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RESEARCH REPORT

Patterns of recreational drug use at dance events in Edinburgh, Scotland

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Abstract

Aims. *To describe the patterns of drug use at dance (rave) events in terms of prevalence, frequency, type of drugs used, patterns of use, access and risk-associated behaviours.* **Design.** *Self-selecting participant-completed survey.* **Setting.** *Three dance events in Edinburgh, Scotland, UK.* **Participants.** *One hundred and twenty-two drug users (57% males, 43% females), 90% of whom were in employment or education, with an age range of 16–47, 80% between 18 and 23 years.* **Measurements.** *Participants who answered 'yes' to the question 'Have you used drugs for dance events in the past year' reported (i) the prevalence, types and frequency of drugs used; (ii) prevalence and contents of mixing drugs; (iii) accessing drugs; and (iv) engagement with drug-associated risk behaviours.* **Findings.** *Over 80% of the participants had used ecstasy and amphetamine, over 30% cocaine and LSD; over 10% nitrites, psilocybin and ketamine and less than 5% had used crack or tranquillizers. Participants reported regular consumption of ecstasy and amphetamine (e.g. 35% used ecstasy and 25% amphetamine on a weekly basis) often taken in combination, with the occasional use of cocaine, LSD, ketamine and psilocybin. Poly- and mixing-drug behaviours were significantly more likely than monodrug usage. Drugs were accessed through friends than from any other source. Eighty-five per cent reported mixing drugs and/or alcohol, 35% driving on drugs, 36% having a bad experience on drugs; 30% unprotected sex; and 0.9% injecting drugs. Women in the sample reported higher consumption than men.* **Conclusions.** *Dance-drug use has a characteristic pattern that has implications for health promotion and criminal policy.*

Introduction

The relationship between participating at dance (rave) events and drug use has been identified as an expanding phenomenon (Pearson, 1999), which has been associated with health risks as well as deaths. Yet there have been few studies of this user group and notable exceptions have tended to recruit through 'snowball' sampling techniques with adults (e.g. Forsyth, 1996; Hammersley *et al.*, 1999), or accessed school populations through their educational institutions (e.g. Parker, Aldridge & Measham, 1998; Pedersen & Skrondal, 1999). The present study adds to this work on quantifying patterns of illegal drug consumption by reporting the use of a questionnaire completed by participants at over-18 legal dance events who have taken drugs within the past year. The paper aims to identity

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the forms of drug consumption by dance-drug users at dance events in Edinburgh, in terms of prevalence, frequency, type of drugs used, patterns of use, access to drugs and risk-associated behaviours.

The rapid increase in 'recreational' drug use, the non-medical use of drugs on which the user is not dependent, has led researchers to argue that recreational drug users cannot be understood in terms of being a 'deviant' minority population, but "are in most other respects quite conventional" (Parker, Measham & Aldridge, 1995, p. 118). One factor that has aided this 'normalization' of drug use among young people has been the rapidly expanding dance scene. The dance scene has been associated with high levels of drug use, particularly ecstasy, in the United Kingdom (Parker *et al.*, 1998; Hammersley *et al.*, 1999), Europe (EMCDDA, 1996), Australia (e.g. Lenton, Boys & Norcross, 1997) and North America (e.g. Johnson, O'Malley & Bachman, 2000).

During the late 1980s the dance scene (such as 'Acid House') emerged as a subculture centred around specific styles of 'techno' music and certain hallucinogenic and stimulant drugs, in particular ecstasy, amphetamine, LSD and cannabis (Saunders, 1995; Collin, 1997). Acid House appeared to cut across social structures such as gender, class and region (Dorn, Murji & South, 1991; Thornton, 1996) and in the following decade the musical styles, venues and people involved expanded. This development was furthered actualized in Britain through legislation that reduced the number of large-scale unlicensed venues, moving dance-drug use into traditional nightclub locations. Such shifts and diversification may have contributed to a 'normalization' of drug use, rather than reduce the connection between participation at dance events and drug use. A connection that has been explained in terms of hedonistic values forged by contemporary youth in a society structured by individualism, uncertainty (Parker *et al.*, 1998), Thatcherite entrepreneurialism and alienation (Collin, 1997). A similar 'mainstreaming' of dance-drug use has also been reported in Europe (Calafat *et al.*, 1999; Pedersen & Skrondal, 1999).

Researchers have argued that dance-drug users do not see their behaviour as deviant or problematic (for example, in terms of leading to social exclusion or reducing the role they play within society) (Parker *et al.*, 1998; Pearson, 1999). However, Shiner & Newburn (1997) have challenged the normalization thesis, arguing that the widespread use of 'life-time prevalence' as a measure of drug use has produced an over-representation of drug consumption, since this measure does not discriminate between those who have used a minimal amount of drugs and those for whom drugs have become a regular leisure activity. Thus, the type of measurements used by researchers have led to debate over the magnitude of drug prevalence.

