Evaluation of a drug checking service at a large scale electronic music festival in Portugal

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Publication details:
International Journal of Drug Policy
v. 73
Medium: Print-Electronic
pp. 88 - 95
0955-3959 (ISSN); 1873-4758 (ISSN)

Publication Date:
2019-11-01

Publisher DOI:
https://doi.org/10.1016/j.drugpo.2019.07.007

Abstract

Background: Drug checking services are being implemented in recreational settings across the world, however these projects are frequently accused of a lack of evidence concerning their impact on people who use drugs. This paper describes the implementation of a drug checking service at the Boom Festival 2016 and explores the impact of this service on its users' behavioural intentions.

Methods: 753 drug samples were submitted to the drug checking service for chemical analysis. All drug checking users were invited to fill a pre-analysis and a post-analysis questionnaire. 310 pre- and post-analysis questionnaires answered by users of the service were successfully matched.

Results: When the test results were "unexpected" (N=86), 94.3% of the service users reported that they would not to take the drug. When the test result indicated the sample contained "the expected substance plus adulterants" (N=41) 32% of users stated they would not take it. When the test result was "only the expected substance" (N=370), as anticipated, 98% of the participants reported they would take it. There was a statistically significant association between users' behavioural intentions and drug-checking result ($\chi^2(2) =350{,}042$, $p<.001$).

Conclusions: These results support the hypothesis that providing drug checking services in large-scale festivals helps users to better manage their drug use and deal with drug adulteration. The data corroborates the supposition that when provided with objective information about the content of their drugs, some users consider health protecting behaviours. Additionally, these results can contribute to the design of tailored harm reduction interventions that take into consideration clients' characteristics, profiles and motivations.

Keywords: Harm Reduction, Program Evaluation, Drug Checking, Boom Festival.

The first electronic music 'raves' appeared in the eighties and since then the number of electronic music events has grown significantly to become established as part of mainstream culture (European Monitoring Centre for Drugs and Drug Addiction, 2002; Anderson, 2014). Several studies emphasize the central role drug use plays in the context of nightlife settings and electronic dance music events (Boeri, Sterk, & Elifson, 2004; EMCDDA, 2002; Holland, 2001; Lee, Battle, Soller, & Brandes, 2011). The distinct setting of nightclubs and festivals (e.g., music, sound, lights) seems to foster practices like dancing or doing drugs, enhancing the pleasure obtained through them (Duff, 2008; Duff, 2012; Malbon, 1999). Hence, the use of certain drugs in the lives of many young people can frequently be framed within particular settings like nightlife venues and electronic music events (Hunt, Moloney, & Fazio, 2014; Kelly, LeClair, & Parsons, 2013, LaBrie, Grant & Hummer, 2011; Lende, Leonard, Sterk, & Elifson, 2007).

When considering the different factors involved in the behaviour of taking drugs, the theory of reasoned action, and later the theory of planned behaviour, propose that this type of conduct is influenced by a number of factors, including: the subject's perceptions, the behaviour's potential consequences, the perceived capacity to perform the behaviour, the opinions of others, and the context the behaviour takes place (Fishbein and Ajzen, 2010). Ajzen and Fishbein (2010) suggest that behavioural intention is produced from a combination of attitude toward the behaviour, subjective norms, and perceived behavioural control, and that it is an immediate determinant of actual behaviour. These theories have been successfully used to predict a wide range of behaviors, particularly health related ones (Armitage & Conner, 2001; Conner & Armitage, 1998; Marcoux & Shope, 1997; Godin & Kok, 1996; Conner & Sparks, 1996; Manstead & Parker, 1995; Blue, 1995; Randall & Wolf, 1994; Sparks, 1994; Godin, 1993; Ajzen, 1991; Sheppard, Hartwick & Warshaw, 1988) and

serve as an important theoretical base for several harm reduction interventions with people that use drugs in party settings.

