

Patterns of ecstasy use amongst club-goers on the UK ‘dance scene’

Kellie Sherlock ^{a,*}, Mark Conner ^b

^a *Ethnicity and Health Unit, Faculty of Health, University of Central Lancashire, Preston PR1 1HE, UK*

^b *School of Psychology, Lifford Place, University of Leeds, Leeds LS2 9JT, UK*

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Abstract

A variety of sources indicate that substantial numbers of young people have experimented with the drug ecstasy (Leitner M, Shapland J, Wiles P. Drug Usage and Prevention: the Views and Habits of the General Public. HMSO: London, 1993; Balding J. Young People and Illegal Drugs, 1989–1995, Facts and Predictions. Schools Health Education Unit, University of Exeter, 1994; Balding J. Young People and Illegal Drugs in 1996. Schools Health Education Unit, University of Exeter, 1996; Mott J, Mirlees-Black C. Self reported drug misuse in England and Wales: findings from the 1992 British Crime Survey. Research and Planning Unit paper 89. London: Home Office, 1992; McMiller P, Plant M. British Medical Journal, 1996;313:394–397; Parker H, Measham F, Aldridge J. Drug futures: Changing patterns of drug abuse amongst English youth. London: Institute for the Study of Drug Dependence, 1995; Ramsay M, Percy A. Drug misuse declared: Results of the 1994 British Crime Survey. Research findings No. 33. London: Home Office, 1996). Although a substantial amount has been written about ecstasy, there is very little data which centres specifically on those who use the drug and hence we know very little about patterns of use amongst those who use the drug. A number of known fatalities and casualties associated with its use (Chadwick IS, Linsley A, Freemont AJ, Doran B, Curry PD. Journal of the Royal Society of Medicine 1991;85; Henry J, Jeffreys K, Dawling S. The Lancet, 1992;340:384–386; Milroy CM, Clarke JC and Forrest ARW. Journal of Clinical Pathology 1996;49:149–153) suggest that ecstasy is not always a safe drug to use in recreational circumstances. It is important that we begin to understand more about use patterns and their possible relationship to the number of accidents amongst ecstasy users. In order to examine these patterns, a survey was administered in one of the monthly dance music magazines, to which 4042 ecstasy users responded. The questionnaire examined; who uses ecstasy, their patterns of use and normative influences over use. Respondents were most likely to be male (63.7%), spanned a wide age range and were engaged in a variety of occupations. Respondents reported a range of different use patterns, with high levels of poly-drug use. Normative influences were found to play a significant role in the uptake and maintenance of ecstasy use. Results are discussed with reference to their implications for the design of health education materials. © 1999 Elsevier Science B.V. All rights reserved.

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* Corresponding author.

1. Introduction

1.1. General background

Drug use surveys indicate 'ecstasy' (3,4-methylenedioxymethamphetamine; MDMA) to have grown from relative obscurity in the early 1980s to feature prominently in the list of recreational drugs used in the UK during the 1990s (Mott and Mirlees-Black, 1992; Leitner et al., 1993; Balding, 1994, 1996; Parker et al., 1995; McMiller and Plant, 1996; Ramsay and Percy, 1996). Despite this apparent popularity there are still significant gaps in our knowledge about who uses ecstasy and their patterns of use.

1.2. Lack of knowledge about ecstasy use

Whilst drugs such as LSD, amphetamines and cannabis have a relatively well documented history (see Weil and Rosen, 1983), comparatively little is known about ecstasy use in the UK. There appears to be two reasons for this. The first is that much of the data concerning ecstasy use comes from America, which relate either to its uses in therapeutic settings (e.g. Greer and Tolbert, 1986) or in settings distinct from the 'rave/dance scene' found in this country (Beck and Rosenbaum, 1994). The second is that although a considerable amount of non-human research has been conducted into the effects of ecstasy (e.g. Fischer et al., 1995), this has told us little about patterns of ecstasy use seen amongst those who use the drug on the 'dance scene' in the UK (Newcombe, 1991, 1992; Saunders, 1995; POST, 1996). This is significant given that some of the more damaging poly-drug use combinations *may* be specific to those who use ecstasy on the UK dance scene.

