

Polydrug use at raves by a Western Australian sample

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Abstract

This study aimed to quantify the patterns of drug use among a group of participants in the rave scene in Perth, Western Australia. Interviews were conducted with 83 people who had recently been to a 'rave'. The study incorporated a semi-structured qualitative interview and a structured quantitative questionnaire. This paper reports on the quantitative data collected concerning patterns of drug use in association with the last rave attended. Use of 'dance drugs' (ecstasy, amphetamines or LSD) was reported by 86.8% of the 76 respondents who had used at least one drug in association with their last rave. Nearly 80% of these had also used at least one other drug on this occasion (mean number used = 2.4). Cannabis and inhalants were the drugs most commonly combined with the 'dance drugs', several respondents used more than one 'dance drug' concurrently and 16.7% had used alcohol. It seems that a significant proportion of those using 'dance drugs' in association with raves and dance parties are mixing these drugs with other substances despite harm reduction advice to the contrary. The need for more research in this area is discussed. [Boys A, Lenton S, Norcross K. Polydrug use at raves by Western Australian sample *Drug Alcohol Rev* 1997;16:227-234]

Key words: polydrug use, raves, dance drugs.

Introduction

It is now widely accepted that illicit drug users often do not confine themselves to the use of a single substance. Instead, several different drugs may be used regularly to complement each other or as substitute when a preferred drug is unavailable [1]. This pattern is also evident among 'dance drug' users. The drugs usually referred to as 'dance drugs' are MDMA (ecstasy), amphetamines and LSD, al-

though other substances such as ketamine, cocaine and nitrites have also been associated with the scene [2-4]. Eighty-three percent of a sample of 89 people who had used MDMA in London had tried amphetamines and cocaine and 63% had taken LSD [5]. Furthermore, it was noted that many had used MDMA with other drugs, notably alcohol, cannabis, LSD and amphetamines, which left the way open

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for potentially adverse interactions [5]. A study of a sample of ecstasy users in Sydney found most were polydrug users and that many used other drugs at the same time as ecstasy, including cannabis, LSD and amphetamines [6]. Similar patterns of use were reported by users in entertainment areas frequented by young people in Brighton [7] and in studies of participants in the dance party scene in both the North West of England [8,9] and in Glasgow [4].

Beliefs about mixing drugs

Research has shown that users of dance drugs hold a wide range of beliefs about the effects of mixing drugs. Some participants in an Australian study, reported that using amphetamines or ecstasy together with a hallucinogen, could serve to reduce the intensity of the 'trip' which has been seen as particularly desirable to enable one to keep going for longer at a rave or dance party [10]. It has also been reported that the combined use of ecstasy and amphetamines had become popular in the UK rave scene, as it was believed to be effective for overcoming the 'jelly legs' resulting from continuous dancing [11]. Sydney ecstasy users described the effects of mixing ecstasy and alcohol as 'deadening' or 'counteracting' the effects of the ecstasy while increasing the side effects and vomiting [6]. Cannabis was commonly smoked during the 'coming down phase' in order to help induce relaxation and sleep, although some also suggested that it could help to perpetuate the ecstasy 'high'.

Harm reduction messages and polydrug use

Information campaigns targeted at people in the rave and dance party scene appear to have been well received [12,13]. However, much of the harm reduction material targeting dance drugs has tended to focus on the effects of taking individual drugs in isolation. There seems to be little information about the possible effects of combining drugs, possibly because the research needed to support such information is scarce. However, there is clearly a need for such information. A new Australian report on the toxic effects of MDMA provides details on the risks of mixing various other drugs with ecstasy; however, combinations which do not include ecstasy are not covered [14].