What is less contentious among researchers is that a relationship exists between attending dance events and drug use, with these participants being described as "at-risk populations" (Pedersen & Skrondal, 1999, p. 1696). Life-time use statistics consistently show that those attending dance events have a higher rate of prevalence in comparison to the general population. For example the 1998 British Crime Survey (HMSO, 1999) reported that 52% of the general population have used drugs, in comparison to the 80% of clubbers reported by Branigan, Kuper & Wellings (1997). Other surveys focusing on recent drug use also show this pattern. For example Macdonald (1999) reported that 10% of the general adult population have used drugs in the past year, in comparison to Bean *et al.*'s (1997) 55% of clubbers who said they planned to use ecstasy or amphetamine on that particular night. Frequency measures of drug use also provide evidence for the routine use of drugs at dance events (Ward, Fitch & Sherlock, 1998).

Patterns of drug use are dynamic, changing according to fashion, availability and price. Nevertheless, trends in the types of drugs used in the dance scene have been plotted, identifying a prevalence of stimulants and hallucinogens (Bean *et al.*, 1997). Assessing the prevalence of the types of drugs his participants used in different settings, Forsyth (1996) produced a three-tier hierarchy of 'primary', 'secondary' and 'non-dance' drugs. Primary dance-drugs, the use of which being generally localized to dance events, were ecstasy, amphetamine and nitrites; secondary dance-drugs tended to be used in a wider variety of different locations and included psilocybin (hallucinogenic mushrooms), LSD, ketamine (a hallucinogenic anaesthetic) and cocaine. Non-dance-drugs were categorized into two: 'ubiquitous drugs' used in a variety of settings including dance events (alcohol and can-

nabis) and those which tended not to be used at dance events, such as tranquillizers (e.g. opiates) and solvents. In this way Forsyth separated those drugs which are highly associated only with dance event usage from those with less strong associations.

Polydrug use (consumption of more than one drug) and mixing drug use (the co-use of two or more substances) have been described as characteristic of dance-drug use (Forsyth, 1996; Mulland, Sherval & Skelton 1996; Parker *et al.*, 1998). However, research has not always made the distinction between these behaviours (polydrug and co-use), an important factor in understanding the patterns of drug use at dance events and in estimating engagement of risk behaviours (in general mixing drugs is inherently more risky). Drug combinations reported tend to be a mix of ecstasy with either amphetamine, nitrites, LSD, ketamine, cocaine and/or cannabis. However, information on the prevalence of 'favourite' mixes has been conflicting, possibly as a result of the paucity of research on this specific issue (Forsyth, 1996; Mulland *et al.*, 1996).

Drug supply networks have also broadened. For example, Shewan, Delgarno & Reith's (1999) participants brought their drugs from friends or 'trusted' dealers; while Parker *et al.*'s (1998) participants reported obtaining drugs through friendship networks, a finding the authors use to support their normalization thesis.

Analyses of demographic trends in drug use suggest a decrease in the average age of users from their mid–late 20s (Forsyth, 1996) to the early 20s, if not during their school years (Parker *et al.*, 1998). For example, London-based studies have reported 20–24 years old as the most heavily represented group of dance-drug users (35% of Bean *et al.*'s 1997 and 50% of Branigan *et al.*'s 1997 dance-drug users), while 70% of Christophorou, Scorthorne & McCauley's (1996) Sheffield-based dance-drug users were aged between 19 and 24 years.

Demographics in gender also appear to have changed. The traditional over-representation of male drug users has steadily decreased (e.g. Leitner, Shapland & Wiles, 1993; Ward *et al.*, 1998). A male:female ratio of 2:1 was identified in the 1996 British and Scottish Crime Surveys (Ramsay & Spiller, 1997) and other research (Barnard & McKeganey, 1994). However, Hammersley *et al.* (1999), Measham, Newcombe & Parker (1993) and Parker *et al.* (1998) argue that this gap has further reduced.

The above review has identified the potential for high prevalence of drug use by participants at dance events. However, in-depth knowledge of the patterns of dance-drug usage is limited. The present study contributes to the understanding of dance-drug usage through the analysis of a questionnaire designed to provide detailed information on patterns of drug consumption by dance-drug users at dance events within the past year.

The questionnaire was designed to overcome some of the methodological difficulties associated with surveys which have not, for example, distinguished between experimentation and regular use; dance-drug use and other recreational drug use; mixing and polydrug use; use on a particular night and regular patterns of use. Surveys that make such distinctions often take a long time to complete (e.g. Forsyth, 1996) and thus rely on recruitment procedures that involve pre-arranged meetings and 'snowball' techniques (asking participants to nominate a drug-using friend). Snowballing avoids the bias in recruitment from drug agency referrals, but may limit participants to particular social networks. Recruitment and data collection in the present study gave direct access to adult dance-drug users at the site of use.

The 1-year time frame avoids some of the problems associated with life-time measurements noted above, while giving information on temporal consumption patterns unavailable from 'particular night' measurements. We argue that this time frame is meaningful for both participants and researchers. As researchers we wanted to get an overview of the type of drug consumption which would not be effected by seasonal variations (e.g. Christmas 'excesses') and would distinguish between habitual, irregular and one-off drug users. In addition the measurement had to be relevant to contemporary dance-drug use, given the dynamic nature of this phenomenon in general and individuals drug use patterns in particular (Parker *et al.*, 1998).