1.3. Difficulties with existing data

Because many of the large drug use surveys

have so many different questions to ask (i.e. about drugs other than ecstasy and about other topics) they rarely ask about consumption patterns specifically related to ecstasy use (e.g. Mott and Mirlees-Black, 1992; Leitner et al., 1993; Parker et al., 1995; Balding, 1996; HEA, 1996; McMiller and Plant, 1996; Ramsay and Percy, 1996). This means that we know little about the intensity and frequency of ecstasy use. Although there have been a variety of studies which examine ecstasy use (Bean and Pearson, 1993; Possil Project, 1993; Anderson, 1994; Forsyth 1996; Webb et al., 1996; Release Survey, 1997), there is no systematic recording of details such as: (a) how often people use ecstasy; (b) for how long they have been using the drug; (c) the amounts used per session; and (d) poly drug use combinations. This means that we are unable to map patterns of ecstasy use. Since use variables may have important health implications (i.e. frequent, high doses may have adverse health consequences, van Aerts, 1997), this is a significant gap in knowledge.

1.4. The context of ecstasy use

A further difficulty in relation to the study of ecstasy use is the paucity of research which concentrates on those most likely to be using the drug, i.e. those who attend night-clubs and dance parties. It is widely agreed that dance parties and clubs are the most common context of ecstasy use in the UK (Bean and Pearson, 1993; Possil Project 1993; Anderson, 1994; Forsyth 1996; Webb et al., 1996). Although some use the drug at home, clubs are most commonly the first venue for having experimented with ecstasy (Forsyth, 1996; Release Survey, 1997). It is perhaps surprising that more research has not centred on those who attend these venues.

1.5. Patterns of ecstasy use

Previous surveys (Bean and Pearson, 1993; Possil Project 1993; Anderson, 1994; Forsyth 1996; Webb et al., 1996) suggest that patterns of ecstasy use do vary between individuals. Respondents are most likely to use ecstasy at weekends, although frequency of ecstasy use was often weekly or fortnightly, suggesting regular patterns of use. Although many users appear to adhere to moderate patterns of ecstasy use, using between one and two tablets of ecstasy per session, others are evidently engaged in much heavier use patterns (Bean and Pearson, 1993; Possil Project 1993; Anderson, 1994; Forsyth 1996; Webb et al., 1996). This variability in ecstasy consumption requires further attention, possibly as a focus for targets in the reduction of drug related harm. Since those who attend dance clubs are more likely to use dance drugs than the general population (Release Survey, 1997), they form a useful target for study and the dissemination of educational advice. This paper examines patterns of ecstasy use amongst a large sample of club-goers and examines the implications of the findings for the design of health education interventions.

2. Method

2.1. Design and procedure

In order to access young people involved in the 'dance scene', a UK national dance music magazine was approached to include a two page questionnaire in their April 1996 issue. Mixmag is a monthly publication whose primary audience is 18 to 24-year-old males (with female readership at approximately 25% in 1995–1996). Readers are most likely to be in full-time employment, with student

readership at approximately 34%. Mixmag targets club-goers, providing a comprehensive set of club listings, record reviews, club reviews, fashion and features centring round the various musical genres which come under the umbrella heading 'dance music'. In April 1996, 80 000 copies of Mixmag were sold, reflecting an average month for the magazine.

2.2. Sample

The only criterion for inclusion in the study was that respondents should have used ecstasy at least once. The questionnaire asked 'if you have ever taken ecstasy, please fill in the questionnaire, cut it out and send it to (freepost address)'. Respondents were assured that 'the questionnaire (was) completely anonymous, so no one will know who you are'.

2.3. The questionnaire

Respondents were asked to record demographic details first; age, gender and occupation. Level of ecstasy use was measured by a variety of questions which examined; uptake of ecstasy use, duration of use, current ecstasy use, frequency, amounts used and future use. Previous drug use was assessed by a range of questions covering lifetime and recent drug use, as well as poly-drug use combinations. Finally, normative influences were examined by a series of questions about friends use of ecstasy, sources of information and respondents initiation into ecstasy use.