Harm reduction in this context is understood as several "policies, programs and practices that aim to reduce the harms associated with the use of psychoactive drugs in people unable or unwilling to stop" (International Harm Reduction Association, 2018). The adoption of harm reduction strategies, as well as the decision to take or not take drugs, appears to be strongly related with users' risk and self-control perceptions (Cruz, 2015). Several studies with participants that use 3,4-methylenedioxymethamphetamine (MDMA) for example, showed that these individuals were typically aware that their use entails risks (Gamma et al., 2005), and actively seek out harm reduction information and employ a variety of strategies to minimize drug-related problems such as testing their drugs before ingesting them, drinking water to prevent dehydration and heat stroke, or taking antioxidants and antidepressants to avoid serotonergic neurotoxicity (Akram and Galt, 1999; Baggott, 2002; Boys et al., 1997; Cruz & Machado, 2010; Cruz, 2015; Hansen et al., 2001; Measham et al., 2001; Topp et al., 1999; van de Wijngaart et al., 1999; Winstock et al., 2001).

However, these theories are not exempt from criticism, particularly because they focus almost exclusively on individual behaviors and tend to disregard the social structural contexts of the individuals, and where and when the behaviors might take place. A person's ability to make health-oriented decisions seems to vary according to age, gender, social-economic status, ethnicity, and the uneven access to the resources that are necessary for good health and wellbeing (Rhodes, 2009). More recently, Ajzen and Fishbein (2004) have pointed out that the relative importance of attitudes, subjective norms, and perceptions of behavioral control for the prediction of intentions will vary from behavior to behavior and between different populations.

When buying drugs in the illegal drug market, even those people who are highly knowledgeable of the risks and aware of strategies to minimize them must deal with several challenges that influence their capacity to make informed behaviours. Due to their unregulated status, illegal psychoactive substances are subject to varying levels of adulteration, being frequently mixed with other substances (Brunt et al., 2017; Coomber, 1997; Martins et al., 2017, Vidal-Giné, Fornis-Espinosa, & Ventura-Vilamala, 2014). This lack of knowledge about the content of drugs has been associated with several cases of acute intoxication and deaths (Ventura et al., 2013).

Alongside the risks of alcohol and drug use, several other hazards may arise from the presence in party settings including accidental injuries, hearing loss, heat stroke, and violence (Hughes et al., 2008, 2011). Outdoor dance music events, many lasting for several days, may entail additional risks due to extreme temperatures, sun exposure, large crowds, and lack of rest or sleep (Munn, Lund, Goldy, & Turris, 2016). Recognising that drug use in party settings constitutes a public health problem, governments and civil society organizations have set in motion a series of responses to deal with these issues. Several different programs and practices have been implemented in recreational settings: a) Prevention and harm reduction at the individual level, referring to programs that are aimed at preventing the potential risks and harms of drug use like: peer education programs and drug checking services that allow people who use drugs "to have their drugs chemically analysed as well as receive advice and counselling" (Ventura et al., 2013, p.12); b) Environmental strategies, including crowd management, provision of rest areas, availability of food, and free drinking water within venues; c) Staff training programs for people working in nightlife venues and festivals; d) Community-based programs that deliver a variety of coordinated interventions through local partnerships; and e) Policing and law enforcement measures that focus on matters like underage drinking, violence, and drunk driving (EMCDDA, 2012).

In Portugal, the number of electronic music events has increased significantly in the last two decades, reaching about 250 medium- to large-scale events per year (Aporfest, 2017). With this increase in the number of events the need to provide festival patrons with comprehensive services that promote their health and safety is growing.

The Boom Festival is one of the most internationally relevant events taking place in Portugal. It is a "biennial independent artistic expression multidisciplinary cultural event" (Carvalho et al. 2014, p. 84). In 2016 the event attracted around 40,000 people of 140 nationalities. The Boom Festival has a particular focus on patron care by offering its patrons comprehensive health services and a wide range of harm-reduction interventions. The festival has run since 1997 and began offering harm reduction services in 2002. In 2016 the festival offered the most comprehensive range of harm reduction services so far, divided in two main areas which worked together and constantly exchanged information. The harm reduction hub offered drug checking, drug information and counselling, and the crisis intervention area, where people undergoing difficult psychological experiences (related or not to the use of drugs) could find specialized help.