The questionnaire was designed to be anonymous, simple and meaningful to the participants. An initial draft was tested with 20 known drug users and modified for clarity from the feedback given (e.g. they reported difficulties in estimating the number of ecstasy pills taken in a year). The questionnaire asked for the demographics of participants in terms of age, sex and occupation and

patterns of drug consumption (prevalence, frequency, patterns of use, purchasing and risk behaviours) in relation to 15 drugs: amphetamine, ecstasy, LSD, cocaine, crack, ketamine, nitrites, psilocybin, heroin, 2CB (a hallucinogen), cannabis, temazepam (a tranquillizer), methadone, DFs (a codeine-based drug), solvents and any other drug they may have taken. A fictional drug 'simeron' was used to control for unreliable information (see Appendix 1 for a copy of the questionnaire). The study aimed to identify (i) participants' demographics; (ii) prevalence, types, frequency and co-use of drugs used; (iii) sources for accessing drugs; and (iv) engagement with drug-associated risk behaviours.

Method

Participants

Two hundred and twenty people present at one of three dance events ($N = 70$, 72, 78 at individual events) completed the questionnaire, of which 43 were discarded due to being insufficiently filled in (e.g. completed on one side only) and two who reported the use of the fictitious drug 'simeron'. Of these 175 questionnaires 122 were completed by participants who had taken drugs in the past year, 14 had previously used drugs but not within the past year and 39 had never used drugs. This article reports findings from the 122 current drug users, the mean age of whom was 21.6 with a range of 16–47. Sixty-nine (57%) were male and 52 (43%) were female (with one missing case).

Procedure

This research was conducted by University of Edinburgh researchers in collaboration with 'Crew 2000', a drugs information agency. Part of Crew 2000's outreach work is to provide drugs information at dance events. At three of these venues (between November 1998 and February 1999) the researchers joined them, placing pens and questionnaires near the Crew 2000 stand. Collection boxes were left by the exit door and the Crew 2000 table. Participants were not approached by the researchers and were self-selecting. In comparison to those who did not participate, it is likely that our participants may be more confident and have a greater interest in drugs information (since they approached the stall). Completing the questionnaire took approximately 5 minutes. The researchers were available for discussion with the participants if they so desired and a contact address was supplied if participants were interested in the results of the research (these were made public at Crew 2000's city centre office). No payment was made to the participants. The harm reduction literature made available by Crew 2000 is designed to be taken home and read at a later date. This form of health promotion did not therefore intervene with responses on the questionnaire. Questionnaires were discarded from analysis if they had been completed on one side of the questionnaire; defaced (e.g. having been completed by more than one person); or if the use of 'simeron' was reported. While the sample was self-selecting a wider selection of participants was sought through recruiting at three venues which attract different clientele. The events included a 'house' music night which tends to have an older and often gay clientele; a student 'drum 'n bass' night and a commercial dance music event, which attracts a younger age range of clubbers. Approximate capacity of these venues were 400, 600 and 2000 people, respectively.

Results

Demographics: age, sex and occupation

Demographics of the 122 current dance-drug users show a similar ratio of males to females (male: $N = 69$ (57%), female: $N = 52$ (43%). Four (3.5%) participants were at school; 44 (38.3%) in higher education; 56 (48.7%) employed; and 11 (9.5%) unemployed (seven (5.7%) did not give this information). The age range was 16–47, the mean 21.6 and the mode 18 years. The majority of participants were 18–23 years ($N = 98$, 80.3%); 13.1% ($N = 16$) were aged 24–29 and 4.9% ($N = 6$) were 30–47 years old.

Drug use during dance events in the past year

Prevalence and type of drug use. Drugs used within the past year in order of prevalence were ecstasy ($N = 100$, 82%), amphetamine ($N = 99$, 81.1%), cannabis ($N = 59$, 48.4%), cocaine ($N = 47$, 38.5%) and LSD ($N = 37$, 30.3%). Twenty-four (19.7%) participants reported the use of nitrites, 15 (12.3%) psilocybin and 15 (12.3%) had used ketamine. The least prevalent

Table 1. *Percentage of respondents (in total and by sex) who used various drugs in the past year and the classification of each drug according to its prevalence at dance events*

Drug	No. of users ($n = 122$)	% of users	No.of male users ($n = 69$)	% of users	No.of female users ($n = 52$)	% of female users	Classification of drug
Ecstasy	100	82.0	52	78.3	45	86.5	Primary
Amphetamine	99	81.1	53	76.8	45	86.5	Primary
Cannabis	59	48.4	34	49.3	24	46.2	Secondary
Cocaine	47	38.5	20	29	26	50*	Secondary
LSD	37	30.3	19	27.5	18	34.6	Secondary
Nitrites	24	19.7	9	13	15	28.8*	Tertiary
Psilocybin	15	12.3	11	15.9	4	7.7	Tertiary
Ketamine	15	12.3	10	14.5	5	9.6	Tertiary
Crack	6	4.9	3	4.3	3	5.8	Non-dance
Temazepam	3	2.5	2	2.9	1	1.9	Non-dance
2CB	3	2.5	2	2.9	1	1.9	Non-dance
Methadone	1	0.08	1	1.4	0	0	Non-dance
Opium	1	0.08	1	1.4	0	0	Non-dance
Solvents	0	0	0	0	0	0	Non-dance
Heroin	0	0	0	0	0	0	Non-dance
DFs	0	0	0	0	0	0	Non-dance