3. Results

3.1. Sample characteristics

A total of 4042 people responded to the Mixmag questionnaire within the 2-month

deadline. This sample constitutes 5% of the readership of Mixmag's April issue. Difficulties associated with this method of sampling are discussed later. All respondents report using ecstasy at least once, although nearly 20% of respondents had quit ecstasy use (80.7% of respondents were current ecstasy users) and 97% of the sample still went to dance parties and clubs. The majority of the sample are therefore clubbers who currently use ecstasy ($N = 3212$; 79.5%). There are 691 clubbers (17.1% of total sample) who do not currently use ecstasy.

The following results are divided into three sections: the socio-demographic profile of those who use ecstasy (age, gender and occupation); their patterns of use (patterns of ecstasy use, previous drug use, poly-drug use and planned future use); and normative influences over use (introduction to ecstasy use, friends use of ecstasy and information sources about ecstasy)¹.

3.2. Sociodemographic data

Given the readership of Mixmag described previously, the socio-demographic profile of the ecstasy sample will be dictated by those who read the magazine and not necessarily those who use ecstasy. Despite this however, it is interesting to note comparisons with other sources of data about ecstasy users and also allows us to map patterns of ecstasy use amongst this particular sample of club-goers.

3.2.1. Age

Respondents ages ranged from 15 to 51 years, with a median of 21 years and a mean of 22.58 (S.D. = 4.61) years, with 92.3% between the ages of 16 and 29 years. The age range of the present sample is therefore rep-

resentative of those reported to be most likely to use ecstasy by the major drug use surveys (Mott and Mirlees-Black, 1992; Leitner et al., 1993; Ramsay and Percy, 1996; Release Survey, 1997).

3.2.2. Gender

A total of 63.7% of respondents were male. Female respondents are therefore slightly more likely to respond to the survey given the audience breakdown described in the previous sections (i.e. readership ratio is 3:1, whereas the response ratio is 2 to 1). Release Survey (1997) report a similar gender ratio in their survey of those attending night-clubs. Female respondents were more likely to report being an ex-user than were males (20.6% versus 17.6%, $\chi^2 = 5.56$, D.F. = 1, $P < 0.018$).

3.2.3. Occupation

Respondents reported over 500 different occupations including students who make up a third of the sample ($N = 1338$: 33.1%), secretarial, clerical and administration personnel ($N = 190$), sales assistants ($N = 155$), engineers ($N = 86$) musicians and DJ's ($N = 62$), factory workers ($N = 60$), nurses ($N = 53$), managers ($N = 51$) and electricians ($N = 40$). A comparatively small number ($N = 247$: 6.1%) were unemployed. The number of students who responded to the survey is generally representative of the student readership (i.e. 34% of readers). Again, it should be acknowledged that these details are necessarily constrained by the limits of the sample (i.e. these details reflect Mixmag readership and not ecstasy users per se).

3.3. Patterns of ecstasy use

3.3.1. Uptake of ecstasy use

June is revealed as the most popular month for uptake of ecstasy use. October is also popular, as are the winter months around

¹ Only significant gender and ex-user / current user differences are reported.

Table 1

Ecstasy consumption; number of tablets consumed per usual session; most ever used per session^a

Amount	Number of tablets used per usual session		Largest number of tablets used in one session	
	N	%	N	%
Less than 1/2	224	5.5	97	2.4
1/2–1	954	23.6	343	8.5
1–2	1737	43.0	848	20.1
2–3	670	16.6	871	21.5
3–4	245	6.1	650	16.1
4–5	119	2.9	431	10.7
5–6	35	0.9	298	7.4
6–7	19	0.5	156	3.9
7–8	9	0.2	97	2.4
8+	19	0.5	234	5.8
Total	4031	99.8	4025	99.6

^a NB. Where total%’s do not add up to 100% this is due to missing data.