The harm reduction hub was strategically placed near the main dance floor and open 24 hours a day. At the information stand (info-stand) clients were offered the following services and harm reductions materials: information on the different drugs (effects; counter-indications; harm reduction strategies) and other risks associated with party settings (e.g. hearing hazards; drug law; heat stroke) in several different languages; condoms; earplugs; water sprinklers and fans; individual snorting tubes; physiologic serum and safe injection material (upon request). A chill-out area was also provided next to the info-stand, where people could rest, read the information material and talk to any of the peer workers: it was a privileged space to engage in brief interventions with young people using drugs. Also available for the festival patrons was a drug checking service.

Aims

This paper explores the data generated by the drug checking service at the Boom Festival 2016 in order to (a) better understand the drug checking service offered at this festival, (b) describe the chemical content of the drugs analysed by the drug checking service, (c) characterize the drug checking service users, (d) describe the users' perception of the utility of drug checking integrated services, and (e) evaluate the impact of the drug checking service on its users' behavioural intentions regarding drug use.

Method

Participants

Of the 388 people who answered the questionnaires, it was possible to match 310 pre- and post-analysis questionnaires representing individuals of 35 different nationalities, mainly from Europe, including Germany (42), UK (36), Netherlands (34) Portugal (31), Sweden (28), and France (21). The sample had a mean age of 28.5 years (SD=7.3; range 18-57), and 73% of the sample identified as male, 24% female, and 2% as other gender. Regarding the participants' educational attainment, most of the sample (76%) had a university diploma, 22% had a high school diploma, and only 2% of the participants indicated "other" educational attainments. Considering the employment situation of the participants there was a very wide range of jobs reported, with the most common professions being engineer (10%) and information technology consultant (6%). Only 3% of the participants reported being currently unemployed.

Setting and Procedures

Drug sample collection began at 7 pm and continued until 2 am, with the laboratory staffed and providing results until 5 am. Limited material and human resources and high

temperatures (up to 43°C midday) prevented the laboratory from operating for longer periods. The mobile laboratory near the dance floor was equipped with one colorimetric reagent station and three different thin-layer chromatography (TLC) stations. The colorimetric reagents Marquis, Mecke, Mandelin and **p**-dimethylaminobenzaldehyde (p-DMAB-TS) were used for preliminary screening and spot confirmation after TLC plates development. Aluminum TLC plates pre-coated with silica gel were used as the stationary phase. In samples containing ergoline, amphetamine, and phenethylamine derivatives the development of plates was carried out in glass chambers saturated with the mobile phase methanol/25% ammonia (100:1.5). Plates containing samples of cocaine, ketamine, and related compounds were developed both in two different solvent systems: with acetone or methanol as the mobile phase. Obtained chromatograms were visualized under ultraviolet light of wavelength of 254 nm and/or 366 nm. For a more detailed description of the analytical procedures used, its benefits and limitations, see Martins et al. (2017).

A team of six laboratory technicians performed the analysis and the laboratory coordinator liaised between the laboratory and the harm reduction team. Four experienced members of the harm reduction team were selected and trained to collect samples and give users detailed information about their sample within the context of a brief intervention. The analytical limitations of this qualitative technique were always clearly explained to users of the drug checking service during a brief consultation. Counselling focused not only on the test results but also the users' needs and wishes when using the service (Valente & Martins, 2019, Bucheli et al., 2013; Martins, Valente & Pires., 2015). This one-on-one interaction with people who use drugs is the crucial moment of the drug checking service as a *harm reduction* tool, and what clearly differentiates it from a purity or quality control service.

People submitting their samples for analysis were asked to answer two different questionnaires, one before and another after receiving the result of the analysis. The

questionnaires used in the field were adapted by the drug checking evaluation manager from the drug checking evaluation questionnaire created within the framework of the Nightlife Empowerment and Wellbeing implementation project and piloted before being applied at Boom Festival 2016. The questionnaires were both answered by the participants themselves with a member from the data collection team always present.

Measures

The following measures were collected:

User's expectation of the chemical content of the sample

Participants wrote in an open question what substance he/she wished to test.

Substance ingestion prior to analysis

Participants were asked, using a multiple-choice question, whether or not they had ingested part of the substance they intended to test prior to the analysis.