* = significant at $p < 0.05$.

drugs used were crack ($N = 6$, 4.9%), temazepam ($N = 3$, 2.5%), 2CB ($N = 3$, 2.5%), methadone ($N = 1$, 0.82%) and opium ($N = 1$, 0.82%). None of the participants reported using solvents, heroin or DFs. A Cochran Q test (a K-related test that has the capacity to compare data which has related and unrelated cases) was performed to classify these drugs according to their prevalence by comparing the number of people using each drug. Categorization was determined when there was a significant difference in the rate of use between two drugs when ordered in prevalence.

The Cochran Q test found no significant difference between the levels in prevalence for ecstasy and amphetamine use ($Q\ (1) = 0.40$, $p = 0.84$). However, the difference in the number of amphetamine users and the number of cocaine users was significant ($Q\ (1) = 42.25$, $p = 0.00$). There were no significant differences in prevalence between cannabis and LSD ($Q\ (1) = 2.17$, $p = 0.14$), but a significant difference between the number of users of LSD and nitrites ($Q\ (1) = 4.83$, $p = 0.03$). No significant differences were found between the number of nitrite, psilocybin and ketamine users ($Q\ (1) = 3.00$, $p = 0.08$). There were significantly less users of crack than there were users of ketamine or psilocybin ($Q\ (1) = 4.76$, $p = 0.03$), but no significant difference between the numbers of participants who used crack or temazepam and methadone ($Q\ (1) = 1.00$, $p = 0.32$ and $Q\ (1) = 1.00$, $p = 0.32$, respectively).

This analysis grouped the drugs into four categories that were labelled using Forsyth's (1996) typology of dance-event-associated drugs. Ecstasy and amphetamine were classified 'primary dance-drugs' (over 80% of drug users taking); 'secondary dance-drugs' were cannabis, cocaine and LSD (over 30% taking); 'tertiary dance-drugs' were nitrites, psilocybin and ketamine (over 10% taking). The very low prevalence (less than 5%) of crack, temazepam, 2CB, methadone, DFs, heroin and solvents led to them being categorized as 'non-dance-drugs' (see Table 1).

The proportion of males to females who reported using each drug were compared, with Mann–Whitney tests showing no significant sex differences with the exception of cocaine ($Z = -2.35$, $p = 0.019$) and nitrites ($Z = -2.149$, $p = 0.032$), where women were significantly more likely to have used than men: see Table 1.

To allow comparisons with Forsyth's (1996) dance-drug categorization cannabis was included in our questionnaire. However, the ubiquitous nature of cannabis use (Forsyth, 1996; Hayes &

Table 2. *Frequency of use in the past year of primary and secondary dance drugs (ecstasy, amphetamine, cannabis, cocaine & LSD)*

	Ecstasy		Amphetamine		Cannabis		Cocaine		LSD	
Frequency measure	No.	%	No.	%	No.	%	No.	%	No.	%
Never taken	22	18	23	18.9	63	51.6	75	61.5	85	69.7
Once in a blue moon	13	10.7	22	18	1	0.8	23	18.9	18	14.8
Every 3 months	13	10.7	10	8.2	5	4.1	6	4.9	5	4.1
Once a month	24	19.7	31	25.4	14	11.5	12	9.8	10	8.2
Weekly	43	35.2	29	23.8	14	11.5	4	3.3	3	2.5
More than once a week	7	5.7	7	5.7	39	32	2	1.6	1	0.8

Baker, 1998) and our focus on use at dance events means that our figure is likely to underestimate cannabis consumption due to the difficulty of smoking it in 'drug-free' clubs. Cannabis was therefore removed from further analysis to avoid distorting the identification of the patterns of dance-drug use at dance events.

Frequency. The overall distribution in the number of participants using from 'never' to 'more than once a week' was bi-modal for the four of the main dance-drugs (ecstasy, amphetamine, cocaine and LSD). That is, participants reported using either 'never'–'once in a blue moon' or 'monthly'–'weekly'. Participants were least likely to use these drugs 'every 3 months' or 'more than weekly'. The average frequency of ecstasy use was between every 3 months and monthly with a modal use of weekly. Amphetamine had a monthly modal frequency of use, with means between every 3 months and monthly. LSD and cocaine had lower modal score with most people never using them, but mean scores nearing the 'once in a blue moon' category (see Table 2).