Christmas. Over 45% of the sample started using ecstasy within the last 3 years. The mean age for uptake of ecstasy use was 19.44 (S.D. = 4.23) years with a median age of 17 years which suggests a skewed distribution. A total of 72.6% of respondents had begun to use ecstasy before the age of 20 years.

3.3.2. Frequency of ecstasy use

Amongst respondents, 38.9% use ecstasy weekly, 26.6% fortnightly, 21.5% monthly and 12.3% less often. Although ecstasy use appears to be confined predominantly to recreational use of the drug at weekends, the majority of the sample (65.5%) can be described as regular (weekly or fortnightly) users of the drug. Male respondents use ecstasy more frequently than female respondents ($\chi^2 [3] = 17.86$, $P < 0.001$), i.e. they are more likely to use ecstasy weekly (40.1 versus 37.4%), fortnightly (27 versus 25.8%) or monthly (21.7 versus 20.8%), whereas female respondents are more likely than males to use ecstasy ‘less often’ (10.7 versus 15.2%).

3.3.3. Total number of ecstasy experiences

Respondents in this sample are more likely to be regular as opposed to occasional users of ecstasy. The biggest proportion of the sample report using ecstasy between 20 and 50 times ($N = 862$; 21.3%). A significant number are heavy users of ecstasy, 18.4% of the sample ($N = 742$) have taken ecstasy more than 200 times, which averages at once a week for 4 years. It should be noted that the accuracy of reporting an event so frequently repeated is likely to be low (Conner and Waterman, 1996). Males are more likely than females to report 50 or more ecstasy experiences (79 versus 70.7%), whereas females are more likely than males to report 49 or less ecstasy experiences (28.4 versus 20.7%).

3.3.4. Number of tablets used per session

The number of tablets used per session varies greatly between respondents (Table 1). This variability has been reported elsewhere, although the average number of tablets consumed per session is usually between one and

two tablets (Anderson, 1994; Forsyth, 1996). The majority (72.1%) of this sample also take between one and two tablets per session and over 88% take 3 tablets or less per session. There are just over 11% ($N = 448$) of the sample who take more than three tablets per session. Female respondents are more likely than males to report using two tablets or less (82.7 versus 66%), whereas male respondents are more than twice as likely as female respondents to report using more than two tablets per session (34.1 versus 16.6%).

More respondents report using larger quantities of ecstasy in their 'most ever' session than in a 'usual session'. For example, 0.7% ($N = 28$) of the sample report using more than seven tablets in a usual session whilst 8.2% of the sample report doing so in their 'largest number of tablets consumed in one session'. Male respondents are more likely to have taken two or more tablets in their 'most ever' session (74.5 versus 55.8%), compared to female respondents who are more likely to have taken less than two tablets (43.8 versus 25.2%).

3.3.5. Other reported drug use

Amongst the sample (who have all used ecstasy at least once), the majority report having experimented with a range of other illicit drugs (see Table 2), most commonly cannabis (95.4%) and amphetamines (95.5%). Many respondents have also used LSD (74.1%). The sample are least likely to use drugs heroin or crack cocaine, although significant numbers ($N = 596$ and $N = 572$, respectively) report ever having used either of these drugs. It is unclear from these data whether ecstasy or heroin/crack cocaine were first used by respondents (Table 2).

There are significant gender differences in the consumption of cannabis (males = 96.3% versus females = 94.2%, $\chi^2 [1] = 9.1$, $P < 0.0025$), cocaine (males = 61.8 versus fe-

Table 2

Respondents reported use of drugs other than ecstasy

Drug used	Ever		Never	
	<i>N</i>	%	<i>N</i>	%
Alcohol	3974	98.3	57	1.4
Amphetamine	3860	95.5	181	4.5
Cannabis	3856	95.4	185	4.6
Tobacco	3482	86.1	552	13.7
LSD	2995	74.1	1042	25.8
Cocaine	2393	59.3	1645	40.7
Temazepam	1294	32.1	2739	67.8
Prozac	658	16.3	3372	83.4
Heroin	596	14.8	3437	85.0
Crack	572	14.1	3460	85.6

males = 55.1%, $\chi^2 [1] = 17.32$, $P < 0.01$), heroin (males = 15.9 versus females = 12.9%, $\chi^2 [1] = 6.78$, $P < 0.009$) and LSD (males = 77.5 versus females = 68.4%, $\chi^2 [1] = 40.56$, $P < 0.001$) where males are more likely to have ever used each of these drugs.