Given the relative lack of research, it is not surprising that messages about concurrent use of dance drugs and other substances often convey little

beyond brief statements such as that the effects of other drugs may seem different or weak, concurrent alcohol use should be avoided and some combinations are deadly [15,16]. However, there are some exceptions. The Speedwise-speedsafe Campaign, although not exclusively targeted at those in the rave community, did address the issue in more detail [17]. In addition to warning that mixing speed with other drugs could increase the side-effects of each drug in unpredictable ways, it specifically noted that: 'mixing speed with ecstasy or MDA increases the effects on the heart and the feelings of anxiety and paranoia. Add dancing to the mix and the side-effects are increased again.' The most recent version of the Ravesafe brochure describes each of the major drug groups and warns that combining drugs from same or different groups can increase the risk of harm. It notes that mixing results in unexpected and possibly hazardous consequences, and makes the point that many drug deaths are the result of mixing drugs. In addition it warns about the risks associated with the use of prescription drugs both in combination with dance drugs and as substitutes for them [18]. However, in general the message has been simply to avoid mixing drugs altogether, and the reasons behind this advice are seldom explained.

Method

Eighty-three people who had been to a 'rave' in Perth within the previous 6 months were interviewed between 1 March and 31 August 1995. The method is described in more detail elsewhere [19]. Respondents were recruited through the use of flyers in clothing and music stores, through snowballing, and unsolicited informal references to the study were made on two radio programmes popular with people in the rave and dance party scene. The flyers, a popular means of advertising raves, did not refer to drug use. They were placed in 17 different venues (cafes, clothing and music stores) in metropolitan and suburban locations in two cities, Perth and Fremantle. Respondents were paid \$20 (AUS) for the 1.5-hour interview. This included qualitative and quantitative components. Questions were asked about the use of 18 distinct drugs or drug types in association with rave/dance parties and in other settings. The drugs addressed were ecstasy, ecstasy mix, amphetamines, LSD, other hallucinogens, ketamine, inhalants, cocaine, crack cocaine, tranquillizers, cannabis, alcohol, heroin, homebake,

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methadone, other opiates, barbiturates and steroids. A category for 'other drugs' used was also included. The category 'ecstasy mix' included tablets sold as 'smacky-E', 'Trippy-E' and 'Coke-E' reputedly ecstasy mixed with heroin, LSD and cocaine, respectively. The 'inhalants' category included use of nitrous oxide, nitrites or glue. However, it appeared that nitrous oxide was the most frequently used inhalant among the study group. Homebake is an opioid which illegally manufactured from codeine-based pharmaceuticals [20]. The analyses were done using SPSS (Release 5) on the SPARC 2 running Solaris 2.3 mini computer [21].

Results

The sample

The mean age of the respondents interviewed was 18.9 years (range 13–48 years, mode = 17, SD = 4.52). Just over half (53.0%, $n = 44$) of the sample were male. There was no significant difference between male and female respondents in terms of age ($\chi^2 = 0.784$, $df = 2$, NS). Nearly three-quarters (72.3%, $n = 60$) of the sample were currently in education: 41.7% of these were still at school, 13.3% were enrolled in technical and further education and 45.0% were attending tertiary institutions. Just over half the sample (56.6%) were in some form of employment and 23.4% of these were working full time.

Drugs used before, during and after most recent rave

Respondents were asked to indicate which of the list of drugs they had used before, during and/or after each of the last two raves that they had attended. Drug use 'before' the rave was defined as anything used on the day of the rave before entering the venue for the first time; 'during' was defined as anything taken between entering the venue for the first time and leaving the venue for the last time; and 'after' was defined as anything used in the period between leaving the rave for the last time and going to sleep. There was no significant differences in the proportion of respondents who reported using each of the drugs across the last two raves attended. Given this the following results will address the most recent rave only, which in total numbered 18 events held between July 1994 and July 1995. These included both

widely advertised 'commercial' raves and more clandestine 'underground' events.

Table 1 shows the multiple responses for drugs used in association with (either before, during or after) the last rave attended. The most commonly used drug was cannabis, followed by amphetamines, LSD, ecstasy and then inhalants. Seven people (8.4%) reported that they had not used any drugs (including alcohol) in association with the last rave attended. There was no reported use of ketamine, cocaine, crack, heroin, homebake, methadone, other opiates or other hallucinogens before, during or after their last rave.

