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EXECUTIVE SUMMARY

Recent research suggests that the prevalence and patterns of ecstasy use in Australia may be changing. Combined with reports of morbidity and mortality associated with the drug, this information has pointed to the need for a comprehensive examination of the patterns and context of ecstasy use in Australia, along with ecstasy-related harms, risk-taking behaviours, and the intervention preferences of this population. A structured interview schedule examining demographics, ecstasy use, other drug use, context of ecstasy use, ecstasy-related harms, risk-taking and intervention preferences was administered to a sample of 329 current ecstasy users recruited from three Australian states, NSW, Victoria and Queensland. The data provided both an overall picture of ecstasy use in Australia, as well as allowing preliminary comparisons between states in patterns of use and related harms.

Compared to an Australian sample of ecstasy users recruited in 1990, the present sample were younger, more diverse, and contained a higher proportion of females. Quantity and frequency of ecstasy use appears to have increased, as has polydrug use and the intravenous use of ecstasy. Participants were most likely to have used alcohol, tobacco, cannabis, LSD and amphetamine before trying ecstasy, and ketamine, MDA and cocaine since. Contrary to popular opinion, ecstasy was used in a wide variety of situations, rather than being exclusively a "dance drug". Ecstasy appears to have become a "mainstream" drug in Australia, used by a demographically diverse range of people in a variety of contexts, not all dance-oriented.

Participants had experienced an average of eight physical and four psychological side-effects from ecstasy in the preceding six months, including energy loss, muscular aches, hot and cold flushes, blurred vision, irritability, trouble sleeping, depression and confusion. Approximately 40% of the sample also reported financial, social and occupational problems related to their use of the drug. While unsafe injecting was uncommon, 41% of the sample consumed inadequate amounts of water while intoxicated, and 13% of those who attended dance venues danced continuously without rest periods. Participants readily identified ecstasy-related risks, yet 94% described their personal use as safe. One-fifth had received treatment for an ecstasy-related problem, most often from a GP or natural therapist, and 7% were currently in treatment. One quarter wanted to reduce their use, due to financial, relationship and psychological problems. Fifteen percent wanted formal treatment for an ecstasy problem, and 85% requested more information about the drug and methods of reducing the harms associated with its use.

Coinciding with changes, a wider range of users, higher quantity and frequency of use, intravenous use, and high rates of polydrug use, there has been an increase in ecstasy-related harms, including physical, psychological, financial, social and occupational problems. A substantial minority of users desire formal treatment for these problems. These results have important implications for the development of policy, including the provision of accurate and culturally acceptable information, and the development and evaluation of intervention programs designed specifically for this population.

1.0 INTRODUCTION

The use of ecstasy[1] appears to be spreading in many parts of the world. Surveys of the Australian general population indicate an increase between 1990 and 1993 in those having tried ecstasy, from 1% to 3%, which appeared to stabilise in 1995 (2%; Commonwealth Department of Health and Family Services, 1996). Consumption was most prevalent among younger users and females, with 9% of females aged 14-24 reporting use of ecstasy (Commonwealth Department of Human Services and Health, 1994).

Many European countries report increasingly high levels of consumption among young people, notably the U.K., Germany, the Netherlands, Spain and some central and eastern European countries (Griffiths et al, 1997; Korf & Wurth, 1995; Pompidou Group, 1997). In the U.S., there have been reports of marked increases in use in association with the "rave" scene in San Francisco, Dallas, Houston, Miami and Denver (Miller, 1997). Between 1994 and 1995, the U.S. Monitoring the Future Study recorded a significant increase in the prevalence of people aged between 19 and 28 who had used ecstasy in the last 12 months, from 0.7% to 1.6% (Johnston, O'Malley, & Bachman, 1997).

Early studies of ecstasy users in both Australia and the U.S. found generally self-limiting patterns of use, with low levels of injecting, few negative health effects and use confined mainly to inner city areas (Beck & Rosenbaum, 1994; Moore, 1993; Solowij, Hall & Lee, 1992). The euphoric effects experienced during the first few use episodes soon diminished, perhaps due to the rapid development of tolerance. When larger doses were taken in an attempt to regain the intensity of the euphoria, aversive side effects overwhelmed the positive effects. As a result, many subjects discontinued use after several doses, or used intermittently to allow tolerance to dissipate, leading to suggestions that ecstasy was a drug which was unlikely to be used regularly (Beck & Rosenbaum, 1994; Chesher, 1990; Solowij, 1993).

Previous research has documented relatively few problems associated with ecstasy use. For example, a survey of 100 ecstasy users (Solowij et al, 1992) found that the most common adverse effects were the unpleasant side effects of acute use, such as loss of appetite, dry mouth, palpitations and bruxism. Among the very few heavy users in this study, only two reported feeling dependent on the drug. The results of this study confirmed those of early studies conducted in the United States (Beck, 1990; Beck & Rosenbaum, 1994; Downing, 1986; Peroutka, 1990; Peroutka, Newman & Harris, 1988). They provided support for suggestions that while the pattern of ecstasy use remained one of intermittent oral use, there was little cause for concern because use was usually self-limited and there were few extreme

[1] "Ecstasy" is preferred to MDMA (3,4-methylenedioxymethamphetamine) in this report as the term is now so widely used as to be considered virtually generic for any of the ring substituted amphetamine group. "Ecstasy" may refer to MDMA, analogs of MDMA, or combinations of these (Griffiths, Vingoe & Jansen, 1997). Pharmacological considerations are not discussed further in this report due to the difficulties in determining the contents of tablets sold as "ecstasy".

reactions or severe problems among users (Beck & Rosenbaum, 1994; Chesher, 1990; Solowij, 1993). Such results seemed to confirm the prevailing view, that ecstasy was a relatively benign substance with few associated problems (Downing, 1986; Fromberg, 1990; Nichols & Glennon, 1984).

However, more recent research suggests that patterns of use may be changing, with injecting becoming more prevalent, a wider range of drug use occurring in dance environments, and a broader range of users and settings of use (Boys, Lenton & Norcoss, 1997; Forsyth, 1996; Green et al, 1995; Peters, Davies & Richardson, 1997). Recently in the U.K., Merrill (1996) described a group of ecstasy users who administered the drug repeatedly in increasing doses to overcome short-term tolerance.

There have also been a growing number of deaths in which ecstasy has been implicated, both in Australia and overseas (Henry, Jeffreys & Dawling, 1992; Solowij, 1993; White, Bochner & Irvine, 1997). The reasons for extreme reactions are yet to be clearly delineated. Deaths have most often been attributed to heat stroke when ecstasy was used in dance venues. A combination of sustained physical exertion, high ambient temperatures, and inadequate fluid replacement appears to compound a direct pharmacological effect of ecstasy on thermoregulatory mechanisms, leading to "fulminant hyperthermia", a rapid rise in body temperature to fatal levels. This effect may be partly due to ecstasy's neurotoxic effects on serotonergic nerve terminals (McKenna & Peroutka, 1990).

Some deaths have also been attributed to excessive water consumption, possibly due to an exaggerated response to harm minimisation messages about the need to maintain fluid intake, leading to cerebral oedema (Cook, 1996; Matthai, Sills, Davidson & Alexandrou, 1996). Other research has noted significant psychological morbidity associated with the use of ecstasy (Cassidy & Ballard, 1994; McGuire, Cope & Fahy, 1994; Series, Boeles, Dorkins & Peveler, 1994; Williamson et al, 1997).

1.1 Study aims

Little research has examined either changes in the patterns of ecstasy use or ecstasy-related harms in Australia since the early 1990s. Such information is necessary to inform the development of public policy. Accordingly, this study was designed in order to examine:

1. the characteristics of ecstasy users;

2. the patterns of ecstasy and other drug use;

3. the context of ecstasy use;

4. the nature and extent of ecstasy-related harms;

5. perceptions of risk and risk-taking behaviours among ecstasy users; and

6. the help-seeking behaviour and intervention needs of ecstasy users.

2.0 METHOD

2.1 Participants

The sample consisted of 329 current ecstasy users recruited from the capital cities in three Australian states: Sydney, New South Wales (n = 213); Brisbane, Queensland[2] (n = 59); and Melbourne, Victoria (n = 57). Criterion for entry was use of ecstasy at least three times in the preceding twelve months, including once in the past six months. Participants were recruited through snowball sampling (61%), advertisements (12%), personal contacts (11%), radio (8%), flyers (5%), and other methods (such as the internet, 2.4%).

2.2 Procedure

Participants contacted the researchers by telephone and were screened for eligibility. They were assured that all information provided was strictly confidential and anonymous, and that the study would involve a face-to-face interview which would take between 45 and 90 minutes. All participants were volunteers who were reimbursed AUD$30 for travel and other expenses incurred by their participation. Interviews took place in varied locations, agreed upon with participants, and were conducted by interviewers trained in the administration of the interview schedule.

2.3 Measures

Participants were administered a structured interview schedule designed specifically for the study, which was based on an earlier study of ecstasy users (Solowij et al., 1992), as well as previous studies of amphetamine users (Darke, Cohen, Ross, Hando & Hall, 1994; Hando & Hall, 1993; Hando, Topp & Hall, 1997). This was a detailed questionnaire focussing on the six months preceding the interview (see Appendix A for a copy of the questionnaire). It assessed the following areas:

1. Demographics: including the source through which the participant was recruited, their suburb or town of residence, gender, age, ethnicity, education, employment, prison history and whether they had dependent children. The questionnaire also assessed the category or "type" of ecstasy user with which participants most identified.

2. Patterns of ecstasy use: this section included ecstasy use history, the frequency and quantity of ecstasy use, concurrent polydrug use, and routes of administration of ecstasy.

3. Context of and motivation for ecstasy use: this section included information on the motivations for ecstasy use, as well as the social and physical environment in which ecstasy use typically occurred.

[2]Queensland participants were recruited from the Greater Metropolitan Brisbane area and the Gold Coast

4. Social functioning: this section examined the extent to which participants' social network was involved in drugs, as well as their employment patterns.

5. Price, purity and availability: this assessed participants' knowledge of the cost, purity and availability of ecstasy, LSD, ketamine, fantasy (GBH) and MDA.

6. Patterns of other drug use: including types and frequency of other drugs used, and drugs that were used before and after ecstasy.

7. Side effects: participants were asked if they had experienced a range of physical and psychological side effects from ecstasy in the preceding six months, as well as timing and duration of these symptoms. Participants were asked about the effects of ecstasy use on several areas of their lives during the preceding six months, including occupational, social, financial and legal problems.

8. Severity of Dependence Scale (Gossop et al., 1995)**:** this scale assessed participants' anxieties about and preoccupations with ecstasy use.

9. Risk-taking behaviour: the HIV Risk-taking Behaviour Scale (Darke, Hall, Heather, Ward & Wodak, 1991) was included to assess risk behaviours associated with intravenous drug use and sexual behaviour. Fluid consumption and activity levels during ecstasy intoxication were also examined.

10. Perception of ecstasy-related risks: this section assessed participants' perceptions of the risks (both personally and in general) associated with ecstasy use.

11. Crime: this section assessed the types and frequency of crime committed within the preceding month.

12. Interventions: this assessed whether participants felt their drug use was a problem, and if they had ever attempted to modify their drug use. It also examined information or interventions they would currently like to help them modify their drug use.

2.4 Data analyses

For continuous normally distributed variables, means were reported and *t*-tests and one-way ANOVAs were employed. For skewed continuous variables, medians were reported and the Mann-Whitney *U*-test, a nonparametric analogue of the *t*-test, was employed (Siegel & Castellan, 1988). Categorical variables were analysed using chi square ($\div^2$). In order to determine the variables independently associated with outcomes of interest, multiple logistic regressions were conducted (Hosmer & Lemeshow, 1989). Odds ratios (OR) and 95% confidence intervals (CI) were calculated for crosstabulations and multivariate regressions. To determine the variables independently associated with various use patterns and associated problems, multiple linear regressions were performed. Backwards

elimination of variables was used to remove those variables not significantly predictive of outcome. All analyses were conducted using *SPSS for Windows, Release 6.0* (Norusis and SPSS, Inc, 1993).

Due to small sample sizes in two states (QLD and Victoria), exploratory univariate analyses were conducted to examine differences in key variables between NSW and the other two states, and between QLD and Victoria. Gender differences are noted when significant.

3.0 RESULTS

3.1 Sample Characteristics

Half (51%) of the sample were female. The majority of the sample (92%) spoke English at home, with the remainder representing 16 language backgrounds. A small minority of the sample (2%) were of indigenous Australian descent. The mean age of the sample was 23.1 years (SD 5.6; range 15 - 46). Females were significantly younger than males (21.3 versus 24.9 years, t_{306}=6.14; p<.001). The majority of the sample (78%) identified as heterosexual, while 10% described themselves as gay male, 9% as bisexual and 3% as lesbian. Over half of the sample were in steady relationships, the median duration of which was 9 months (range 2 weeks - 14 years). Few participants had dependent children (5%).

Mean number of years of school education was 12.2 (SD 1.0; range 8-13). Almost half of the sample had completed courses after school, with 26% possessing a trade or technical qualification, and 23% having completed a university degree or college course. One-third (35%) of the sample were presently employed on a full-time basis, and a similar proportion (34%) were students. Smaller proportions were unemployed (16%), employed part-time or casually (15%), or engaged in home duties (0.3%). Most participants (92%) had held a job or been a student for at least some of the preceding six months. Only 2% had a previous conviction.

Table 1 presents demographic information for samples in each of the three states. The distribution of males and females was relatively equal across states. However, Sydney participants were significantly younger (M = 22.4 years) than those in Brisbane and Melbourne (M = 24.4 and 24.2 years respectively; p < .005). Participants in all cities appeared to be relatively well-educated; the average duration of school education exceeded 12 years in all samples. Rates of current employment were high in all samples, with between 82% and 85% employed in some fashion (full time, part time, or student). Participants in Brisbane and Melbourne were more likely than those in Sydney to have been unemployed for some time during the last 6 months (OR = 1.63; CI: 1.01, 2.63).

Participants were asked to nominate a single "scene" or "type" of ecstasy user with which they most identified. "Types" were derived from previous studies of amphetamine and ecstasy users (Beck & Rosenbaum, 1994; Klee, 1997; Saunders, 1995). Over half (54%) of participants identified with various dance scenes including "nightclubbers", "dance party patrons" and "ravers". One-fifth (20%) of the sample identified with both a dance scene and another category, such as student, gay or professional. The remainder (25%) were a heterogeneous group who identified with other categories, such as, student, musician, artist, surfer, biker, and a large group who were unable to name a "scene" of

which they considered themselves a part (13%). Most emphasised that ecstasy users were "just normal people"; that is, they felt that virtually anyone might use this drug. Participants from Brisbane were significantly less likely to identify with a rave, dance or nightclub scene than those from Sydney and Melbourne (OR = 0.27; CI: 0.15, 0.49).

Overall, this sample of ecstasy users was young and well-educated, exhibited high rates of employment, and were unlikely to have a criminal record. The main demographic differences between cities were that the Sydney sample, was younger and more consistently employed. Sydney and Melbourne participants also identified more strongly with various dance scenes than participants from Brisbane.

TABLE 1 : Demographic characteristics of participants in the three states

	Sydney n = 213	**Brisbane n = 59**	**Melbourne n = 57**
Mean age	22	24	24
% male	48	58	46
Mean years of education	12	12	12
% identify with dance/rave/club scene	78	53	90
% currently employed	84	85	82
% unemployed some time during preceding six months	30	41	40

3.2 Ecstasy use

3.2.1 Patterns of ecstasy use

The median age at which participants had first tried ecstasy was 18 years (range 13-40), with a mean use duration of 3.6 years (SD 2.6; range six months-13 years). Two thirds first tried the drug during the years 1993-1996, and 11% first used in the 1980s. Females began to use at a significantly younger age than males (median = 17 versus 19 years, U=9683.5, p<.001). Most of the sample (89%) had used ecstasy at least monthly at some time, at a median age of 19 years (range 13-39).

Table 2 displays information on the patterns of ecstasy use in each state. Participants from Sydney first tried ecstasy at a significantly younger age than those in Melbourne or Brisbane (t = 3.367, p < .005). When the age of first use was taken into consideration, there was no difference between the cities in the age at which participants began regular (monthly) use of ecstasy, suggesting that participants did not

differ in the rates of progression to regular use. The average duration of ecstasy use was approximately equivalent, ranging from 3.4 years (Melbourne) to 4 years (Brisbane).

Participants had used ecstasy on a median of 10 days in the preceding six months (range 1-100 days). Just over a third (37%) of the sample had used ecstasy on a range of between one and six days in the preceding six months, a further third (32.5%) had used it between seven and 12 days, 19% had used it between 13 and 24 days, and 11.6% had used on more than 24 days. The median number of tablets taken in a typical use episode was 1 (range 0.5-8). In their heaviest use episode, participants reported using a median of 2 tablets (range 0.5-30). A quarter (25%) had taken 4 or more tablets in a single episode.

TABLE 2: Patterns of ecstasy use in the three states

	Sydney n = 213	**Brisbane n = 59**	**Melbourne n = 57**
Median age first ecstasy use (yrs)	17	20	20
Mean duration of use (yrs)	3.5	4.0	3.4
Median days ecstasy use (6 mths)	12	6	6
Median number of ecstasy tabs in average episode (range)	1.5 (0.5 - 8)	1 (0.5 - 3)	1 (0.5 - 7)
Median number of ecstasy tabs in heaviest episode (range)	2 (0.5 - 30)	2 (0.5 - 5)	2 (0.5 - 15)
% ecstasy preferred drug	53	34	54
% binged on ecstasy last 6 mths	43	33	48

Participants from Sydney had used ecstasy significantly more often than those from Melbourne and Brisbane during the past 6 months ($t = 3.303$, $p < .005$). Sydney users reported taking more ecstasy in their heaviest use period than those in Melbourne and Brisbane ($t = 2.492$, $p < .05$), and there was a trend for Sydney users to also use more ecstasy in an average session ($t = 1.961$, $p = .065$).

Ecstasy was the preferred drug of half (50%) of the sample, followed by cannabis (12%), amphetamine (12%), LSD (7%) and cocaine (5%). Brisbane participants were significantly less likely than those in Sydney and Melbourne to nominate ecstasy as their favourite drug (OR = 0.45; CI: 0.25, 0.81; Table 2).

A multiple regression analysis was carried out to examine the factors linked to higher average consumption of ecstasy (see Appendix B for details of the analysis). The following factors were independently associated with using more ecstasy in an average use session:

1. **Gender**: being male;
2. **Employment**: having been consistently employed for the past 6 months;
3. **Scene**: identifying with a dance, rave or club scene;
4. **Favourite drug**: nominating ecstasy as favourite or preferred drug;
5. **Frequency of use**: using ecstasy more often;
6. **Number of drugs ever used**: having used a greater number of drug types.

Those who tended to use more ecstasy in an average session were males who were consistently employed (and therefore, had consistent incomes), and were involved in the dance scene. They tended to have a wider drug use history, identify ecstasy as their drug of choice, and use ecstasy more regularly. The fact that Sydney participants used more ecstasy in an average session may reflect their more extensive involvement with drug use.

One third (35%) of the sample had "binged"[3] on ecstasy in the preceding six months. The median length of longest binge was three days (range 2-14 days). Nearly half of Melbourne participants (48%) reported bingeing within the past 6 months, while 43% of Sydney participants and 33% of Brisbane participants reported having done so. The following factors were independently associated with bingeing on ecstasy (see Appendix C for details of the analysis):

1. **Average amount of ecstasy used:** those who used more ecstasy on average;
2. **Frequency of use**: those who used ecstasy more often;
3. **Binged on other drugs**: those who had binged on other drug types.

It appears that those who binged on ecstasy were more frequent and heavier users of ecstasy. They were also more likely to engage in the sustained use of other drug types.

3.2.2 Routes of administration

One-third (33%) of the sample had injected a drug, 16% had injected ecstasy, and 10% had injected ecstasy in the preceding six months. The median age of first injection of ecstasy was 20 years (range 15-40). Ecstasy was the first drug injected for only a minority (4%) of the injectors, most having commenced injecting with amphetamine (59%) or heroin (19%). Almost all participants (99%) had swallowed ecstasy and 99% had done so in the preceding six months. Half (48%) of the sample had snorted ecstasy and 30% had done so in the preceding six months. A quarter (23%) had smoked ecstasy mixed with cannabis, 12% having done so in the preceding six months.

[3] Defined as the continuous use of a drug for 48 hours or more (Ovendon & Loxley, 1996).

When asked to identify their main route of administration in the preceding six months, most participants (94%) reported swallowing ecstasy, followed by injecting (3%) and snorting (2%). There was a significant association between injecting ecstasy and bingeing in the preceding six months; significantly more of those who had injected had also binged (65% versus 32%; $\div^2$=14.6; p<.001).

Among those who had administered ecstasy only through oral or intranasal routes (84%), the reasons given for not injecting ecstasy included: dislike of needles and injecting (65% of those who had not injected), fear of health problems or dependence (57%), satisfaction with oral/intranasal routes (55%), friends not injecting (21%) and the inconvenience of preparing ecstasy for injection (11%). Among those who had used oral/intranasal routes and injected ecstasy (16%; n=54), reported reasons for trying injecting included: curiosity (74%); for the rush/high (62%), their friends were injecting (50%), they liked needles (34%), they considered injecting to be more economical (28%), or that they considered injecting better, easier or quicker (16%).

Three quarters (74%; n=39) of those who had injected ecstasy had switched from injecting back to oral or intranasal administration at some time. Reasons for this included: health problems from injecting (54%), being in an inconvenient setting for injecting (20%), feeling dependent on ecstasy (17%), coming down too quickly and intensely after injecting (17%), that their friends did not inject (14%), and that the effects of intravenous ecstasy were too intense to enjoy (11%). One participant (0.3%) had only injected ecstasy, because s/he liked the rush and considered injecting more economical.