3.3.6. Poly-drug use

Many respondents used ecstasy in poly drug use combinations with a range of other drugs (see Table 3). The most common poly drug use combinations with ecstasy include; amphetamine, cannabis, tobacco, cocaine and

Table 3

Poly drug use combinations whilst using ecstasy

Drugs typically used with ecstasy	<i>N</i>	%
Ecstasy alone	147	3.6
Amphetamine	3117	77.1
Cannabis	3041	75.2
Tobacco	2551	63.1
Cocaine	721	17.8
LSD	568	14.1
Temazepam	217	5.4
Prozac	79	2.0
Crack	36	0.9
Heroin	44	1.1

LSD². There are just 147 respondents who report typically using ecstasy alone! This supports findings from drug use surveys which suggest that those who use one of the drugs ecstasy, LSD, amphetamine and cannabis are likely to use one or more of the others (Mott and Mirlees-Black, 1992; Leitner et al., 1993; Balding, 1996; McMiller and Plant, 1996; Ramsay and Percy, 1996). Amongst the rest of the sample, over 75% ‘usually’ take amphetamine or cannabis with ecstasy and smaller numbers also take cocaine and LSD with ecstasy.

3.3.7. *Expected use of ecstasy*

Over 85% of the sample reported expecting to use ecstasy within the next 6 months (see Table 4a). Note the discrepancy between those who report not being a current ecstasy user (i.e. 18.7% of the sample) and those who report that they do not intend to use ecstasy in the next 6 months (i.e. 13.1%). This suggests that a proportion of those who do not describe themselves as current ecstasy users can envisage a time when they will use ecstasy in the future, although not in the following 6 months. Nearly a third of the sample report that they will continue to use ecstasy for 4 years or more, see Table 4b.

3.4. *Normative influences*

Although 22.6% of the sample were introduced to ecstasy by a female friend, 62.6% were introduced to ecstasy by a male friend, 6.0% by their partner, 4.2% by a sibling and 2.6% by a dealer. It is notable that (contrary to popular myth) drug dealers are the *least* likely source of ecstasy introduction to new

Table 4

(a) Respondents predicted use of ecstasy in the next 6 months and (b) Length of time respondents will continue to use ecstasy^a

(a) Predicted level of use (no. of times)	<i>N</i>	%
Never	530	13.1
1–2	435	10.8
3–10	1286	31.8
10–20	883	21.8
20–50	688	17.0
50–100	130	3.2
100+	45	1.1
Total	3997	98.8
(b) Continued use of ecstasy	<i>N</i>	%
Never	505	12.5
up to 1 year	411	10.2
1 to 2 years	834	20.6
2 to 3 years	580	14.3
3 to 4 years	252	6.2
4 years +	1267	31.3
Total	3849	95.1

^a NB. Where total%’s do not add up to 100% this is due to missing data.

users. Female respondents are 7 times more likely than males (1.9 versus 13.5%) to be introduced to ecstasy by their partner, although they were equally as likely to be introduced to ecstasy by a female friend as a male friend (see Table 5).

A sustained normative influence over the use of ecstasy can be seen in the fact that most ecstasy users are friends with other ecstasy users. 73.9% of the sample report that ‘all’ or ‘most’ of their friends use ecstasy. Only 0.5% report that none of their friends use ecstasy. There are no differences between male and female respondents on this measure.

To further investigate normative influence over ecstasy use, respondents were asked to report from which sources they get ecstasy

² It should be noted here that Mixmag made a typing error and omitted alcohol from the list of drugs most commonly used with ecstasy. This is a significant omission given that drug advice agencies warn of the dangers of consuming alcohol and ecstasy together (Lifeline, 1993, 1994).