Sharing of the analysed substance with friends

This information was accessed with multiple choice questions where the alternatives were: 1 (yes), 2 (no). The participants that stated they would share with friends were asked in an open question with how many.

Drug use patterns

Participants reported how often they used several different psychoactive substances in a scale that varied from 1 (Never) to 6 (Every day). They could add a maximum of 4 different substances to the original list.

Motivations for drug use; locations where drugs are usually ingested; techniques used to assess the content of drugs when a drug checking service is not available

These three measures were accessed with multiple choice questions, where several options were presented to respondents. Participants also had the opportunity to list other reasons in an open question.

Degree of usefulness of the drug checking service

The degree of usefulness was measured using a scale from 1 (Very useful); 2 (Fairly useful; 3 (Not very useful); 4 (Not at all useful) to 5 (Don't know).

Behavioural intention following the provision of the test result

Participants had to answer two multiple choice questions. The first question asked, "Now that you know the analysis result what you intend to do?". Participants had the following options: 1 (Take it), 2 (Don't take it). Depending on the answer the participants gave they were asked to answer another multiple-choice question. For participants that had reported the intention of taking the substance the following options were available: "It's pure/only the expected substance"; "It's adulterated but it's not toxic"; "It's new, and I want to try it"; "It's a substance I am already familiar with"; "Don't know this substance but I will take it anyway".

If participants had reported the intention of not taking the substance the following options were available: "I don't know this substance(s)"; "I know this substance and I don't like it"; "It's toxic or adulterated"; "I will collect more information before deciding if I want to take it or not.". All participants had the opportunity to list other reasons in an open question.

Descriptive statistics were used for reporting user's expectations of the chemical content of the sample, substance ingestion prior to analysis, sharing of the analysed substance with friends, drug use patterns, motivations for drug use, locations where drugs are usually ingested, techniques used to assess the content of drugs when a drug checking service is not available, and degree of usefulness of the drug checking service. Furthermore, for calculating

differences regarding behavioural intention following the provision of the test result, chi-square tests were performed (alpha level .05).

Results

User's expectation of the chemical content of the sample

Seven hundred and fifty-three different drug samples were submitted for analysis in 5 days of intervention. Most users of the drug checking service wanted to test a substance they believed to be MDMA (n=309). The second most tested substance was allegedly lysergic acid diethylamide (LSD) (n=206).

[Insert figure 1 here]

Figure 1 shows the levels of adulteration per substance found at the Boom Festival in 2016. Almost 90% of the MDMA samples contained only MDMA and 9% were misrepresentations of this substance, mainly synthetic cathinone derivatives. Some samples were also adulterated with cathinones and lidocaine. Similarly, most samples expected to be LSD contained only LSD, with NBOMe and DOx being detected in a 24 'LSD' samples. Of the 65 samples of cocaine analysed only 6 contained just cocaine. Of the remaining samples, 34 samples contained a single substance: lidocaine. Two samples that were sold as cocaine contained ketamine. One sample sold as 2C-E contained a NBOMe derivative.

Substance ingestion prior to analysis

When asked if they "had used the drug prior to testing it" most of the participants (77%) said "no".

Sharing of the analysed substance with friends

A large majority of respondents (86%) reported they would be sharing the analysed drug with friends. Twenty-eight per cent stated they would be sharing with 4 or 5 friends and 8% with 6 or more.

Drug use patterns

[Insert table 1 here]

Cannabis (27%) and alcohol (9%) were the primary substances used "everyday" by the study participants (see Table 1). These drugs (cannabis (69%) and alcohol (78%)) were also the most often used in the last week. Analysing last month's consumption, MDMA was one of the most used substance by the respondents (25%). Considering the use in the "last twelve months", again MDMA appears as one of the most used substance (68%), again after alcohol (96%) and cannabis (89%). For the question "once or more in your life", drugs like magic mushrooms (80%) and MDMA (94%) had been used by most respondents.

Motivations for drug use

Drug checking clients (*N*=310) were also asked their reasons for taking drugs (multiple response allowed). The largest portion of the sample (70%) indicated "fun" as their reason to use drugs, followed by curiosity (64%), to "feel less tired" (31%), to "loosen up" (30%), to "stay awake" (28%) or to "improve social relations" (25%).