Of the 100 ecstasy users (see Table 1), 74 (74%) used ecstasy monthly or more often than monthly. This pattern was repeated in amphetamine use. Of the 99 amphetamine users, 68 (68.7%) reported frequency of use at dance events of monthly or more than monthly. This pattern was not reflected in the frequency patterns of cocaine and LSD use. Of the 47 cocaine users in this sample, only 18 (38.3%) reported monthly or more often than monthly consumption. Similarly, of the 37 LSD users, 14 (37.8%) reported taking it monthly or more often than monthly. There was a further drop in the frequency of psilocybin and ketamine use. Of the 15 psilocybin users, 3 (20%) reported using monthly or more often, and of the 15 ketamine users, one (6.7%) reported taking it monthly or more often (see Table 3). This pattern of frequency corresponds with the prevalence categorization described in Table 1.

Male and female frequency of use for each dance-drug was compared showing no significant differences, with the exception of amphetamine, in which women used significantly more often than men ($Z = -3.252$, $p = 0.001$). Thus, while women were more likely to have used cocaine and nitrites than men, those who used amphetamines were more frequent users of amphetamine in comparison to men who used amphetamine.

Polydrug use. Of the participants, 92.6% ($N = 113$) had used more than one drug during the year, 7.4% ($N = 9$) participants had taken only one drug. A comparison between the numbers of participants who used one drug with those who used more than one drug showed that it was significantly more likely for dance-drug users to engage in polydrug use than to confine their drug use to one particular drug ($Z(1) = 87.68$, $p = 0.000$). The mean number of drugs used was 4.18 with a standard deviation of 2, showing that the majority of respondents had used between 2 and 6 different drugs within the last year.

A significant sex difference was identified ($t(118) = -2.84$, $p = 0.005$), with women using more drugs than men; female mean = 4.77 (SD = 1.98), male mean = 3.72 (SD = 2.03).

Mixing drug behaviours. Eighty-one (66.3%) of respondents reported mixing drugs. The ratio of 81 (66.3%) mixers to 41 (33.6%) non-mixers was significant ($Z(1) = 13.1$, $p = 0.001$), demonstrating that participants were more likely to

Table 3. *Frequency of non-users, less than monthly and more than monthly users of the primary, secondary and tertiary dance drugs in the past year*

	Non-users		Less than monthly users		Monthly or more users	
	n	%	*n*	%	*n*	%
Ecstasy	22	18	26	26.0	74	74.0
Amphetamine	23	18.9	31	31.3	68	68.7
Cocaine	75	61.5	29	61.7	18	38.3
LSD	85	69.7	23	62.2	14	37.8
Psilocybin	107	87.7	12	80.0	3	20.0
Ketamine	107	87.7	14	93.3	1	6.7

co-use their drugs during a dance event than engage in monodrug usage. The majority of 'usual mixes' ($N = 56$, 69.1% of those who mixed, 45.9% of total sample) involved the use of two drugs. Twenty participants reported three drugs (24.7% of those who mixed, 16.4% of total sample); four participants reported four drugs (5% of those who mixed, 3.3% of total sample); and one participant five drugs (1.2% of those who mixed, 0.8% of total sample).

Women were more likely to engage in mixing drugs than men, 76.9% ($N = 40$) women mixed drugs in comparison to 58% ($N = 40$) men ($Z(1) = -2.01$, $p = 0.02$).

Participants were asked to state the drugs they 'most often' used together, giving data on the components in the mixes. All the mixes reported included the use of ecstasy or amphetamine in combination with one or more other drugs. Thus, mixes were categorised as follows: amphetamine and other drugs(s) but not ecstasy ($N = 1$, 1.2%); ecstasy and other drugs(s), but not amphetamine ($N = 7$, 8.6%); ecstasy, amphetamine and other drug(s) ($N = 22$, 27.2%); ecstasy and amphetamine only ($N = 51$, 63%). The latter was the most prevalent mix, with participants being significantly more likely to use the ecstasy and amphetamine only mix than any of the other mixes combined (Z (1) = 5.44, $p = 0.02$). The drugs used in combination with ecstasy and/or amphetamine were always one or more of the hallucinogens/stimulants cocaine, LSD or psilocybin. None of the mixes reported contained tranquillizer drugs.

Comparisons between the number of males and females using each mix found no significant differences, with the exception of the 'ecstasy, amphetamine and other drug(s)' category, in which more women used than men ($Z = 3.51$, $p = 0.000$). However, when the number of drugs each participant used in their 'usual mix' were compared, no significant differences were found between males and females (the male mean number of drugs mixed was 2.30 (SD = 0.61) and the female mean number of drugs mixed was 2.48 (SD = 0.68); Z (1) = 1.45, $p = 0.23$). That is, while women are more likely than men in our sample to use a three or more drug combination including ecstasy and amphetamine, they were not more likely than men to use more drugs in general in their mixes.

Accessing drugs. Participants were asked where they bought their drugs from the options of 'at dance events' ($N = 11$, 9.4%), 'from friends' ($N = 117$, 84.6%), 'from family' ($N = 3$, 2.6%), 'on the street' ($N = 3$, 2.6%), 'in the pub' ($N = 0$) and 'other' ($N = 0$). The number of participants who bought from friends was significantly greater than buying drugs from all the other sources combined (Z (4) = 578.87, $p = 0.001$).