Table 3 displays information on routes of ecstasy administration for the separate states. The most common way in which participants in all states usually took ecstasy was orally, with between 93% (Sydney) and 96% (Melbourne) nominating swallowing as the main route of administration. However, sizeable minorities in each city reported having injected ecstasy at some time: 13% of participants in Sydney, 18% of those in Melbourne, and 29% of those in Brisbane. Further, substantial proportions of those who had ever injected ecstasy had done so in the preceding six months (Brisbane, 31%; Melbourne, 16%; and Sydney 10%). Participants in Brisbane were more likely than those in the other states to have injected ecstasy (OR = 2.54; CI 1.32, 4.94), and to have injected it in the preceding six months (OR = 2.46; CI 1.13, 5.38).

TABLE 3: Routes of ecstasy administration in the three states

	Sydney n = 213	**Brisbane n = 59**	**Melbourne n = 57**
% main route of admin.			
swallowing	93	95	96
injecting	2	3	4
snorting	3	0	0
other	2	2	0
% ever injected ecstasy	13	29	18

% injected ecstasy last 6 months	8	19	12

A logistic regression was conducted to examine the factors independently associated with having injected ecstasy (see Appendix D for details of the analysis). The following factors predicted a higher likelihood of having injected ecstasy:

1. **State**: being in the Brisbane (as opposed to the Sydney) sample;
2. **Scene**: not identifying with a dance, rave or club scene;
3. **Drug of choice**: nominating ecstasy as preferred drug;
4. **Age when monthly use began**: beginning regular ecstasy use at an earlier age;
5. **Number of drugs used**: using more drug types;
6. **Injection**: injecting other drug types.

Injectors of ecstasy were more likely to prefer ecstasy to other drugs, to have started ecstasy use earlier, and to identify with scenes other than the dance scene. They were also more likely to be injectors of other drugs, and to use more other drugs. Notably, participants from Brisbane were most likely to have injected ecstasy, and were also less likely to nominate ecstasy as their preferred drug (see Table 1). This suggests that a different population, characterised by intravenous polydrug use, may have been sampled in this city.

3.2.3 Tolerance to and acute withdrawal from ecstasy

Two-thirds (69%) of the overall sample had noted diminishing effects of ecstasy over the course of their use histories, manifested as needing more to get the same effects, or the same amount of drug having less effect. Of these, 13% used the same amount of ecstasy as when they started, 24% used a little more, 39% used double the amount that they started with, and 25% used more than double.

The specific effects of ecstasy most frequently described as less intense were: the euphoria/pleasure (82% of those who reported diminished effects), the length of time for which the effects lasted (78%), the stimulant effect of energy (29%), the extra confidence (13%) and the sociability/volubility (12%). Perceived reasons for the diminished effects were: variations in quality and purity (83% of those who reported diminished effects), tolerance ("Your body gets used to it"; 74%), and that it depends on mood (40%), setting (37%), recent drug use (23%), route of administration (5%) or food intake (4%).

Most participants perceived that the nature of the "come down"[4] or recovery period following acute intoxication had changed over the course of their use history. Only 3% reported experiencing no symptoms of a come down period, while just over a third (37%) said that the come down was the same as it had always been. Just under one-quarter (23%) said that the come down was less intense than previously. This was usually because participants had learnt methods for making it more bearable, rather than because the symptoms were less intense. Just over one-third (37%) reported that the come

[4] When the effects of ecstasy begin to wear off.

down was more intense now, either a little more intense (24%) or a lot (13%). This was despite the fact that these participants were no less able to offer tips for dealing with the recovery period.

Substantial minorities of each state sample reported that the come down from ecstasy had become worse since they first took ecstasy (Sydney 45%, Brisbane 22%, Melbourne 23%). Sydney participants were more likely than those in Melbourne and Brisbane to report that their come down had become worse since they started using (OR = 2.78; CI: 1.67, 4.66).

3.2.4 Motivation for and context of ecstasy use

3.2.4.1 Main reasons for using ecstasy

There was a high degree of consistency in reported reasons for first trying ecstasy. Most participants reported that they were curious (91%), that their friends were using (74%), that the drug was easily accessible (43%) or that they thought it would make them feel good (22%). Overwhelmingly, the main reason for continuing to use ecstasy following original experimentation was its euphoric effects (98%). Other reported reasons included the stimulant effect of ecstasy (32%), confidence and loss of inhibitions (23%), and friends continued to use (21%). Another 20% reported fewer perceived negative effects from ecstasy than other drugs. For example, it did not induce aggression or violence such as that attributed to alcohol, perception was not radically altered as with LSD, and the recovery period was not as aversive as that of amphetamine.

3.2.4.2 Best and worst things about ecstasy

The "best" things about ecstasy reported by the sample were: the euphoria/rush (77%), the group experience and friendship (46%), energy (31%), feelings of confidence and loss of inhibitions (29%), heightened senses (23%), escape from reality and routine (19%), positive outlook and sense of well-being (18%), relaxation and stress relief (16%) and improved communication and empathy (18%).

Almost all participants (96%) reported things about ecstasy they did not like. The "worst" things were: the come down (59% of the sample), variable quality and impurities (46%), the cost (41%), physical health risks and problems (32%), psychological risks and problems (24%), the legal status (22%) and the development of tolerance (13%).

3.2.4.3 Activities undertaken while intoxicated

The most common activity undertaken while intoxicated by participants in this sample was dancing (84%). This was done in a variety of environments, including dance clubs, dance parties, raves, pubs and live music venues, at friends' houses and at home. Other activities included socialising and meeting new people (61%), feeling empathic and close to friends (52%), cuddling, kissing and touching (48%), listening to music (33%), "chilling out" and relaxing (30%), staying home or at friends' houses (29%) having sex (20%), thinking (13%) and going to the pub or live music venues (10%).

3.2.4.4 Social context of ecstasy use

Most (91%) of the sample had at least three close and trusted friends, and most of these (82%) saw those friends on a regular basis. A majority (61%) of participants reported that they used ecstasy with two to four close friends. Others with whom ecstasy was frequently used included five or more friends (51%) and a partner (36%). Minorities reported that they used with family (7%), acquaintances (4%), alone (3%) or with their dealer (2%).

Over half (54%) of the sample had a regular partner, 80% of whom also currently used ecstasy. Almost half (44%) of the sample reported that they knew more than 50 people who used ecstasy, one-third (33%) knew between 21 and 50 people, and 15% knew between 11 and 20 people. The majority (78%) reported that half or more of the people that they spent time with currently used ecstasy, and 20% said that all their friends used.

The most common source from which ecstasy was obtained was friends (91%). More than two-thirds (69%) of the sample had introduced at least one other person to ecstasy, with a median of two people introduced (range 0-150). Over half (56%) of the sample had introduced between one and five people to ecstasy.

3.2.5 Price, purity and availability of ecstasy

Table 4 displays information about the price, purity and availability of ecstasy in the three states. Ecstasy was significantly cheaper in Sydney (M = $50 per tablet) than in Brisbane (M = $53) and Melbourne (M = $54; $t = 3.1$, $p < .005$). Participants from all cities were likely to report either that the price of ecstasy had remained stable or decreased in the preceding six months.

TABLE 4: Reported price, purity and availability of ecstasy in the three states

	Sydney n = 213	**Brisbane n = 59**	**Melbourne n = 57**
Mean usual price $	50	53	54
Mean price range	42 - 62	41 - 69	45 - 64
Price change (6 months)			
% stable	64	43	51
% decreasing	25	29	19
Availability			
% easy / very easy to obtain	96	88	86
% Availability stable (6 months)	68	43	58
% Police activity does not make drugs more difficult to obtain	92	85	96

Purity **% stable**	47	40	47

Ecstasy was usually described as easy or very easy to obtain, although participants in Sydney were more likely to report this than those in the other cities (OR = 3.84; CI 1.57, 9.35). The majority in the three states reported that the availability of ecstasy had remained stable in the preceding six months, and that police activity did not make drugs more difficult to obtain. Most also reported that the purity of ecstasy was currently stable, with minorities reporting fluctuations One-third of the Melbourne sample did not feel confident in providing comments on the purity of the drug.

TABLE 5: Patterns of drug use of the overall sample

Drug class	Ever used (%)	Used last 6 months (%)	No. days used last 6 months (median)#
Alcohol	100	94	24
Cannabis	100	92	48
Amphetamine	94	82	10
LSD	93	68	4
Tobacco	85	75	180
Amyl nitrate	75	47	3
Cocaine	61	41	2
Nitrous oxide	61	35	4
Benzodiazepines	57	43	5.5
MDA	51	31	3
Other opiates	32	21	3
Heroin	30	17	12
Antidepressants	23	13	6
Ketamine	18	10	4
Ethyl chloride	10	6	2
Methadone	7	3	20
Anabolic steroids	4	2	20
GHB	3	2	1.5

Other drugs *	-	5	2

Among those who had used
* Other drugs included hallucinogenic mushrooms, DMT and 2CB

3.3 Patterns of other drug use

Polydrug use was the norm among this sample (Table 5), as has been found with users of some other illicit drugs (Darke & Hall, 1995). The sample had experimented with a mean of 10.1 drugs (SD 2.6, range 2-17), most frequently ecstasy, alcohol, cannabis, amphetamine, LSD and tobacco. In the preceding six months, the sample had used a mean of 7.9 drugs (SD 2.3, range 1-17), most frequently ecstasy, alcohol, cannabis, amphetamine, tobacco and LSD.

Most participants typically used other drugs in combination with ecstasy (93%) and in the come down period after using ecstasy (87%). "Typically" was defined as at least two-thirds of the time. A mean of 2.4 drugs were typically used in conjunction with ecstasy (SD 1.4; range 0-7), most commonly tobacco (62% of the sample), cannabis (45%), amphetamine (43%), alcohol (40%), LSD (13%), amyl nitrate (12%) and nitrous oxide (7%). Of those that typically drank alcohol while using ecstasy, 41% (17% of the whole sample) usually consumed more than five standard drinks in an episode[5]. A mean of 1.8 drugs were typically used when coming down from ecstasy (SD 1.2; range 0-6), most frequently cannabis (64%), tobacco (54%), alcohol (21%), benzodiazepines (17%), nitrous oxide (8%), amphetamine (7%) and heroin (5%).

Table 6 depicts the average and heaviest use of other "party drugs" among those participants who had used them in the preceding six months. The median amounts used in both average and heaviest episodes of most drugs remained approximately equivalent, but there was greater variability in the amounts taken in heaviest use episodes. In the preceding six months, more than one-third (42%) of the sample had binged on one or more party drugs, including amphetamine (36% of the sample), LSD (13%), nitrous oxide (7%), amyl nitrate (5%), cocaine (5%) and MDA (3%).

Participants were asked which drugs, both licit and illicit, they had used prior to ecstasy, and which they had experimented with after using ecstasy (Table 7). Ecstasy was the first drug tried by only one participant (0.3%). The drugs participants were most likely to have used before ecstasy were alcohol, tobacco, cannabis, LSD and amphetamine. For more than one-quarter of the sample (29%), ecstasy had replaced drugs used earlier in the repertoire, most commonly LSD (21% of the sample), alcohol (6%), amphetamine (5%) and cannabis (4%). Among the remainder of the sample, ecstasy was added to the drug repertoire. A substantial minority (15%) of the sample had not experimented with other

[5] Drinking in excess of five standard drinks (>80g alcohol) has been suggested by the National Health & Medical Research Council (NH&MRC) as exceeding the limits of moderate drinking (NH&MRC, 1992).

drugs after using ecstasy. The drugs participants were most likely to try after ecstasy were ketamine, MDA and cocaine.

TABLE 6: Median amounts of party drugs used in average and heaviest use episodes in the preceding six months (among those who had used them).

Drug class	Number who had used	Average episode (range)	Heaviest episode (range)
Amphetamine	269	0.5 grams (0.1-7)	1 gram (0.1-28)
LSD	224	1 tab (0.25-5)	1 tab (0.25-11)
Amyl nitrate	153	5 snorts (1-100)	6 snorts (1-150)
Cocaine	134	0.35 grams (0.1-5)	0.5 grams (0.1-9)
Nitrous oxide	116	10 bulbs (1-100)	12 bulbs (1-240)
MDA	103	1 cap (0.2-3)	1 cap (0.2-5)
Ketamine	33	3 "bumps" (1-12)	5 "bumps" (1-20)
GHB	6	2 "bumps" (1-3)	2 "bumps" (1-3)

Note: "tab" = tablet
"cap" = capsule
"bump" = small snort, usually measured by tiny spoon provided with container in which drug is purchased
"bulb" = small canister in which nitrous oxide can be legally purchased for the purpose of whipping cream

Table 8 shows the patterns of other drug use of participants in each city during the preceding six months (see Appendix E for detailed drug use histories of each sample). In all cities, polydrug use was the norm. Sydney participants had used significantly more drugs than those in the other states, both in their lifetimes ($t_{326} = 2.2$, $p < .05$), and in the preceding six months ($t_{325} = 2.6$, $p < .05$).

Despite Sydney participants reporting use of a greater number of drugs, Brisbane participants were more likely than those in Sydney and Melbourne to report bingeing on other drugs (OR = 2.26; CI: 1.27, 4.01). Compared to those from Sydney and Melbourne, participants from Brisbane also reported taking a significantly greater number of drugs both while using ($t_{322} = 2.5$, $p < .05$) and coming down from ecstasy ($t_{325} = 5.0$, $p < .001$). Sydney participants reported taking a significantly greater number of drugs while coming down than did those from Melbourne ($t_{322} = 2.7$, $p < .01$).

TABLE 7: Proportion of those who had used various drugs who used them before and after ecstasy

Drug class	% sample ever used (*n*)	% first used before ecstasy *	% first used after ecstasy *
Alcohol	99.7 (328)	99.4	0.6
Cannabis	98.8 (325)	95.7	4.3
Amphetamine	94.2 (310)	72.3	27.7
LSD	93.3 (307)	80.8	19.2
Tobacco	85.4 (281)	95.7	4.3
Amyl nitrate	75.4 (248)	49.6	50.4
Cocaine	61.4 (202)	29.7	70.3
Nitrous oxide	61.1 (201)	52.2	47.8
Benzodiazepines	56.8 (187)	39.0	61.0
MDA	50.5 (166)	14.5	85.5
Other opiates	32.0 (105)	41.3	58.7
Heroin	30.1 (99)	39.4	60.6
Ketamine	18.2 (60)	5.0	95.0
Methadone	7.3 (24)	70.8	29.2

* percentages refer to those who had ever used each drug class

A third or more of each sample drank alcohol while using ecstasy (Table 8), although those in Sydney and Brisbane were more likely than those in Melbourne to drink in excess of five standard drinks (OR = 3.58; CI: 1.14, 11.20). Brisbane participants were significantly more likely to have injected a drug than those in Sydney and Melbourne (50.8% versus 29.2%; OR = 2.55; CI: 1.43, 4.52), and to have injected within the past month (OR = 3.38; CI: 1.73, 6.61).

In summary, while the Sydney sample had used the greatest number of drugs, the Brisbane sample differed from the other two samples in their patterns of other drug use. They tended to use more other drug types when both using and coming down from ecstasy; they reported drinking more alcohol concurrently with ecstasy; they were more likely to have binged on drugs other than ecstasy; and they were more likely to have injected other drug types. In short, the Brisbane sample appeared to be heavier users of drugs other than ecstasy.

TABLE 8: Other drug use during the preceding six months of participants in the three states

	Sydney n = 213	Brisbane n = 59	Melbourne n = 57
Mean no. other drugs ever used	10.4	9.7	9.5
Mean no. other drugs used (6 months)	8.1	7.5	7.4
% binged on other drugs (6 months)	41.8	59.3	29.8
Mean no. drugs used while using ecstasy	2.4	2.8	2.0
% normally drink alcohol while using ecstasy	40	47	33
% normally have more than 5 std. drinks while using ecstasy	29	40	17
Mean no. drugs used when coming down	1.8	2.5	1.4
% injected any drug	29	51	30
% injected in past month	10	31	16

3.4 Ecstasy-related harms

3.4.1 Psychological and physical side effects

Tables 9 and 10, respectively, display the psychological and physical side-effects of ecstasy experienced in the preceding six months, as well as their duration and perceived origins. Participants reported experiencing a mean of 7.7 physical side-effects in the preceding six months (SD 4.2; range 0-20), most frequently energy loss, muscular aches, hot/cold flushes and blurred vision. A mean of 4.1 psychological side-effects (SD 2.4; range 0-13) were also reported, most frequently irritability, trouble sleeping, depression and confusion. Compared to males, females reported a significantly greater number of both physical (8.6 versus 6.7; t_{320}=-4.04; p<.001) and psychological side effects (4.5 versus 3.6; t_{326}=-3.31; p<.05).

TABLE 9: Psychological side effects of ecstasy reported by the overall sample (N=329)

SYMPTOM	Last 6 mths % *	While using ecstasy*	While coming down *	At other times *	Median length of worst case #	Only related to ecstasy % #
Irritability	62	3	60	20	2 days	47
Trouble sleeping	56	23	52	16	12 hours	43
Depression	56	5	50	24	3 days	50
Confusion	47	30	36	11	12 days	53
Anxiety	45	27	33	14	4 hours	46
Paranoia	40	22	31	11	3 hours	40
Visual hallucinations	28	27	8	6	1.5 hours	52
Sound hallucinations	21	19	7	3	45 mins	54
Flashbacks	15	0	5	12	5 mins	52
Panic attacks	13	10	5	4	1 hour	43
Loss of sex urge	12	8	8	5	24 hours	53
Suicidal thoughts	10	0.6	8	7	24 hours	27
Violent behaviour	3	0.6	2	2	60 mins	22
Suicide attempts	1	0	0.3	0.6	-	0

* proportion of total sample
# among those reporting the symptom

TABLE 10: Physical side effects of ecstasy reported by the overall sample (N=329)

SYMPTOM	Last 6 mths % *	While using ecstasy*	While coming down *	At other times *	Median length of worst case #	Only related to ecstasy % #
Loss of energy	65	8	61	19	2 days	46
Muscular aches	60	11	58	12	2 days	35
Hot / cold flushes	48	39	26	5	1 hour	53
Blurred vision	47	46	13	4	1 hour	69
Numbness/tingling	46	42	15	6	1 hour	59
Profuse sweating	43	39	18	5	3 hours	41
Weight loss	43	-	-	-	21 days	26
Dizziness	42	31	21	10	20 mins	46
Tremors/shakes	42	30	25	9	2 hours	46
Heart palpitations	41	37	16	8	30 mins	39
Headaches	40	11	35	8	4 hours	35
Stomach pains	38	26	23	6	2 hours	48
Joint pains/stiffness	35	8	33	8	2 days	31
Inability to urinate	35	34	6	2	3 hours	78
Vomiting	34	30	8	6	5 mins	65
Teeth problems	33	15	23	12	2 days	44
Shortness of breath	26	23	7	2	30 mins	35
Blackout/memory lapse	25	14	13	3	3 hours	31
Chest pains	16	9	9	5	1 hour	25
Fainting/pass out	6	5	2	2	3.5 mins	48
Fits/seizures	1	0.6	0.6	0	30 secs	0.3

* proportion of total sample
# among those reporting the symptom

The most common side-effects were generally acute symptoms experienced while either intoxicated or recovering from intoxication ("coming down") from ecstasy use. Specifically, the side-effects most often experienced while intoxicated were: blurred vision, numbness / tingling, hot/cold flushes, profuse sweating, heart palpitations, inability to urinate, dizziness, confusion tremors and vomiting.

The most common symptoms experienced while recovering from ecstasy included: energy loss, irritability, muscle aches, trouble sleeping, depression, confusion and headaches. Significant minorities reported more chronic symptoms extending beyond the acute intoxication and recovery period. These included weight loss, depression, irritability, energy loss, trouble sleeping, anxiety and teeth problems (eg. bruxism, hypersensitive teeth, mouth ulcers from excessive chewing). Very small proportions reported extreme reactions, such as, fits or seizures, violent behaviour or suicidal thoughts or attempts (Tables 9 & 10).

The majority of participants who reported the following symptoms perceived them to be due to ecstasy use alone: inability to urinate, blurred vision, vomiting, numbness/tingling, sound hallucinations, confusion, loss of sex urge, hot/cold flushes, visual hallucinations and flashbacks. Other symptoms were generally perceived as due to a combination of ecstasy use and other factors such as polydrug use, lack of sleep, pre-existing conditions and sustained exertion (Tables 9 & 10).

Half of the sample (49%) reported an increase in ecstasy-related side-effects since they began using. These were most often energy loss (25%), depression (25%), irritability (22%), anxiety or panic attacks (13%), paranoia (13%) and muscle aches (8%). One-third (37%) reported that the side-effects had not changed, while 14% perceived that the side-effects had lessened over the course of their use histories.

Table 11 depicts the mean number of physical and psychological side effects reported by participants in each city. Participants in Sydney experienced significantly more physical side effects than those in Melbourne and Brisbane ($t_{320} = 3.471$, $p < .005$). There were no significant differences between the cities in the number of psychological side effects experienced.

TABLE 11: Reported physical and psychological side effects of participants in the three states

	Sydney n = 213	**Brisbane n = 59**	**Melbourne n = 57**
Mean no. physical side effects	8.25	7.02	6.15
Mean no. psychological side effects	4.26	3.53	4.02

Multiple linear regressions were conducted to determine the variables independently associated with the number of physical side effects experienced (see Appendix F for details of the analysis). The factors which independently predicted more physical side effects were:

1. **Gender**: being female;
2. **Age**: those who were younger;
3. **Unemployment**: those who had been unemployed some time during the last 6 months;
4. **City**: those in Sydney;

5. **Average amount of ecstasy taken**: those who normally took more ecstasy;
6. **Drug types while coming down**: those who used more drug types while recovering;
7. **Bingeing on ecstasy during the last 6 months**: those who had binged.

It appears that those who were likely to report more negative physical side effects were younger, female and were less consistently employed. They tended to use ecstasy more heavily, and engaged in polydrug use when recovering from ecstasy use. Participants from Sydney were also more likely to report a greater number of physical side effects.