Locations where drugs are usually ingested

When asked about the location where they usually used drugs, the most common places to use drugs were "festival and parties" (72%), "home" (60%), "disco or club" (45%) "someone else's house" (44%), "concerts" (43%), "nature/outdoor locations" (36%), and "bars" (17%).

Behavioural intention following the provision of the test result

Service users were also asked about their intended behaviour once they received the test result. Each user had the possibility of testing more than one sample hence, the same participant could present diverse behavioural intentions depending on the results of the different tests.

[Insert Figure 2 here]

Figure 2 shows the self-reported intentions of drug checking service users compared with their testing results. When the drug checking result was "not the expected substance" (N=86) most users with this result (94%) reported an intention not to use the substance. When the test result indicated the sample contained "the expected substance plus adulterants" (N=41) 32% of users who got this result stated they would not take it. When the result was "only the expected substance" (N=370), as expected, 98% of the participants reported they would take it. There was a statistically significant association between users' behavioural intentions and drug-checking result ($\chi^2(2) = 350{,}042$, $p<.001$).

When asked about the reasons not to use the tested substance (N =142 [1]; multiple responses possible) the majority of participants (43%) stated that they didn't know the substance that appeared in the test, 28% said it was toxic or adulterated, 23% reported that they did not like the substance, and 7.7% stated they needed more information about the drug.

For the participants that intended to use the tested substances, when asked about the reasons for this behaviour (N=497 [2]); 60.8% said "it's only the expected substance", 31.5% said "it's a substance I am familiar with", 4.9% said "it's new and I want to try it", 4.6% said "it's adulterated but non-toxic" and only 1.3% of the sample said "don't know this substance, but I still want to try it".

Techniques used to assess the content of drugs when a drug checking service is not available.

Respondents were also questioned about which methods they use to assert the quality of their drugs when a drug checking service is not available to them (N=310). The majority of the respondents stated they would "ask information of someone who had tried it before"

[1] N=142 refers to the number of samples, not individuals, since some people tested more than one sample.
[2] N=498 refers to the number of samples, not individuals, since some people tested more than one sample.

(63%), almost half of the participants stated they would "start with a small quantity" (47%), 38% would "ask the dealer for information", 32% would "look up information on the internet" and 26% of respondents would base their judgment on the product's appearance.

Degree of usefulness of the drug checking service

Finally, participants (N=310) were asked to rate the usefulness of the drug checking services. Almost all (95%) considered drug checking services to be very useful while the remaining 5% considered these services to be fairly useful. No participant reported that the service was not useful.

Discussion

The number of drug checking services around the world has been growing in the last years (Barratt, Kowalski, Maier, & Ritter, 2018), driven by the continued emergence of new psychoactive substances (EMCDDA, 2015, UNODC, 2018) and the opioid crisis in North America (Barry, 2017). However, the EMCDDA states that there is still a lack of robust studies surrounding drug checking (EMCDDA, 2017). This paper adds to the existing literature by reinforcing the positive results obtained by other studies (Measham, 2019; BAONPS, 2017b; Benschop, Rabes & Korf, 2002; Martins et al., 2017; Michelow & Dowden, 2015; Sage & Michelow, 2016; Saleemi, Pennybaker, Wooldridge & Johnson, 2017, Wiese & Verthein, 2014), accessing a larger sample and providing, at the same time, a characterization of drug-checking clients to inform how harm reduction services are designed and implemented. This latter contribution is especially relevant when considering that the literature describing behavioural intentions of drug checking clients after receiving the test result is still scarce.

Our analysis found that drug checking clients at the Boom Festival 2016 were typically well-educated, professionally integrated males in their twenties. Concerning the participants' drug use patterns, alcohol, cannabis and amphetamine were mentioned as

substances used daily, 9% and 27% and 1% respectively. Alcohol and cannabis had the highest rates of use in all categories.

This description of the sample supports pre-existing findings that many people that use drugs in recreational settings are socially integrated and that their drug use is framed within a particular setting, while educational and occupational goals are typically still attained (Cruz, 2015).