Risk. Frequency of engaging in five risk behaviours were examined, on a scale of never, sometimes and always. The risk behaviours were: injecting drugs, mixing drugs with alcohol, driving on drugs, unprotected sex and 'ruining your night by taking too many drugs' (used as a measure of the participants subjective experience of abusing drugs).

Of the participants, 28% ($N = 34$) reported 'always', 57% ($N = 70$) 'sometimes' and 15% ($N = 18$) 'never' mixing drugs with alcohol; 11% ($N = 13$) 'always', 25% ($N = 31$) 'sometimes' and 64% ($N = 78$) 'never' reported driving while using drugs; 4% ($N = 5$) 'always', 26% ($N = 32$) 'sometimes' and 70% ($N = 85$) 'never' reported

Table 4. *'Riskiness' scores of total sample and by gender for risk behaviours engaged in the past year*

Score	Total	Total (%)	No. of males	% of males	No. of females	% of females
5	7	5.7	5	7.2	2	3.8
6	30	24.6	18	26.1	12	23.1
7	33	27.0	15	21.7	13	24.6
8	22	18.0	12	17.4	10	19.2
9	12	9.8	7	10.1	5	9.6
10	3	2.5	2	2.9	1	1.9
11	2	1.6	1	1.4	0	0
12	0	0	0	0	0	0
13	1	0.8	0	0	1	1.9
14	0	0	0	0	0	0
15	0	0	0	0	0	0
Missing	12	9.8	9	13	8	15.9

Where a score of 5 represents the participant responding 'never' to all five risk behaviours and a score of 15 represents a participant responding 'always' to all five risk behaviours.

having unprotected sex; and 3% ($N=4$) 'always', 33% ($N=40$) 'sometimes' and 64% ($N=78$) 'never' reported taking too many drugs. Ninety-nine per cent ($N=121$) 'never' injected drugs and 1% ($N=1$) did 'sometimes'.

A 'riskiness' score was calculated from the frequency data by summing the participants scores for each behaviour (1 = never, 2 = sometimes, 3 = always), producing a maximum possible score of 15 and a minimum possible score of 5. The mean risk score for the sample was 7.22 (SD = 1.41), which represents responding 'always' and 'sometimes' to two risk behaviours. The 'riskiness' score allowed comparisons between male and female risk engagement. No significant differences were found between the male (mean = 7.13, SD = 1.37) and female (mean = 7.29, SD = 1.46) respondents 'riskiness' score (t (107) = -0.5, $p=0.62$) (see Table 4).

Summary of sex differences. There were more females than males using cocaine (50% ($N=26$) females: 29% ($N=20$) males; $Z=2.35$, $p=0.019$) and nitrites (28.8% ($N=9$) females: 13% ($N=15$) males; $Z=2.15$, $p=0.032$). Female amphetamine users used more frequently than male amphetamine users ($Z=-3.252$, $p=0.001$). Women used more drugs on average than men (female mean: 4.77, male mean 3.72; $t(118)=-2.84$, $p=0.005$). More women co-used drugs (76.9%, $N=40$) than men (58%, $N=40$) (Z (1) = -2.01, $p=0.02$). More women than men gave the 'ecstasy, amphetamine and other drug(s)' category as their usual mix (26.9% ($N=14$) of women: 11.6% ($N=8$) of men; $Z=3.51$, $p=0.000$), although there were no sex differences in terms of number of drugs used in a usual mix ($Z=1.45$, $p=0.23$).

Discussion

The patterns of drug consumption identified demonstrate the regular use of ecstasy and amphetamine, often in combination, with the occasional use of other stimulant and hallucinogenic drugs. This is not to say that those attending dance events inevitably consume drugs, but that those who do report a distinctive pattern of use.

The occupational demographics show that these dance-drug users are, in general, employed or in higher education and thus are not experiencing the social and economic marginalization associated with regular drug use (Pedersen & Skrondal, 1999). That this form of drug use is not understood as particularly socially deviant by the participants is also evident in the access of drugs through friendship networks, lack of drug dependency (in terms of daily use) and equal representation of males and females.

The 'normalizing' of recreational dance-drug use has been explained by Parker *et al.* (1988) in terms of a framework that constructs contemporary culture as inherently risky so that the risks of drug-taking are no longer understood in opposition to 'safe' behaviours. The adult world outside of dance-drug usage may also be constructed as normalizing drug-related risks: '(o)f course eight (ecstasy related) deaths a year

is eight too many, but Viagra has already caused 31 deaths, and more people die from peanut allergy than taking ecstasy' (McNicholas, in Stevens, 1999, p. 14). Furthermore, psychological theories of risk perception suggest that the long-term risks of brain damage identified with ecstasy use may, in their remoteness, have little meaning for users (Shewan *et al.*, 1999).