Similar analyses were conducted to determine the variables independently associated with number of psychological side effects (see Appendix G for details of the analysis). The factors which independently predicted more psychological side effects were:

1. **Gender**: being female;
2. **Number of drugs binged during the previous 6 months**: those who had binged on more drug types;
3. **Drugs used when coming down**: those who used more drug types when recovering.

Thus, females who were using a variety of drugs heavily and were engaging in extensive polydrug use when recovering from the effects of ecstasy, were likely to report more psychological side effects.

3.4.2 Symptoms of dependence

The median Severity of Dependence Scale (SDS) score was 1 (range 0-11), and females scored significantly higher than males (median = 2 versus 1; U=10784.5; p<.005). A cut-off of four on the SDS has been statistically validated as equivalent to clinically significant amphetamine dependence (Topp & Mattick, 1997). Using this cut-off, 18% of the present sample would be classified as dependent on ecstasy[6].

Participants from Sydney recorded significantly higher median scores on the SDS (2) than those in Melbourne (1) and Brisbane (1), indicating that they experienced greater preoccupation with and anxieties about their ecstasy use than participants in the other cities (U = 9693.0; p < .001).

3.4.3 Other ecstasy-related problems

More than a third of the sample (42%) had experienced occupational problems related to their ecstasy use in the preceding six months. A significantly higher proportion of females reported work or study problems (50% versus 34% of males; $\div^2_1$=9.0; p<.01). Most of the problems (64%) involved trouble concentrating, reduced performance or feeling unmotivated. A quarter (25%) involved taking sick leave

[6] DSM-IV measures of ecstasy dependence among a subset of the present sample are discussed elsewhere (Topp, Hall, & Hando, submitted).

or not attending classes, while a minority (11%) were serious problems such as being dismissed from or quitting a job, or inability to obtain employment.

Forty percent of the sample reported ecstasy-related relationship problems in the preceding six months, three-quarters (77%) of which were relatively minor, such as arguments, mistrust or anxiety. Minorities reported serious problems like ending a relationship (19%), being forced to leave home (2%) or violence (2%). Financial problems related to ecstasy were reported by a third of the sample (38%). Half (47%) of these were relatively minor, such as having no money for other recreation, although 28% reported being in debt, and 25% had been unable to pay for essentials such as food or rent. Only 9 participants had recent legal problems related to ecstasy, six of whom had been cautioned and three of whom had been arrested.

Substantial proportions of samples from all cities reported ecstasy-related problems (Table 12), with participants from Sydney the more likely to be affected. Compared to those in Brisbane and Melbourne, Sydney participants were significantly more likely to report financial problems (OR = 2.48; CI: 1.50, 4.09), occupational problems (OR = 1.85; CI: 1.15, 2.98), and relationship problems (OR = 2.47; CI: 1.51, 4.04) related to their ecstasy use. Relationship problems were also more commonly reported by Brisbane participants than those from Melbourne (OR = 2.60; CI: 1.09, 6.17).

TABLE 12: Reports of problems associated with ecstasy use of participants in the three states

	Sydney n = 213	**Brisbane n = 59**	**Melbourne n = 57**
% reported ecstasy caused relationship problems	47	36	18
% reported ecstasy caused financial problems	46	31	19
% reported ecstasy caused work/study problems	47	34	32

TABLE 13: Risky injecting practices in the month preceding the interview

	Total % (n)
Frequency of injection of any drugs:	
Daily	2.7 (9)
2-3 times/week	4.3 (14)
Weekly or less	7.9 (26)
No injection	85.1 (280)
Injectors who borrowed a used needle:	10.1 (5)
No. times injectors borrowed used needle:	
None	89.8 (44)
Once	2.0 (1)
Twice	6.1 (3)
3-5 times	2.0 (1)
Injectors who lent a used needle:	18.4 (9)
No. of times injectors lent a used needle:	
None	81.6 (40)
Once	8.2 (4)
Twice	4.1 (2)
3-5 times	6.1 (3)
Injectors who had shared needles:	18.4 (9)
Sharers who had cleaned needles with bleach:	
Every time	(4)
Rarely	(1)
Never	(4)

A multiple logistic regression was carried out to determine the factors associated with relationship, occupational and financial problems (see Appendix H for details of the analysis). The factors associated with experiencing more problems were:

1. **Age**: being younger;
2. **Frequency of ecstasy use**: using ecstasy more often;
3. **Bingeing on ecstasy**: having binged on ecstasy within the last 6 months;
4. **State:** being from the Sydney sample.

In short, it appears that ecstasy use had problematic consequences for the Sydney sample in particular. Those who reported problems associated with their ecstasy use appeared to be heavier and more

regular users of ecstasy and/or other drugs, and to have become involved in drug taking at a younger age.

3.5 Risk-taking behaviour

3.5.1 Injecting practices

Fifteen percent of the overall sample had injected one or more drugs in the month preceding the interview (Table 13). This was usually once a week or less frequently, or a few days per week. Few participants reported daily injection.

Among those who had injected, five participants had used a needle after another person, on one to five occasions. Nine participants had lent a used needle to another person, up to five times during the month. When sharing was defined as having either lent or borrowed a used needle, nine participants had shared needles in the past month. Four of these participants reported never using bleach to clean needles before re-use, while four always used bleach before re-using.

3.5.2 Sexual risk-taking

At least three quarters of the samples in each city reported engaging in penetrative sex in the preceding month (Table 14; see also Appendix I for more detailed analyses of the sexual behaviour of a subset of the present sample). Further, between 75% and 83% of each sample had had unsafe sex with a regular partner(s) in the preceding month. Smaller but substantial proportions (between 34% and 42%) of each sample had had unsafe sex with a casual partner(s) in the preceding month. Extent of sexual risk-taking, as measured by the Sexual Behaviour subscale of the HIV Risk-taking Behaviour Scale (HSB; Darke et al., 1991), was approximately equivalent between the three samples (Table 14).

TABLE 14: Sexual risk-taking of participants in the three states

	Sydney n = 213	**Brisbane n = 59**	**Melbourne n = 57**
% who had penetrative sex during the past month	77	81	75
% of sexually active people - unprotected sex with regular partner	75	81	83
% of sexually active people - unprotected sex with casual partner	42	40	34

Mean HSB total score	4	4	4

3.5.3 Fluid consumption and activity levels

Fluid consumption and activity levels during intoxication were examined (Table 15). Most participants (94%) reported that they usually drank fluids while using ecstasy, and all of these reported drinking at least some water. Forty one percent of the sample typically consumed less than 250ml of water per hour, 43% consumed between 250-500ml of water per hour, 8% consumed between 500-1000ml per hour, and three participants (<1%) typically consumed more than a litre of water per hour. Almost a third of the sample drank only water while intoxicated. Other fluids typically consumed included alcohol, soft drinks, fruit juice, isotonic sports drinks and coffee.

Medical opinion suggests that water consumption should vary according to activity level during intoxication (White, Irvine & Bochner, 1996). Eighty-nine percent (*n*=293) of the present sample had attended a dance venue while intoxicated during the preceding six months. While 87% reported taking breaks from dancing, 13% danced continuously without resting. Among those who did not rest at dance venues (*n*=38), half (*n*=19) drank adequate amounts of water (250-500ml per hour). The remainder consumed either too much water (*n*=2, >500ml per hour), or too little (*n*=17, <250ml per hour), including six participants who reported drinking no water. Those who did not rest and consumed inadequate water either consumed alcohol (*n*=9), or no fluids at all (*n*=8).

Among those who did rest at dance events (*n*=255), 44% consumed adequate amounts of water (250-500ml per hour). Almost half (45%) usually drank less than recommended (<250ml per hour), including eight participants who consumed no water. Twenty eight participants (11%) consumed excessive amounts (>500ml per hour). Among those resting but drinking too little water (*n*=114), 36% usually drank no other fluids, while 43% usually consumed alcohol.

One third (37%) of Sydney participants, 51% of Melbourne participants, and 59% of Brisbane participants reported drinking an appropriate amount of water when at a dance venue. Participants from Brisbane and Melbourne were more likely than those in Sydney to report that they had consumed the correct amount of water (OR = 2.10; CI: 1.32, 3.33). One factor that must be considered when accounting for these results is the availability of water at dance venues. Observational studies conducted at permanent dance venues as part of the National Dance Party Project suggest that inadequate water supplies and exorbitant prices for water are common in bars, nightclubs and dance parties (see Appendix J).

TABLE 15: Fluid consumption during ecstasy use of the overall sample (N = 329)

	% (n)
Drink fluids while using ecstasy	94
Water typically drunk when using ecstasy (per hour)	
< 250 mL	41
250 - 500 mL	43
500 - 1 000 mL	8
> 1 000 mL	1
Fluids typically drunk when using ecstasy	
water only	29
alcohol	40
juice	28
soft drink	19
sports drinks	17
coffee	6
Attended dance venue when using ecstasy (last 6 months)	89
% who took breaks	87 (255)
% who danced continuously	13 (38)
Did rest (n = 255)	
drank adequate water	44 (112)
drank too little water	45 (115)
drank too much water	11 (28)
Did not rest (n = 38)	
drank adequate water	50 (19)
drank too little water	29 (11)
drank no water	16 (6)
drank too much water	5 (2)

3.5.4 Perceptions of risk

Participants rated on an 11 point scale how "hard" an illicit drug they perceived ecstasy to be, with cannabis at point "0", and heroin at point "10". The mean score was 5.0 (SD 1.9; range 0-10). When asked to nominate the three main risks of ecstasy, the two most common responses were emotional problems and the risks posed by impurities (Table 16). Large proportions mentioned the physical problems associated with ecstasy use (both short and long term), as well as the unknown long term effects of ecstasy use. Some cited the risks of death or toxic reaction as risks associated with use. Other issues such as financial and legal difficulties were also mentioned. The majority (94%) of the

sample perceived their own use of ecstasy as at least moderately safe (Table 16); very few described it as risky (6.5%).

TABLE 16: Perceived risks of ecstasy use reported by the overall sample (N = 329)

Perceived risks of ecstasy use	%
Emotional problems	44
Impurities	42
Short term physical problems	31
Long term physical problems	25
Financial problems	25
Unknown long term effects	24
Dependence	18
Legal problems	16
Death	12
Toxic reactions	12
Cognitive problems	12
Perception of own ecstasy use	
Quite safe	38
Moderately safe	30.5
Very safe	25
Quite risky	5.5
Very risky	1

3.5.5 Crime

Substantial proportions of all samples reported committing crime in the preceding month; 57% of those in Sydney, 39% of those in Brisbane, and 39% of those in Melbourne (Table 17). Sydney participants were significantly more likely than those from Melbourne or Brisbane to have committed a property crime (OR = 2.23; CI: 1.18, 4.25), and to have been involved in drug dealing (OR = 1.62; CI: 1.01, 2.59). Few participants from any city were involved in fraud or violent crime.

TABLE 17: Recent criminal involvement of participants in the three states

	Sydney n = 213	Brisbane n = 59	Melbourne n = 57
% any crime in past month	57	39	39
% drug dealing in past month	46	36	33
% property crime in past month	24	9	16
% fraud during past month	4	2	0
% violent crime in past month	2	0	0

Multivariate analyses suggested that the factors which increased the likelihood of criminal involvement were (see Appendix K for details of the analysis):

1. **Years of education**: those who had fewer years of education;
2. **Age of monthly ecstasy use**: those who began regular ecstasy use at a younger age;
3. **Frequency of use**: those who used ecstasy more often.

The fact that Sydney participants were more likely to be involved in some sort of crime appears to be due to the fact that this sample tended to use ecstasy more regularly than those in other samples, and had started using ecstasy at a younger age. On the whole, those who reported involvement in some crime appeared to be more heavily involved in ecstasy use, and to be less well-educated.

3.6 Help seeking behaviour

3.6.1 Self-defined problematic use

More than one-third (41%) had attempted to reduce their ecstasy use at some time, most (84%) of these during the preceding 12 months. Of those that had attempted to cut down, the most common reasons were financial difficulties (60%), physical health problems (48%), psychological problems (38%), occupational problems (27%), relationship problems (21%), to improve their quality of life (20%), poor quality drugs (14%) and feeling dependent (11%). Participants from Sydney were more likely to have tried to cut down than those from Melbourne and Brisbane (OR = 2.95; CI: 1.80, 4.84). Forty participants (12% of the sample) felt that they had needed help for an ecstasy-related problem in the past, and 6% (*n*=18) felt that their current use of ecstasy was problematic.

3.6.2 Formal treatment

One fifth of the sample (21%; *n*=71) had received formal assistance from a health practitioner for an ecstasy-related problem (Table 18), although in the majority of these cases (81%; *n*=58), other drugs were also involved. The most common treatments sought were GP (11%) or natural therapist (8%) consultations. Seven percent of the total sample (*n*=23) were currently receiving treatment for an ecstasy-related problem, most frequently from a natural therapist (*n*=11) or a GP (*n*=7).

Among those who had consulted a GP (*n*=37), most (78%; *n*=29) reported to their practitioner that the problem was ecstasy-related. Only 19% (*n*=7) noted reductions in ecstasy use as a result of this assistance. Other outcomes included obtaining a prescription for benzodiazepines or other pharmaceuticals (*n*=9), increased knowledge about drugs (*n*=9) and receiving a medical check-up or blood tests (*n*=7). Five participants reported improved physical health as a result of their consultation, and four reported feelings of anxiety and frustration. Two-thirds (*n*=25) were satisfied with the treatment (Table 18).

Eleven of the 25 participants who had received natural therapies (eg. acupuncture, massage, herbs) presented the problem as ecstasy-related. The most common outcomes were stress reduction and increased relaxation (*n*=11), reduced ecstasy use (*n*=10), improved physical (*n*=9) and psychological (*n*=7) health and detoxification (*n*=9). Only one subject was unsatisfied with this intervention.

Thirteen participants had seen a drug counsellor, two of whom were currently doing so. Most (*n*=12) presented the problem as ecstasy-related. Outcomes included reduced ecstasy use (*n*=7), improved physical health (*n*=4) and psychological stability (*n*=4), support and understanding (*n*=3), improved financial situation (*n*=2) and relationships (*n*=2), and increased motivation (*n*=1). Three participants reported negative outcomes of counselling, including increased anxiety and craving. Seven of the thirteen participants were satisfied with this form of treatment.

Nine participants had seen a psychiatrist for an ecstasy-related problem, although in every case, other drugs were also involved. Five participants disclosed that they were using ecstasy, and four reported decreased use following treatment. Other outcomes included improved psychological stability (*n*=2) and physical health (*n*=1), increased motivation (*n*=1) and increased knowledge about drugs (*n*=1). However, four participants reported negative outcomes including increased anxiety and frustration. Four participants were satisfied with this intervention.

TABLE 18: Options sought to modify ecstasy use or reduce associated problems (N=329)

	Ever received % (n)	Current intervention % (n)	Presented as ecstasy-related %#	% Reduced ecstasy use#	% Satisfied# *
Formal					
GP	11 (37)	2 (7)	78	19	68
Nat. therapies	8 (25)	3 (11)	44	40	96
Counsellor	4 (13)	0.6 (2)	92	54	62
First Aid	3 (9)	-	89	11	100
Psychiatrist	3 (9)	0.6 (2)	56	44	44
Casualty	2 (8)	-	100	13	63
Detoxification	1 (3)	0	100	67	100
NA	1 (3)	0.3 (1)	100	100	100
TC	0	-	-	-	-
Informal					
Alone	41 (136)	35 (114)	-	88	91
Social support	18 (58)	12 (40)	91	52	97
Information	40 (133)	-	-	9	58

among those who participated in the intervention
* includes participants who were moderately to extremely satisfied

Nine participants had received First Aid at a venue, eight of whom reported to staff that they had taken ecstasy. This type of treatment did not usually lead to reduced ecstasy use (*n*=1), as all involved treatment for an acute negative drug reaction. All participants were satisfied with the treatment they had received from First Aid. A further eight participants had presented to a hospital accident and emergency department with an ecstasy-related problem, and all informed staff that they had taken ecstasy. One subject had reduced their ecstasy use following this incident. Six of the eight received medical treatment, four for an acute toxic reaction and two for suicide attempts. Five of the eight were satisfied with the treatment they received.

Three participants had attended detoxification programs for ecstasy-related problems, two of which also involved amphetamine, and all disclosed their drug use to the practitioners. Two of the three reduced their drug use following detoxification, with other outcomes reported to be improved physical (*n*=1) and psychological (*n*=1) health and increased knowledge about drugs (*n*=1). All three were satisfied with the programs. Three participants had attended Narcotics Anonymous (NA) meetings for ecstasy and other drug problems, one of whom was still doing so. All presented their problems as drug-related, reduced their drug use as a result, and were satisfied with this intervention.

Nineteen percent (*n*=62) of the sample had wanted help with some aspect of their ecstasy use but did not successfully obtain it. Barriers to treatment seeking included: feeling that they should be able to deal with the problem alone (45%; *n*=28), feeling unmotivated or denying the problem (40%; *n*=25), not knowing where to go (26%; *n*=16), perceiving the treatment or practitioner as inadequate (26%; *n*=16), confidentiality concerns (16%; *n*=10), time constraints (5%; *n*=3), waiting lists (3%; *n*=2) and cost issues (3%; *n*=2).

3.6.3 Informal responses

Attempts to modify ecstasy use without formal assistance were common (46%), with many participants having done so alone (41%), and/or with support from family or friends (18%) (Table 18). Participants from Sydney and Brisbane were more likely than those from Melbourne to have attempted to modify their use without formal assistance (OR = 3.54; CI: 1.82, 6.86).

Among those who had attempted to modify their ecstasy use alone, most (88%) reduced consumption and were satisfied with the outcomes (91%). Additional outcomes included: improved financial situation (62%), improved physical (52%) and psychological (33%) health, better concentration (44%), increased motivation (41%), improved relationships (31%), and feeling more in control (18%). One-fifth (20%) of this group reported negative outcomes, including increased craving, anxiety and frustration, and loss of social group.

Among those who attempted to modify their use with social support, 91% revealed to their family or friends that they used ecstasy. Half (52%) reduced their use with this assistance, and nearly all (97%) were satisfied with the outcomes. Other outcomes included emotional support (57%), improved relationships (52%) and increased knowledge about drugs (22%).

Overall, participants were most likely to report a reduction in ecstasy use from attending NA, cutting down on one's own, detoxification programs, counselling or social support. Less than half of those who had participated in other interventions had reduced their use. Satisfaction was highest with First Aid, detoxification programs and NA, followed by social support, natural therapies and cutting back alone. Given the small numbers who had participated in formal treatments, replication of these results is required.

Forty percent (*n*=133) of the sample had obtained information about ecstasy from sources such as textbooks, pamphlets, the internet or youth centres. The most common outcome was increased knowledge about ecstasy (93%), although less than two-thirds (58%) were satisfied with the information they received. A quarter (28%) were totally unsatisfied with the information available, and 15% were only a little satisfied. Almost half of the sample (46%) had attempted to modify ecstasy use without formal assistance, with many participants having done so alone (41%), and/or with support from family or friends (18%).

3.6.4 Intervention preferences

More than half (55%) of the sample wanted to make changes to their ecstasy use. A quarter (25%) wanted to reduce their use, including seven participants (2%) who wanted to quit using altogether. More than one-fifth (23%) wanted purer drugs and 21% wanted cheaper drugs. Minorities wanted ecstasy to be more available (8%), to increase their use (4%), or to stop injecting (2%).

Of those who wanted to reduce their use (25%; *n*=83), the most common reasons were: financial difficulties (57%; *n*=47), physical health effects (45%; *n*=37), psychological problems (39%; *n*=32), occupational problems (37%; *n*=31), to improve their quality of life (28%; *n*=23), relationship problems (17%; *n*=14), feeling dependent on ecstasy (16%; *n*=13) or poor quality drugs (12%; *n*=10).

A multivariate analysis was conducted to determine the variables independently associated with desire to reduce use (see Appendix L for details of the analysis). The variables independently associated with desire to reduce ecstasy use were:

1. **Recent financial problems**;
2. **Recent relationship problems**;
3. **More psychological side-effects**;
4. **More frequent ecstasy use**.

Clearly, those who wished to cut down their ecstasy use were those who were more regular users of ecstasy, and for whom ecstasy use was proving more problematic.

Almost a third of Sydney participants said they would like to cut down their ecstasy use, a proportion which was significantly higher than the other cities combined (OR = 2.86; CI: 1.57, 5.23). One fifth of Brisbane participants said that they would like to cut down, and this was significantly more than those wanting to cut down in the Melbourne sample (OR = 3.38; CI: 1.02, 11.21).

Fifteen percent (*n*=49) of the sample wanted formal treatment for an ecstasy-related problem. The most common request was for natural therapies, particularly advice on diet and nutrition (10%; *n*=32), followed by consultation with a counsellor (4%; *n*=13), GP (3%; *n*=11) or psychiatrist (2%; *n*=6), or attending NA meetings (<1%).

Most participants (85%) requested more information about ecstasy, particularly on side-effects (49%), harm reduction techniques (49%), long-term effects (34%), mode of action (29%), manufacturing processes and contents (26%), recommended water consumption (24%), strategies for cutting down (13%), emergency procedures (9%), effects on vital organs (7%) and contraindications (7%). Some participants thought that information about ecstasy should be more accessible (10%), and that drug testing facilities should be provided to minimise problems from impurities (50%).

Table 19 summarises the differences between states in help-seeking behaviour. Higher proportions of the Sydney sample reported that they would currently like to reduce their ecstasy use and that they had attempted to do so without formal assistance in the past. Brisbane participants were most likely to report that they had sought professional help for an ecstasy-related problem in the past.

TABLE 19: Reports of intentions and attempts to cut down or cease ecstasy use from participants in the three states

	Sydney n = 213	Brisbane n = 59	Melbourne n = 57
% who would like to cut down or quit ecstasy	32	20	7
% who have sought professional help to cut down	22	26	16
% who have attempted to cut down without formal assistance	54	41	23

4.0 DISCUSSION

4.1 Characteristics of the sample

This sample of 329 ecstasy users was recruited with ease from all metropolitan regions of three Australian capital cities, mainly through the use of snowball techniques. On the whole, the sample was young and relatively well educated, few were unemployed, and males and females were equally represented. A variety of cultural backgrounds were represented, including a minority of participants of indigenous descent.

