 (35)	77	33 (48)	98	124 (150)	169	131 (159)	67	120 (145)	102
Cocaine	14 (12)	174	13 (11)	147	15 (16)	27	40 (48)	163	35 (40)	137	68 (72)	26
Ketamine	14 (13)	173	14 (13)	152	15 (16)	21	34 (36)	155	31 (34)	135	54 (45)	20
LSD	12 (11)	166	12 (11)	156	3 (3)	10	27 (37)	160	28 (39)	146	19 (19)	14
MDMA	12 (10)	168	13 (11)	140	7 (6)	28	29 (29)	162	28 (29)	130	34 (29)	32
Nitrous Oxide	13 (10)	168	13 (9)	147	15 (17)	21	40 (51)	157	38 (52)	132	54 (45)	25

3.4.3. Understanding Student's Concern Over their own Drug Use

3.4.3.1. To What Extent are Student's Concerned by their Drug Use?

For each drug listed, Table 3.5 shows the mode rating of Concern Over Drug Use given by users of each drug.

Table 3.5: Mode Concern Rating for Users of the Drug Stated

Drug	Concern Rating
Alcohol (n=173)	To a Moderate Extent
Cannabis (n=65)	To an Extremely Small Extent
Cigarettes (n=104)	To a Moderate Extent
Cocaine (n=24)	To a Moderate Extent
Ketamine (n=19)	To an Extremely Small Extent
LSD (n=15)	To a Small Extent
MDMA (n=30)	To an Extremely Small Extent
Nitrous Oxide (n=23)	To a Small Extent

3.4.3.2. How Does a Student's Frequency of Drug Use and Perceived Risks of Harm From Drug Use Affect their Ratings of Concern for their Drug Use?

Three multiple regression analyses were run to predict Concern over Drug Use from gender, age, Frequency of Drug Use, Number of Drugs Used and Perceived Risk of Harm From Drug Use. This was done for three drugs (alcohol, cigarette and cannabis), because the number of participants who have used these drugs in the past year exceeded 40 participants. These variables significantly predicted variance in Concern Over Alcohol Use, $F(5, 165) = 6.546$, $p < .001$. Of the five variables, age, Frequency of Alcohol Use and Perceived Risk of Harm From Alcohol Use uniquely explained aspects of variance. These variables

significantly predicted variance in Concern Over Cannabis Use, $F(5, 58) = 13.233$, $p < .001$. Of the five variables, age, Cannabis Use and Perceived Risk of Harm From Cannabis Use uniquely explained aspects of variance. These variables significantly predicted variance in Concern Over Cigarette Use, $F(5, 96) = 4.785$, $p = .002$. Of the five variables, only Perceived Risk of Harm From Cigarette Use uniquely explained aspects of variance (see Table 3.6).

Table 3.6: Regression model for Concern Over Drug Use

	Alcohol					Cannabis					Cigarettes				
Predictors	B	CI	Beta	t	p	B	CI	Beta	t	p	B	CI	Beta	t	p
(Constant)	2.714	1.169 - 4.259	-	3.469	**.002****	- 3.565	- 6.073 - - 1.056	-	- 2.845	**.005****	1.512	- 0.704 - 3.728	-	1.354	.275
Gender	0.193	-.221 - 0.608	0.066	0.921	.260	0.187	- 0.523 - 0.898	0.049	0.528	.584	0.268	- 0.363 - 0.900	0.080	0.845	.373
Age	- 0.071	- 0.120 - - 0.022	- 0.205	- 2.861	**.003****	0.139	0.044 - 0.234	0.271	2.929	**.004****	- 0.050	- 0.131 - 0.031	- 0.122	- 1.219	.166
Frequency of Drug Use	0.003	0.001 – 0.006	0.197	2.633	**.009****	0.006	0.003 - 0.009	0.388	3.790	**<.001*****	0.001	- 0.001 - 0.003	0.144	1.321	.099
Number of Drugs Used	- 0.047	- 0.136 – 0.042	- 0.077	- 1.040	.216	0.031	- 0.104 - 0.165	0.047	0.456	.600	0.070	- 0.037 - 0.177	0.122	1.292	.232
Perceived Risk of Harm From Drug Use	0.464	0.233 - 0.695	0.291	3.963	**<.001*****	0.788	0.517 - 1.058	0.539	5.820	**<.001*****	0.660	0.325 - 0.995	0.399	3.913	**<.001*****

Participant Number	171	64	102
R^2/R^2 adjusted	.166/1.40	.533/.493	.193/.151

3.4.4. Understanding Student's Attitudes Towards Harm Reduction Techniques, For the Drugs they Report Using

3.4.4.1. How Do Student Rate Harm Reduction Techniques in Terms of their: Likelihood to Use them, Effectiveness of Reducing Harm Through Their Use and Difficulty of Using Them

Table 3.7 shows participant attitudes towards harm reduction techniques for the drugs they have reported using.

Table 3.7: For each drug, the harm reduction technique rated by participants as: the most likely to use, least likely to use, most difficult, least difficult, most effective and least effective

Drug	Most likely	Least likely	Most difficult	Least difficult	Most effective	Least Effective
Alcohol	Not driving a vehicle when using this drug	Carrying contraception on your person when using this drug	Not drinking on consecutive days	Eating a filling meal before drinking/ remaining hydrated during a drinking session	Eating a filling meal before drinking/ remaining hydrated during a drinking session	Not going out alone when drinking
Cannabis	Not driving a vehicle when using this drug	Not consuming cannabis with tobacco	Not smoking cannabis (e.g. using a vape or edibles instead)	Not driving a vehicle when using this drug	Not driving a vehicle when using this drug	Not smoking cannabis (e.g. using a vape or edibles instead)
Cocaine	Not driving a vehicle when using this drug	Using your own snorting tube	Not mixing cocaine with other drugs	Not driving a vehicle when using this drug	Not driving a vehicle when using this drug	Using your own snorting tube

Ketamine	Not driving a vehicle when using this drug	Not mixing ketamine with other drugs	Weighing a dose (possibly using a milligram scale) before taking it	Not driving a vehicle when using this drug	Not driving a vehicle when using this drug	Carrying contraception on your person when using this drug
LSD	Not driving a vehicle when using this drug	Carrying contraception on your person when using this drug	Taking a lower dose and waiting for the effects to kick in	Not driving a vehicle when using this drug	Not driving a vehicle when using this drug	Making sure to take the drug when in a good environment
MDMA	Not driving a vehicle when using this drug	Weighing a dose (possibly using a milligram scale) before taking it	Weighing a dose (possibly using a milligram scale) before taking it	Not driving a vehicle when using this drug	Not driving a vehicle when using this drug	Carrying contraception on your person when using this drug
Nitrous Oxide	Not driving a vehicle when using this drug	Not inhaling from the same balloon more than a few times (without releasing the contents and refilling using a new cannister)	Not using more than five balloons in a single session	Not driving a vehicle when using this drug	Not driving a vehicle when using this drug	Not mixing nitrous oxide with other drugs

3.4.4.2. What Do Students View as the Barriers Preventing them from Carrying Out Harm Reduction Techniques during Drug Use Sessions?

Unfortunately, the number and length of responses, to free-text questions regarding causes of difficulty in using each harm reduction technique, were insufficient to conduct a quality descriptive analysis of these responses.

3.4.5. Understanding Student's Attitudes Towards Harm Reduction-Focused Drug Education Services

3.4.5.1. How Likely are Students to State they would Sign Up to a General Harm Reduction-Focused Drug Education Service or a Specific Harm Reduction-Focused Drug Education Service, such as The Drop?

For both the likelihood of signing up to a general harm reduction service and a specific harm reduction service like The Drop, Table 3.8 shows the frequency of responses in each response category by all participants, alcohol users, cannabis users and cigarette users.

Table 3.8: Participant likelihood of signing up to a general harm reduction service and a specific harm reduction focused drug education service

	Frequency															
	General Harm Reduction Services								Specific Harm Reduction Focused Drug Education Services							
	Overall (n=217)		Alcohol (n=203)		Cannabis (n=73)		Cigarettes (n=111)		Overall (n=217)		Alcohol (n=203)		Cannabis (n=73)		Cigarettes (n=111)	
	Absolute	%	Absolute	%	Absolute	%	Absolute	%	Absolute	%	Absolute	%	Absolute	%	Absolute	%
Extremely unlikely	15	6.9	14	6.9	7	9.6	3	2.7	13	6.0	13	6.4	3	4.	3	2.7
Very unlikely	26	12.0	25	12.3	7	9.6	7	6.3	21	9.7	20	9.9	7	9.6	5	4.5
Unlikely	51	**23.5**	50	**24.6**	13	17.8	40	**36.0**	47	**21.7**	46	**22.7**	9	12.3	32	28.8
Neither unlikely nor likely	32	14.7	30	14.8	5	6.8	13	11.7	41	18.9	39	19.2	9	12.3	19	17.1
Likely	43	19.8	37	18.2	22	**30.1**	24	21.6	46	21.2	40	19.7	24	**32.9**	27	**24.3**

Very likely	27	12.4	27	13.3	11	15.1	14	12.6	32	14.7	30	14.8	14	19.2	19	17.1
Extremely likely	23	10.6	20	9.9	8	11.0	10	9.0	17	7.8	15	7.4	7	9.6	6	5.4

3.4.5.2. How Does a Student's Frequency of Drug Use, Perceived Risk of Harm From Drug Use and Concern Over Drug Use affect their Likelihood of Stating They Would Sign Up to The Drop service?