Table 1 also shows the multiple responses for the different drugs according to the time of use (before, during or after the rave). At least one drug was used by 63.9% of the sample on the day of the last rave that they attended before they entered the venue for the first time. The drugs most commonly used during this period were cannabis and amphetamines. The majority of the sample (71.1%) reported using a drug while at the rave. The most common were the three main dance drugs amphetamines, LSD and ecstasy. The majority (59.0%) of the sample did not use alcohol or any other drug after leaving the rave. For those who did, the drug most commonly used was cannabis, followed by inhalants. There were no differences between the proportion of respondents abstaining from drug use before or during their last rave, but significantly more did not use after the event.

For most of the drugs, significant differences (see Table 1) were found between the number of respondents who used each drug before, during and after their last rave. Cannabis was used by more respondents before and after the last rave than it was during the event. Amphetamines were used by more respondents both before and during the last rave than they were afterwards. Ecstasy was used by more respondents during the last rave than either before or after. There were no significant differences between the proportion of the sample using LSD before or during the event, but significantly fewer used the drug after the rave. More respondents used alcohol before the rave than either during or after and more respondents used tranquillizers after the rave than before or during it.

Number of different drugs used in association with the last rave

Almost all the respondents (91.6%) reported using at

Table 1. Drug use associated with last rave attended

	Before		p^2	During		p^3	After		Associated with last rave ¹	
	<i>n</i>	% cases		<i>n</i>	% cases		<i>n</i>	% cases	<i>n</i>	% cases
Cannabis	28	33.7	<0.05	15	18.1	<0.05	27	32.5	43	51.8
Amphetamines	18	21.7	NS	22	26.5	<0.001	2	2.4	29	34.9
Ecstasy	5	6.0	<0.05	19	22.9	<0.001	1	1.2	23	27.7
LSD	10	12.0	NS	20	24.1	<0.001	0	0.0	29	34.9
Inhalants	6	7.2	NS	13	15.7	NS	8	9.6	23	25.3
Alcohol	13	15.7	<0.05	3	3.6	NS	1	1.1	15	18.1
Tranquillizers	0	0.0	NS	1	1.2	NS	5	6.0	5	6.0
Ecstasy mix ⁴	1	1.2	NS	2	2.4	NS	0	0.0	3	3.6
Other drug	1	1.2	NS	0	0.0	NS	1	1.2	2	2.4
No drugs used	30	36.1	NS	24	28.9	<0.001	49	59.0	7	8.4
Total responses	112			119			94		180	

¹ Either before, during, or after last rave.

² Significance of McNemar test for before-during differences.

³ Significance of McNemar test for during-after differences.

⁴ Includes drugs sold as 'Smacky-E', 'Trippy-E' and 'Coke-E' which are claimed to be MDMA + heroin, MDMA + LSD and MDMA + cocaine, respectively.

least one drug in association with the last rave that they attended (mean = 2.3; range 1-7) and just over two-thirds (67.5%) of the sample used more than one drug (Fig. 1).

Combinations of drugs used with dance drugs

The majority (86.8%) of those who reported using a drug on the last occasion that they went to a rave used one of the 'dance drugs': either ecstasy (or its mixes), amphetamines or LSD. Of these, 16.7% also used alcohol in association with the rave. The mean number of different drugs used by those who used at least one 'dance drug' varies from 2.4 (for LSD) to 3.0 (for amphetamines), with a range of 1-7. Details of the other drugs used in addition to ecstasy, amphetamines and LSD are summarized below.

Nearly a third (31.3%, $n = 26$) of the sample reported using ecstasy (or its mixes) before, during or after the last rave that they attended. Only 7.7% of this group reported that they did not use other drugs on this occasion. The most common drug used in addition to ecstasy was cannabis (69.2%), followed by amphetamines (34.6%) and inhalants (34.6%). LSD was used by 26.9% of those who used ecstasy, 19.2% used alcohol and 7.7% reported that

they had used tranquillizers of some sort before, during or after the rave.