The sample differed in a number of ways from the 100 ecstasy users surveyed in Sydney in 1990 by Solowij et al (1992). The earlier sample was older (27.1 versus 23.1 years), more likely to be from the inner city (74%) and to be working full-time (63%), and less likely to be female (39%). Few cultural backgrounds were represented in the earlier sample, and no participants of indigenous descent were recruited. These differences may reflect the biases of "snowball" sampling. However, since both studies employed similar recruitment methods, differences may be due to changes in the nature of the ecstasy-using population in Australia during the 1990s. These changes have been reflected in results of regular National Household Drug Surveys of the general population. For example, whereas in 1991, 4% of females aged between 14 and 24 years had tried ecstasy, by 1993, this figure had risen to 9% (Commonwealth Department of Human Services & Health, 1994).

Participants were asked to nominate a "type" of ecstasy user with which they most identified. This proved a somewhat ambitious undertaking, as some participants were reluctant to categorise or "pigeon-hole" themselves, and some were unable to name a single scene or type with which they identified. While many participants identified with various dance scenes, the item provided a flavour of the wide range of ecstasy users in Australia, and refuted the common view that ecstasy is *exclusively* a dance drug. Participants identified with a broad range of "types" or "scenes" of ecstasy use, although the validity of such a "typology" cannot be evaluated using survey methodology. Ethnographic research

would be preferable to develop a typology of ecstasy users, similar to that described for amphetamine users (Klee, 1997).

4.2 Ecstasy use

4.2.1 Patterns of ecstasy use

Although a broad range of ecstasy users were found in the present sample, they typically began to use ecstasy in their late teens, and quickly began to use the drug regularly. The frequency of ecstasy use varied from once in six months to four days per week. Frequency of ecstasy use appears to have increased; a higher proportion of this sample than in the Solowij et al. (1992) study used ecstasy weekly or more often (19% versus 12%), and a smaller proportion used monthly or less frequently (37% versus 76%).

Quantity of ecstasy use has also increased. Over two-thirds of the Solowij et al. (1992) sample reported taking only one tablet per average use episode, with a maximum of five tablets. In the present sample, almost half (44%) reported using more than one tablet in an average use episode, with a maximum of eight tablets consumed in a typical occasion of use. Those who used more ecstasy in an average episode were likely to be male, employed and identify with a dance scene. They identified ecstasy as their favourite drug, and used it more often; they also had a more extensive drug taking history.

One quarter (26%) of the current sample had consumed four or more tablets in a use episode in the preceding six months, with a maximum of 30 tablets consumed in a weekend "binge" by one subject. Whereas "binge" behaviour was not assessed in the earlier study, remarkably high rates were reported among the present sample, with over one-third having binged on both ecstasy and amphetamine for 48 hours or more. As has been reported previously (Ovendon & Loxley, 1996), there was a significant association between bingeing and injecting. When multiple factors were considered, those who had binged on ecstasy were likely to regard it as their drug of choice, to use it more often and in larger amounts, and they were also likely to have binged on drugs other than ecstasy. Participants who engage in such binges are likely to compromise their immune systems through lack of sleep, food and adequate fluid intake for significant periods of time (Carroll, 1996).

4.2.2 Routes of administration

Consistent with Solowij et al. (1992), the use of ecstasy was primarily through oral routes, although an increase in intravenous administration was reported by the present sample (16% versus 2%). The adverse health and psychological implications of injecting ecstasy have been highlighted elsewhere (Hunt, Jones & Shelley, 1993), as they have for intravenous use of other stimulants (Hall & Hando, 1994). Multivariate analyses suggested that those who were most likely to have injected ecstasy were less likely to identify with the dance scene with which ecstasy is often associated. They tended to have become involved in regular ecstasy use at a younger age and to regard it as their drug of choice. They had a wider experience of drug use, and tended to have injected other drugs besides ecstasy. In short, it

appears that those who were injecting ecstasy were more likely to belong to a group of users who had been more heavily involved in drug use for a greater amount of time.

More than half of those who had injected ecstasy had reverted to oral/intranasal routes of administration. This was most often due to health problems, inconvenience, dependence and the intensity of the come down. Reasons for changes in routes of administration were similar to those reported by amphetamine users (Darke et al., 1994). Such issues should be emphasised in educational campaigns to reduce the hazards associated with ecstasy use.

4.2.3 Tolerance to ecstasy

More participants in the present sample noted diminishing effects of ecstasy than in the sample recruited by Solowij et al. (1992) (69% versus 49%). This may reflect changes in the composition of street ecstasy since the early 1990s; present figures suggest that ecstasy in Australia is approximately 33% pure (Hando, Darke, Degenhardt, Cormack & Rumbold, 1998). A majority of those in both studies who reported diminished effects considered them due, at least in part, to variations in quality and purity. However, it is also possible that increases in quantity and frequency of ecstasy use has led to the development of a higher degree of tolerance among regular users. Certainly, more of the present sample attributed diminished effects to "tolerance" than in the earlier study (74% versus 59%). Substantial proportions of both samples also suggested that diminished effects depended on mood and setting.

4.2.4 Motivation for and context of use

A range of motivations for ecstasy use were reported, many consistent with those reported in the Solowij et al. (1992) study. In both studies, participants reported that a combination of curiosity, availability and having friends who used encouraged them to experiment with ecstasy. Ecstasy-induced euphoria was the overwhelming reason for continued use. Other reported reasons for continuing to use reinforced the nature of ecstasy as both a stimulant and an hallucinogen, as well as an "entactogen" or "touchy drug" (Hermle, Spitzer, Borchardt & Kovar, 1993; Solowij et al., 1992). Thus, energy, confidence, heightened sensations, the group experience of warmth and friendship, improved communication and empathy, and insight and clarity of thought, were all important reasons for continued use in the present sample. Further, these effects of ecstasy were most often described as the best things about the drug.

These effects also relate to the activities undertaken while intoxicated, which were more extensive and varied than just dancing at clubs or raves (Henry, 1992; Forsyth, 1996). They included socialising and meeting new people, feeling empathic and close to friends, touching, relaxing, "hanging out" at home, having sex and thinking. Its enhancement of social events makes ecstasy conducive to use in many situations, ranging from using at home with a partner for empathy and intimacy, using during the day with friends to go shopping or to the beach, to taking small doses before the cinema or dinner parties. Although the social effects of ecstasy, in combination with the hallucinogenic and stimulant effects, made dancing in an aurally and visually stimulating environment a favourite activity for many participants, there were many participants who had never used the drug in a dance environment.

Ecstasy is a drug used within a particular social context. Few participants in either sample reported that they used it alone, with their dealer or acquaintances. Most used with small groups of friends, larger groups of friends or partners. Participants described extensive networks of friends who used the drug, with a majority of both samples indicating that most of the people they spent time with currently used ecstasy. The majority of those in the present study with regular partners reported that their partners also used. The social nature of ecstasy use also relates to the sources from which the drug is obtained; almost all participants (91%) usually obtained ecstasy through their friends. Most participants emphasised that an important harm reduction technique was to obtain the drug from a known and trusted source, capable of reporting on the effects of new "batches".

In both the 1990 sample and the present study, the quality and cost of ecstasy and the nature of the come down period after use were considered the worst things about the drug. Also of concern to the present sample were physical and psychological problems, the illegal status of the drug and the development of tolerance. This increase in recognition of undesirable aspects of ecstasy, and in particular of health and psychological side effects and tolerance, which might arise due to heavier use, are consistent with the notion that greater amounts of ecstasy are now being used, with a wider range of harmful consequences.

Interestingly, 40% of the Solowij et al. (1992) sample believed that ecstasy use in Sydney was decreasing at the time of that study. This led Solowij et al. (1992) to postulate that ecstasy was a "fad" that would quickly be superseded by some other drug. However, the results of the present study suggest that if anything, ecstasy use has increased in Australia throughout the 1990s. It is now being used by a more demographically diverse range of people, and contexts of use have broadened from primarily dance-oriented to a wide range of social and intimate events. It has been suggested that the media hype surrounding ecstasy use in the late 1980s may have contributed to the numbers of people experimenting with the drug (Henry, 1992; Solowij & Lee, 1991). This suggestion is supported by the present study, with 64% of participants having first tried the drug in the years 1993-1996. This is partly a function of the young age of the sample, but it is likely that it is also partly due to the intense media interest in dance drugs and raves throughout these years. While the media continue to publish sensational and ill-informed stories about drugs like ecstasy and events like raves, young people will probably continue to be attracted to these illicit and underground activities (Beck, 1986, 1990; Farrell, 1989).

4.3 Patterns of other drug use

It is accurate to characterise this sample as polydrug users, half of whom had a preference for ecstasy. High levels of consumption of numerous other drugs were recorded, both in conjunction with ecstasy and completely separate from it. While cross-sectional data cannot elucidate the pathways between use of various drugs, it is interesting to note that most had used alcohol, tobacco, cannabis, LSD and amphetamine before using ecstasy. Initiation of ketamine, cocaine and MDA use were most likely to succeed ecstasy use. However, authoritative comments on the status of ecstasy as a "gateway" drug are not possible without longitudinal research (Kandel, Yamaguchi & Chen, 1992).

Different patterns of polydrug use among ecstasy users have been noted over time. While detailed patterns of other drug use were not collected in the Solowij et al. (1992) study, what was reported contrasts markedly with the present findings. For example, 24% of the earlier sample had *never* used other drugs in conjunction with ecstasy, whereas concurrent polydrug use was *typically* undertaken by 93% of the present sample, emphasising the need for research and education on the effects of polydrug use. Of particular concern was the finding that 41% of those who drank alcohol with ecstasy typically did so at hazardous levels. The hazards of this pattern of alcohol consumption may be heightened when used with a drug that may produce dehydration.

Remarkably high and diverse rates of party drug use were reported. Almost all participants had used amphetamine (94%) and LSD (93%), 75% had used amyl nitrate, and more than half had used cocaine (61%), nitrous oxide (61%) and MDA (51%). Substantial minorities of the sample typically used amphetamine (43%), LSD (13%), amyl nitrate (12%) and nitrous oxide (7%) concurrently with ecstasy. Many participants typically used other drugs such as cannabis (64%), alcohol (21%) and benzodiazepines (17%) to ease the come down period after using ecstasy. Ecstasy users seem to be adept at obtaining drugs with which to self-medicate the aversive physical and psychological effects of ecstasy (and other drug) use. This is of concern, as the "stimulant-depressant" cycle of use has been associated with more adverse effects than stimulant use alone (Williamson et al., 1997). The fact that 57% of the sample had used benzodiazepines was unexpected and disturbing, given suggestions that benzodiazepines may act as a "bridge" between problem drug users and the dance scene (McDermott & McBride, 1993). Further, amphetamine users who also use benzodiazepines have reported higher levels of polydrug use and psychopathology, poorer health and social functioning, and greater HIV risk-taking than those who do not (Darke, Ross & Cohen, 1994).

4.4 Ecstasy-related harms

The present study reports users' perceptions of a diverse range of physical and psychological ecstasy-related harms. The findings stand in contrast to the conventional wisdom that ecstasy is a relatively benign drug with few associated risks (eg. Downing, 1986; Fromberg, 1990; Nichols & Glennon, 1984). Young, female polydrug users appeared to be particularly at risk of experiencing harms from ecstasy use.

On average, participants reported eight physical and four psychological side-effects from ecstasy in the preceding six months. Half or more of the sample had experienced energy loss, irritability, muscular aches, trouble sleeping and depression. These were generally acute symptoms that occurred during intoxication and recovery. A number of more chronic adverse effects occurring between use episodes were also reported, including weight loss, depression, irritability, energy loss, trouble sleeping, anxiety and teeth problems. Half the sample reported that these side-effects had increased in frequency since they began to use ecstasy.

While most psychological symptoms were perceived to stem from a combination of ecstasy and other factors, such as polydrug use, sustained exertion, lack of sleep or pre-existing conditions, some physical symptoms were perceived by the majority of those who reported them as being due to ecstasy use alone. These included: inability to urinate, blurred vision, vomiting, numbness or tingling, loss of sex urge and hot/cold flushes. Multivariate analyses provided some support for participants' attributions. This

finding must be viewed with caution, however, given the problems involved in drawing causal inferences from cross-sectional data. The extent of physical symptomatology was best predicted by being young and female, along with indices of ecstasy use including quantity, bingeing and extent of polydrug use during the recovery period. The multivariate model predicting psychological symptoms did not have strong predictive power, but indicated that polydrug use was important in accounting for variance in psychological symptoms.

More than one-third of the sample reported other recent problems related to their ecstasy use, including occupational (42%), relationship (40%) and financial (38%) problems. While many of these were relatively minor, some participants had experienced significant disruptions to functioning that they attributed to their ecstasy use, including loss of employment, ending relationships and inability to pay for essentials like food or rent. That these problems were ecstasy-related was supported by multivariate analyses, which indicated that such problems were best predicted by ecstasy use variables including frequency and bingeing. Indices of other drug use, and in particular other stimulant use, did not add significant predictive power to the model.
An important predictive factor in ecstasy-related harm was the youth of the user. Age was a significant predictor of two of the measures of ecstasy-related harm (physical side-effects and extent of total harm). In both cases, being younger was independently associated with greater harm, although there was no relationship between age and quantity or frequency of ecstasy use. Similarly, recent U.S. research has indicated that adolescent users are more likely to meet criteria for dependence than adults at the same intensity of cannabis use (Chen, Kandel & Davies, 1997). In the case of cannabis, Chen et al. (1997) speculated that adolescents may be more vulnerable than adults to the social and psychological consequences of cannabis use. These findings may extend to ecstasy use by young adults, in that younger users may be more vulnerable to any harms associated with ecstasy use.

4.5 Risk-taking behaviour

Current injecting was reported by a substantial minority of the sample (15%), but only nine participants (3%) had shared needles in the preceding month. Inadequate or excessive fluid consumption was a more prevalent form of risk-taking. While nearly all participants (94%) reported that they usually drank fluids while intoxicated, many (41%) consumed less than the recommended quantity of water (between 250-500ml per hour; White et al., 1996). About one-in-ten drank excessive amounts (>500ml). While other fluids were consumed by some participants, including alcohol (40%), soft drinks (28%), fruit juice (19%) and isotonic sports drinks (17%), some of these may exacerbate the negative effects of ecstasy and are generally not recommended (eg. alcohol, isotonic drinks; White et al., 1996). One quarter of this sample requested information on correct water consumption, suggesting that this is an area where appropriate and accurate harm reduction material may reduce the risks associated with ecstasy use.

Of most concern was the minority (5%) of participants who reported that they did not consume water nor take breaks from dancing while at dance venues. Given the literature on the circumstances surrounding most ecstasy-related deaths (Henry et al., 1992; Solowij, 1993; White et al., 1997), these participants were at serious risk of toxic reactions such as hyperthermia or rhabdomyolysis.

Ecstasy use was perceived by participants to pose a moderate risk, approximately halfway between cannabis and heroin. Long and short-term physical and psychological problems and purity issues were key concerns, along with financial problems, unknown long term effects, legal problems and death. Despite this knowledge of risks associated with ecstasy use, 94% thought their personal use of the drug was safe, and one-quarter considered their use "very safe". Adverse effects and risk-taking were common, although the risks were perceived to be greater for others than for the self. These attitudes may be a manifestation of the general tendency for individuals to underestimate the degree to which they are at risk of unpleasant events (Weinstein, 1980, 1982). This bias is particularly pronounced among young people, who not only underestimate risks (Moore & Rosenthal, 1992) but also feel invulnerable to them (Elkind, 1985). Users of other sorts of illicit drugs have also demonstrated the tendency to consider the risks to others to be greater than the risks to the self. For example, while heroin users tend to believe it is likely that other users will overdose in the future, they consider themselves unlikely to do so (Darke & Ross, 1997). Correspondingly, female injecting amphetamine users tend to consider that they are not at risk of contracting HIV, as infection is something that happens to heroin users (Klee, 1993).

4.6 Help-seeking behaviour

Almost half (46%) of the sample had attempted to modify their use of ecstasy without formal assistance at some time, either alone (41%) and/or with social support (18%). In addition, 22% had sought formal assistance from a health practitioner for an ecstasy-related problem, and 7% were currently in treatment for ecstasy use. Although in the majority of these cases other drugs were also involved, this is hardly surprising given the extent of polydrug use among the sample. The most common treatments were consultations with GPs or natural therapists, interventions for which there were relatively low rates of subsequent reductions in use, but a high degree of satisfaction. This may relate to the fact that some participants who sought treatment did not want to reduce their use *per se*, seeking instead to adopt measures to minimise the side-effects, such as obtaining pharmaceuticals or strengthening immunity through stress reduction or changes in diet.

The few participants who attended formal treatment programs, such as, NA programs, detoxification, counselling and social support were most likely to report reductions in use. Those who sought help were least satisfied with psychiatrists and counsellors. This may relate to the lack of ecstasy-specific interventions available, or the fact that some were compelled to attend by the judicial system or family. It may also be that by their very nature, such clinicians might attract clients with entrenched psychological problems which are more difficult to treat, so that satisfaction may be lower. A range of beneficial outcomes were reported by those who had undergone both formal and informal interventions, although some participants found that participating in various treatments exacerbated negative affect such as anxiety, frustration and craving.

Among those who had cut down in the past, the main motivations were financial difficulties, physical and psychological problems, occupational problems, relationship troubles and to improve quality of life. A quarter (25%) of the sample currently wanted to reduce their use of ecstasy, nominating the same reasons for desiring change. A sample of stimulant users in the U.K. reported their main reasons for reduced use of ecstasy were cost issues, reduced novelty and decreased quality (Williamson et al.,

1997). This suggests that the present sample were more affected by the adverse effects associated with use, although varying sampling methods may partly account for these differences. Multivariate analyses indicated that desire to reduce use was independently associated with financial, relationship and psychological problems, and frequency of use. Fifteen percent of the sample indicated a desire for formal treatment for an ecstasy-related problem, most frequently natural therapies, counselling or consultations with a GP. The overwhelming majority (85%) requested more information about ecstasy, in particular on side-effects and harm reduction techniques, pointing to the distinct lack of culturally relevant material available in Australia. Moreover, half the sample recommended that drug testing facilities, similar to those operating in the Netherlands (Institute for the Study of Drug Dependence (ISDD), 1998; Levine, 1994), and be provided at dance venues to minimise the risks from impurities.

4.7 Trends since 1990 in ecstasy-related harms and help-seeking

A number of items assessed in Solowij et al.'s (1992) survey of ecstasy users can be compared with the present findings. Few differences in perception of ecstasy-related risk were found between the two samples. Both rated ecstasy as moderately risky, ranking it approximately halfway between cannabis and heroin. Both described long and short term physical and psychological problems and purity issues as key concerns. However, significant minorities of the present sample also nominated financial problems, legal problems and death as important risks of ecstasy use.

Fewer participants in the earlier sample reported adverse symptoms of depression, paranoia, anxiety, teeth problems and vomiting compared to the present sample. Furthermore, when adverse symptoms were reported in the earlier study, these were generally more acute and mild; few described them as chronic or severe. Fewer participants in the earlier sample had sought professional help for associated problems (1% versus 22%) or had modified their use alone (1% versus 41%). While ecstasy users have not altered their perceptions of related risk since 1990, increases in ecstasy-related harm and help-seeking behaviour seem to have occurred. It is not surprising, perhaps, that harms and help-seeking have increased, given the greater quantity and frequency of use, increased prevalence of intravenous administration, and higher rates and a wider range of polydrug use.

Predictions that ecstasy use was a "fad" which would quickly be superseded by some other substance (Solowij et al., 1992) have not been borne out. Nor has the belief that the predominant pattern of oral, intermittent use was of little concern (Beck & Rosenbaum, 1994; Chesher, 1990; Solowij, 1993). The present results have suggested that there are significant hazards associated with ecstasy use, and that there is a pressing need for the dissemination of credible information to help reduce these problems. Further, treatment and prevention options must be developed and evaluated to meet the demand clearly indicated by the present results. Many participants expressed interest in treatments that would help them to minimise the aversive side-effects of ecstasy, but substantial minorities referred to the need for specific treatments to help them reduce their use.

4.8 Comparison of state samples

Participants in the Sydney sample were significantly younger than those in the other two samples and began to use ecstasy at a younger age. There was no difference in the proportions of males and females

recruited in each state. Participants in all samples were relatively well-educated and current employment levels were high. Sydney participants had been more consistently employed over the preceding six months.

Many participants identified with various dance scenes, namely dance parties, raves or nightclubs. Those in Brisbane were less likely to identify with these scenes than participants in the other two cities. Brisbane participants were also less likely than Melbourne and Sydney participants to nominate ecstasy as their preferred drug. Together, these findings suggest that the Brisbane sample may not represent the same population of ecstasy users as was sampled in Sydney and Melbourne.

While the Sydney sample had experimented with ecstasy at a younger age, samples from all cities appeared to progress at similar rates to the regular (at least monthly) use of ecstasy. Sydney participants appeared to be heavier users of ecstasy than those in the other cities, engaging in higher quantity and frequency of use. Bingeing on ecstasy was more likely amongst participants from Sydney and Melbourne than those in Brisbane. Those who were most likely to have binged on ecstasy were more likely to rate ecstasy as their preferred drug, and were more heavily involved in both ecstasy and other drug use.

Polydrug use was the norm, with samples in all cities reporting using an average of at least two other drugs concurrently with ecstasy. Those in Brisbane were likely to take a greater number of other drugs than those in Sydney and Melbourne whilst using ecstasy. They also reported taking a greater number of drugs while recovering from ecstasy use than the other samples.

These risky patterns of drug use by the Brisbane sample were further reflected by a higher likelihood of bingeing on drugs other than ecstasy. Although those in the Sydney sample had used a wider range of drugs, those in the Brisbane sample were more likely to use other drugs in an excessive manner. It appears that while the Melbourne and Sydney samples were more likely to be involved in excessive ecstasy consumption, those in the Brisbane sample were more likely to be heavily involved with other drugs.