The majority of participants in this survey were younger (18–20 years) than in previous surveys on dance-drug use. Since dance events are barred to those under 18, our modal age of 18 may represent a floor effect (it is our measure that stops at this point, rather than the demographics of users). We surmise that this floor effect represents a population who are familiar with drugs by the time they reach the legal clubbing age of 18.

In unpacking this dance event–drug use relationship, we identified prevalence and frequency patterns which often mirrored each other. For example, ecstasy and amphetamine were the most prevalent and frequently used drugs (82% and 81% of participants having used ecstasy and amphetamine within the past year, of whom 61% and 55% used ecstasy and amphetamine at least monthly, respectively). Previous studies have also identified the prevalence of stimulant drugs at dance events (Forsyth, 1996; Bean *et al.*, 1997); the present study suggests that shifts have occurred with ecstasy and amphetamine use becoming the 'favourite' drugs of our sample with cocaine, rather than LSD or nitrites, following in prevalence.

The increase in the number of cocaine users identified in our study may be a temporal and/or regional artefact; however, it reflects the increase in cocaine use identified in England (Hayes & Baker, 1998). The increase in cocaine use may be accounted for in terms of a shift in image away from a 'yuppie/luxury' or 'hard' drug (Morrison & Plant, 1990; Ditton *et al.*, 1991; Forsyth, 1996). This shift may be related to the decrease in price of cocaine (Stevens, 1999). Frequent dance-drug users may be increasing their cocaine use to give themselves a 'break' from ecstasy/amphetamine, for a greater sense of control over the effects of drug use (cocaine has shorter-lasting effects) or, paradoxically, because media campaigns have highlighted the dangers of ecstasy (see Parker *et al.* (1998) and Shiner & Newburn (1999) for debate on the effect of media scares on drug consumption). A continuation of this shift could have serious consequences, as cocaine has greater addictive properties than ecstasy, making cocaine a potential 'epidemiological bridge' (Forsyth, 1996, p. 514) between recreational and problematic drug consumption. This 'bridge' may be further strengthened by the legal classification of drugs in Britain that does not distinguish between cocaine and ecstasy (they are both Class A controlled drugs).

Forsyth (1996) produced a dance-drug categorization to map predominance of place of use for a variety of drugs. The higher up in the hierarchy a particular drug the stronger its use was associated with the specific localised setting of dance events. Drugs lower in the hierarchy were either drugs that were not often used at dance events (e.g. solvents), or were drugs which were so ubiquitous as to be used both at dance events and other places (e.g. alcohol). The present study categorized the prevalence of drugs used at dance events to produce a comparable classification to Forsyth's hierarchy of dance-drugs in terms of the association of particular drugs with dance events; that is, the drugs which dance-drug users most often use at dance events. Our study supported Forsyth's categorization in terms of the dominance of ecstasy and amphetamine as dance-drugs, while identifying an increase in the use of ketamine and a decrease in nitrate use (for example 7.1% of Forsyth's (*ibid.*) participants had tried ketamine in comparison to 19.7% of the participants in this study). Ketamine is not usually considered a dance-drug as its muscle relaxant effects impair physical activity. However, hedonistic use outside of dance events, its presence as an 'impurity' in ecstasy and its stimulating effect at low doses (Dalgarno & Shewan, 1996; Shewan, Dalgarno & King 1996; Jansen, 2000) may be factors that have led to its increased use at dance events. Nitrite use may have decreased as a consequence of 'fashion', availability and/or the complexities around their legality in Britain.

Forsyth's typology is useful in identifying and comparing the prevalence of drugs used at dance events. However, in using this typology we have categorized drugs that have low prevalence (e.g. crack), as well as no reported use (e.g. heroin), at dance events as 'non-dance-drugs'. We argue that this terminology remains meaningful despite the use of some of these drugs at dance-events, since we read their very low prevalence as an

indication that our participants do not generally associate these drugs with dance events.

The present survey distinguished between polydrug and mixing drug use, showing that both behaviours were characteristic for this sample (93% having used more than one drug within the year and 66% of respondents having co-used drugs). These findings support previous studies which have demonstrated the potential for the co-use of dance-drugs (e.g. Forsyth, 1996). Of the participants in this study, 93.8% who mixed drugs reported using between two and three drugs in their 'usual mix', with an average of 4.18 of drugs used within the year. The latter figure is lower than Forsyth's (ibid.) reported 10.7 mean number of drugs used. This difference may be accounted for either in terms of Forsyth's measurements (drug consumption at non-dance and dance events were recorded) or by his recruitment of generally older participants often working within the dance-music scene.