Table 5

Gender differences in reported introduction to the use of ecstasy^a

Introducer	Male		Female	
	N	%	N	%
Male friend	1953	75.8	567	39.1
Female friend	346	13.4	566	39.1
Partner	48	1.9	196	13.5
Sibling	96	3.7	72	5.0
Dealer	84	3.3	23	1.6
Total	2527	98.1	1424	98.3

^a NB. Where total%’s do not add up to 100% this is due to missing data.

information. Most respondents gained information from Mixmag (76.7%), magazines (70.3%) and friends (69.5%) compared to far fewer who were informed by partners (21.2%), media (10.1%) and parents (8.8%). It is interesting to note that more respondents get ecstasy information from drug dealers (25.8%) than from drugs agencies (24.1%). Women were significantly more likely than men to seek information from friends (73.6 versus 67.3%, $\chi^2 [1] = 17.12$, $P < 0.01$) and the media (12.4 versus 8.9%, $\chi^2 [1] = 12.07$, $P < 0.01$). They were also more likely to seek information from magazines (72.7 versus 69.0%, $\chi^2 [1] = 5.9$, $P < 0.05$) and from television programmes (38.5 versus 34.9%, $\chi^2 [1] = 5.11$, $P < 0.05$), although the lower probability value ($P < 0.05$) require that these latter results be treated with some caution.

4. Discussion

4.1. Methodological considerations

The present sample design allowed for a larger sample of ecstasy users than is typically found in drug use surveys. This rela-

tively cheap way of obtaining large amounts of data, enables analysis amongst significant numbers of ecstasy users—a luxury not normally afforded by more traditional survey methods. Further, these large samples are interviewed in what is a relatively short space of time, which allows for interesting data to be generated about patterns of ecstasy use. These advantages overcome some of the difficulties found in the use of clinic based samples, where respondents almost always have some form of problematic drug use. However, this type of sample is not without limitations which introduce potential sources of bias.

It should be acknowledged that the 5% of Mixmag readers who responded to the survey were self selecting and therefore highly motivated. Further, the researchers had no control over their interpretation of particular questions and no guidance over how participants chose to respond to the survey. These limitations constrain the extrapolation of these findings to ecstasy users per se. Using a ‘clubbing’ sample may not be representative of all those who use ecstasy. Those who buy dance music magazines are likely to be more heavily involved with the ‘dance drug’ scene than other potential ecstasy users. They may also be a limited sample in terms of age and other socio-demographic characteristics.

A further difficulty with administering a self report questionnaire of this nature, is that results are wholly reliant on what people say they do. There may be some under- or over-reporting of drug use amongst those who wish to answer along socially desirable lines. Although in a non-clinic sample of this kind, there would seem to be little obvious motivation to under- or over-report drug use. There are also difficulties with the accuracy of self report measures of behaviours which are undertaken so frequently. For example, is it really possible to accurately recall whether one has used ecstasy 75 or 95 times?

In addition to this, one of the main difficulties in *interpreting* the present data is the lack of other data with which to compare it. It is with these difficulties in mind that the following results are discussed.

4.2. Sample characteristics

The typical ecstasy user as described by this sample, is under the age of 29 years; is employed; uses ecstasy weekly or fortnightly in a night-club setting; was introduced to the drug by a friend; is a poly-drug user who expects to use ecstasy in the future and whose friends also use ecstasy. We can say very little about whether the present sample is an accurate reflection of the proportion of Mixmag readers who use ecstasy, since (a) the extent of ecstasy use amongst Mixmag readers is unknown; and (b) some readers who use ecstasy may not have completed the questionnaire. It is also difficult to make any estimates about this sample in relation to the total number of young people who use ecstasy since this baseline data is not known.