A series of multiple linear regression analyses were run to predict Likelihood of Signing Up to The Drop from age, gender, Frequency of Drug Use, Number of Drugs Used, Perceived Risk of Harm From Drug Use and Concern Over Drug Use (see Table 3.9). This was done for three drugs (alcohol, cannabis and cigarettes), because the number of participants who have used these drugs in the past year exceeded 40. For alcohol users, these variables significantly predicted the variance in Likelihood of Signing Up to The Drop, $F(6, 165) = 2.292$, $p = .038$. Of the six predictor variables, only Number of Drugs Used uniquely explained the variance. For cannabis users, these variables did not significantly predict the variance in Likelihood of Signing Up to The Drop, $F(6, 57) = 1.503$, $p = .194$. For cigarette users, these variables significantly predicted the variance in Likelihood of Signing Up to The Drop, $F(6, 97) = 8.587$, $p < .001$. Of the six variables, gender, Frequency of Cigarette Use, Number of Drugs Used and Concern Over Cigarette Use uniquely explained the variance.

Table 3.9: Regression Model for Likelihood to Sign Up to The Drop for Users of the Drug Stated

	Alcohol					Cannabis					Cigarettes				
Predictors	B	CI	Beta	t	p	B	CI	Beta	t	p	B	CI	Beta	t	p
(Constant)	2.332	0.382 - 4.282	-	2.361	**.019***	4.401	1.230 - 7.573	-	2.779	**.007****	3.364	1.379 – 5.349	-	3.363	**.001****
Age	0.045	-0.015 – 0.105	0.115	1.480	.141	-0.033	-0.153 – 0.087	-0.075	-0.554	.582	0.055	-0.017 – 0.128	0.135	1.511	.134
Gender	0.374	-0.123 – 0.872	0.113	1.485	.139	-0.332	-1.175 – 0.511	-0.100	-0.789	.433	0.897	0.339 - 1.456	0.270	3.188	**.002****
Drug Use	0.003	0.000 – 0.006	0.144	1.791	.075	-0.002	-0.006 – 0.003	-0.127	-0.811	.421	0.002	0.001 – 0.004	0.251	2.572	**.012***
Drugs Used	0.111	0.005 – 0.218	0.161	2.063	**.041***	0.000	-0.158 – 0.159	0.000	0.002	.998	0.099	0.003 – 0.196	0.173	2.036	**.044***
Perceived Risk of Harm from Drug Use	0.057	-0.232 – 0.346	0.031	0.389	.698	0.111	-0.298 – 0.519	0.087	0.542	.590	-0.152	-0.470 – 0.166	-0.093	-0.947	.346
Concern over Drug Use	-0.013	-0.197 – 0.172	-0.011	-0.135	.892	0.291	-0.022 – 0.604	0.338	1.862	.068	-0.191	-0.370 - - 0.011	-0.192	-2.102	**.038***
Participant Number			172					64					104		
R^2/R^2 adjusted			.077/.043					.137/.046					.347/.306		

*Note: * = p<.05, ** = p<.01, *** = p<.001*

3.4.5.3. What do Students Cite as Reason that Influence their Decision to Sign Up with a Harm Reduction-Focused Drug Education Service

Participants were shown a list of factors that could influence their likelihood to engage with harm reduction-focused drug education services and asked to rate their importance on a 5-point Likert scale (1 = Not at all important; 5 = Extremely Important). Table 3.10 shows participant's made ratings of importance given to these factors.

Table 3.10: Mode Importance Rating for Motivating Factor Stated

Motivating Factor	Importance Rating
To learn more about drug harm reduction techniques	Moderately Important
To get a drug reagent testing kit	Moderately Important
To get drug advice for myself	Moderately Important
To get drug advice for a friend/ family member	Moderately Important
To get confidential drug advice	Moderately Important
To get personalised drug advice	Moderately Important
To learn more about drug harm reduction techniques	Moderately Important
To get a drug reagent testing kit	Moderately Important

To further investigate the factors that influence student's decisions to sign up to a harm reduction-focused drug education service, participants were asked to write a response to three free text questions regarding the reasons they would want to engage, the reasons they would not want to engage and factors that would increase their likelihood of engaging with a harm reduction-focused drug education service. A total of 81 participants gave 173 responses across the three free text questions. I used an adapted form of the guidelines of Braun and Clarke (2006) by Maynard et al. (2018) to conduct a qualitative descriptive analysis of the data. Participant responses were initially coded and grouped into themes. Themes were

interpreted through reading participant responses and were then combined to form three overarching themes: (1) students want to engage with harm reduction-focused drug education services, (2) increasing engagement by easing concerns and incentivising students and (3) misinterpretations about harm reduction services.

1) Students want to engage with harm reduction-focused drug education services

Many participants' responses showed a genuine interest in engaging with drug education. Participants reported a desire to increase their general knowledge about drugs. More specifically, some students wanted to learn about the "severe effects of drug abuse" (Female, 25) and to become more "informed on how frequent (drug) usage can perhaps cause damage" (Female, 23). Other students wanted to learn more about harm reduction techniques, such as acquiring "Info on vaping or edible cannabis" (Male, 39).

Health concerns were also highlighted as reasons to engage with harm reduction-focused drug education services. Participants wanted "to be healthy again" (Female, 25) and needed "suggestions that are good for your physical health" (Female, 27).

2) Increasing engagement by easing concern and incentivisation

Whilst participants showed an interest in the idea of engaging with a harm reduction-focused drug education service, several concerns were shared that might prevent them from doing so. Services confidentiality was considered fundamental, with students indicating that they would not want their personal information "passed onto (their) GP" (Male, 20). Having the education "conducted by someone in a position of authority e.g. university staff" (Male, 22) was also considered a disincentive to engage, perhaps due a "fear of judgement" (Female, 23) by those conducting it. Students were also less likely to show interest if they viewed extensive requirements being made of them from "time and motivation" (Male, 27) to the service costing "too much money and affecting...life" (Female, 24)

Alongside these concerns, students shared a number of insights that may help to ease them or ease the perceived burden of attending a harm reduction-focused drug education service. Multiple participants highlighted concerns that stigma, related to use of drug services, may prevent them engaging with one. However, knowledge of, or testimony from, "relatable people who've been there" (Male, 23) was suggested as ways to reduce this stigma. Service convenience was also highlighted as a critical factor in participants' willingness to engage with a service, whether this was through greater "Availability of sites and flexibility of appointments" (Female, 24) or by conducting appointments "online" (Male, 27). Whilst other participants suggested that "Rewards after a successful participation" (Female, 21) and other incentives, such as complimentary testing kits/ needles, health plans or monetary compensation, would further increase their likelihood of taking part in a drug education session.

3) Misinterpretations about harm reduction services

Through this descriptive analysis, it emerged that participants may have incorrectly perceived what the purpose of the harm reduction-focused drug education service (that I described) was. Some students stated they would not engage because they were "not an addict" (Male, 36) or that they didn't "take illegal drugs,...only alcohol" (Female, 24), suggesting that drug education would be only of use to those using "hard" drugs. Whilst others seemed to view services as being abstinence-focused, with the goals of the service being to stop their drug, one respondent said they wouldn't engage because "I don't think I can quit" (Female, 24), or to stop their enjoyment of drug use, "Ecstasy gives me a lot of mental happiness…Alcohol keeps my mind off things that bother me" (Male, 22)

3.5. Discussion

This study hoped to address two of the main aims of this thesis: to understand the factors motivating university students to engage with a harm reduction-focused drug

education service and to understand the factors that may limit university students from practicing harm reduction during drug use sessions. To do so, I had four research objectives: to understand student's drug use and perceived risk of harm from drug use; to understand student's concern over their own drug use; to understand student's attitudes towards harm reduction techniques, for the drugs they report using; to understand student's attitudes towards harm reduction-focused drug education services. I will discuss the findings of investigations into these research objectives and their possible explanations. Chapter 4 will discuss these findings in relation to the main aims of the thesis.