Indeed, most participants reported that festivals and parties were the most frequent locations they used drugs, reinforcing the importance of providing services at these settings. Harm reduction projects are grounded in outreach methods that meet people where they are and where the risk behaviours tend to take place. On-site location of harm reduction services is particularly important in the context of outdoor events in remote locations where the harsh environmental conditions and lack of access to certain basic goods might potentiate the risks associated with the use of drugs such as dehydration, tiredness, heat stroke, and physical and/or psychological crisis situations.

Results also emphasize “fun” as one of the most relevant reasons for our study participants to use drugs. Traditionally, pleasure is removed from most health messages or preventive campaigns. However, this type of subjectivity and users’ motivations should be accounted for when planning interventions since preventive messages focusing only on the risks drug use might entail tend to be unsuccessful, particularly with a fringe of young drug users that do not identify themselves with discourses that disregard the pleasures and benefits drug use might involve (Barratt, Allen, & Lenton, 2014, Duff, 2012, Kane, 2008; Moore, 2008).

Another relevant result is the fact that most participants state that they will share the analysed drug with their friends. This finding corroborates the results of other studies that show the supply of drugs among friends and acquaintances is highly prevalent within youth

drug markets (Coomber & Turnbull, 2007; Potter, 2009). Research has also shown that the most significant source of information for young drug users is their peers (Needle et al., 1986). So, we can infer that information about drug composition and harm reduction strategies might be disseminated not only to direct clients of the service but also among their social networks.

Also supportive of the provision of the service—underlining the value users give to the availability of this type of harm reduction facility—is the fact that that the majority of our clients test before taking the substance, showing that the information obtained in this service is valued and taken in consideration when making a decision whether or not to use a drug. This finding also corroborates the results of previous research in this field (Hungerbuehler et al., 2011). In fact, most participants in the study (95%) consider drug checking services to be very useful.

Another important finding was that over 94% of the people that found out that they did not have the expected substance reported intending not to take the substance. Assuming that behavioural intention is an immediate determinant of actual behaviour as suggested by the theories of reasoned action and planned behaviour (Fishbein and Ajzen, 2010), these results are an indication of the impact drug checking services can have on users' behaviours.

The fact that people state they will not use an unexpected substance is particularly relevant in this case considering the high levels of adulteration for some generally used substances like cocaine or amphetamine, and the appearance of relatively unknown substances like NBOMe derivatives as adulterants of commonly used drugs, like LSD, at the Boom Festival 2016. This reality—combined with the methods people use to assess the content of their drugs when a drug checking service is not available: "ask someone who has tried it before" (63%), "start with a small quantity" (47%), "ask the dealer" (32%)—puts people at high and extremely unnecessary risks. In fact, without a chemical analysis it is

impossible to know the content of a drug sample and adequately advise people that use drugs. Without a drug checking service to determine drug sample content, it is extremely difficult for harm reduction workers to provide objective and evidence-based information to their clients.

Limitations

Concerning the data collection strategy, self-report questionnaires were used. Study results based in people's self-report might frequently be tainted by a range of biases, including recall and social desirability bias. Concerning the latter, the data collection team tried to address this issue by assuming a non-judgmental approach to all the service users' behaviours and allowing them privacy when answering the questionnaire. Still, since most service users reported an extremely positive attitude towards the service, they might feel more prone to answer the questions in a way they believe would satisfy the service workers and peers. Nevertheless, in the context of a study done in a naturalistic setting, like this one, it would be virtually impossible to obtain a more objective measurement of certain behaviours which are extremely private.

Also, the data collected concerns people's behavioural intentions and not actual behaviour. The relation between intentions and behaviours is subjected to several conditions, the most relevant ones for Ajzen (1985) are the time interval between the measurement of the intention and the actual behaviour, and the level of confidence the person has on the intention reported. The shorter the time frame the more accurate the prediction of actual behaviour: as time passes more unanticipated and unforeseeable events or information may change a person's intention. Regarding the level of confidence, higher levels of confidence usually lead to greater commitment to executing the intention. Future research should include follow-up questionnaires so that the validity of measures of behavioural intention can be tested

against recent reports of actual behaviour. Also, the provision of amnesty bins where people can discard the substances, they don't want to take should be available at drug checking services. Data from these discard points provide objective information on discard rates to assess the impact of a drug checking service.