The most frequent method of administration of ecstasy was orally (90+%). Substantial minorities had injected ecstasy at some point, with those from Brisbane the most likely to have done so.

The reported price of ecstasy was cheaper in Sydney than in Melbourne and Brisbane. Participants in all cities were most likely to report that prices had remained stable, or had decreased, over the preceding six months. Reports from all samples suggested that the purity of ecstasy had remained stable over the past 6 months. Furthermore, participants in all states reported that ecstasy was readily available (with those in Sydney most likely to say so), and that this had consistently been the case during the preceding six months. Overwhelmingly, the consensus among participants in all states was that police activity had not affected the availability of drugs.

It appears that the heavier use of ecstasy of the Sydney sample led to a wider range of ecstasy-related problems among this group. While multiple negative physical side effects were reported by participants in all states, those in Sydney reported a significantly greater number. Compared to those in the other

two states, participants from Sydney also exhibited greater preoccupation with and anxieties about their ecstasy use, as measured by the SDS (Gossop et al., 1995). They were also more likely to report ecstasy-related financial, occupational and relationship problems: the Sydney sample experienced more of these problems.

Most participants who had attended dance parties, clubs or raves reported that they had rested for some part of this time. However, much smaller proportions of the samples reported drinking the correct amount of water whilst at the venues. In particular, those from Sydney were less likely than those in Brisbane and Melbourne to drink the appropriate amount of water. It is unclear whether this was due to lack of awareness of appropriate levels, or inadequate water supplies at the venues (see Appendix J).

Substantial proportions of each sample had engaged in criminal activity in the preceding month. The types of crime which were most likely were drug dealing and property crime (such as shoplifting). The people most likely to have been involved in crime were less educated and more heavily involved in ecstasy use. Those in Sydney were most likely to have been involved in some sort of criminal activity, perhaps because of their tendency to use ecstasy more frequently and in larger average amounts.

Many participants had previously attempted to reduce their ecstasy use. Those in Sydney and Brisbane were more likely to have done so than those in Melbourne, perhaps due to problems associated with their heavier and riskier patterns of ecstasy and other drug use. Participants were most likely to have attempted to cut down without formal assistance: between approximately one quarter and one half of participants in each city had previously attempted to do so. The proportions of those who had sought professional help to cut down were smaller, with between approximately 15% and 25% having done so previously. Those in Sydney and Brisbane were more likely to currently want to reduce their ecstasy use than Melbourne participants, possibly because their heavier and riskier patterns of drug use were associated with more problems.

5.0 CONCLUSIONS

This study has shown that a wide range of people use ecstasy. The users in this study also appeared to be younger, better educated and more likely to be employed than other drug using groups, such as intravenous drug users. Furthermore, this study suggests that ecstasy is not solely a "dance party drug". Many individuals do not identify with any dance party scene, and most users report having used ecstasy in situations other than such events.

Comparison with previous research on ecstasy users (Solowij et al., 1992) revealed changes in the patterns of use during the 1990s. Users of ecstasy now tend to begin use at a younger age, and appear to be using ecstasy more frequently and heavily. The incidence of bingeing on ecstasy also appears to have increased, and a higher proportion of users have injected ecstasy. The prevalence of polydrug use also appears to have increased.

These riskier patterns of ecstasy use have been accompanied by an increase in the physical and psychological problems experienced by ecstasy users. These problems are also more likely to be more serious and chronic than those reported by users in earlier research.

In light of these risky patterns of use, it is of further concern that many users do not consume appropriate levels of fluids, particularly when attending dance parties. Large proportions are either drinking too little water, or none at all, with many of these drinking alcohol either instead of or in addition to water. This poses concern, given the documented risks associated with inadequate water consumption.

Given these concerns, there is a need for better and more accessible information on the risks associated with ecstasy use, particularly the risks associated with dehydration. Furthermore, a significant proportion of users report that they would like to reduce or cease their ecstasy use. This suggests that assistance needs to be made available for users to allow them to do so.

An examination of differences between states suggests that methodological differences may have led to the sampling of qualitatively different groups of ecstasy users, making conclusions about differences tenuous. However, it appears that Sydney users may be younger, with more frequent and risky ecstasy use. They also appear to experience more problems as a result of their ecstasy use. Future research would usefully validate these preliminary findings.

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Appendix A: Structured interview schedule employed in the study

Interviewer:

State:

Subject No.:

Date: / /97

NATIONAL SURVEY OF ECSTASY AND OTHER PARTY DRUGS

Entry criteria:

- Use of ecstasy 3x or more in the last twelve months
- Resident of Sydney/Melbourne/GoldCoast/Brisbane metropolitan areas for past six months

Notes for interviewers:

- Mark `NA' for questions which are not applicable to subject
- Additional notes are in *italics* throughout the questionnaire

. National Drug and Alcohol Research Centre, UNSW, 1997

SECTION A: DEMOGRAPHICS

We do not need to know anything which might identify you in this section.

1. Sex:

   Male.....1
   Female.....2

2. Age _____ years

3. Suburb/town where you live _____ *(State code* _____)

4. What is the **main** language you speak at home? *(mark only one)*

   English.....1
   Other (specify)_____

5. Are you of Aboriginal or Torres Strait Islander descent?

   Yes.....1
   No.....0

6. How many years of school did you complete? _____ yrs
   (include kindergarten but not preschool, only formal schooling)

7. Have you **completed** any courses after school?

   No.....0
   Yes, trade/technical.....1
   Yes, university/college 2

8. How are you employed at the moment? *(mark only one main category)*

   Not employed.....0
   Full time.....1
   Part time/casual.....2

Student 3
Home duties.....4

9. Have you ever been in prison? (ie. convicted of an offence)

No.....0
Yes.....1

10. Do you have any dependent children? (ie. that you currently support)

No.....0
Yes.....1

11. How did you find out about this study? *(mark the initial source only)*

Ad in paper.....1
Friend/family 2
Needle exchange.....3
Treatment centre 4
Researcher/interviewer 5
Radio interview 6
Flyer.....7
Other (specify)

SECTION B: DRUG USE

This section is about your use of ecstasy and other drugs. Some things may be difficult to remember; please estimate if you're not sure.

1. How old were you when you first tried ecstasy? _____yrs. What year: 19

2. How old were you when you first started to use ecstasy regularly (ie. at least once a month?) ___ yrs

3. How old were you when you first injected ecstasy? _____ yrs

4. What drug did you first inject? *(mark only one drug)*

   Don't inject 0
   Ecstasy 1
   Speed 2
   Cocaine 3
   LSD 4
   Cannabis.....5
   Inhalants 6
   Alcohol.....7
   Benzodiazepines.....8
   Heroin 9
   Other opiates.....10
   Methadone 11
   Steroids.....12
   Other (specify) _____

5. What is your **main** drug of choice? ie. favourite or preferred drug *(mark only one)*

   Ecstasy 1
   Speed 2
   Cocaine 3
   LSD 4
   Cannabis.....5
   Amyl.....6
   Alcohol.....7
   Benzo's.....8
   Heroin 9
   Other opiates.....10
   Methadone 11
   Steroids.....12
   Tobacco.....13
   GBH.....14
   MDA.....15
   Nitrous oxide.....16

Ketamine 17
Can't specify 18
Other (specify) _____

6.Which drugs have you ever used and how have you used them? **(Yes=1 No=0)**

Drug Class	Ever used	Ever Injected	Injected lst 6 mths	Ever smoked	Smoked 6 mths	Ever snorted	Snorted 6 mths	Ever Swall.	Swall. 6 mths	Days use lst 6 mths
1. Ecstasy										
2. Speed										
3. Cocaine										
4. LSD										
5. Cannabis										
6. Amyl nitrate										
7. Alcohol										
8. Benzo's										
9. Heroin										
10. Other opiates										
11. Methadone										
12. Steroids										
13. Tobacco										
14. GBH/fantasy										
15. MDA										
16. Nitrous oxide										
17. Ketamine										
18. Ethyl										
19. Anti-depressants										
20. Other (specify)										
21. Other (specify)										

7. What is the **average** and **most** number of party drugs you would use in **one session** (ie. period of continuous use) (in the last six month period)?

Drug Class	Average		Most	
	main measure	other (specify)	main measure	other (specify)
1. Ecstasy	tabs		tabs	
2. Speed	grams		grams	
3. Cocaine	grams		grams	
4. LSD	tabs		tabs	
5. Amyl nitrate	snorts		snorts	
6. GBH	bumps		bumps	
7. MDA	caps		caps	_____
8. Nitrous oxide	bulbs		bulbs	
9. Ketamine	bumps		bumps	

8a. In the last six months, have you **binged on any stimulants or party drugs** (ie. used for more than 48 hours continuously without sleep followed by 3 or more days without the drug)?

No.....0
Yes.....1

If NO, go to qu 9.

8b. Which party drugs/stimulants have you binged on in the last six months? *(can mark more than one)*

No binges.....0
Ecstasy.....1
Speed.....2
Cocaine 3
LSD 4
Amyl.....5
GBH.....6
MDA.....7
Nitrous 8
Ketamine 9
Other (specify) _____

8c. What was the longest binge of party drugs you have been on in the last six months?

_____ days

9. In the last 6 months, how have you **mainly** used ecstasy (ie. more than half the time):

No ecstasy use.....0
By injecting 1
By snorting..... 2
By swallowing..... 3
By shelving..... 4
Half-and-half (specify which methods_____)

10. In the last 6 months, which drugs have you **normally** used **with ecstasy**, and while **coming down** from ecstasy?

Yes=1 No=0

	Drugs normally used with ecstasy	**Drugs normally used while coming down from ecstasy**
1. None		
2. Speed		
3. Cocaine		
4. LSD		
5. Cannabis		
6. Amyl nitrate		
7. Alcohol	Y/N *(circle one)* If yes, more than 5 stand. drinks per session? Y/N	
8. Benzo's		
9. Heroin		
10. Other opiates		
11. Methadone		
12. Steroids		
13. Tobacco		
14. GBH/fantasy		
15. MDA		
16. Nitrous oxide		
17. Ketamine		
18. Ethyl		
19. Anti-depress.		
20. Other - specify		

11. Have you noticed in the time that you have been using ecstasy that you need to take more to get the same sorts of effects?

No..... 0
Yes..... 1

12. How much do you take now to get the effects you're after? *(mark only one)*

Less than when first started..... 0
Same as when first started..... 1
A little more..... 2
Double 3
More than double than when
first started..... 4

13. Which particular effects of ecstasy aren't as strong as they used to be? *(can mark more than one)*

Hasn't happened 0
Energy/stay awake..... 1
Appetite suppressant..... 2
Euphoria/pleasure..... 3
Sociability/talkativeness..... 4
Confidence 5
Effects don't last as long 6
Effects take longer to come on..... 7
Other effects (specify) _____

14. Why do you think this might be happening? *(can mark more than one)*

Hasn't happened 0
Using it too often..... 1
Variations in quality/purity..... 2
Depends on your mood..... 3
Tolerance..... 4
Depends on the setting 5
Changed route 6
Other (specify) _____

Other comments on "tolerance"

15. Have you noticed that you come down differently from ecstasy now than when you first started taking it? *(mark only one)*

    Don't come down from ecstasy..... 0
    Comedown is less intense now..... 1
    Comedown is about the same..... 2
    Comedown is a little more intense now..... 3
    Comedown is a lot more intense now..... 4

16. What do you usually do when you're coming down from ecstasy? Have you learnt any 'tricks' along the way to make it easier to deal with? Specify

Other comments on coming down

SECTION C: TRANSITIONS

These questions are about any changes in the ways you have used ecstasy.

1a. Have you **only ever swallowed/snorted ecstasy**? (ie. never injected)

Yes..... 1
No..... 0

1b. If YES, what are the 3 main reasons you never tried injecting ecstasy?

Not applicable (ie had injected).. 0
Dislike of needles/injecting..... 1
Fear of health problems/dependence..... 2
Injecting inconvenient 3
Satisfied with swallowing/snorting 4
Friends do not inject..... 5
Other (specify) _____

2a. Have you ever **changed from snorting/swallowing to injecting ecstasy** at any time?

Yes..... 1
No..... 0

2b. If YES, what are the 3 main reasons you started injecting?

Not applicable 0
Rush/high..... 1
Friends were injecting..... 2
Health problems from oral routes 3
Curious/experimental..... 4
Injecting better/quicker/easier..... 5
Injecting more economical..... 6
Like needles..... 7
Other (specify)_____

3a. Have you ever **changed from injecting to snorting/swallowing ecstasy** at some stage?

Yes..... 1
No..... 0

3b. If YES, what are the three main reasons you did not continue to inject?

Not applicable 0
No fits available 1
Inconvenient setting..... 2
Friends did not inject..... 3
Health problems..... 4
Dependence..... 5
Other (specify) _____

4a. Have you **only ever injected ecstasy** when you have used it?

Yes..... 1
No..... 0

4b. If YES, what are the three main reasons you don't use other methods and have continued to inject?

Not applicable (ie only oral use/snort)..... 0
Like the rush..... 1
Injecting more efficient/better/quicker..... 2
Friends inject 3
Like needles..... 4
Other (specify)_____

5a. What legal and illegal drugs did you take before first trying ecstasy? *(can mark more than one)*

None 1
Speed 2
Cocaine 3
LSD 4
Cannabis..... 5
Amyl..... 6
Alcohol..... 7
Benzo's..... 8
Heroin 9
Other opiates..... 10
Methadone 11
Steroids 12
Tobacco 13
GBH..... 14
MDA..... 15
Nitrous oxide..... 16
Ketamine 17

5b. Did ecstasy **replace** any of these drugs?

No..... 0
Yes..... 1

5c. If YES: Which drug(s) did ecstasy replace? *(can mark more than one)*

None 1
Speed 2
Cocaine 3
LSD 4
Cannabis..... 5
Amyl..... 6
Alcohol..... 7
Benzo's..... 8
Heroin 9
Other opiates..... 10
Methadone 11
Steroids 12
Tobacco 13
GBH..... 14
MDA..... 15
Nitrous oxide..... 16
Ketamine 17

Other (specify) _____

5d. If NO: So, did ecstasy get **added to** the range of drugs that you like - that is, you continued to use the earlier ones as well?

No..... 0
Yes..... 1

5e. Which legal and illegal drugs did you start using after you had tried ecstasy? *(can mark more than one)*

None 1
Speed 2
Cocaine 3
LSD 4
Cannabis..... 5
Amyl..... 6
Alcohol..... 7
Benzo's..... 8
Heroin 9
Other opiates..... 10
Methadone 11
Steroids..... 12
Tobacco 13
GBH..... 14
MDA..... 15
Nitrous oxide..... 16
Ketamine 17
Other (specify) _____

6. Have there been any **other changes** in your ecstasy use since you first started using? eg. places where you use it, what you do while you're on it, reasons why you use it, other drugs you use with ecstasy or to come down from it, etc. Describe these changes and the reasons for them.

SECTION D: MOTIVATION FOR AND CONTEXT OF USE

1. What were your **three main reasons** for first trying ecstasy and for continuing to use it *(don't read out options, only note up to three reasons for each question)*

Yes=1 No=0

MAIN REASONS	**For first trying E**	**For continuing to use E**
1. To feel good/for the effect/enjoyment/to party/have fun		
2. Boredom/release from routine		
3. Friends using/feel like one of the group/acceptance		
4. Curiosity/to experiment		
5. Cope with problems/worries		
6. Using other drugs/drinking alcohol at the same time		
7. It's available/couldn't get other drugs		
8. It's cheap		
9. Have a habit/dependent		
10. Energy/stay awake		
11. To help with work/study		
12. Communicate better		
13. Fewer negative effects from E eg. can stay in control		
14. Feel confidend/uninhibited		
15. Other (specify)		
16. Other (specify)		
17. Other (specify)		

2. What are the **three best things** about using ecstasy for you? *(mark up to three)*

Euphoria/rush/high..... 1
Group experience, friendship 2
Confidence/uninhibited 3
Heightened senses..... 4
Relaxing/release from stress..... 5
Energy (eg. to dance all night)..... 6
Communicate better/more empathic..... 7
Insight/clarity of thinking 8
Positive outlook/sense of well-being..... 9
Escape reality/routine 10
Creativity..... 11
Feel in control..... 12
Other (specify)_____

3. What are the **three worst things** about using ecstasy for you? *(mark up to three)*

Nothing..... 0
Coming down effects..... 1
Other health risks/problems 2
They're illegal to use 3
Psychological problems eg. anxiety..... 4
Tolerance..... 5
Quality issues/impurites..... 6
Other (specify)_____

4. What are the **main things you do** while you're using ecstasy? (ie. describe activities and settings)*(can mark more than one)*

Dance at clubs/raves/parties/gigs... 1
.....Cuddle/kiss/touch/be sensual..... 2
Have sex..... 3
Feel empathic and close to people 4
Socialise/meet new people..... 5
Chill out/relax..... 6
Stay home/friend's houses..... 7
Listen to music 8
Go to the pub/gigs..... 9
Think 10

Other (specify)_____

5. Who do you usually use ecstasy with?*(can mark more than one)*

Alone..... 1
Partner..... 2
Small group of friends (2-4)..... 3
Larger group of friends (5+)..... 4
Dealer..... 5
Family..... 6
Workmates..... 7
Acquaintances..... 8
Other (specify)_____

6. Approximately how many people do you know (partner, friends, acquaintances, family, etc.) who use ecstasy? *(mark only one)*

None 0
One 1
Two 2
3 - 10 3
11 - 20 4
21 - 50 5
More than 50 6

7. How many people would you have given ecstasy to for the first time? No.

8. When you use ecstasy, do you usually drink fluids? (last 6 months)

No..... 0
Yes..... 1

9. How much **water** do you normally drink per hour while you're on ecstasy? *(mark only one; work out amount of water usually consumed per session and divide by no. of hours. 250ml = small bottle; 500ml = large bottle; schooner size glass = about 400ml)*

None 0
Less than 250ml..... 1
250-500ml..... 2
About 500ml..... 3
500-1000ml..... 4

More than 1000ml 5
Don't know..... 6

10. What **other fluids** do you normally drink while on ecstasy? *(can mark more than one)*

None 0
Sports drinks (eg. Gatorade)..... 1
Alcohol..... 2
Fruit juice..... 3
Soft drinks (eg. coke, lemonade).. 4
Coffee 5
Other (specify)_____

11. Do you spend any time chilling out or resting when at a dance venue?

Don't attend these venues..... 0
Yes..... 1
No..... 2

SECTION E: PERCEPTION OF RISKS

1. Generally, how "hard" an illicit drug do you think ecstasy is? On a ten-point scale, if pot was '0' and heroin was '10', where would ecstasy fit?

0	1	2	3	4	5	6	7	8	9	10
Pot										Heroin

2. How safe do you think it is to use ecstasy **for you personally**? *(mark only one)*

Very safe 1
Quite safe 2
Moderately safe 3
Quite risky..... 4
Very risky..... 5

3. What are the **3 main risks** you see about ecstasy use for users **in general**? (*Read out options if subject is unsure and mark only 3 main risks)*

No risks..... 0
Emotional problems (eg. depression, paranoia) 1
Cognitive problems (eg. brain damage, memory loss). ..2
Long-term physical problems (eg. run down, general health)..... 3
Short-term physical problems (eg. dehydration, overheating) 4
Dependence/addiction..... 5
Financial problems 6
Unknown longterm effects..... 7
What it's cut with/impurities 8
Legal problems (eg. being arrested)..... 9
Involvement in drug subculture..... 10
Getting ripped off..... 11
Sleeping with people you don't know..... 12
Taking more than you can handle.. 13
Death..... 14
Toxic reaction (specify) 15
Being too trusting and vulnerable... 16
Other (specify)_____

4. How do you think such risks could be reduced? (specify)

SECTION F: SDS

These questions are about the ways that you've felt about your ecstasy use in the last six months *(read out options).*

1. Did you ever think your ecstasy use was out of control?

Never or almost never..... 0
Sometimes 1
Often..... 2
Always or nearly always..... 3

2. Did the prospect of not being able to get any ecstasy make you very anxious or worried?

Never or almost never..... 0
Sometimes 1
Often..... 2
Always or nearly always..... 3

3. How much did you worry about your ecstasy use?

Not at all 0
A little..... 1
Often..... 2
Always or nearly always..... 3

4. Did you wish you could stop?

Never or almost never..... 0
Sometimes 1
Often..... 2
Always or nearly always..... 3

5. How difficult would you find it to stop or go without?

Not difficult at all..... 0
Quite difficult 1
Very difficult..... 2
Impossible..... 3

SDS TOTAL _____

SECTION G: SIDE EFFECTS

1. Have you had any of the following symptoms from ecstasy in the last six months? If so, did you get the symptoms **while you were using** ecstasy, while you were **coming down** from ecstasy, and/or **at other times**? **How long** did the worst case last for? *(specify time interval eg. days, minutes*) Were these symptoms **just related to ecstasy** use or other drugs as well? *(eg. ask if the subject was only using ecstasy at the time. Note the subject's perception of whether ecstasy was directly or indirectly related to the symptom. These questions may be difficult to determine. Leave a question mark if subject is not sure).*

Yes=1 No=0

SYMPTOM	Last 6 months?	While on E?	While coming down?	At other times?	How long worst case? (note times)	Only related to E?
1 Teeth problems						
2 Profuse sweating						
3 Hot / cold flushes						
4 Heart palpitations						
5 Shortness of breath						
6 Chest pains						
7 Headaches						
8 Dizziness						
9 Tremors/shakes						
10 Fainting/pass out						
11 Fits/seizures						
12 Blackout/memory lapse						
13 Numbness/ tingling						
14 Vomiting						
15 Stomach pains						
16 Muscular aches						

17 Joint pains/stiffness						
18 Inability to urinate						
SYMPTOM	**Last 6 months?**	**While on E?**	**While coming down?**	**At other times?**	**How long worst case? (note times)**	**Only related to E?**
19 Blurred vision						
20 Visual hallucinations						
21 Sound hallucinations						
22 Trouble sleeping						
23 Loss of sex urge						
24 Weight loss						
25 Loss of energy						
26 Violent behaviour						
27 Anxiety						
28 Panic attacks						
29 Paranoia						
30 Depression						
31 Suicidal thoughts						
32 Suicide attempts						
33 Confusion						
34 Irritability						
35 Flashbacks						
36 Other (specify)						
37 Other (specify)						
38 Other (specify)						

DEFINITIONS:

Confusion: disoriented, not knowing what's going on, where you are at etc

Violent behaviour: actual physical violence or aggression towards person or property

Anxiety: feel really anxious, nervous

Panic attacks: heart pounding, trouble breathing, hyperventilating, sweaty, shaky, frightened, note that this is not just feeling anxious - subject must have actually hyperventilated

Paranoia: feel that people are spying on you, following you around, plotting against you or trying to hurt you

Hallucinations: see (visual) or hear (sound) things that others around you cannot see or hear

Depression: feel very sad or depressed. This affected the quality of your work, made you lose interest in your friends, and no longer get pleasure from things you usually like

Flashbacks: actually re-experiencing the previous effects of ecstasy, not just remembering a previous occasion of ecstasy use

2. Have you noticed any changes in the **side effects** from ecstasy since you first started taking it? *(can mark more than one)*

None 0
More nausea/vomiting 1
More palpitations 2
More headaches 3
More depression..... 4
More paranoia 5
More irritability 6
More energy loss 7
Side effects less intense now..... 8
Other (specify) _____

3a. Has your use of ecstasy caused any **relationship/social problems** in the past six months? (ie. with a partner, friends, family)

No..... 0
Yes..... 1

3b. If YES, what is the **most serious** relationship problem you've had in the last 6 months? *(note only one)*

No relationship problems..... 0
Arguments 1
Mistrust/anxiety..... 2
Ending a relationship..... 3
Violence 4
Kicked out of home 5
Other (specify) _____

4a. Has your use of ecstasy caused any **financial problems** in the past six months?
No..... 0
Yes..... 1

4b. If YES, what is the **most serious** money problem you've had?*(note only one)*

No money problems..... 0
No money for recreation/luxuries.. 1
In debt/owing money..... 2
No money for food/rent..... 3

Other (specify) _____

5a. Has your use of ecstasy caused any **legal/police problems** in the past six months?