A total of 217 students were recruited for this study, this fell short of the 384 students I had aimed to recruit. Recruitment was closed before the goal could be reached due to pragmatic considerations about the length of the study. This meant that the qualitative descriptive analysis in this study lacked power. However, patterns found in this research may be used to inform future research.

3.5.1. Understanding Student's Drug Use and Perceived Risk of Harm From Drug Use

I investigated whether being a user of a drug and Level of Drug Use Described effected Perceived Risk of Harm From Drug Use. I found that, for both cannabis and cigarette users, Perceived Risk of Harm From Drug Use increased as Level of Drug Use Described increased. This is consistent with the findings of Johnston, O'Malley and Bachman (2003) and shows that UK students view an increased use of drugs as carrying a greater risk of harm. Furthermore, there was evidence that individuals that are users of either cannabis or cigarettes perceived the risk of harm from their use to be lower than those who had not used them. Again, this is consistent with the findings of Bachman, Johnston and O'Malley (1990) and supports my hypothesis. As discussed in the introduction, this may be explained through cognitive dissonance (Harmon-Jones & Mills, 2019), as drug users who believe that drugs are

harmful are likely to experience cognitive dissonance. To reduce this, drug users could either change their behaviour (i.e. stop using drugs) or change their cognition (i.e. choose to view drugs as not causing harm). This could have implications for engaging university students with harm reduction-focused drug education services, as drug users may not believe they need drug education because they do not view their drug use as a cause of harm. While it may be inferred that the solution to this would be to conduct interventions that aim to increase university students' perception of the risk of harm from drug use, for all drugs, to motivate them to engage with harm reduction services, this is not necessarily the case.

A person who uses cannabis may view the risk of harm from cannabis use as lower than someone who does not. This does not mean the person using cannabis has a less rational view of cannabis risks than the non-user. As discussed in Chapter 2, Nutt, King and Phillips (2010) developed a rational scale of drug harm that suggested that public perceptions of the risk of some drugs may be underestimated (in the case of alcohol), while it may be overestimated for others (in the case of cannabis). The perceived risk of harm of drug use by the sample population supports this view. While it is not possible to make a direct comparison between the perceived risk of harm ratings of drugs in my sample and those in the rational scale of drug harm, because of the differences in how risk was measured and the drugs of interest in my study, Table 3.11 shows the order of drugs (that my survey and the rational scale of drug harm shared), by harm to self and others, for illicit drug-using UK university students and the rational scale of drug harm.

Table 3.11: Order of drugs by harm caused to self and other from most harmful to least harmful

UK University Students	Rational scale of drug harm (Nutt, King & Phillips, 2010)
Cocaine	Alcohol
MDMA	Cocaine
Ketamine	Cigarettes

LSD	Cannabis
Cigarettes	Ketamine
Cannabis	MDMA
Alcohol	LSD

It is interesting to note the relative positions of specific drugs, in relation to their perceived risk of causing harm, between my university student sample and a rational scale developed by drug experts. Notably, alcohol was viewed by UK university students as the least harmful drug, but in the rational scale is was rated by experts as being the most harmful. It is interesting to note that, relative to a rational view of the harms of drug use, university students may overestimate the risks of some drugs but greatly underestimate others. This may have implications for interventions aiming to increase university student engagement with harm reduction-focused drug interventions. For example, an intervention aiming to increase university students' perception of the risk of harm from drug use, for all drugs, would not be appropriate. As it could lead to some individuals having an irrationally high perception of the risk of harm caused by their drug use, this could cause these individuals to engage with harm reduction-focused drug education services when they do not need to. Interventions may instead target increasing the rationality of university students' perceptions of the risk of harm from drug use. This might increase the likelihood that harm reduction-focused drug education services engage with populations that need them most. Future studies may wish to investigate, for which drugs, do drug users show the greatest difference in perceptions of the risk of harm from a rational perception of risk of harm (by drug experts). Education interventions could then specifically target these drugs to increase rational perceptions of the harm of drug use.

After deciding to use Monitoring the Future's measure of perceived risk of harm from drug use (Johnston, O'Malley & Bachman, 2001), I became aware of the ambiguous nature

of some of levels of drug use described in these questions. Participants are asked to rate the harm caused by occasional or regular drug use but no concrete definition of occasional and regular drug use is provided. It is important to know if participants' interpretation of the question determined their ratings of the perceived risk of harm from drug use. Therefore, I explored if participants' interpretations of the meaning of occasional and regular drug use affected their ratings of perceived risk of harm from occasional and regular drug use.

For cannabis and cigarette users, participants' definitions of occasional drug use (in terms of days on which drug use has occurred in the previous 12 months) did not predict participants' ratings of the perceived risk of harm from occasional drug use. However, participants' definitions of regular drug use did predict participants' ratings of the perceived risk of harm of regular drug use. Viewing regular cannabis use as involving more days of cannabis use per year predicted a lower perceived risk of harm from regular cannabis use, whilst viewing cigarette use as involving more days of cigarette use per year predicted a higher perceived risk of harm from cigarette use. Interestingly, descriptive statistics of mean definitions of occasional and regular drug use by drug users and non-users showed the same direction. Cannabis users defined regular cannabis use as using cannabis on 170 days per year, whilst non-users defined this as 33 days per year. Meanwhile, cigarette users defined regular cigarette use as using cigarettes on 120 days per year, whilst non-users defined this as 131 days per year. Taken together, I speculate that these findings suggest that, at least part of, the effect of using a drug on ratings of the perceived risk of harm from occasional and regular drug use can be accounted for by drug users and non-users defining the meaning of occasional and regular drug use differently. As this analysis was exploratory, future studies should investigate this relationship further. If this finding is repeated, studies using this measure may need to reframe the questions used such that Level of Drug Use Described is given in more concrete terms. For example, "How much do you think a person risk harming

themselves (physically or in others ways), if they use ketamine once a month?". Reframing questions in this way would remove any effect of participants' interpretation of the question on results.

As to why the interpretation of the meaning of regular drug use did predict ratings of perceived risk of harm from drug use, but interpretation of the meaning of occasional drug use did not, it could be that there was too little variance in the estimated mean days of drug use per year when defining occasional drug use. Alternatively, it could be the case that there was enough variance, but it did not affect perceived risk of harm from drug use. More research is needed to explore this effect further.

3.5.2. Understanding Student's Concern Over their own Drug Use

In my introduction, I proposed that a measure of Concern Over Drug Use could be valuable for assessing if harm reduction-focused drug education services were engaging with individuals that desired help. To further the understanding of any potential relationship Concern Over Drug Use may have with Likelihood to Sign Up For The Drop (or a similar harm reduction-focused drug education service), I thought it necessary to investigate variables that may influence concern. Therefore, I investigated if there was an effect of Frequency of Drug Use and Perceived Risk of Harm From Drug Use on Concern Over Drug Use.

For both alcohol and cannabis users, university students that used these drugs more and perceived the risk of harm from the use of these drugs to be higher were more likely to show greater concern over their drug use. For cigarette users, university students that perceived the risk of harm from cigarette use to be higher were more likely to show great concern over their drug use. Frequency of cigarette use did not influence students' concern over cigarette use.

These findings appear to be against the idea of cognitive dissonance (Harmon-Jones & Mills, 2019) presented in the introduction of this chapter. As according to the theory of cognitive dissonance, one might expect individuals who use drugs more to rationalise their behaviour by perceiving the risk of harm from drug use to be lower and therefore, be less concerned by their drug use. However, we found that increased frequency of drug use predicted increased concern over drug use. One explanation for this may be that the effect only applies when comparing drug users against non-users rather than drug users who use drugs at differing frequencies. Indeed, in *3.5.3.* I found that cannabis and cigarette users perceived the risk of harm from drug use to be significantly lowers than non-users. Perhaps the use of a drug to any extent reduces the risk perceived in drug use such that there is not a significant difference in the effect of cognitive dissonance between light and heavy users of a drug.

Alternatively, it could be viewed that these findings support the theory of cognitive dissonance. The theory follows that an induvial who has experienced cognitive dissonance will then exhibit an avoidance of the behaviour causing said dissonance (Harmon-Jones & Mills, 2019). However, I speculate that because the sample population may not have been exhibiting drug use behaviour over a long period of time dissonance has not led to the avoidance of drug use at this point. Instead, dissonance may be exhibited through concern over drug use. Heavy drug users that view the risk of their drug use as being greater may be more likely to experience dissonance due to their drug use behaviour. This dissonance could make drug users feel more concerned about their drug use. As to why Frequency of Drug Use influences Concern over Drug Use, for alcohol and cannabis users but not cigarette users, this may be due to public perceptions that any cigarette use is harmful, whereas for alcohol and cannabis use, only heavy use is viewed as harmful. So, there may be no effect of Frequency of Cigarette Use on concern as any frequency of use may cause concern. This has

implications for the engagement of users of these drugs with harm reduction-focused drug education services as it suggests it may be easier to convince heavy alcohol and cannabis users with such a service.