Another limitation to be considered is the fact that the results in this paper relate to a very specific group of people that use drugs in the Portuguese setting where drug use and possess is decriminalised, which could be considered an enabling environment (Rhodes, 2009). Most of our sample is composed of white males, with a high socio-economic status, lacking diversity in terms of social-economic status, ethnicity and age. This type of person might feel less constrained in their health-related decision-making compared to, for example, more vulnerable people using drugs. It might be easier for a person with a non-problematic use and a high socio-economical level to discard an adulterated drug than for someone with more problematic use and/or who is struggling to buy their drugs. These contextual differences might help to explain the discrepancy between the positive results of studies in recreational settings (Measham, 2019; BAONPS, 2017b; Benschop, Rabes & Korf, 2002; Martins et al., 2017; Michelow & Dowden, 2015; Sage & Michelow, 2016; Saleemi, Pennybaker, Wooldridge & Johnson, 2017, Wiese & Verthein, 2014) when compared with more modest results in other settings where drug checking is beginning to be implemented (Bardwell and Kerr, 2018; Karamouzian et al., 2018; Kennedy et al, 2018; Krieger et al., 2018a; Krieger et al., 2018b; Tupper, McCrae, Garber; Lysyshy and Wood, 2018). Further research is necessary focusing in different contexts and different segments of the population, including those who do not use the service, to fully assess the impact of drug checking as a harm reduction tool.

Conclusion

In conclusion these results support the provision of drug checking services in large scale festival, as an effective harm reduction strategy, to help users to better manage their drug use and deal with drug adulteration. The data corroborates the hypothesis that when provided with objective information about the content of their drugs, people that use drugs typically implement health protecting behaviours. Additionally, these results can contribute to the design of tailored harm reduction interventions that take into consideration clients' characteristics, profiles and motivations.

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Figure 1:

Level of adulteration for the 753 analysed samples

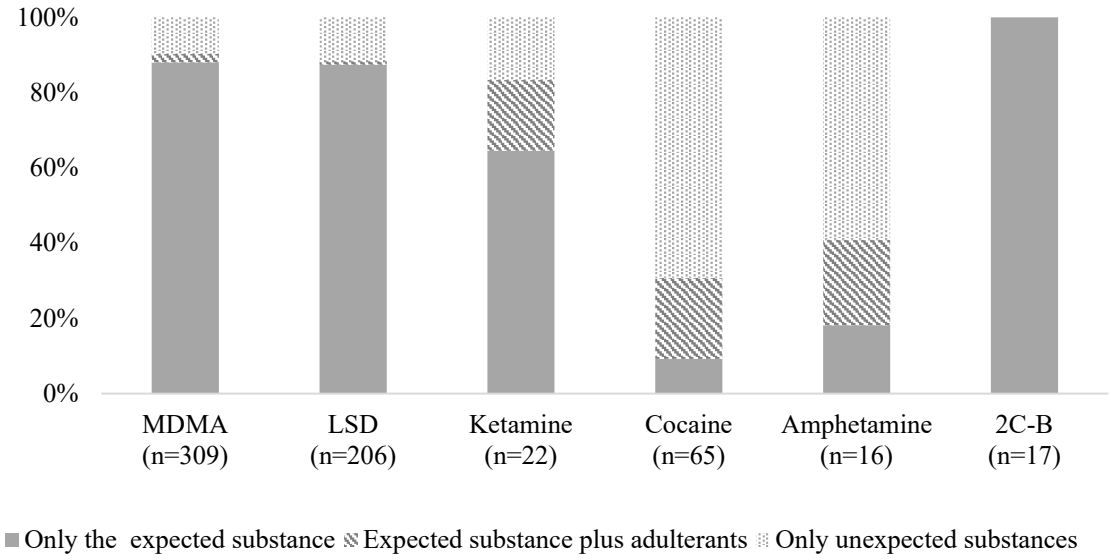

Figure 2:

Self-reported intentions of drug checking service users compared with their testing results (N= 497)