Amphetamines were used by 34.9% ($n = 29$) of the sample in association with the last rave that they had attended. Only 13.8% of this group reported no other drug use. The drug most commonly used in addition to amphetamines was cannabis, used by 58.6% of these respondents, followed by inhalants (44.8%) and ecstasy (as above). Other drugs used by this group in conjunction with amphetamines included alcohol (27.6%), LSD (20.7%) and tranquillizers (13.8%).

LSD was used by 34.9% ($n = 29$) of the sample in association with the last rave attended. For 27.6% of this group this was the only drug used throughout the evening. As with the other 'dance drugs', cannabis was the drug most commonly used in addition to LSD, used by 51.7% of this group, followed by inhalants (27.6%). Concurrent use of ecstasy and amphetamines is reported above. Alcohol was used in addition to LSD by 10.3% of this group and 3.4% used tranquillizers.

Preferred drugs before, during and after raves

Respondents were asked to give up to three drugs of preference for use before, during, and/or after a rave

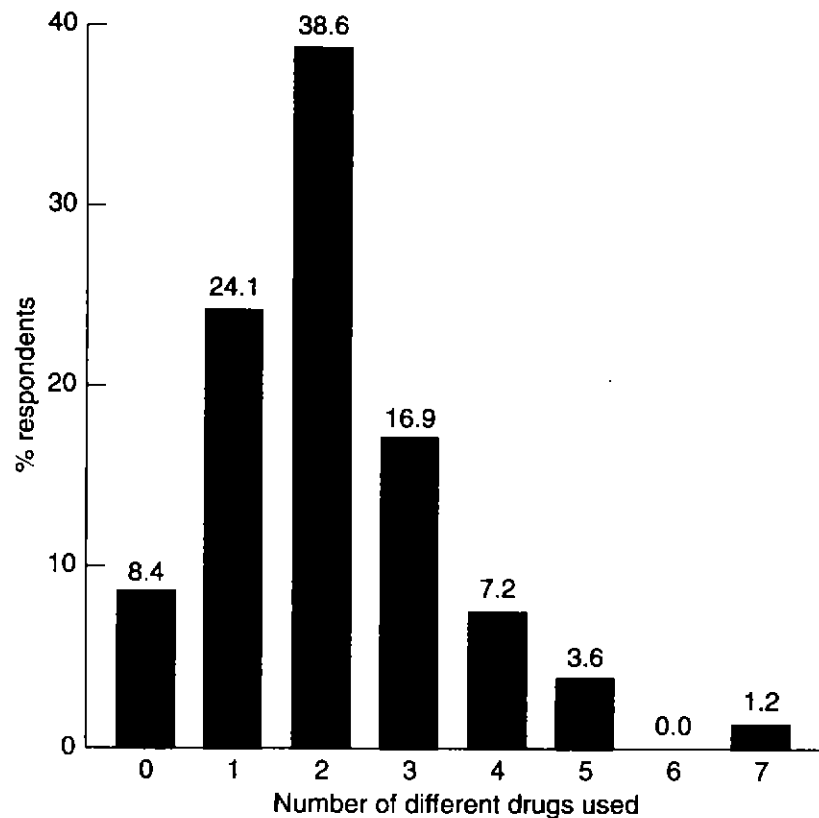


Fig. 1. The number of different drugs used by respondents associated with the last rave attended.

(given that any drug was freely available and cost was not an issue). Sixteen people (19.3%) did not list any preferred drugs for before a rave, 14 (16.9%) did not list any drugs for during the rave and 18 (21.7%) did not list any preferred drugs for use after attending a rave. Alcohol was listed as a preferred drug for use before a rave by only 10.8% of respondents; during a rave by 2.4%; and nobody indicated it as a drug of preference for use after a rave. Table 2 summarizes the five most popular drugs in each category:

Discussion

The average age of this sample group (18.9 years) is substantially less than for those in other studies of dance drug users. For example, the mean age reported in Forsyth's study of participants in the Glasgow rave or dance party scene was 24 years, and the Sydney ecstasy users interviewed by Solowij *et al.* had a mean age of 27 years [4,6]. The sample was small in number and the characteristics of the population who have recently attended raves and other dance events is yet to be described. Consequently it is not possible to generalize with confidence from this sample to patterns of drug use in the wider

population of people who attend raves and other dance events.