3.5.3. Understanding Student's Attitudes Towards Harm Reduction-Focused Drug Education Services

As highlighted previously, understanding the factors that may influence students to engage in harm reduction-focused drug education services is important for developing ways to increase engagement. I investigated the effect of Frequency of Drug Use, Perceived Risk of Harm From Drug Use and Concern over Drug Use on Likelihood to Sign Up for The Drop (or a similar harm reduction-focused drug education service). For alcohol and cannabis users, none of these variables influenced the likelihood to state they would sign up for a harm reduction-focused drug education service. However, for cigarette users, greater use of cigarettes and reduced concern over cigarette use predicted increases in the likelihood to state they would sign up for a harm reduction-focused drug education service.

These results do not support my hypothesis that Concern over Drug Use would predict a greater Likelihood to Sign Up to The Drop because concern would motivate university students to engage in behaviours that could reduce it. I speculate that this finding may be because my measure of Likelihood to Sign Up to The Drop service had poor construct validity. Evidence in support of this can be found in my qualitative descriptive analysis of participants' free text responses to questions regarding the factors influencing their decision to engage with a harm reduction service. Results of the qualitative descriptive analysis showed that participants made incorrect assumptions about what a harm reduction-focused drug education service involved (even following a description in the survey). Participants assumed harm reduction services aimed to stop drug use (despite descriptions of harm reduction services in the survey stating this was not true) and harm reduction services

were only for users of illicit drugs. This, combined with the finding that alcohol and cannabis had the two lowest ratings of perceived risk of harm (by participants), suggests that participants' concern over drug use did not increase their likelihood to sign to a harm reduction service because participants did not think use of alcohol or cannabis necessitated engagement with harm reduction-focused drug education services (as they understood them). As to why increased frequency of cigarette use predicted an increased likelihood to sign up, because participants believed that harm reduction-focused drug education services aimed to stop drug use, perhaps frequent cigarette users were more willing to try to cease their drug use than frequent alcohol and cannabis users. Again, this would suggest poor construct validity of the Likelihood to Sign Up measure.

Future research should continue to investigate the factors influencing a person's likelihood of engaging with a harm reduction-focused drug education service. Studies may assess this by comparing individuals who have engaged with an actual harm reduction-focused drug education service, with those who have not, in terms of their Frequency of Drug Use, Perceived Risk of Harm From Drug Use and Concern Over Drug Use. This would reduce the chance of construct validity influencing results.

The findings of the qualitative descriptive analysis also have implications for engaging individuals with harm reduction-focused drug education services. Findings suggest that many participants incorrectly assumed that drug education is abstinence-focused (despite being provided with a description that stated otherwise). If these beliefs affect an individual's likelihood of signing up to a service, interventions should aim to challenge these beliefs and educate students regarding the purpose of drug education in this paradigm.

3.5.4. Understanding Student's Attitudes Towards Harm Reduction Techniques

Informing the teaching of harm reduction-drug education is another important element of developing harm reduction-focused drug education services. To do so, I investigated

students' attitudes towards the use of harm reduction techniques. Table 3.7 shows, for each drug, the harm reduction techniques users viewed as most likely to use, least likely to use, most difficult to use, least difficult to use, most effective to use and least effective to use. Participants' ratings of these factors yielded some insights of interest. Firstly, common sense harm reduction techniques such as "not driving a vehicle" were commonly rated as easy, effective and likely to be used. As such, it does not seem necessary to teach such techniques to university students during harm reduction-focused drug education sessions. Secondly, university students did rate some techniques, that could be quite useful in reducing the harm of drug use, as being difficult to use or unlikely to be used. These included techniques such as not mixing drugs, weighing doses before consuming or waiting for the effects of a drug to kick in before re-dosing. Harm reduction-focused drug education services should take note of these techniques of perceived greater difficulty and lower likelihood of use and educate students on how to employ them more often and avoid potential barriers that may increase the difficulty of their use.

Unfortunately, I could not conduct a qualitative analysis of the barriers preventing students from engaging in harm reduction techniques. Future studies should investigate the factors preventing students from conducting harm reduction techniques (with a particular focus on techniques that are more likely to reduce drug-related harm). These could form part of the education given to students and further reduce the chances of them experiencing drug-related harm.

3.6. Conclusions

This study suggests that university students might not hold rational beliefs regarding the risk of harm from drug use. Overestimations and underestimations of harm from drug use could prevent harm reduction-focused drug education services from engaging with students in need. I propose that education interventions challenge these beliefs by giving students

rational information about the harms of drug use. This study found that individuals with a higher frequency of drug use (for alcohol and cannabis users) and a greater perceived risk of harm from drug use (for alcohol, cannabis and cigarette users) were more likely to experience concern over drug use. This study, therefore, proposes that heavy alcohol and cannabis users may be easier targets for harm reduction-focused drug education services and that individuals who view the risk of harm of drugs as being greater may also be easier (although not necessarily more appropriate) targets for harm reduction-focused drug education services.

This study failed to find evidence in support of its hypothesis that individuals more concerned by their drug use would be more likely to engage with harm reduction-focused drug education services. I speculate that this is due to participants' misconceptions about the nature of harm reduction-focused drug education services. More research is required to determine the factors influencing university students to engage with harm reduction services. Such research could be carried out by comparing students that have chosen to take part in an actual harm reduction-focused drug education service and students that have chosen not to, in terms of the characteristics of their drug use and attitudes towards drug use. More research is also needed on the barriers preventing use of harm reduction techniques, as such information could help inform the teaching of harm reduction-focused drug education services.

CHAPTER 4: GENERAL DISCUSSION

4.1. Thesis Findings

The primary purpose of this thesis of work was to help inform the development of harm reduction-focused drug education services delivered to university students at the University of Bristol and other universities. To do so, I: conducted an assessment into the feasibility of a harm reduction-focused drug education service; characterised the drug use of university students and their attitudes towards drug use; investigated students' attitudes towards the use of drug-related harm reduction techniques and investigated the factors influencing students' likelihood to engage with a harm reduction-focused drug education service.

I will now discuss the findings from both my study chapters and the broader literature about their use in informing the development of harm reduction-focused drug education services.

4.1.1. Evaluating Harm Reduction-Focused Drug Education Services

Chapter 2 of my thesis aimed to evaluate a harm reduction-focused drug education service, The Drop. As detailed in that chapter, due to difficulties with recruitment into my evaluation study, I elected to close the study and convert it to a discussion on feasibility. In that chapter, I concluded that evaluating a harm reduction-focused drug education service was not feasible.

However, several factors that made the evaluation unfeasible were unique to the circumstances under which it was conducted. Namely Covid-19 restrictions preventing research presence at the site of the intervention and time restrictions on the length of the study period relating to the master's thesis for which this study was conducted. Through conducting the feasibility assessment, I identified a number of factors for improving the

feasibility of evaluating a harm reduction-focused drug education service. These are as follows.

4.1.1.1. Recruitment

Recruitment of individuals from an external bodies intervention into an evaluation study is crucial to the feasibility of an evaluation study. In Chapter 2, I identified student concerns regarding the evaluation and the amount of steps in the study procedure as barriers to recruitment. For future evaluations of harm reduction-focused drug education services, researcher presence at the site of the intervention could help to improve recruitment as this would allow the researchers to address concerns students may have regarding the evaluation. Research presence on site would also allow for informed consent to be gained immediately after students have engaged with the intervention, thus preventing the need for a consent to be contacted form and reducing the number of steps in the study procedure.

Future evaluation studies of harm reduction-focused drug education services could conduct the education internally, instead of evaluating one conducted by an external body. Student reluctance to provide personal drug use information for the intervention, having already done so for the education, was identified as another barrier to recruitment. By conducting education internally such information could be collected during the intervention and used for the evaluation, this would prevent participants from sharing the same information repeatedly. Carrying out the intervention internally would also address issues regarding data sharing between the external body and the researchers, identified in Chapter 2. However, in Chapter 3 I identified that students may be reluctant to engage with a harm reduction-focused drug education service if conducted by a person of authority at their university. Therefore, future studies should weigh the potential issues of engagement with the intervention if education is held internally, and issues of engagement with the evaluation if it

is of an external body, when designing evaluations of harm reduction-focused drug education interventions.