No..... 0
Yes..... 1

5b. If YES, what is the **most serious** police problem you've had?*(note only one)*

No legal problems..... 0
Cautioned by police 1
Arrested 2
Other (specify) _____

6a. Has your use of ecstasy caused any **work/study problems** in the past six months?

No..... 0
Yes..... 1

6b. If YES, what is the **most serious** work/study problem you've had?*(note only one)*

No work/study problems..... 0
Trouble concentrating..... 1
Reduced work performance..... 2
Unmotivated 3
Sick leave/not attending classes .. 4
Sacked/quit job/can't find work .. 5
Other (specify)_____

7. Have you had any other problems from ecstasy in the last 6 months? (specify)

SECTION H: RISK-TAKING BEHAVIOUR

These questions are about the way you use drugs, and your recent sexual behaviour.

Drug use:

1. How many times have you hit up (ie injected any drugs) in the last month?

   Hasn't hit up 0
   Once a month or less 1
   Once a week or less 2
   More than once a week 3
   Once a day 4
   More than once a day 5

   (If has not hit up go to Qu. 5)

2. How many times in the last month have you used a needle after someone else used it?

   No times 0
   One time 1
   Two times 2
   3-5 times 3
   6-10 times 4
   More than 10 times 5

3. How many times in the last month has someone used a needle after you have used it?

   No times 0
   One time 1
   Two times 2
   3-5 times 3
   6-10 times 4
   More than 10 times 5

4. Before sharing/re-using any needles with someone else in the last month, how often did you use bleach to clean them?

   Doesn't re-use 0
   Every time 1
   Often 2
   Sometimes 3

Rarely..... 4
Never..... 5

Sexual behaviour:

5. How many people, including clients, have you had **penetrative sex** with in the last month? *(penetrative sex includes penetration of penis with vagina/anus, and `fisting', but not oral sex or the use of sex toys)*

None 0
One person..... 1
Two people 2
3-5 people..... 3
6-10 people..... 4
More than 10 people..... 5

(If none go to Qu. 10)

6. How often have you used condoms when having penetrative sex with your **regular partner/s** in the last month? *(include the use of gloves when `fisting')*

No reg. partner/no pen. sex..... 0
Every time..... 1
Often..... 2
Sometimes..... 3
Rarely..... 4
Never..... 5

7. How often did you use condoms when you had penetrative sex with **casual partners** in the last month? *(include the use of gloves when `fisting')*

No cas. partner/no pen. sex..... 0
Every time..... 1
Often..... 2
Sometimes..... 3
Rarely..... 4
Never..... 5

8. How often have you used condoms when you have been **paid for penetrative sex** in the last month? *(include the use of gloves when `fisting')*

No paid sex/no pen. sex..... 0
Every time..... 1

Often..... 2
Sometimes..... 3
Rarely..... 4
Never..... 5

9. How many times did you have **anal sex** in the last month?

No times..... 0
One time..... 1
Two times..... 2
3-5 times 3
6-10 times 4
More than 10 times..... 5

SEXUAL BEHAVIOUR SUBTOTAL _____

General questions:

10. How many partners have you had sex with in the last 6 months? _____

11a. Who have you had sex with in the last 6 months?

No sex..... 0
Only women..... 1
Both men and women..... 2
Only men..... 3

11b. How would you describe your sexual identity at the moment?

Heterosexual..... 1
Gay male..... 2
Lesbian..... 3
Bisexual..... 4
Other (specify) _____

12. How long have you been in a steady relationship with a regular partner?

_____ months

13. How many times have you had sex while you were **using ecstasy** in the last six months?

No sex while 'e'-ing..... 0
Once..... 1
Twice..... 2
3-5 times..... 3
6-10 times..... 4
More than 10 times 5

14. What were the **effects of 'e'** on your sexual performance? *(read options, can mark more than one)*

No sex while `e'-ing..... 0
Sex improved..... 1
Felt less inhibited..... 2
Sex worse..... 3
Other (specify)_____

15. When you have had penetrative sex with a **regular partner** while using ecstasy in the last six months, how often have you used condoms? *(mark only one)*

No reg. partner/no pen. sex..... 0
Every time..... 1
Often..... 2
Sometimes 3
Rarely..... 4
Never 5

16. When you have had penetrative sex with a **casual partner** while using ecstasy in the last six months, how often have you used condoms?*(mark only one)*

No cas. partner/no pen. sex..... 0
Every time..... 1
Often..... 2
Sometimes 3
Rarely..... 4
Never 5

SECTION I: SOCIAL FUNCTIONING

1. How much of the last 6 months have you been unemployed?

   None of the time..... 0
   Some of the time 1
   Half of the time..... 2
   Most of the time 3
   All of the time..... 4

2. About how many close friends (ie. people you can trust) would you estimate that you have? (include partner)

   None 0
   One 1
   Two..... 2
   Three..... 3
   Four or more..... 4

3. How often do you see your friends?

   Never 0
   Rarely..... 1
   Sometimes 2
   Often..... 3
   Very often (eg. daily)..... 4
   N/A..... 9

4. What proportion of the people you hang around with now use ecstasy? (include partner)

   None 0
   Less than half 1
   Half..... 2
   More than half..... 3
   All..... 4

5. Does your regular partner currently use ecstasy?

   No..... 0
   Yes..... 1
   No reg partner 9

6. Does your regular partner inject any drugs?

No 0
Yes 1
No reg. partner 9

SECTION J: INTERVENTIONS

1. Have you ever felt you needed help for an ecstasy problem **in the past**?

No 0
Yes 1

2. Do you feel your ecstasy use is a problem **at the moment**?

No 0
Yes 1

3. Have you actually tried to give up or cut down on ecstasy? When was the last time?

Never 0
During last 12 months 1
More than 12 months ago 2

4. What were your three main reasons for wanting to cut down/quit ecstasy?*(mark up to three, don't read out list)*

Never cut down/quit 0
Physical health effects 1
Financial reasons 2
Legal reasons 3
Relationship problems 4
Work/study problems 5
Psychological/emotional problems 6
Improve quality of life 7
Feel dependent/addicted 8
Poor quality drugs 9
No reliable supply 10
Other (specify)_____

4b. Have you reduced your use of ecstasy at any time since you first started using it? (ie. not necessarily because of problems)

No 0

Yes..... 1

5. Have you ever done anything about your drug use? eg. sought help, info, tried to cut down on your own? *(read options)*

	Type of response? Yes = 1 No = 0	**Are you currently doing this?** Yes = 1 No = 0	**Was it presented as drug-related?** Yes = 1 No = 0	**Did you reduce your drug use?** Yes = 1 No = 0	**Other outcomes?** eg. more money healthier improved relationships more knowledge (specify)	**How satisfied were you?** Extremely = 1 Very = 2 Moderately =3 A little =4 Not at all = 5	**Problem drug?** Just E = 1 E+other drugs=2 Just other drugs= 3
1 Cut down alone							
2 Information eg ADIS (specify)							
3 Friends/family support							
4 First Aid eg at dance party							
5 Drug counselling							
6 GP							
7 Hospital emergency							
8 Psychiatrist							
9 Detoxification prog.							
10 NA/12 step prog.							
11 Therap.community							
12 Natural therapies eg acupuncture, herbs, massage (specify)							
13 Other help (specify)							

6. If you've ever felt you needed help for your ecstasy use, **what has stopped you** from getting it? *(don't read options; can mark more than one)*

Didn't need help 0
Could do it alone..... 1
Didn't know where to go 2
Inadequate treatment/practitioner 3
Worried about confidentiality..... 4
Lack of time..... 5
Not motivated/denial..... 6
Wait list..... 7
Other (specify)_____

7. Is there any sort of **help or information** for ecstasy that you would you **currently** like? *(read options; can mark more than one)*

	Yes = 1 No = 0	**Describe what you would like**
1. Information		
2. Cut down on your own		
3. Support from friends/family		
4. Drug counselling		
5. GP		
6. Psychiatrist		
7. Natural therapies		
8. NA/12 step		
9. Detoxification		
10. Therapeutic community		
11. None		
12. Other (specify)		

8a. Are there any **changes** that you would like to make to your ecstasy use **at the moment**? *(can mark more than one; don't read options)*

No change 0
Quit 1
Cut down..... 2
Purer drugs 3
Cheaper drugs..... 4
More available drugs 5
Increase use 6
Start injecting 7
Stop injecting 8
Other (specify)_____

8b. If you want to make any changes, what are the **main reasons** you want to change your ecstasy use?*(can mark more than one; don't read options)*

Don't want changes 0
Physical health effects..... 1
Financial reasons 2
Legal reasons 3
Relationship problems..... 4
Work/study problems..... 5
Psychological problems 6
Improve quality of life 7
Feel dependent/addicted..... 8
Poor quality drugs 9
No reliable supply 10
Other (specify) _____

SECTION K: TYPES OF ECSTASY USERS

1. Describe the different types of **ecstasy users/scenes** that you are familiar with eg. ravers, nightclubbers/dance party scene, students, professionals, gay scene, musicians, pub scene, new agers/alternative health scene, unemployed *(read out this list)*

2. Which of these **scenes** or groups do **you** *most* identify with? *(can mark up to 2 main categories)*

Students..... 1
Ravers 2
Nightclubbers/dance party..... 3
Gays 4
Professionals/yuppies..... 5
New agers/alternative health..... 6
Drinkers/pub scene..... 7
Musicians/artists..... 8
Unemployed..... 9
Other (specify)_____

(*if they give a really general category [eg. people who like to party], get them to specify some of the characteristics of this scene*)

SECTION L: PRICE, PURITY and AVAILABILITY of PARTY DRUGS

These questions are about the price, purity and availability of ecstasy and other party drugs. Please only answer these questions if you feel confident of your knowledge in this area. Answer these questions based on your own personal experience.

Ecstasy

1. How much does ecstasy cost at the moment? $_____tab

   range $_____ to $

2. Has the price of ecstasy changed in the last 6 months?

   Don't know..... 0
   Increasing..... 1
   Stable 2
   Decreasing..... 3
   Fluctuating..... 4

3. How pure would you say the ecstasy is at the moment?

   Don't know..... 0
   Low..... 1
   Medium 2
   High..... 3

4. Has the purity changed in the last 6 months?

   Don't know..... 0
   Increasing..... 1
   Stable 2
   Decreasing..... 3
   Fluctuating..... 4

5. How easy is it to get ecstasy at the moment?

   Don't know..... 0
   Very easy..... 1
   Easy..... 2
   Difficult 3
   Very difficult..... 4

6. Has this changed in the last 6 months?

   Don't know..... 0
   More difficult..... 1

Stable 2
Easier..... 3
Fluctuates..... 4

7. Who have you got ecstasy from in the last six months? *(can mark more than one)*

Friends..... 1
Dealers 2
Workmates 3
Acquaintances..... 4
Unknown 5
Other (*specify*)_____

8. What venues do you normally score ecstasy at?*(can mark more than one)*

Own home 1
Dealer's home 2
Friend's home..... 3
Raves..... 4
Dance parties 5
Nightclubs..... 6
Pubs 7
Gym..... 8
On the street 9
Other (specify)_____

9. In the last six months, how did you **pay for** the ecstasy you were using? (*read out options; can mark more than one)*

Yes=1 No=0

1. Paid employment	
2. Credit from dealers	
3. Austudy	
4. Ecstasy was a gift from friends	
5. Money from parents (either lent or given)	
6. Dealing drugs	
7. Unemployment benefits	
8. Bartering drugs/goods (ie. swapping)	
9. Fraud	
10. Property crime	
11. Money from friends (either lent or given)	
12. Pawning goods	

13. Sex work (for money or drugs)	
14. Other (specify)	

LSD/Trips

Again, please only answer these questions if you feel confident of your knowledge in this area.

1. How much does LSD/trips cost at the moment? $_____/tab

   range $_____ to $_____

2. Is the price changing?

   Don't know..... 0
   Increasing 1
   Stable 2
   Decreasing..... 3
   Fluctuates 4

3. How strong would you say trips are at the moment?

   Don't know..... 0
   Low..... 1
   Medium 2
   High..... 3

4. Is the strength of trips changing?

   Don't know..... 0
   Increasing 1
   Stable 2
   Decreasing..... 3
   Fluctuates 4

5. How easy is it to get trips at the moment?

   Don't know..... 0
   Very easy 1
   Easy 2
   Difficult 3
   Very difficult 4

6. Has this been changing?

   Don't know..... 0
   More difficult 1
   Stable 2

Easier 3
Fluctuates 4

Ketamine (`Special K')

Again, please only answer these questions if you feel confident of your knowledge in this area.

1. How much does ketamine cost at the moment? $_____/gram

   range $_____ to $_____

2. Is the price changing?

   Don't know..... 0
   Increasing 1
   Stable 2
   Decreasing..... 3
   Fluctuates 4

3. How strong would you say ketamine is at the moment?

   Don't know..... 0
   Low..... 1
   Medium 2
   High..... 3

4. Is the strength of ketamine changing?

   Don't know..... 0
   Increasing 1
   Stable 2
   Decreasing..... 3
   Fluctuates 4

5. How easy is it to get ketamine at the moment?

   Don't know..... 0
   Very easy 1
   Easy 2
   Difficult 3
   Very difficult 4

6. Has this been changing?

Don't know..... 0
More difficult 1
Stable 2
Easier 3
Fluctuates 4

GBH (`Fantasy')

Again, please only answer these questions if you feel confident of your knowledge in this area.

1. How much does GBH cost at the moment? $_____/gram

   range $_____ to $_____

2. Is the price changing?

   Don't know..... 0
   Increasing 1
   Stable 2
   Decreasing..... 3
   Fluctuates 4

3. How strong would you say GBH is at the moment?

   Don't know..... 0
   Low..... 1
   Medium..... 2
   High..... 3

4. Is the strength of GBH changing?

   Don't know..... 0
   Increasing 1
   Stable 2
   Decreasing..... 3
   Fluctuates 4

5. How easy is it to get GBH at the moment?

   Don't know..... 0
   Very easy 1
   Easy 2
   Difficult 3

Very difficult 4

6. Has this been changing?

Don't know..... 0
More difficult 1
Stable 2
Easier 3
Fluctuates 4

MDA

Again, please only answer these questions if you feel confident of your knowledge in this area.

1. How much does MDA cost at the moment? $_____/gram/cap

range $_____ to $_____

2. Is the price changing?

Don't know..... 0
Increasing 1
Stable 2
Decreasing..... 3
Fluctuates 4

3. How pure would you say MDA is at the moment?

Don't know..... 0
Low..... 1
Medium 2
High..... 3

4. Is the purity of MDA changing?

Don't know..... 0
Increasing 1
Stable 2
Decreasing..... 3
Fluctuates 4

5. How easy is it to get MDA at the moment?

Don't know..... 0

Very easy 1
Easy 2
Difficult 3
Very difficult 4

6. Has this been changing?

Don't know..... 0
More difficult 1
Stable 2
Easier 3
Fluctuates 4

SECTION M: CRIME

This section is about crime that you have committed in the last month, and not necessarily been caught for. Remember that we don't need to know any specific details.

Property Crime

1. How often, on average, during the last month have you committed a property crime (eg stealing, shoplifting, break & enters)?

No property crime 0
Less than once a week..... 1
Once a week 2
More than once a week..... 3
(but less than daily)
Daily..... 4

Dealing

2. How often, on average, during the last month have you sold drugs to someone (for profit)?

No drug dealing 0
Less than once a week.....1
Once a week 2
More than once a week.....3
(but less than daily)
Daily..... 4

Fraud

3. How often, on average, during the last month have you committed a fraud (eg using someone's credit card, forging cheques, tax fraud)?

No fraud..... 0
Less than once a week.....1
Once a week 2
More than once a week.....3
(but less than daily)
Daily..... 4

Crimes Involving Violence

4. How often, on average, during the last month have you committed a crime involving violence (eg assault, armed robbery)?

No violent crime.... 0
Less than once a week.....1
Once a week 2
More than once a week.....3
(but less than daily)
Daily..... 4

CRIME TOTAL _____

SECTION N: GENERAL TRENDS

1. Are there any new trends happening in drug use among you or your friends that you are aware of? (eg. new drug types, different types of users, increase in drug use by some users)

   No..... 0
   Yes..... 1

   If YES, please specify:

2. Have there been any changes in police activity towards users in the last six months?

   Don't know..... 0
   Less activity..... 1
   Stable 2
   More activity..... 3

   If YES, please specify:

3. Has police activity made it more difficult to score drugs in the last six months?

   Don't know..... 0
   No..... 1
   Yes..... 2

4. Have more of your friends been busted in the last six months?

   Less..... 1
   Stable 2
   More 3

5. Do you think media reports on party drugs have encouraged people to experiment with these drugs?

   No..... 0
   Yes..... 1

   If YES, please specify:

6. What other effects do you think media reports on party drugs have had?

7. Would you like to make any comments about any of the venues that you go to? (eg. availability of cold water, ventilation, exits, security, crowds)

8. Are there any other comments you would like to make about ecstasy or party drugs generally?(eg. what do you think about the way drugs are handled in this country?)