It was interesting to note that respondents were engaged in a diverse range of occupations. In the only other survey to report data on the occupational status of ecstasy users, 58% were employed, 19% were unemployed and 19% were students (Release Survey, 1997). Respondents in the present sample were therefore less likely to be unemployed (6.1 versus 19%) and more likely to be students (33.1 versus 19%). It is difficult to know whether these results are artefacts of the different methods used in these two studies. Since other survey data do not report the occupational status of ecstasy users specifically, we cannot judge whether these occupations are typical of ecstasy users in general. It does appear however, that drug use per se has spread across all social classes (Gilman, 1995). Although traditional types of drug use

(e.g. injecting heroin users) *may* be related to factors such as unemployment, the use of drugs such as ecstasy appears to be unrelated related to these factors (Mott and Mirlees-Black, 1992; Ramsay and Percy, 1996).

4.3. Patterns of ecstasy and other drug use

June is revealed as the most popular month for uptake of ecstasy use. This is probably linked with the end of student exam taking (at all educational levels) and the start of summer months. October is also popular, perhaps because this is when students start their new term at College/University. The winter months around Christmas are also popular for uptake of ecstasy, perhaps because of Christmas and New Year celebrations.

Over 45% of the sample started using ecstasy within the last 3 years. Highly publicised deaths and ecstasy related misadventure have not put many young people off experimenting with ecstasy for the first time. A total of 189 respondents started using ecstasy during November 1995 to March 1996, the 5 months following Leah Betts' death.

The mean age for uptake of ecstasy use was 19.44 (S.D. = 4.23) years with a median age of 17 years which suggests a skewed distribution. This would support findings from population drug use surveys which suggest that initiation into drug use peaks between the ages of 16 and 19 years then steadily declines (Mott and Mirlees-Black, 1992; Leitner et al., 1993; Ramsay and Percy, 1996). This has also been documented in the drug use literature (Menard and Huizinga, 1989; Lalinec-Michaud et al., 1991).

The present survey reveals that the number of new ecstasy users has increased every year from 1987 to 1995, with the exception of 1992 which saw a slight drop from figures for 1991. Although some ecstasy users will have

decided to quit during this period there is a constant stream of new users. It should be noted that long term recall for events such as first using a drug and other drug consumption variables may be unreliable (see Conner and Waterman, 1996).

The frequency with which ecstasy is used amongst the present sample is similar to reported use of the drug elsewhere, i.e. a significant proportion of ecstasy users are regular (weekly or fortnightly) users, whilst others use the drug more infrequently (Anderson, 1994; Forsyth, 1996; Release Survey, 1997). Although advice from drug agencies (Life-line, 1994) suggests that infrequent use of ecstasy is the best way to minimise potential harms, only an eighth of the sample follow this advice. It is notable that over 50% of the sample reported 50 or more experiences with ecstasy. This supports findings from other surveys that also report significant numbers of regular as opposed to experimental users (Anderson, 1994; Webb et al., 1996).

The majority of the sample had experimented with other 'dance drugs', providing support for the contention that cannabis, amphetamines, LSD and ecstasy are the most widely used of all illegal drugs (Mott and Mirlees-Black, 1992; Leitner et al., 1993; Parker et al., 1995; Balding, 1996; McMiller and Plant, 1996; Ramsay and Percy, 1996) and that users' of one of these four drugs are likely to be users of the others (Mott and Mirlees-Black, 1992; Leitner et al., 1993; Parker et al., 1995; Balding 1996; Ramsay and Percy, 1996). The latest survey to examine patterns of drug use amongst club-goers also reports high levels of other drug use amongst ecstasy users (Release Survey, 1997), 95% report using cannabis, 84% amphetamines, 78% LSD and 62% cocaine. These figures are much higher than those found in the general population, although slightly lower than those reported in the

present study. As Jansen (1997) argues, the 'pure' ecstasy user appears to be a very rare phenomenon. Only 15 respondents in the present study (less than 0.5%) report not using any of the other illicit drugs aside from ecstasy. Respondents are therefore most likely to be poly-drug users or poly-drug experimenters. The presence of opiate drug use is perhaps not surprising given that ecstasy users have experimented with a wide range of other drugs. This may also give some support to the emergence of 'recreational' heroin users proposed by Shewan et al. (1997).