4.1.1.2. Outcome Development

When conducting novel interventions it may be necessary to develop appropriate outcome measures for the intervention (Orsmond & Cohn, 2015). The Drop is conducting a novel intervention that seek to provide university students with harm reduction-focused drug education and so developing appropriate for The Drop and similar services formed part of my investigation in Chapter 2. Through the findings of my thesis, I have identified a number of outcome measures that could be appropriate for evaluations of harm reduction-focused drug education services.

Firstly, future evaluations studies could assess the rationality of participants' perceptions of the risk of harm from drug use both before and after engaging with the education. Such a measure could be determined by calculating the difference between participants' perceived risk of harm from drug use with an experts' ratings of the harm of drug use, e.g. the rational scale of drug harm (Nutt, King & Phillips, 2010). I speculate that a successful harm reduction-focused drug education service would provide students with a more rational perception of the risk of harm from drug use. Researchers should note that in Chapter 3 I found evidence that participants interpretations of the meaning of occasional and regular drug use (which is potentially affected by their use of the drug in question) may influence their rating of the risk of harm of occasional and regular drug use. I therefore recommend that when using a perceived risk questionnaire, such as the one used in the monitoring the future study (Johnston, O'Malley & Bachman, 2001), questions should describe levels of drug use conditions in concrete terms. For example, asking participants to rate the likelihood of harm for a cannabis user that uses the substance once a month.

Secondly, participants' use of harm reduction techniques could be used as an outcome measure. As the use of harm reduction techniques are known to reduce the negative consequences of drug use (Vidal Giné, Fernández Calderón and López Guerrero, 2016), greater use of these techniques by individuals who have engaged with harm reduction-focused drug education services could be indicative of the success of the service. In Chapter 3, I assessed participants' attitudes towards harm reduction technique as opposed to the number of techniques used. My reasoning for doing so was that not all harm reduction techniques are equal (i.e. it cannot be stated that a person who weighs their ketamine dose every time before use is practicing harm reduction to the same degree as a person who keeps contraception on their person every time they use ketamine), so it would not be possible to make direct comparison between groups in terms of harm reduction technique use. However, recent research on the harm reduction practices of psychedelic users has suggested use of harm reduction techniques as a measure could be done by asking participants to rate the importance of differing harm reduction techniques and using this to create a weighted score of the techniques that they have used (Palmer & Maynard, 2022). Participants use of and attitudes towards harm reduction may both be useful outcome measure for future evaluations of harm reduction-focused drug education services.

Finally, drug-related harm experienced by individuals could be used as an outcome measure. McBride, Farringdon and Midford (2000) have developed a measure of alcohol-related harm. This measure could be adapted to assess harm relating to the use of multiple drugs to increase its utility for evaluating harm reduction-focused drug education services. Future studies could then evaluate the success of drug education services by comparing drug-related harm before and after individuals have received the education. Researchers should note that this measure asks participants to list the harms they have experienced in the previous 12 months and should allow sufficient time in their study period so that experience

of drug-related harm, up to 12 months following engagement with the drug education, can be properly assessed.

4.1.2. Engaging Individuals with Harm Reduction-Focused Drug Education Services

The capability, opportunity, and motivation behaviour model (COM-B) proposes that, for an individual to carry out a particular behaviour, they must have: the capability, the opportunity (physically and socially) and the motivation (automatically and reflectively) to do so (Michie, Van Stralen & West, 2011). This approach is of particular use for developing interventions as it can inform the understanding of a desired behaviour (Jatau et al., 2019), in this case, understanding what may influence university students to engage with harm reduction-focused drug education services. Figure 4.1 shows how I have used my findings to apply the COM-B model to increase the engagement of university students with harm reduction-focused drug education services.

4.1.2.1. Capability

Capability refers to a person's ability to carry out the physical and psychological requirements of an intervention (Jatau et al., 2019). My study did not highlight any issues that could provide physical barriers to university students engaging with harm reduction-focused drug education services. However, those conducting drug interventions should take note of findings that individuals with disabilities are at greater risk of drug use disorders (Anderson, Chang & Kini, 2018) and may benefit from access to drug education interventions. Delivery of harm reduction-focused drug education interventions should ensure physical capability is not a barrier to engagement.

Regarding psychological capability, in Chapter 3, I found evidence that misunderstandings relating to what harm reduction was, led to university students being less likely to state they would engage with a drug education service. One of these

misunderstandings was the belief that such a service would aim to stop their drug use. As discussed, this belief may have been due to the poor construct validity of the measure I used, and future studies should investigate this further. However, university students might reasonably assume that any form of drug education would have an abstinence focus, as this has been the default paradigm in this area since the 1880s (Beck, 1998). Increasing knowledge about harm reduction within university student populations, possibly through awareness campaigns, may reduce this psychological barrier to engagement.

4.1.2.2. Opportunity

Opportunity refers to external factors that enable an individual to engage with an intervention (Jatau et al., 2019). In Chapter 3, qualitative analysis found evidence that monetary and time requirements could be barriers to university students engaging with harm reduction-focused drug education services. Making these services free to students and deliverable through online sessions could address these issues.

The Drop, the drug education service I attempted to evaluate in Chapter 2, is an external body that has partnered with the University of Bristol to deliver drug education to its students. Having a harm reduction-focused drug service charity locally is an opportunity not necessarily available to all university students. The creation of such services throughout the UK would increase the opportunities available to university students to engage with harm reduction services. It should also be noted that the University of Bristol is one of the few UK universities that does not have a zero-tolerance policy on student drug use (UoB, n.d.). To increase opportunity, UK universities must change their drug use policies.

4.1.2.3. Motivation

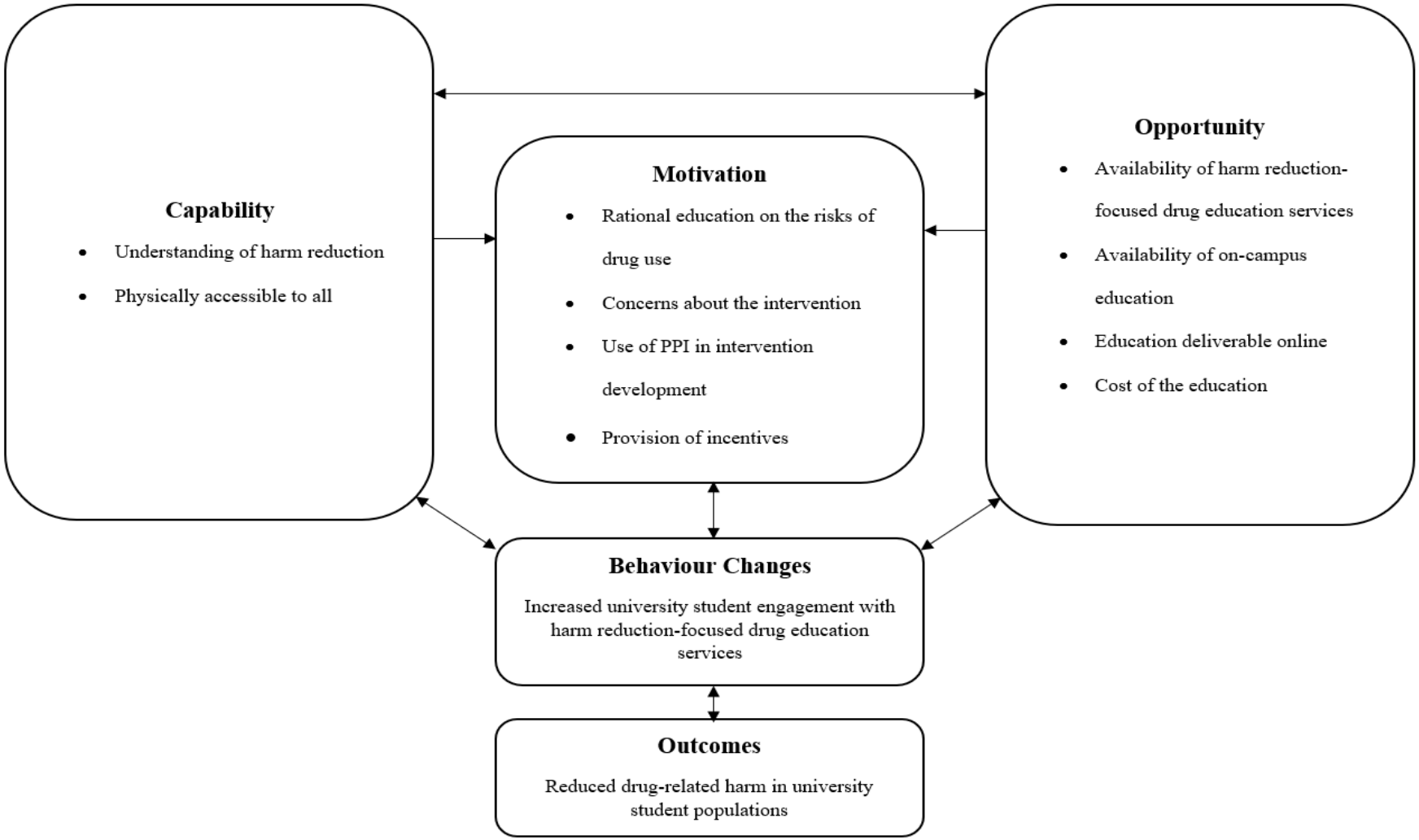
Motivation refers to aspects of cognition that influence behaviour (Jatau et al., 2019). In Chapter 3, I characterised students' attitudes regarding the risk of harm from drug use and its influence on concern over drug use. Results indicated that increased perceived risk of