The combination of ecstasy and amphetamine together had the highest prevalence (e.g. 90.2% of 'usual mixes' contained amphetamine and ecstasy). The identification of the combination of ecstasy and amphetamine as the most prevalent mix (one which was significantly more likely to be used than any other type of mix combined) is a phenomenon not reported previously. This may suggest a standardization in dance-drug consumption within the context of shifts such as an increased occasional use of cocaine, which is a key finding, as both these drugs raise body temperature, a factor identified in the causes of ecstasy/dance-drug-related deaths (Henry, 1992; Forsyth, 1996). Furthermore, the regular nature of dance-drug consumption (e.g. the weekly mode for ecstasy) increases the social, emotional and cognitive risks associated with drug use (Hammersley *et al.*, 1999; Pedersen & Skrondal, 1999; Wareing, Fisk & Murphy, 2000) and demonstrates that drugs are often a normative aspect of clubbing, rather than a behaviour associated with 'special occasions'. The participants were also vulnerable to risks associated with mixing drugs with alcohol, which include dehydration (85% reporting always or sometimes drinking with drugs); one-third of the participants reported having unprotected sex and taking 'too many drugs'; a quarter of participants admitted driving on drugs. The high number of participants who reported never driving on drugs (64%) may reflect a lack of access to cars due to the low age of the participants. In accessing drugs through friendship networks our participants also became vulnerable to legislation which does not differentiate between 'professional' and 'social' dealing behaviours, particularly as current government policy emphasizes the distinction between users and suppliers (Macdonald, 1999).

Tranquillizer drugs known to be prevalent within Scotland, such as heroin and temazepam had a low use at dance events. This is likely to be a measure of their incongruous effects with dancing, and does not mean that they are not associated with the dance scene in terms of 'after-event' behaviour. However, it may indicate that dance-drug users are differentiating between different forms of drug use, a categorization encouraged within harm-reduction literature to reduce the recreational to dependency drug use pathway (Fawcett *et al.*, 1996). Only one participant reported the risk behaviour of injecting drugs, despite the prevalence of amphetamine, again suggesting an engagement with drugs in which recreational behaviours are distinguished from other forms of use. However, we would add a note of caution. Shewan *et al.* (1998) reported the occurrence of heroin experimentation in a non-treatment population with participants in their 30s, and Forsyth's (1996) older population had not only tried more pharmaceutical drugs than the present study's participants but also reported more injecting behaviour (7.4%). Therefore, engagement in some risky behaviours may be associated with more experienced dance-drug users.

Our findings suggest that health promotion needs to target dance-drug users in relation to their characteristic use of drugs, in particular the frequency of drug use, co-use of drugs and/or alcohol, and the distinction between recreational and dependency drug use. Criminal policy needs to incorporate the prevalence of supply through friendship networks. We identify the need for longitudinal research on dance-drug pathways and note the absence of the issue of ethnicity in our all-white sample.

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Appendix 1. Format of questionnaire

CREW 2000 SURVEY

This questionnaire has been produced by Crew 2000 who provide information about drug use to young people. Our survey has been designed to find out about drug use at dance events.
This questionnaire is **anonymous** and **confidential**; so, please fill it in as accurately and honestly as possible.
Please remember that the following questions refer to drug use at DANCE EVENTS ONLY, not drug use in general.

(1) **Age** .....

(2) **Sex** *(Please tick)* ☐ M ☐ F

(3) **Which town do you live in or near?**
.....

(4) **Are you:**
☐ At school?
☐ At college?
☐ Employed?
☐ Unemployed?
☐ Other? *(Please specify)*
.....

(5)
Have you EVER used drugs for *dance events*? *(Please tick)*
☐ Yes ☐ No *(please go to Number 10)*

6 (a)
Have you used drugs for *dance events* IN THE PAST YEAR? *(Please tick)*
☐ Yes ☐ No *(please go to Number 13)*

Please note that the rest of this questionnaire refers to your drug use in the past year ONLY

(b)
Which drugs have you used for dance events in the past year, and when?
(Please tick ALL that apply)

	Choose ONE of these only				
	More than once a week	**Weekly**	**Monthly**	**Every 3 months**	**Once in a blue moon**
Speed (amphetamine)					
E (ecstasy/MDMA)					
Trips (LSD)					
Coke (cocaine)					
Crack (base)					
Sims (simeron)					
Special K (ketamine)					
Poppers (nitrites)					
Magic mushrooms					
Smack (heroin)					
2CB					
Hash (cannabis)					
Jellies (e.g. temazepam)					
Meth (methadone)					
DFs					
Solvents (e.g. glue)					
Other:					

7 (a)
Have you mixed your drugs for dance events in the past year? *(Please tick)*
☐ Yes ☐ No *(please go to Number 8)*

(b)
Which combination have you mixed most often, and when? *(Please specify)*

DRUGS USED TOGETHER BEFORE/DURING DANCE EVENTS	**DRUGS USED TOGETHER AFTER DANCE EVENTS**
.....	.....
.....	.....
.....	.....

(8) **Where have you usually bought your drugs for** *dance events* in the past year?
(Please tick **ONE** box)
☐ At the dance event ☐ In the pub ☐ On the street
☐ From friends ☐ Family ☐ Others (please specify) .....

(9) **While using drugs for a** *dance event* in the past year, have you ever:
(Please tick for each category)

	Never	Sometimes	Always
Injected drugs?			
Mixed drugs with alcohol?			
Driven there/back?			
Had unprotected sex?			
Ruined your night by taking too many drugs?			

(10)

THANK YOU VERY MUCH FOR YOUR TIME & HELP—HAVE A GREAT NIGHT!