Rave-related drug use

The patterns of rave-related drug use reported in this study suggest that particular drugs or drug types are popular at specific times in association with raves. For example, amphetamines were used by many more respondents before or during the rave than after it. Ecstasy and LSD were both used by more people during the rave than either before or afterwards. Cannabis was used by more people before and after the last rave than it was during the event, and tranquillizers were mainly used afterwards. As might be predicted, given the rave culture of all night dancing, the main drugs used during the rave were the hallucinogens or stimulants. Many users believe that these drugs increase energy levels for dancing and/or accentuate the effects from the light shows and music. The main drugs used following the rave (cannabis and tranquillizers), might be expected to aid relaxation and the 'come down' after dancing all night and help to induce sleep. It thus seems that respondents were using drugs for their

Table 2. *The five most preferred drugs for use before, during and after a rave*

Before the rave	During the rave	After the rave
Cannabis (34.9%)	Ecstasy (74.7%)	Cannabis (55.4%)
Amphetamines (34.9%)	Amphetamines (39.8%)	Inhalants (24.1%)
Ecstasy ¹ (25.3%)	Inhalants (20.5%)	Ecstasy ¹ (10.8%)
LSD/hallucinogens ² (18.1%)	LSD (14.5%)	Tranquillizers (9.6%)
Inhalants (12.0%)	Cannabis (9.6%)	Amphetamines (9.6%)

¹ Includes drugs sold as MDMA mixed with other drugs.

² Includes other hallucinogens such as 'magic mushrooms'.

specific effects in order to manage their state of mind at different stages of the evening.

Evidence to support this idea may also be drawn from analysis of the drugs respondents expressed a preference for before, during and after a rave. A very similar pattern to that of the drugs used emerges: cannabis was the most popular drug before and after a rave and the stimulants and hallucinogens were preferred by more people during a rave event. This suggests that the patterns of reported drug use were not purely dependent on what was available at the time. However, it does appear that the 'dance drugs' may be substituted for one another: three quarters of the sample named ecstasy as their drug of preference during a rave, yet less than one in four reported that they had actually used this drug during the last rave attended. LSD was named as a preferred drug during a rave by only about one in seven of the sample, yet about one in four had used this drug during the last rave that they attended. Together, these findings are consistent with other observations that more readily available, cheaper and more reliable drugs such as LSD may be substituted for the expensive and less reliable ecstasy when the latter is less available [22].

Although the results indicate a high prevalence of illicit drug use in association with raves, other results from this study indicate that use was also evident in other situations [19]. Thus it seems that for most respondents rave-related drug use was part of a wider pattern of use.

Patterns of polydrug use

Over three-quarters of the those who used one of the 'dance drugs' in association with the last rave that they attended used at least one other drug as well during the evening. The most common were cannabis and inhalants, although about one in six

respondents also reported using alcohol in combination with these drugs. Several respondents had combined more than one 'dance drug'; the most common combination being ecstasy and amphetamines. For those who used 'dance drugs' in association with the last rave, the average number of different drugs used was between two and three. However, 15.0% reported using four or more and one person used seven different drugs. These results clearly suggest that a significant proportion of those who are using 'dance drugs' at raves are mixing these drugs with others. The data do not explain whether the drugs are being consumed simultaneously, or over the course of several hours. However, even if the majority of those using more than one drug are consuming them at different times throughout the night, it is still likely that there would be some significant interaction of effects, especially for those using combinations including the longer-acting drugs such as LSD.

While the specific drugs used may differ from city to city, similar patterns of polydrug use have been reported elsewhere among other groups of psychostimulant users [4,6,8-10,23,24]. Newcombe observed that a small minority of ravers danced while under the influence of 'awesome shopping lists of drugs' and suggested that such individuals were running much greater risk of both physical and psychological problems associated with their drug use [11].