harm from drug use was associated with increased concern over drug use (for alcohol, cannabis and cigarette) users; I speculate that interventions targeting students' perceived risk of harm from drug use could motivate them to engage with harm reduction services. Furthermore, descriptive statistics indicated that university students' view of the relative harm of different drugs is different from a rational scale of drug harm (Nutt, King & Phillips, 2010). I propose that interventions targeting individuals' attitudes towards perceived risk should aim to educate students on the rational risks of drug use to harm. This would help motivate those who need drug education to engage.

The qualitative descriptive analysis in Chapter 3 also revealed concerns about harm reduction-focused drug education that could discourage individuals from engaging. These concerns included: fear of judgement by peers for engaging, concerns about discussing confidential information such as drug use history and concerns about education being conducted by an authority figure at their university. One strategy to avoid this would be to employ PPI (patient and public involvement in research) and involve university students in the process of devising harm reduction-focused drug education interventions. PPI has been shown to improve the quality of research and its' relevance to communities of interest (Brett et al., 2014). Employing PPI could allow researchers to work with university students to strategies ways in which to reduce concerns regarding harm reduction-focused drug education services and improve student engagement with them.

Another way students could be motivated to engage with harm reduction-focused drug education services is by offering them incentives for participating. The Drop provided students with reagent drug testing kits for taking part in their intervention. Unfortunately, I could not assess the role this incentive played in getting students to engage with the service. However, there is strong evidence to suggest that incentives can improve the efficacy of an intervention (Mitchell et al., 2013).

Figure 4.1: Application of COM-B to increase university student engagement with harm reduction-focused drug education services



4.1.3. Understanding the factors that may limit university students from practicing harm reduction during drug use sessions

In Chapter 3, I aimed to investigate the barriers to students carrying out harm reduction techniques. Unfortunately, I could not collect the necessary data to investigate this. Nevertheless, future studies must explore the factors preventing harm reduction technique use as they can form a vital part of harm reduction-focused drug education. This knowledge could be used to develop strategies, overcome potential barriers to harm reduction technique use, and better protect students from experiencing drug-related harm.

4.2. Novel Research Contributions and Implications

Previous studies have highlighted the association of harm reduction-focused drug education services with reduced drug-related harm, lower risky drug use behaviour and greater drug knowledge (McBride et al., 2004; Midford et al., 2014). However, these studies were conducted with schoolchildren. As far as the author is aware, no previous studies have attempted an evaluation of a harm reduction-focused drug education intervention by an external service targeting university students. This thesis contributes to this area by highlighting how: data sharing between the researcher and external party, study procedures, and student confidentiality concerns can negatively affect the feasibility of such an evaluation. These findings implicated that an evaluating a harm-reduction focused drug education may not be feasible. However, this study made numerous recommendations on how such barriers may be overcome so that feasibility can be increased.

This thesis also further contributed to this area by suggesting appropriate outcome measures for evaluating harm reduction-focused drug education services. This author uniquely suggests that individuals' perceived risk of harm from drug use may be used in relation to the rational scale of drug harm (Nutt, King, Saulsbury & Blakemore, 2007) to evaluate if drug education services produce more rational attitudes towards the risk of drug

use. This study also showed how interpretations of the questions used in the perceived risk questionnaire could affect ratings of risk of harm. Future studies should provide concrete descriptions of levels of drug use when assessing harm.

Given the novelty of conducting harm reduction-focused drug education interventions with university students, it is essential to understand how best to engage this population with drug education. In Chapter 3, a novel mixed methods investigation was conducted into the factors influencing the likelihood of signing up for a harm reduction-focused drug education service. This thesis found that for alcohol and cannabis users, a student's frequency of drug use and concern over their drug use did not influence their rating of how likely they would be to sign up for a harm reduction-focused drug education service. This may be explained somewhat by the qualitative descriptive analysis in Chapter 3, which found that participants viewed harm reduction-focused drug education as aiming to stop individuals' drug use behaviour and only being helpful to users of "hard drugs". This thesis suggests that those in need of harm reduction services are not likely to engage with them, and this may be partly due to false perceptions of harm reduction drug education. I have created a model (*see Figure 4.1*) that could inform harm reduction-focused drug education services better engage with university student populations.

4.3. Limitations

The evaluation of The Drop service, attempted in Chapter 2 of this thesis, was limited by recruitment capabilities. The low levels of recruitment led to the inability to conduct the evaluation and the decision to repurpose the study into a feasibility assessment. This was further limited by the constraints under which the study was conducted because it was part of a master's thesis and occurred during the Covid-19 pandemic. The thesis only allowed for a one-year research period. So, there was not enough time to adjust our recruitment strategies in Chapter 2 to try and get the participants needed to conduct an evaluation. Outside the

constraints of a master's thesis and Covid-19 related restrictions, future studies may have greater success in evaluating a harm reduction-focused drug education service owing to the recommendations suggested in this thesis and lesser time limitations.

If Chapter 2 had been conducted as intended, the cross-sectional design we planned to use, to evaluate the effects of The Drop on attitudes towards and use of harm reduction behaviours, could have limited the study. This is because cross-sectional studies can make it difficult to make causal inferences (Rindfleisch, Malter, Ganesan & Moorman, 2008). Therefore, future studies looking to evaluate the effects of engagement with a harm reduction focused drug education service on drug use, attitudes towards drug use and use of harm reduction techniques may choose to use a longitudinal design by assessing university students before and after they have engaged with a service. This approach allows you to determine how an exposure variable affects your outcome measure(s) and how this effect changes over time (Caruana, Roman, Hernández-Sánchez & Solli, 2015). In regards to evaluating a harm reduction-focused drug education service, a longitudinal study would allow researchers to see if there is a benefit to interventions of this type and if they persist over time.

The research conducted in Chapter 3 was limited by the general approach taken to recruit drug users. Users of specific drugs (e.g. MDMA users) were not targeted, and as such, it was not possible to anticipate how many users of each drug would be recruited before making the analysis plan. This (and the need to conduct data analysis within the thesis) led to the determination that 40 users of each drug would be required before conducting analysis. As a result, in Chapter 3, it was only possible to perform analyses for three drugs (alcohol, cannabis and cigarettes). Furthermore, this limited the power of the analysis and our ability to make conclusions from the results. To ensure that these issues are avoided, future research could instead target users of specific drugs so that appropriate power calculations can be made and the analyses can be conducted. Alternatively, if continuing to take a general

approach to the recruitment of drug users, researchers should consider the time required to recruit the desired number of users for each drug of interest.

Another limitation of Chapter 3 was that participants' likelihood to engage with a harm reduction focused drug education service was a hypothetical construct, and so, perhaps these variables would have an effect on university students' actual attendance with a harm reduction focused drug education service. Furthermore, the qualitative descriptive analysis in Chapter 3 indicated that some of my participants perceived harm reduction-focused drug education as aiming to stop drug use and only being appropriate for users of "hard" drugs. This led me to speculate that my measure of likelihood to engage had poor construct validity. By investigating university students who have engaged with a drug education service and matched pairs that have not to see if these two groups differ in their drug use behaviour and attitudes, future research can remove the hypothetical nature of the measure and should avoid problems with construct validity. This would provide greater insight into how these factors determine individuals' likelihood to engage with these services.

4.4. Future Directions

This thesis has discussed how university student populations may benefit from engagement with harm reduction-focused drug education services. However, research in this area is lacking. Studies are required to evaluate harm reduction-focused drug education sessions (conducted by researchers and external bodies) to develop this area of study further. Given its success in developing recruitment strategies, researchers may consider engaging in the practice of PPI (Brett at al., 2014) by working with university students when developing these evaluations. This may help overcome the barriers discussed in Chapter 2 of this thesis.