THANKS FOR YOUR HELP

PAY SUBJECT
GIVE CONTACT DETAILS & OTHER INFORMATION

Appendix B: Factors associated with typical quantity of ecstasy used from multiple linear regression analysis

Variable	Coefficient	Beta	SE	T	sig T
Gender	-0.46	-0.218	.108	-4.266	.0000
Identify with dance scene	0.269	0.106	.132	2.031	.0432
Unemployed during the past 6 months	-0.259	-0.117	.115	-2.255	.0249
Ecstasy favourite drug	0.276	0.131	.111	2.487	.0135
No. days used ecstasy in last 6 months	0.029	0.37	.004	7.140	.0000
No. other drugs ever used	0.097	.240	.021	4.586	.0000

$R^2 = 0.31$, $F(6, 273) = 20.65$, $p = .0000$

Key:

gender: males = 1, females = 2
identify with dance scene: no = 0, yes = 1
unemployed 6 months: employed during last 6 months = 0, unemployed = 1
ecstasy favourite drug: no = 0, yes = 1

Appendix C: Factors associated with having binged on ecstasy within the past 6 months from multiple logistic regression analysis

Variable	B	OR	SE	95% CI
Average amount of ecstasy used per use session	.636	1.89	.2215	1.22, 2.94
No. days used ecstasy in past 6 months	.051	1.05	.0237	1.005, 1.10
No. other drugs binged in past 6 months	4.02	55.52	.5348	19.46, 158.37

$\div^2$ (3 df) = 252.337, p = .0000

Appendix D: Factors associated with having injected ecstasy from multiple logistic regression analysis

Variable	B	OR	SE	95% CI
State	-1.01	.36	.350	.18, .72
Identify with dance scene	-1.87	.15	.599	.05, .50
Ecstasy favourite drug	1.76	5.83	.594	1.004, 18.64
Age first regularly used ecstasy	-.16	.85	.064	.75, .97
No. drugs ever used	.45	1.57	.121	1.24, 1.99
No. drugs besides ecstasy injected in last 6 months	1.96	7.07	.318	3.79, 13.17

$\div^2$ (7df) = 141.169, p = .0000

Key: state: -1 = Brisbane, 1 = Sydney
identify with dance scene: 0 = no, 1 = yes
ecstasy favourite drug: 0 = no, 1 = yes

Appendix E: Drug use histories of participants in the three states
Drug use history of those in the Sydney sample

Drug class	% Used last 6 months	Median days used 6 months (range)	% Ever used
Cannabis	93.0	48 (0 - 180)	98.6
Alcohol	93.0	24 (0 - 180)	99.5
Speed	87.3	6 (0 - 120)	96.2
Tobacco	74.6	180 (0 - 180)	85.4
LSD	69.0	2 (0 - 60)	96.7
Amyl nitrate	51.6	1 (0 - 72)	81.2
Cocaine	45.5	0 (0 - 100)	69.5
Benzodiazepines	44.6	0 (0 - 100)	59.2
MDA	38.0	0 (0 - 48)	58.7
Nitrous oxide	36.6	0 (0 - 60)	63.8
Other opiates	25.8	0 (0 - 60)	35.7
Heroin	14.1	0 (0 - 180)	28.2
Anti-depressants	9.9	0 (0 - 120)	19.7
Ethyl	8.0	0 (0 - 12)	13.1
Ketamine	6.1	0 (0 - 20)	16.0
Methadone	3.3	0 (0 - 180)	6.6
GBH (fantasy)	1.4	0 (0 - 2)	1.9
Steroids	1.4	0 (0 - 50)	2.8

Drug use history of those in the Brisbane sample

Drug class	% used last 6 months	Median days use 6 months (range)	% ever used
Cannabis	89.8	60 (0 - 180)	98.3
Alcohol	93.2	40 (0 - 180)	100
Speed	81.4	10 (0 - 100)	93.2
Tobacco	79.7	180 (0 - 180)	81.4
LSD	71.2	2 (0 - 80)	91.5
Nitrous oxide	49.2	0 (0 -60)	78.0
Amyl nitrate	40.7	0 (0 - 20)	67.8
Benzodiazepines	35.6	0 (0 - 50)	50.8
Cocaine	20.3	0 (0 - 10)	40.7
Heroin	20.3	0 (0 - 180)	33.9
Anti-depressants	20.3	0 (0 - 180)	30.5
Other opiates	16.9	0 (0 - 16)	29.3
MDA	13.6	0 (0 - 10)	27.1
Ketamine	5.1	0 (0 - 4)	11.9
Methadone	3.4	0 (0 - 20)	13.6
GBH (fantasy)	1.7	0 (0 - 1)	1.7
Steroids	0	0	10.2
Ethyl	0	0	1.7

Drug use history of those in the Melbourne Sample

Drug class	% used 6 months	Median days use 6 months (range)	% ever used
Alcohol	96.5	12 (0 - 100)	100
Cannabis	91.2	30 (0 - 180)	100
Tobacco	70.2	30 (0 - 180)	89.5
Speed	61.4	2 (0 - 120)	87.7
LSD	61.4	1 (0 - 25)	82.5
Benzodiazepines	45.6	0 (0 - 180)	54.4
Cocaine	43.9	0 (0 - 25)	52.6
Amyl nitrate	33.3	0 (0 - 80)	61.4
Ketamine	29.8	0 (0 - 18)	33.3
Heroin	26.3	0 (0 - 180)	33.3
MDA	24.6	0 (0 - 18)	43.9
Antidepressants	19.3	0 (0 - 180)	28.1
Nitrous oxide	15.8	0 (0 - 20)	33.3
Other opiates	5.3	0 (0 - 3)	21.1
GBH	3.5	0 (0 - 2)	7.0
Ethyl	3.5	0 (0 - 2)	7.0
Steroids	3.5	0 (0 - 20)	3.5
Methadone	0	0	3.5

Appendix F: Factors associated with physical side effects of ecstasy use from multiple linear regression analysis

	Coefficient	Beta	SE	T	Sig T
Gender	1.65	.209	.458	3.769	.0002
Age	-.199	-.257	.042	-4.711	.0000
Unemployed last 6 months	1.452	.161	.463	3.136	.0019
State	1.423	.157	.468	3.039	.0026
Average amount of ecstasy used	.490	.125	.214	2.290	.0228
Binged on ecstasy 6 months	1.277	.149	.457	2.796	.0055
No. drugs used when coming down	.912	.256	.190	4.791	.0000

R^2 = .317, F (7,267) = 17.69, p = .0000

Key: gender: males = 1, females = 2

unemployed during the last 6 months: 0 = never, 1 = was unemployed last 6 months

state: Brisbane and Melbourne = 0, Sydney = 1

Appendix G: Factors associated with psychological side effects of ecstasy use from multiple linear regression analysis

	Coefficient	Beta	SE	T	sig T
Gender	.942	.195	.267	3.525	.0005
No. drugs binged last 6 months	.425	.183	.132	3.212	.0015
No. drugs used when coming down	.553	.268	.118	4.694	.0000

R^2 = .168, F (3, 273) = 18.338, p = .0000

Key: gender: males = 1, females = 2

Appendix H: Factors associated with reported problems in financial, occupational, relationship and legal spheres from multiple linear regression analysis

Variable	Coefficient	Beta	SE	T	sig T
Age	-.0516	-.2586	.0010	-5.175	.0000
State	.3992	.1677	.1199	3.329	.0010
No. days used ecstasy in last 6 months	.0182	.2138	.0046	3.924	.0001
Binged on ecstasy during the last 6 months	.3731	.1581	.1272	2.933	.0036

$R^2 = .357$, $F(7, 268) = 21.255$, $p = .0000$

Key: state: Melbourne and Brisbane = 0, Sydney = 1

binged on ecstasy last 6 months: no = 0, yes = 1

Appendix I: Sexual behaviour of ecstasy users in Sydney, Australia

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SEXUAL BEHAVIOUR OF ECSTASY USERS IN SYDNEY, AUSTRALIA

EXECUTIVE SUMMARY

Although ecstasy has enjoyed a reputation as a sexual enhancer in the media, little research has examined the effects of ecstasy on sexual behaviour. As part of a survey of 213 ecstasy users, the HIV Risk-taking Behaviour Scale was administered to examine extent of sexual risk-taking while intoxicated and not, as well as items concerning the effects of ecstasy on sex. Results indicated that 77% of the sample had engaged in penetrative sex in the preceding month, and that 49% had sex while intoxicated in the preceding six months. There was a tendency for participants to use condoms less often with casual partners while intoxicated than while not. Ecstasy use and age were more consistent predictors of sexual risk-taking than gender and sexual identity. Most participants reported that ecstasy improved sex (70%) and lowered inhibitions (67%), but 45% also reported that it inhibited arousal and/or climax. Twelve percent reported a loss of sex urge related to ecstasy use in the preceding six months, lasting for an average of 48 hours. Results suggest that effects of ecstasy on sex are mixed, and that better education on the risks of unsafe sexual activity for this population is warranted.

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SEXUAL BEHAVIOUR OF ECSTASY USERS IN SYDNEY, AUSTRALIA

INTRODUCTION

Although ecstasy has enjoyed a reputation as a "love drug" or sexual enhancer in the media (Beck & Rosenbaum, 1994; Fitzgerald, 1991), little research has examined the effects of ecstasy on sexual behaviour. In a study of 76 ecstasy users, Buffum and Moser (1986) found that 70% of participants had engaged in sexual activity while intoxicated on ecstasy. The majority of this group reported that the sensuality of the sexual experience was enhanced while intoxicated. Consistent with animal research (Dornan *et al.*, 1991), males commonly reported difficulty attaining an erection, and 62% found it difficult to achieve orgasm. However, females were equally divided between those who found orgasm easier to achieve while intoxicated and those who found it more difficult.

More important from a public health perspective was the finding that a small but substantial proportion (15%) of this group reported that they were more likely to indulge in activities that were not normally part of their sexual repertoire, such as group sex, a pattern of behaviour that has also been described among amphetamine users (Smith *et al.*, 1979). Further, one-third of females and 46% of males felt that they were more receptive to sexual advances while intoxicated. While three quarters of the sample had not used ecstasy specifically to enhance a sexual experience, a similar proportion said that they would use the drug for this purpose.

These findings were later confirmed in a qualitative study by Beck and Rosenbaum (1994). Among their sample of 100 ecstasy users, most described ecstasy as providing a sensual rather than sexual experience, and reported that the drug interfered with erections and generally inhibited orgasms for both men and women. However, it was considered that ecstasy served to lower inhibitions, and a small proportion of participants felt that the drug provided definite sexual benefits, contributing to sexual marathons through the prolongation of erections and delayed orgasms. One subject commented on the contribution of ecstasy to "the different sexually transmitted disease problems", due to frequent situations involving a great deal of sexual activity (Beck & Rosenbaum, 1994, p.75).

These reports raised the possibility that sexual activity and risk-taking among some users may be more likely while intoxicated on ecstasy. Risk-taking behaviour has been related to intoxication and drug use (Plant & Plant, 1992), and stimulant use in particular (Chaisson *et al.*, 1989; Klee, 1992; 1993). As part of a larger study examining patterns and correlates of ecstasy use in Australia (Hando *et al.*, in press; Topp *et al.*, in press), the Sexual Behaviour Subscale of the HIV Risk-taking Behaviour Scale (HRBS; Darke *et al.*, 1991) was administered to a sample of current ecstasy users in order to examine their sexual behaviour. The aims of the present study were:

1. to examine the sexual behaviour of ecstasy users, both while intoxicated and not intoxicated; and

2. to examine the degree of sexual risk-taking undertaken by this group, both while intoxicated and not intoxicated.

METHOD

Procedure

The sample comprised 213 ecstasy users recruited in Sydney, Australia, through snowballing procedures (63%), advertisements (24%) and personal contacts (13%). All participants were volunteers who were reimbursed $30 for their participation. Participants contacted the researchers by telephone and were screened for eligibility for the study. Entry criterion was the use of ecstasy on at least three occasions during the preceding 12 months. Interviews were conducted by the authors in locations convenient to participants, and took between 60 and 90 minutes. Participants were guaranteed anonymity and confidentiality of the information provided.

Data analyses

For continuous, normally distributed variables, *t*-tests were employed and means reported. Where continuous variables were highly skewed, medians were reported and the Mann-Whitney *U* test, a non-parametric analogue of the *t*-test, employed. Categorical variables were analysed using chi-square ($\div^2$). To examine the contributions of gender and sexual identity to sexual practices, comparisons of key variables were made between males and females, and between those of different sexual identities. To determine which variables were independently associated with sexual risk-taking, exploratory simultaneous multiple regressions were conducted. Backwards elimination of variables was used to select the most appropriate models. Variables entered into the model included demographic variables such as age, sexual identity and gender, along with a number of drug use variables. All analyses were conducted using *SPSS for Windows, Release 6.0* (Norusis, 1993).

RESULTS

Sample Characteristics

The mean age of the sample was 22.4 years (SD 5.8; range 15-46), and 52% were female. Female participants were significantly younger than males (20.5 versus 24.5 years; t_{186}=5.13; p<.001). Median number of school years completed was 13 (range 8-13), and 43% had completed further qualifications. One third of the sample were employed on a full time basis, 37% were students, and 16% were unemployed. Few participants had been imprisoned (2%) or were currently in treatment (5%).

The majority of the sample (80%) described their current sexual identity as heterosexual, while 9% identified as gay males, 7% as bisexual and 3% as lesbian. The majority (n=11; 73%) of those who identified as bisexual were female. Over half of the sample (54%) were in steady relationships, the median length of which was nine months (range 2 weeks - 13 years). The majority (83%) of those with regular partners reported that those partners were also current ecstasy users, and eight participants reported that they had a regular partner who was an injecting drug user.

Participants had used ecstasy on a median of 12 days in the preceding six months (range 1-100 days), approximating fortnightly use. Median number of tablets used in an average use episode was 1.5 (range 0.5-8 tablets), and in their heaviest use episode, participants had used a median of 2 tablets (range 0.5-30 tablets). Most participants (92.5%) had mainly swallowed ecstasy in the preceding six months, although 29% had injected a drug at some time, and 13% had injected ecstasy. One third of the sample

(33%) had binged on ecstasy in the preceding six months, defined as using the drug on a continuous basis for 48 hours or more (Ovendon & Loxley, 1996). Median length of longest binge was three days (range 2-14 days). Although 53% of the sample nominated ecstasy as their favourite drug, polydrug use was the norm amongst this group. They had experimented with a mean of 10.4 drugs (SD 2.4; range 1-17), most often alcohol, cannabis, LSD, amphetamine, tobacco and amyl nitrate. In the preceding six months, they had used a mean of 8.1 drugs (SD 2.1; range 1-14). Full details of this sample are reported elsewhere (Hando *et al.*, in press; Topp *et al.*, in press).

Sexual practices

Most of the sample (77%) had penetrative sex in the preceding month, usually with one partner (53%), although 13% reported two partners, 8% reported between three and five partners and 3% reported six or more partners (Table 1). The sample reported a median of 2 sexual partners during the preceding six months (range 0-70), with 90% reporting that they had penetrative sex with six or fewer partners during this time. Male participants had penetrative sex with significantly more partners than female participants (median 2 versus 1; U=4218.0; p<.001). Homosexuals, lesbians and bisexuals had significantly more partners than heterosexuals (median 3 versus 1.5; U=2521.5; p=.002). Further, gay and bisexual males had significantly more partners than heterosexual males (median 4 versus 2; U=619.5; p<.01).

Multiple linear regressions were performed to determine which variables independently predicted number of sexual partners in the preceding six months. This variable was transformed in order to meet the assumption of normality of the outcome variable (Hair *et al.*, 1995). A constant was added to the original variable and the value inversed, hence the sign of the beta values must be reversed when interpreting this analysis. The final model indicated that age (â=-.01; p<.001), frequency of recent ecstasy use (â=-.003; p=.02), having sex while intoxicated on ecstasy (â=-.14; p<.001), extent of recent polydrug use (â=-.03; p=.001), bisexuality (â=-.18; p=.003) and recent bingeing on stimulants for at least 48 hours (â=-.12; p<.001), were independently associated with number of sexual partners. This model was significant ($F_{6,205}$=11.9; p<.001) and accounted for 26% of the variance.

Among those who had sex with a regular partner during the preceding month (n=123, 58% of the sample), only one quarter (26%) used condoms on every occasion, and the majority (59%) reported that they never used condoms. Among those who had sex with a casual partner (n=68, 32% of the sample), over half (59%) always used condoms, although 22% reported that they never used condoms with casual partners. There were no differences in age, gender or sexual identity between those who had engaged in risky casual sex in the preceding month and those who had not. Only one subject had been paid for sex in the preceding month and had used a condom on every occasion. A minority of the sample (n=29, 14%) reported engaging in anal sex in the preceding month, most of whom had done so once (34%) or twice (31%). Males were significantly more likely than females to have had anal sex ($\div^2_1$=6.0; p=.01). Gay and bisexual males were significantly more likely than heterosexual males to have had anal sex ($\div^2_1$=13.7; p<.001).

TABLE 1: Sexual practices of the 213 ecstasy users in the study

	Total (%)
Penetrative sex in past month	77
No. of sexual partners in past month:	
One partner	53
Two partner	13
Three to five partners	8
Six or more partners	3
Had sex with a:	
Regular partner	58
Casual partner	32
Client (paid sex)	<1
Condom use every time with a: *	
Regular partner	26
Casual partner	59
Client	100
No. of times anal sex in past month:	
None	86
Once	5
Twice	4
Three or more times	5
No. of sexual partners in past 6 months:	
None	10
One partner	37
Two partners	18
3-5 partners	23
6 or more partners	12

* among those who had sex with such a partner

Scores on the HRBS Sexual Behaviour subscale were calculated. This scale ranges from 0 to 25, with higher scores indicating greater levels of sexual risk-taking. Mean score was 4.2 (range 0-16, SD 3.5). No significant differences were found on the basis of gender or sexuality. By way of comparison, the sample of 175 opiate users on which the HRBS was originally validated had a mean score of 4.5 on the Sexual Behaviour subscale (SD 3.7; Darke *et al.*, 1991). The same mean score was observed in a sample of 200 regular amphetamine users interviewed in Sydney (SD 3.5; Hando, 1996), indicating approximately equivalent levels of sexual risk-taking between the three groups. Multiple linear regressions were performed to determine which variables were associated with sexual risk-taking in the preceding month. The final model indicated that age (â=.16; p=.003), frequency of recent ecstasy use (â=.08; p<.001), using ecstasy with a partner (â=1.9; p<.001) and having a partner who was an

injecting drug user (â=-.3; p=.003) were independently associated with degree of sexual risk-taking. This model was significant ($F_{4,110}$=11.2; p<.001), and accounted for 29% of the variance.

Effects of ecstasy on sexual behaviour

Half the sample (49%) reported having sex while acutely intoxicated on ecstasy in the preceding six months, one quarter (24%) of whom had done so more than 10 times. Eighteen percent of the sample reported that sex was one of the main activities undertaken while intoxicated, and 2% considered that one of the main "risks" of ecstasy was unsafe sex with strangers. Among those who had sex with a regular partner while intoxicated (n=82, 38% of the sample), 24% used condoms every time, while 50% never used condoms. Among those who had sex with a casual partner while intoxicated (n=41, 19% of the sample), 49% always used condoms, a lower rate than when not intoxicated (59%). Further, 20% never used condoms with casual partners while intoxicated. Bisexual participants were significantly more likely than others to have engaged in risky casual sex while intoxicated (27% of bisexuals versus 9% of nonbisexuals; $\div^2_1$=5.1; p=.02). There was a trend for more males than females to have had risky casual sex while intoxicated (14% of males versus 6% of females; $\div^2_1$=3.3; p=.07).

Among those who had engaged in sex while intoxicated, ecstasy was reported to improve sex (70%), to lower inhibitions (67%), to make the experience more loving and intimate by improving communication between partners (63%), to inhibit arousal and/or climax (45%), to have unpredictable effects on sex (that is, to make it better and worse; 18%), to make sex worse (7%), or have no effects on sex at all (1%). Males were significantly more likely than females to report that ecstasy inhibited arousal and/or climax (30% of males versus 15% of females; $\div^2_1$=6.1; p=.01). There was no relationship between sexual identity and the effects of ecstasy on the sexual experience. Positive effects of ecstasy on sex were related to a higher quantity and frequency of use. Participants who reported that ecstasy improved sex used more often than those who did not report these effects (median 12 versus 10.5 days; U=3843.5; p<.005), and used more per occasion (median 1.5 versus 1 tablet; U=4303.0; p=.05).

Twelve percent of the sample reported a loss of sex urge related to their use of ecstasy in the preceding six months. Of these, 60% reported that they experienced a loss of sex urge while acutely intoxicated, 64% while "coming down" or recovering from ecstasy, and 44% experienced a chronic loss of sex urge that extended beyond the ecstasy use and recovery episode. Only 40% of those who experienced such a loss reported that they considered it to be due to ecstasy alone; most felt that factors other than the drug also influenced their decreased sexual urge. The median length of worst case of loss of sex urge was 48 hours (range 20 minutes to six months). There was no difference in age, sexual identity or gender in those who reported a loss of sex urge and those who did not.

DISCUSSION

A range of current ecstasy users were recruited into this study, substantial minorities of whom identified as gay males (9%), bisexual (7%) and lesbian (3%). Three quarters (77%) of this sample had engaged in penetrative sexual activity in the preceding month, most often with regular partners (58%) but also with casual partners (32%). Only a quarter (26%) of those who had regular partners always used condoms, and given the transitory nature of many of these relationships, these figures are a cause for concern. Further, 41% of those who had casual partners did not use condoms on every occasion, and 22% never did so. Sexual risk-taking among this group was approximately equivalent to that undertaken by samples of opiate (Darke *et al.*, 1991) and amphetamine (Hando, 1996) users. These results suggest that safe sex messages may not be reaching the entire population of illicit drug users, and that reinforcement of such messages in a culturally appropriate fashion may be useful.

Multivariate analyses indicated that extent of sexual risk-taking in the preceding month was independently associated with age, frequency of ecstasy use, using ecstasy with a partner and having a partner who injected drugs. Together, these results suggest that much recent sexual risk-taking may have occurred in the context of a steady relationship, but it must be noted that the average length of these relationships was only nine months. Data on testing for blood borne viruses and sexually transmitted diseases was not collected, and it will be important in the future to determine the proportion of these partnerships which had undergone testing before commencing penetrative sexual activity without condoms. The fact that ecstasy rather than other stimulants is specifically associated with risk-taking is a novel and important finding, once again reinforcing the need for culturally relevant safe sex messages to prevent the spread of viruses among this population, as well as among the general population which may have sexual contact with this group.

In the preceding six months, the sample had a median of two sexual partners. Multiple regressions suggested that participants who were older, were using ecstasy more frequently, had sex while intoxicated on ecstasy, were using a wider range of other drugs, were bisexual and had binged on stimulants for 48 hours or more, had more sexual partners in the preceding six months than other participants. The fact that drug use was independently associated with sexual behaviour after taking into account variables such as gender, sexuality and age is consistent with evidence that both types of risk-taking behaviour are intercorrelated (eg. Biglan *et al.*, 1990). Moreover, once again, ecstasy was the drug that was most clearly associated with this form of risk-taking, suggesting that ecstasy users may constitute a special "high risk" group for greater number of sexual partners as well as increased likelihood of sexual risk-taking.

Half (49%) of the sample had engaged in sexual activity while intoxicated on ecstasy in the preceding six months, most often with regular partners (38%) but also with casual partners (19%). While 59% of those who had sex with casual partners when not intoxicated always used condoms, the comparable figure during intoxication was 49%, suggesting that risky casual sex is more likely after ecstasy use. Once again, this result is consistent with a great deal of evidence linking risky sexual behaviour to intoxication and drug use (eg. Chaisson *et al.*, 1989; Klee, 1992; 1993; Plant & Plant, 1992). Further, the results point to the need for education campaigns which specifically mention the increased likelihood of unsafe sex during drug use episodes.

Participants who engaged in sex while intoxicated on ecstasy reported a range of effects. Some used ecstasy specifically to enhance sex, while in others the drug contributed to a loss of sex urge, and in a minority, sex while intoxicated was less enjoyable than normal. The effects most consistently reported among those who had engaged in sexual activity while intoxicated were that sex was improved (70%), inhibitions lowered (67%), and intimacy increased due to improved communication (63%). These effects are similar to those reported earlier in the literature (Buffum & Moser, 1986; Beck & Rosenbaum, 1991). Also consistent with previous studies and the animal literature (Dornan *et al.*, 1991) was the finding that ecstasy inhibited arousal and/or climax in 45% of this sample, with significantly more males reporting these effects. It is interesting to note, however, that often this was not perceived as an aversive event. Prolonged sexual activity due to delayed orgasm was considered by some to be a desirable effect of the drug. As has been shown with amphetamine (Smith *et al.*, 1979), the effects of ecstasy on sex were dose-related: those who reported beneficial effects were using more per occasion as well as more often. Sexual identity did not predict differences in perception of the effects of ecstasy on sex.