Polydrug use risks, effects and beliefs

The specific effects of mixing dance drugs with each other and with other illicit and licit substances is likely to remain uncertain. The work of Zinberg pointed to the role of drug, set and setting in the individual's drug experience [25]. The specific interactive effects of pharmaceuticals of known strength

and composition are complicated enough, but the complexities are further magnified when dealing with illicit drugs of unknown composition, purity and strength, in addition to the variations in the individual and the drug-taking setting.

Research which aims to clarify the interactive effects of these drugs is scarce. Consequently information about the risks associated with mixing these drugs is typically non-specific. For example, Abbott & Concar have stated that 'the effects of any two drugs may be purely additive [but] unpredictable pharmacological interactions are always possible' (p. 33) [26]. However, others have noted that users of dance drugs may hold a whole range of specific beliefs about the interactions of dance drugs and other effects that are not necessarily 'purely additive' [10]. It is unclear to what extent the observations of this small number of users are more widely shared. More research is needed on these drug interactions if harm reduction messages about mixing dance drugs are going to be more specific than telling users to 'avoid it' or 'take care' [15,16].

Over a quarter of those who used amphetamines in association with the last rave that they attended also used alcohol. It is generally accepted that alcohol use can be associated with aggressive and violent behaviour [27]. Research has also suggested that amphetamine use may be associated with episodes of aggression and violence [24]. However, little has been written about the interaction effects of the two drugs together. Anecdotal evidence suggests that users feel more disinhibited, are inclined to drink more alcohol when under the influence of amphetamines and, without being aware of its effects, can become aggressive. Again, more research is needed to establish if these experiences are widespread.

Harm reduction messages and polydrug use

Information resources that have been developed to target people in the rave and dance party scene have, with one or two exceptions, tended to say little about concurrent drug use. The results from this study suggest that people attending raves in Perth are combining their drugs and some are also using the drug alcohol. These findings contrast with those polydrug-related messages which exist, notably to avoid mixing drugs, especially with alcohol. It should be noted that Perth is a somewhat isolated city and that there was possibly less rave-targeted

drug information available to those in the rave scene than in other locations where specific campaigns have been implemented. However, given other literature, it seems that the polydrug use is also common among dance drug users in other locations [4,6-8].

If concurrent use of more than one drug is a common practice among users of dance drugs, the effectiveness of harm reduction messages advising users not to mix their drugs could be questioned. This needs to be understood in the context of changing patterns of drug use in this scene. Forsyth has proposed that the advent of widespread ecstasy use has resulted in new attitudes towards drug use [28]. Users believe that the different tablets on the market have variable content and effects and may actively seek out certain types or brand names rather than a single pharmacology. Indeed, some participants in the present study described purchasing ecstasy tablets thought to be already mixed with other drugs such as amphetamines, LSD and opiates. It has been suggested that such beliefs could have serious impacts on future patterns of drug use among users in the dance party scene [28]. First, ecstasy users who believe that they are ingesting ready-made drug cocktails may be more likely to mix similar drugs together. Secondly, they may try other substances that they have not used before, but believe they have already experienced in an ecstasy mix. Forsyth recommends that health education messages should target the 'dance drug lifestyle' rather than concentrating on the effects of single drugs in isolation [28].

If advising people not to mix their drugs and telling them that 'some combinations are deadly' is failing to deter some participants in the rave and dance party scene from using different drugs concurrently, the question arises as to what else could be done. Further research could add to the limited anecdotal reports of the effects from combining certain types of drugs together and, in broad terms, clarify some interactive effects. Results presented here suggest that any future research should include an investigation of the combining of 'dance drugs' together and with substances such as cannabis, inhalants, alcohol and tranquillizers. Further research into attitudes and beliefs surrounding the mixing of these drugs is needed. This research needs to be ongoing as drug use patterns and the settings in which they are taken are dynamic and change over time. Strategies which aim to minimize drug-related

harm in the rave and dance party scene should address the concurrent use of different drugs.

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