As was also noted in Chapter 2, for these evaluations to be successful, researchers need to consider the outcomes being used carefully. As highlighted in the Chapter 2 discussion, researchers may consider using harm reduction techniques, attitudes towards drug

use (such as perceived risk) and drug-related harm when conducting such evaluations. In regards to the use of perceived risk, researchers may compare the correlation between participants' ratings of the perceived risk of harm from drug use for various drugs, with the rational scale of drug harm (Nutt, King, Saulsbury & Blakemore, 2007), for both those who have and have not attended a harm reduction focused drug education service. This may allow researchers to assess if interventions have improved the rationality of participants' drug attitudes. More research is required to determine the validity of this potential outcome measure.

Chapter 3 investigated the influence of participants' frequency of drug use, perceived risk of harm from drug use and concern over their drug use on how likely they stated they would be to engage with a harm reduction-focused drug education service. The results of this chapter suggested that, for alcohol and cannabis users, the frequency with which they used the drug, the risk of harm they perceived from the drug's use, nor their concern over their use of the drug influenced their likelihood to state they would sign up for a harm reduction focused drug education service. Future studies should research if this holds for other drugs. If this holds true for other drugs, research focus may shift to why this is the case as such information would allow harm reduction services to strategies ways to engage these individuals.

In this chapter, I have identified a number of targets that could improve student engagement with harm reduction-focused drug education services. Future studies may investigate if these targets have a positive impact on engagement so that the mechanisms by which students engage with drug education can be better understood.

4.5. Conclusions

This thesis of work aimed to help inform the development of harm reduction-focused drug education services delivered to university students at the University of Bristol and other

universities. To this end, I discussed the feasibility of evaluating a harm reduction-focused drug education service, characterised the drug use of university students and their attitudes towards drug use, investigated students' attitudes towards the use of drug-related harm reduction techniques and investigated the factors influencing students' likelihood to engage with a harm reduction focused drug education service.

In Chapter 2, it was suggested that: data sharing between the researcher and external party, the number of sessions run by The Drop within the study period, barriers within the study procedures, and students' concerns about sharing personal drug information with a university researcher not present on-site may have had a negative influence on the feasibility of evaluating harm reduction focused drug education service conducted by an external body. Some of these issues arose partly due to the constraints placed on this study by the Covid-19 pandemic and the requirements of a master's thesis. However, employment of PPI and research presence are suggested as solutions to these issues. Chapter 2 also discussed the importance of developing appropriate outcome measures for cross-sectional studies evaluating harm reduction-focused drug education services as these are needed truly assess the success of these interventions. This chapter suggests using perceived risk, harm reduction techniques and drug-related harm to determine the effectiveness of harm reduction-focused drug education services. Taken together, Chapter 2 highlights the need for further research into evaluations of these services to help further their development.

In Chapter 3, findings suggested that university students that used drugs more frequently and perceived the risk of harm from drug use as being greater were more likely to indicate concern over their drug use (for both alcohol and cannabis users). Findings also suggested that participants' frequency of drug use, the risk they perceived in carrying out drug use and their concern over their drug use influenced how likely they stated they are to sign up for a harm reduction-focused drug education service (for alcohol and cannabis users).

It was suggested that participants' incorrect views that drug education services were only appropriate for users of "hard drugs" or necessitated cessation of drug use may explain why the variables investigated had no effect. These findings may be limited by the outcome variable being a hypothetical sign-up to a harm reduction service. It must be investigated if drug use, perceived risk and concern over drug use affect likelihood of engaging with a harm reduction service in reality. More research is needed to investigate this finding and see if it is replicated with other drugs. If this finding is repeated, it would suggest that harm reduction services may not reach drug users that need drug education the most, so work must be conducted to ensure these groups are reached.

In conclusion, this thesis has highlighted: methods for improving the recruitment of individuals into evaluations of harm reduction focused drug education services; appropriate outcome measures for evaluating the effect of these services on drug use behaviour and attitudes; the relationship between drug use and drug use attitudes in university student populations; factors that may influence an individual's likelihood to sign up for a drug education service. I have discussed how these findings, taken together, could be used to inform strategies for engaging university students with – as well as conduct evaluations of – harm reduction-focused drug education services. It is hoped that the research contributions made in this thesis can help to inform the development of future harm reduction-focused drug education services delivered to university students.

LIST OF ABBREVIATIONS

ANOVA – Analysis of Variance

BDP – Bristol Drug Project

CI – Confidence Intervals

COM-B – Capability, Opportunity and Motivation of Behaviour

CSQ – Client Satisfaction Questionnaire

D.A.R.E. – Drug Abuse Resistance Education

DEVS – Drug Education in Victorian Schools

DOI – Digital Object Identifier

HRT – Harm Reduction Techniques

M – Mean

n.d. – no date

NUS – National Union of Students

ONS – Office for National Statistics

OSF – Open Science Framework

PPI – Patient and Public Involvement

QR – Quick Response

SD – Standard Deviation

SE – Standard Error

SHAHRP – School Health and Alcohol Harm Reduction Project

UK – United Kingdom

UoB – University of Bristol

URL – Uniform Resource Locators

USA – United Stated of America

WHO – World Health Organisation

REFERENCE LIST

Anderson, M. L., Chang, B. H., & Kini, N. (2018). Alcohol and drug use among deaf and hard-of-hearing individuals: A secondary analysis of NHANES 2013–2014. *Substance abuse*, *39*(3), 390-397.

Bachman, J. G., Johnston, L. D., & O'Malley, P. M. (1990). Explaining the recent decline in cocaine use among young adults: Further evidence that perceived risks and disapproval lead to reduced drug use. *Journal of Health and Social Behavior*, 173-184.

Beck, J. (1998). 100 years of" just say no" versus" just say know" reevaluating drug education goals for the coming century. *Evaluation Review*, *22*(1), 15-45.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, *3*(2), 77-101.

Brett, J. O., Staniszewska, S., Mockford, C., Herron-Marx, S., Hughes, J., Tysall, C., & Suleman, R. (2014). A systematic review of the impact of patient and public involvement on service users, researchers and communities. *The Patient-Patient-Centered Outcomes Research*, *7*(4), 387-395.

Bristol Drug Project (n.d.). *Drugs Information*. https://www.bdp.org.uk/get-information/drugs-information/

Bristol Drug Project. (n.d.). *The Drop – Club and Party Drugs*. https://www.bdp.org.uk/thedrop/

Brunt, T. (2017). Drug checking as a harm reduction tool for recreational drug users: opportunities and challenges.

Carod-Artal, F. J. (2015). Hallucinogenic drugs in pre-Columbian Mesoamerican cultures. *Neurología (English Edition)*, *30*(1), 42-49.

Caruana, E. J., Roman, M., Hernández-Sánchez, J., & Solli, P. (2015). Longitudinal studies. *Journal of thoracic disease*, *7*(11), E537.

Charles, H., Heron, J., Hickman, M., Brown, J., & Hines, L. (2021). Testing the validity of national drug surveys: comparison between a general population cohort and household surveys. *Addiction*, *116*(8), 2076-2083.

Craigs, C. L., Bewick, B. M., Gill, J., O'May, F., & Radley, D. (2012). UK student alcohol consumption: A cluster analysis of drinking behaviour typologies. *Health Education Journal*, *71*(4), 516-526.

Crocq, M. A. (2022). Historical and cultural aspects of man's relationship with addictive drugs. *Dialogues in clinical neuroscience*.

Ennett, S. T., Tobler, N. S., Ringwalt, C. L., & Flewelling, R. L. (1994). How effective is

drug abuse resistance education? A meta-analysis of Project DARE outcome evaluations. *American journal of public health*, *84*(9), 1394-1401.

Harmon-Jones, E., & Mills, J. (2019). An introduction to cognitive dissonance theory and an overview of current perspectives on the theory.

Jatau, A. I., Peterson, G. M., Bereznicki, L., Dwan, C., Black, J. A., Bezabhe, W. M., & Wimmer, B. C. (2019). Applying the capability, opportunity, and motivation behaviour model (COM-B) to guide the development of interventions to improve early detection of atrial fibrillation. *Clinical Medicine Insights: Cardiology*, *13*, 1179546819885134.

Johnston, L. D., O'Malley, P. M., & Bachman, J. G. (2003). Monitoring the future: National results on adolescent drug use: Overview of key findings. *Focus*, *1*(2), 213-234.

Johnston, L., O'Malley, P. M., & Bachman, J. G. (2001). Monitoring the future: National survey results on drug use, 1975-2000.