Significant gender differences in LSD and crack cocaine use found amongst the present sample are also reported by Release Survey (1997). Findings from other population drug use surveys (Mott and Mirlees-Black, 1992; Leitner et al., 1993; Ramsay and Percy, 1996) and some school based surveys (Balding, 1996; McMiller and Plant, 1996) also suggest that males are more likely to use these drugs than females. Findings from other school surveys (Parker et al., 1995) suggest that females are more likely to use some drugs than males and vice versa.

Poly-drug use is a significant feature of the drug use amongst this sample. The most commonly reported drug use combinations are ecstasy and amphetamine or ecstasy and cannabis. These patterns have been reported elsewhere (Release Survey, 1997). Little is known about the synergy between different drugs within the body, especially between different classes of drugs (e.g. stimulants and hallucinogens) or even between different varieties of similar drug types (e.g. amphetamines and ecstasy). Research does suggest however, that the combined use of amphetamine and ecstasy has the potential to be dangerous (Henry et al., 1992; Jansen, 1997). Patterns of poly-drug use may increase the health risks associated with ecstasy use (Forsyth, 1996).

Poly drug use combinations may also affect respondents' perception of the effects of ecstasy. This is exacerbated by the fact that consumers purchase tablets with unknown ingredients, which may distort the 'true' effects of ecstasy (Sherlock et al., 1999a,b). The combined use of heroin or crack cocaine with ecstasy is low, which may suggest that the majority of those who have used heroin or crack cocaine in our sample are not currently long term drug users or 'traditional' drug users.

4.4. Normative influences

Friends were found to play an important role in the uptake and maintenance of ecstasy use. It was notable that female ecstasy users were more likely to have been introduced to ecstasy by their partner than were male ecstasy users. Research conducted amongst female injecting heroin users in Scotland reports that male friends/partners are likely to play a role in the introduction of 'hard' drugs to female users (Taylor, 1993).

4.5. Implications for the design of health education materials

Our survey provided some useful guidance to those interested in the design and targeting of educational campaigns designed to reduce ecstasy related harm. Firstly, health education campaigns should target periods prior to the peak uptake times which were identified as June, October and over Christmas and the New Year. Whilst these periods were identified as peak initiation times into ecstasy use, they may also be times when experienced ecstasy users consume more than they usually do. Such times may be ideal for the focus of new campaigns or indeed as a time for re-iterating 'old' educational messages.

The second issue for health educators to consider is that of age. Given that the majority of the sample began using ecstasy before the age of 20 years, young people in this age group could usefully form targets for both educational and preventive campaigns. Older, established users may require a different style of educational message which encourages moderating and adapting to safer patterns of ecstasy use. Audiences are more likely to identify with these *specific* health messages than other 'blanket' messages.

Gender differences in the use of ecstasy should also be accounted for. Focusing health education interventions at male ecstasy users may be particularly important since they were found to engage in heavier use patterns than female users. In addition, as male friends are the most likely 'introducers' for the majority of ecstasy users, they may be an appropriate target for the dissemination of health education materials to those whom they introduce to the drug.

Finally, given that over 80% of respondents reported expecting to use ecstasy within the next 6 months and over 85% report intending to use ecstasy in the future (from 1 to 'over 4' years). This may have important implications for the planning of health education campaigns. If people intend to continue using ecstasy for a number of years, then there will be long term health implications to consider.

4.6. Limitations of the present survey and directions for future work

Although the Mixmag survey constitutes the largest ecstasy survey conducted in this country to date, it has two main problems. Firstly, the sample were unrepresentative and secondly, the survey tells us little about trends in use across time. Further research studies could aim to examine trends more

closely. It would be interesting to repeat this survey on an annual/bi-annual basis in order to monitor current trends in ecstasy use. One possible method for achieving this would be a longitudinal cohort survey. Continued monitoring would also enable an examination of the effects of any health education materials which were introduced in the intervening periods between questionnaires. Future studies could also examine whether those respondents who had tried heroin and crack cocaine did so before or after they used ecstasy. This would enable us to discover whether ecstasy users were indeed progressing to potentially more damaging drug use.

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