Kennedy, M. C., Karamouzian, M., & Kerr, T. (2017). Public health and public order outcomes associated with supervised drug consumption facilities: a systematic review. *Current Hiv/aids Reports*, *14*(5), 161-183.

Larsen, D. L., Attkisson, C. C., Hargreaves, W. A., & Nguyen, T. D. (1979). Assessment of client/patient satisfaction: development of a general scale. *Evaluation and program planning*, *2*(3), 197-207.

Leslie, K. M., Canadian Paediatric Society, & Adolescent Health Committee. (2008). Harm reduction: An approach to reducing risky health behaviours in adolescents. *Paediatrics & Child Health*, 13(1), 53-56.

Lynam, D. R., Milich, R., Zimmerman, R., Novak, S. P., Logan, T. K., Martin, C., ... & Clayton, R. (1999). Project DARE (Drug Abuse Resistence Education) Is Not Successful, and We Need to ASk Why. *Journal of Consulting and Clinical Psychology*, *67*(4), 590-593.

Martens, M. P., Taylor, K. K., Damann, K. M., Page, J. C., Mowry, E. S., & Cimini, M. D. (2004). Protective behavioral strategies when drinking alcohol and their relationship to negative alcohol-related consequences in college students. *Psychology of Addictive Behaviors*, *18*(4), 390.

Maynard, O. M., Langfield, T., Attwood, A. S., Allen, E., Drew, I., Votier, A., & Munafò, M. R. (2018). No impact of calorie or unit information on ad libitum alcohol consumption. *Alcohol and Alcoholism*, *53*(1), 12-19.

McBride, N., Farringdon, F., & Midford, R. (2000). What harms do young Australians experience in alcohol-use situations?. *Australian and New Zealand Journal of Public Health*, *24*(1), 54-59.

McBride, N., Farringdon, F., Midford, R., Meuleners, L., & Phillips, M. (2004). Harm

minimization in school drug education: final results of the School Health and Alcohol Harm Reduction Project (SHAHRP). *Addiction*, *99*(3), 278-291.

Measham, F. C. (2019). Drug safety testing, disposals and dealing in an English field: Exploring the operational and behavioural outcomes of the UK's first onsite 'drug checking' service. *International Journal of Drug Policy*, *67*, 102-107.

Michie, S., Atkins, L., & West, R. (2014). The behaviour change wheel. *A guide to designing interventions. 1st ed. Great Britain: Silverback Publishing*, 1003-1010.

Michie, S., Van Stralen, M. M., & West, R. (2011). The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation science*, *6*(1), 1-12.

Midford, R., Mitchell, J., Lester, L., Cahill, H., Foxcroft, D., Ramsden, R., ... & Pose, M. (2014). Preventing alcohol harm: early results from a cluster randomised, controlled trial in Victoria, Australia of comprehensive harm minimisation school drug education. *International Journal of Drug Policy*, *25*(1), 142-150.

Mitchell, M. S., Goodman, J. M., Alter, D. A., John, L. K., Oh, P. I., Pakosh, M. T., & Faulkner, G. E. (2013). Financial incentives for exercise adherence in adults: systematic review and meta-analysis. *American journal of preventive medicine*, *45*(5), 658-667.

National Union of Students. (2018). *Alcohol Impact*. https://uploads-ssl.webflow.com/620ed46f5ecee11b31afd328/622f2c3f234c7cb5acf5ca8d_6086de151ae50a141c0d214f_2018731_NUS%20Students%20and%20Alcohol_National%20FINAL.pdf

National Union of Students. (2021). *Students and alcohol 2020-21*. https://uploads-ssl.webflow.com/620ed46f5ecee11b31afd328/622f2cb8f460843f80b78bf0_NUS%20Alcohol%20Impact%20Students%20and%20alcohol%202020-21%20National%20-%20%20FINAL.pdf

National Union of Students. (2021). *Students and Drugs Survey 2020-21*. https://uploads-ssl.webflow.com/6008334066c47be740656954/6086d5f97f53db34b0d826ab_20210426_SOS-UK%20Students%20and%20Drugs%20survey%202020-21_FINAL.pdf

Ng, R. (2020). *How to Ask about Gender in Forms Respectfully*. https://www.ruth-ng.co.uk/how-to-ask-about-gender-in-forms-respectfully

Nutt, D. (2012). *Drugs - without the hot air : Minimising the harms of legal and illegal drugs*. UIT Cambridge Ltd..

Nutt, D. J., King, L. A., & Phillips, L. D. (2010). Drug harms in the UK: a multicriteria decision analysis. The Lancet, 376(9752), 1558-1565.

Nutt, D., King, L. A., Saulsbury, W., & Blakemore, C. (2007). Development of a rational scale to assess the harm of drugs of potential misuse. *the Lancet*, *369*(9566), 1047-1053.

Office for National Statistics. (2018). *Adult drinking habits in Great Britain*. https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/drugusealcoholandsmoking/datasets/adultdrinkinghabits

Office for National Statistics. (2020). *Adult smoking in the UK: 2019*. https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/bulletins/adultsmokinghabitsingreatbritain/2019

Office for National Statistics. (2020). *Deaths related to drug poisoning by selected substance, England and Wales*. https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/deathsrelatedtodrugpoisoningbyselectedsubstances

Office for National Statistics. (2021). *Alcohol-specific deaths in the UK: registered in 2020*. https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/causesofdeath/bulletins/alcoholrelateddeathsintheunitedkingdom/registeredin2020

Orsmond, G. I., & Cohn, E. S. (2015). The distinctive features of a feasibility study: objectives and guiding questions. *OTJR: occupation, participation and health*, *35*(3), 169-177.

Palmer, M., & Maynard, O. M. (2022). Are you tripping comfortably? Investigating the relationship between harm reduction and the psychedelic experience. *Harm reduction journal*, *19*(1), 1-12.

Release. (2018). *Taking the Hit: Student Drug Use and How Institutions Respond*. https://www.release.org.uk/publications/taking-hit-student-drug-use-and-how-institutions-respond

Release. (2021). *Release's take on the Government's new Drug Strategy*. https://www.release.org.uk/blog/release%E2%80%99s-take-government%E2%80%99s-new-drug-strategy

Rindfleisch, A., Malter, A. J., Ganesan, S., & Moorman, C. (2008). Cross-sectional versus longitudinal survey research: Concepts, findings, and guidelines. *Journal of marketing research*, *45*(3), 261-279.

Schulenberg, J., Johnston, L., O'Malley, P., Bachman, J., Miech, R., & Patrick, M. (2020). Monitoring the Future national survey results on drug use, 1975-2019: Volume II, college students and adults ages 19-60.

Strang, J., Babor, T., Caulkins, J., Fischer, B., Foxcroft, D., & Humphreys, K. (2012). Drug policy and the public good: evidence for effective interventions. *The Lancet*, *379*(9810), 71-83.

Taherdoost, H. (2017). Determining sample size; how to calculate survey sample size. *International Journal of Economics and Management Systems*, *2*.

United Kingdom. Health and Social Care. (2021). *Review of drug part two: prevention,*

treatment, and recovery. https://www.gov.uk/government/publications/review-of-drugs-phase-two-report/review-of-drugs-part-two-prevention-treatment-and-recovery

United Kingdom. Home Office. (2017). *Drug Misuse: Findings from the 2016/17 Crime Survey for England and Wales*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/642738/drug-misuse-2017-hosb1117.pdf

United Kingdom. Home Office. (2021). *From harm to hope: A 10-year drugs plan to cut crime and save lives*. https://www.gov.uk/government/publications/from-harm-to-hope-a-10-year-drugs-plan-to-cut-crime-and-save-lives

United Kingdom. House of Commons Library. (2022). *Higher education student numbers*. https://researchbriefings.files.parliament.uk/documents/CBP-7857/CBP-7857.pdf

University of Bristol. (n.d.). *Drugs and alcohol harm reduction statement*. https://www.bristol.ac.uk/students/support/wellbeing/policies/harm-reduction/

Vidal Gine, C., Fernández Calderón, F., & Lopez Guerrero, J. (2016). Patterns of use, harm reduction strategies, and their relation to risk behavior and harm in recreational ketamine users. *The American Journal of Drug and Alcohol Abuse, 42*(3), 358-369.

West, S. L., & O'Neal, K. K. (2004). Project DARE outcome effectiveness revisited. *American journal of public health, 94*(6), 1027-1029.

Winstock, A. R., Wolff, K., & Ramsey, J. (2001). Ecstasy pill testing: harm minimization gone too far?. *Addiction, 96*(8), 1139-1148.

World Health Organization. (2000). *International guide for monitoring alcohol consumption and related harm* (No. WHO/MSD/MSB/00.4). World Health Organization.