In short, ecstasy use appears to be associated with a greater level of recent sexual risk-taking, a greater number of sexual partners and increased likelihood of risky casual sex during intoxication. Ecstasy has a range of effects on the sexual experience which appear to be idiosyncratic, but most consistently the drug is reported to enhance sex. Together, these results point to the need for comprehensive and culturally appropriate safe sex campaigns for ecstasy users. However, careful evaluation of such programs will be necessary, as education does not necessarily correlate with changes in behaviour (Lewis & Ross, 1995). Examination of other predictors of sexual risk-taking will contribute to a comprehensive understanding of the factors relevant to such behaviour.

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Appendix J: Health and safety issues in entertainment venues frequented by drug users

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EXECUTIVE SUMMARY

There have been a growing number of drug-related deaths in dance venues both in Australia and overseas. While there have been some attempts to distribute information to users regarding the risks of party drug use, the way in which entertainment venues contribute to drug-related harm should be examined.

The present study conducted observations using a structured check-list at 29 permanent entertainment venues in three Australian States, including dance parties, nightclubs and bars. Data from 112 patrons who had attended these settings was also included. Most venues were found to contribute to the health and safety risks of drug-taking in these environments to a moderate extent. Although no significant differences between venues or cities were found in scores on a risk summary scale, venues in Sydney and Melbourne tended to be riskier, as did nightclubs.

There is an urgent need for information about venue organisation and facilities to be disseminated to venue operators and promoters in Australia. In particular, such information should cover: adequate water provision, toilets, ventilation, crowd control, first aid procedures, chill-out areas which are quieter, cooler and less active, regular monitoring of patrons and the dissemination of health promotion materials and equipment to users and patrons. Evaluation of planned initiatives targeting venue operators and promoters is also required.

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INTRODUCTION

Venues such as dance parties, nightclubs, bars and raves have commonly been associated with drug taking by young adults (Lenton, Norcross & Boys, 1996; Moore, 1993; Solowij, Hall & Lee, 1992). For example, Lenton et al. (1996) examined drug use among a sample of 83 people who attended "rave" dance parties in Perth, Australia. The mean age of this sample was 19, and just over half (53%) were male. Polydrug use was common, most having tried alcohol (99%), cannabis (96%), LSD (90%), inhalants (83%), MDMA (76%) and amphetamines (69%). Nine out of ten had used an illicit drug at their last rave, and most had begun illicit drug use while still at school and in association with a rave event. A third (33%) of the sample had injected a drug at some time, a relatively high proportion given the young age of the sample. Studies of similar groups in the U.K. confirm these findings (e.g. Forsyth, 1996; Gilman, 1990; Latimer, 1997; McDermott, 1993).

Of particular concern is the growing number of deaths in dance venues in which MDMA has been implicated, both overseas and in Australia (Henry, Jeffreys & Dawling, 1992; Solowij, 1993; Suarez & Riemersma, 1988; White, Bochner & Irvine, 1997). Deaths have mostly been attributed to heat stroke resulting from the circumstances in which MDMA is used in these settings, where it is commonly reported as the drug of choice among patrons (Moreton, 1997; Saunders, 1995). It appears that a combination of sustained physical exertion, high ambient temperatures and inadequate fluid replacement compound a direct pharmacological effect of MDMA on thermo-regulatory mechanisms, leading to fulminant hyperthermia. This effect is in part a result of MDMA's neurotoxic effects on serotonergic nerve terminals, but such extreme reactions are rare for reasons as yet unknown. On the other hand, some deaths have been attributed to excess water consumption as a result of an exaggerated response to harm reduction literature advising replacement of fluids (Matthai, Davidson, Sills & Alexandrou, 1996; Parr, Low & Botterill, 1997).

There have been previous attempts to distribute information pamphlets to users regarding the risks of party drug use (e.g. Baxter, Bacon, Housman & van Beek, 1994), some of which have utilised peers to disseminate this information (McDermott & McBride, 1993; Pearson, Ditton, Newcombe & Gilman, 1991). The dance venues in which MDMA and other party drugs are commonly used suggest that information should also be targetted at venue operators and promoters. Some have suggested that better facilities and monitoring in these venues may reduce health problems such as hyperthermia (Health Department of Western Australia, 1995; Solowij, 1993;White, Irvine & Bochner, 1996). Clearly, dance venues more conducive to the reduction of drug-related harm are needed.

In a recent review of this literature, White et al. (1996) suggest that venues should provide: plentiful and inexpensive sources of water; "chill-out" or cooling-off areas which ideally should be quieter, cooler, contain adequate seating and have non-alcoholic fluids easily accessible; adequate ventilation and cooling; and factual information for drug users on issues such as overheating, fluid intake, polydrug use, overdose, and other situations which may exacerbate drug-related problems. They also suggest that rest or slow paced periods of music be provided to allow recovery from vigorous dancing, that staff monitor patrons' well-being and intervene when necessary, and that staff conduct regular checks of chill-out areas, toilets, the dance floor and fire exits.

Many of these recommendations have been incorporated into the National Protocols for Conducting Safer Dance Parties (NPCSDP; 1996) which provide guidelines for venue operators and promoters of all dance events in Australia to ensure "high quality, well regulated and safer entertainment events" (p.3). Some additional suggestions in the NPCSDP include: recording the number of people in each venue so that overcrowding does not occur, displaying clear finishing times and pass-out conditions, having a glass-free environment to prevent accidents, providing entertainment other than dancing to encourage breaks from continuous dancing, encouraging patrons to monitor their friends, limiting smoke and strobe machines and noise levels, providing a phone service offering advice and information to dance party patrons, ensuring that staff are properly trained in First Aid, and displaying health promotion signs, including those which advise that illegal drug use would not be tolerated (see also Health Department of Western Australia, 1995; NSW Ministry for Police, 1997).

These issues have been highlighted in similar overseas guidelines (e.g. Scottish Drugs Forum, 1996). In Australia, the NPCSDP have not yet been officially endorsed by the government, nor systematically implemented. While the suggestions may be useful, the present condition of venues where drug-taking occurs has not been formally evaluated, nor the need for improvements in such venues. Furthermore, while there have been some studies of drug use in raves, which tend to be held in temporary, often secretive settings (Forsyth, 1996; Lenton et al., 1996; Newcombe, 1992), little research has examined more permanent entertainment settings, such as dance parties, nightclubs and bars.

The present study therefore aims to evaluate the health and safety issues in permanent entertainment settings where drugs are consumed, and the extent to which these venues may contribute to drug-related harm.

METHOD

The study involved observation of 29 venues in three Australian cities, conducted between December 1996 and April 1997. Fourteen venues were examined in Sydney, 8 in Adelaide and 7 in Melbourne. A range of different venues were evaluated, including three large dance parties, 13 nightclubs and 13 bars/hotels (Table 1).

To be eligible for observation, the venue had to be permanent so that it could be re-examined in twelve months time in order to evaluate various government initiatives in the area, including the NPCSDP and an information kit on health and safety issues distributed to a range of venue operators and promoters. Raves by definition did not meet this criteria as their locations change. Other studies of drug use in raves in Australia provide more information about the conditions of these venues (Fitzgerald & Hamilton, 1995; Lenton et al., Moreton, 1997). Large dance parties that were held at the same time and location each year by the same promoters were included as these events can be followed up over time. Venues were also chosen if it was considered that party drug use, such as MDMA, was likely to occur. Discussions with key informants who were familiar with a range of venues assisted with this selection process.

A structured check-list was designed to evaluate the health and safety issues at each venue. This was based on documents which examine the issue of standards for dance party venues (Health Department

of Western Australia, 1995; NPCSDP, 1996; White et al., 1996). The main domains of interest included: the availability of water, temperature control and ventilation, "chill-out" zones, fire exits, noise levels, security, indications for medical treatment and emergency procedures, and the provision of education, outreach and other information.

While some qualitative data was collected, most of the information was recorded on standard scales which were revised after some experimentation with the methods. For example, values for temprature included cool, average, warm and very warm. Crowding was judged by how difficult it was to move through the main section of the venue (easy, a little difficult, moderately difficult, quite difficult, very difficult). While most of the data was observational, physical or behavioural indicators were collected for many variables of interest (e.g. evidence of syringes, signs about drug use, actual drug taking behaviours). Some data was also confirmed by venue staff, such as the number of patrons, closing times, the availability of medical facilities, and the cost of water.

Each venue was visited by two observers in order to verify the results. Logistical difficulties did not allow the collection of inter-rater reliability data. Instead, the two observers agreed upon the final ratings in a cooperative effort. These methods were checked during the first few observations.

A total of eight observers assisted with data collection. All attempted to maintain their anonymity throughout the observation process so as not to influence the setting or results. Observers spent a median of 90 minutes in each venue (range 45 mins to 12 hours). Most observations (n=20) were conducted during the peak operational time for venues. This peak time varied between venues, so observations could not be conducted at the same time of the week for all venues.

Results were typed up in full after each observation. Most of the data were coded and analysed using SPSS (Windows) Version 6.0. Descriptive analyses were conducted due to the small sample size. A summary score on the level of risk present in each venue was also calculated. This consisted of 25 items derived from the structured checklist, most of which (n = 20) involved a binary response (no = 0, yes = 1). Items included: whether there were guard checks at the door and inside the venue; any blocked fire exits; how crowded and noisy the venue was; the pace of music; whether hazardous dancing was noted; the temperature inside the venue; whether any ventilation was operating; how smokey the venue was; whether other activities were provided; the conditions of the chill-out area (if any); whether any outside area was provided; queues in toilets; cold water taps operating; information about alcohol, illicit drugs and safe sex; whether injecting equipment, syringe disposal and condoms were available; and whether there were any obvious medical facilities. These variables were agreed upon by three of the investigators as the crucial indicators. In addition, the validity of the summary score was confirmed by its approximately normal distribution.

All data were analysed by location (city) and type of venue (dance parties, clubs, bars), and results are presented by these variables when differences were found. Additional open-ended data on MDMA users' perceptions of venue conditions which were collected in a concurrent survey of MDMA use in Sydney have also been incorporated into the findings (Hando et al., 1998).

RESULTS

General description of the venues and patrons

Table 1 lists the main features of the venues and patrons. Most venues (90%) were located in inner city areas, with the remainder selected from outer suburban areas. Twenty eight percent of the venues were predominantly homosexual venues. The number of patrons in each venue varied according to the type of venue; dance parties were attended by 7,000 to 22,000 patrons, clubs by 60 to 600 patrons, and bars by 100 to 2,000 patrons. Venues in Adelaide contained fewer patrons (up to 600) compared to venues in Melbourne (up to 7,000) and Sydney (up to 22,000), although no large dance parties were included in Adelaide.

The minimum age range of patrons was estimated to be between 16 and 25 years, and the maximum age range between 23 and 65 years. Under age patrons (under 18 years) were noted in Sydney and Adelaide, but not Melbourne. They were also observed in only clubs and bars, not dance parties. The proportion of males noted in the venues ranged from 40% to 95%, the latter reflecting the venues frequented by gay male patrons. Dancing was observed among patrons in most venues (90%). Twelve of the venues (41%) contained residential areas within one block of the venue. Specified car park areas were noted in only 6 venues (21%).

Table 1: Venues and patrons (no.)

	Total n=29
Located in:	
Sydney	14
Adelaide	8
Melbourne	7
Type of venue:	
Dance party	3
Club	13
Bar	13
Area:	
Inner city	26
Outer suburbs	3
Gay venues	8
Min. age range patrons	16-25 yrs
Max. age range patrons	23-65 yrs
% Range males	40-95
No. patrons (range)	60-22,000

Security and entry/exit conditions

Most venues (97%) had security guards positioned at the front door. The median number of guards was 2 (range 0-20). The larger venues, such as dance parties, had more security guards (median=20). Actual guard checks at the door were observed at 72% of the venues. Guards working at bars/hotels were less likely to conduct checks (46%) than guards working at clubs (92%) and dance parties (100%). The most common type of check were age checks (conducted by 62% of venues), followed by bag checks (conducted by 10% of venues, only at dance parties). No guards were observed conducting body searches or using metal detectors. Entry was refused to some patrons in 38% of the venues.

Eighteen venues (62%) had queues at the door, some up to 150 people. Queues were most common at dance parties and in Sydney venues. Formal pass-out conditions appeared to be present in 66% of the venues, including all of the dance parties and clubs, and a quarter of the bars. Very few venues (10%) had clearly posted operational hours.

The median number of exits and entrances in each venue (not including specified fire exits) was 1 (range 1-2), and this did not vary by city or type of venue. These exits were usually clearly marked. Blocked fire exits (by chairs, tables, patrons) were noted in 24% of venues, and were more common in bars and Sydney venues.

Security guards were observed making checks inside 59% of the venues, including all of the dance parties, and half of the bars and clubs. Most of the staff that did move through the premises were generally difficult to recognise, although Adelaide security staff wore identity numbers and appeared more visible than security personnel in the other cities. A minority of venues had a police presence inside (7%) or outside (24%) the venue. However, evidence of a police response towards illicit drug use was noted at only one dance party in Melbourne. Here, undercover police made a number of arrests for drug possession, or requested that users destroy their drugs and issued them with warnings.

Venue facilities and conditions

Venues had on average 3 rooms (range 1-7), with dance parties generally bigger (mean 5 rooms). They provided an average of 2.5 bar areas (range 1-14). Two thirds (62%) of the bar areas in venues were rated as very crowded, including all of the dance parties. Ninety percent of the venues provided seating and tables for patrons, 69% of which had spare seats available during the observation period. Food was not usually available in the venues, provided by 3 bars and 3 dance parties, and was not available in any clubs or Adelaide venues.

Half of the venues were rated as very crowded, including all of the dance parties and half of the clubs and bars (Table 2). The noise level in about half of the venues was also rated as very high, again occurring in all of the dance parties. Hazardous dancing (eg. on speakers) was noted in 31% of venues, with few differences between the type of venue or city. The pace of music was rated as "fast" in 59% of venues, more so in clubs than bars or dance parties. Forty two percent of the venues operated smoke

machines. Several venues provided other entertainment, such as bands (28%), shows (41%), video or pool games (52%) or TV videos (45%).

The lighting was rated as dim to average in a third of venues (34%), bright in 10% of venues, and varied in 31% of venues. In addition, a quarter of the venues (24%) had laser shows operating. Twenty-four percent of venues provided no ventilation, 62% had air conditioning operating at the time of the observation, 10% had fans working and 1 venue (3%) had both air conditioning and fans. The temperature inside the venues was rated as warm to very warm in over half the venues (Table 2). However, most were not considered very smoky (69%). In one venue, air conditioning was turned off during the night as the venue became more crowded, and smoke machines operated continuously, resulting in an overheated and poorly ventilated environment.

Table 2: Venue conditions (no.) total n = 29

How crowded:	
Not at all/little	4
Moderately/quite	11
Very	14
Noise levels:	
Low	1
Moderate	3
High	9
Very high	16
Pace of music:	
Slow	1
Medium	2
Fast	17
Varied	9
Type of lighting:	
Dim-average	10
Bright	3
Lasers	7
Varied	9
Ventilation:	
None	7
Fans	3
Air cond.	18
Both	1
Temperature:	
Cool-average	10
Warm	8
Very warm	10
Chillout area available	16
Chillout quieter	10
Chillout cooler	16

Chillout less active	14

Specified chill-out areas away from the main entertainment section were provided in just over half (55%) of the venues, including all of the dance parties, most of the clubs (69%) and some of the bars (31%). One dance party provided three chill-out areas. All chill-out areas were rated as being cooler than the main dance area. However, not all were considered less active (88%) or quieter (63%) (Table 2) as they were affected by the light and laser shows and noise of the main dance area. For example, one chill-out area in a dance party was poorly lit, played loud music, was crowded and extremely hot. A third of the venues (34%) provided an outside area for patrons to use, while 21% (n = 6) had both an outside area and a chill-out area. However, a third (31%) provided neither a chill-out area or outside area.

The median cost of water by the bottle was $2.50 (range 0-$3.50), and the median size of bottles was 350ml (range 350-500ml). Generally, water sold in clubs (median $3.00 for 350ml) was more expensive than that sold in dance parties (median $3.00 for 500ml) or bars (median $2.50 for 350ml). Free bottled water was available at one large dance party, but this was not well promoted and few patrons were aware of or utilised this service. A bar at one of the large dance parties was also observed to run out of water in the early hours of the morning, with new supplies not brought in until some time later.

Larger and cheaper water bottles were available in Adelaide, compared to Sydney and Melbourne. Adelaide venues also provided their patrons with more options for water supply. For example, in one venue, bottled water could be bought at the bar for $2.50, iced water from a bubbler was available for 80c per 425ml glass, tap water was provided free upon request and cold water taps were operating in the toilets.

Toilet facilities were also examined. Male toilets contained a median of 3 cubicles (range 1-48), 3.5 sinks (range 1-17), and 3 cold taps (range 0-17). Three venues (2 clubs and a bar) had no cold taps operating in male toilets. Twenty eight percent (n = 8) of the venues had queues in the male toilets, including all of the large dance parties. Female toilets contained a median of 5 cubicles (range 2-57), 3 sinks (range 1-17), and 3 cold water taps (range 0-17). Three venues (10%, 2 clubs and a bar) had no cold taps operating in female toilets. Thirty one percent of venues had queues in the female toilets, including all of the dance parties. There were no queues in any of the Adelaide venues, although no large dance parties were observed there. One Adelaide nightclub provided unisex toilets.

Some venues appeared particularly hazardous and unhygienic. For example, one Sydney nightclub had turned off the cold water taps in the toilets (leaving only hot water) and had long queues requiring a wait of 20 minutes or longer. In another Sydney nightclub with the cold water taps removed, a large stainless steel bucket containing ice cubes were provided for patrons to cool down and/or wash their hands in, a serious concern due to the risks of spreading infectious diseases such as hepatitis.

Evidence of licit and illicit drug use

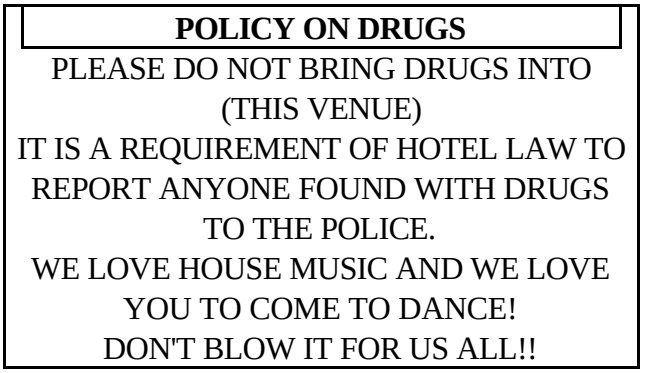
Obvious swallowing and snorting of illicit drugs was observed among patrons in a third (31% of venues, obvious cannabis use in 55% of venues, and evidence of injecting behaviour in 7% of venues. In addition, drug purchases were observed in a quarter of the venues. These activities were more likely to occur in dance party settings (67-100%) and bars (0-69%), and least likely in clubs (0-30%). Other than cannabis use, they were not commonly observed in Adelaide.

Only licensed venues were observed, and obvious alcohol consumption was noted in all of the venues. Excessive alcohol use where patrons were clearly intoxicated was also noted in two-thirds of the venues (62%), with few differences between the type of venue and city. Other evidence of licit and illicit drug use included dilated pupils (noted among patrons in 62% of venues), excessive chewing (66% of venues), excessive talking (55% of venues) and excessive moving (69% of venues). Patrons in a minority of venues exhibited more serious health symptoms, such as collapsing/overdose (14% of venues) and vomiting (10% of venues). No seizures were noted. All of these symptoms were less likely to be observed in Adelaide than Sydney or Melbourne.

Health promotion and medical facilities

Ten percent of venues had signs about illegal drug use, including a Sydney club, dance party and bar (Table 3). An example of a sign in one venue is contained in Figure 1. This was placed outside the venue and in both the male and female toilets in an attempt to discourage illicit drug use. Fourteen percent of venues had pamphlets on illicit drug use (3 in Sydney and 1 in Melbourne).

Figure 1



Most of the venues (93%) had signs about alcohol, either advertisements for brands of alcohol or cautions about the age limit, but no venue provided harm reduction materials on alcohol use, and some venues actively promoted alcohol use by offering discounted beverages.

A third of the venues (38%) had signs about unsafe sex, and 21% venues had pamphlets on unsafe sex. While a number of the gay venues had well-stocked information areas (eg. on AIDS and STDs), many of these were positioned in dark areas of the venue and were difficult to notice. An exception was a gay nightclub in Adelaide which had placed a limited number of information materials in a well-lit and accessible part of the foyer.

New syringes and other injecting equipment were available in 2 venues (7%), and syringe disposal facilities were available in 21% of venues which were mostly in Sydney or Melbourne, including all of the dance parties. Condoms were almost 4 times more likely to be provided in the male toilets (52% of venues) compared to female toilets (14% of venues), and were usually sold from vending machines.

Table 3: The provision of information and other resources (no.)

	Total n=29
Signs about:	
Illegal drugs	3
Alcohol	27
Safe sex	11
Pamphlets about:	
Illegal drugs	4
Alcohol	0
Safe sex	6
New syringes	2
Syringe disposal - males*	6
Syringe disposal - females*	5
Other injecting equipment	2
Condoms - males*	15
Condoms - females*	4
Outreach workers	2

* Usually provided in toilets

Outreach workers were only observed in the two Sydney dance parties (7% of venues). Volunteer groups co-ordinated by AIDS Councils gave safe-sex packs containing condoms, water-based lube and information to patrons as they entered these venues. A booth run by outreach workers also provided a needle exchange and other relevant information.

Fourteen percent of venues (all the dance parties and one nightclub) had medical facilities. Medical areas at dance parties were set up with volunteer medical staff who worked throughout the evening. Medical incidents during the observation period were not only drug-related but included cuts, bruises and sprains, or people just wanting to rest. It is not clear from the present data how many other venues had staff trained in First Aid.

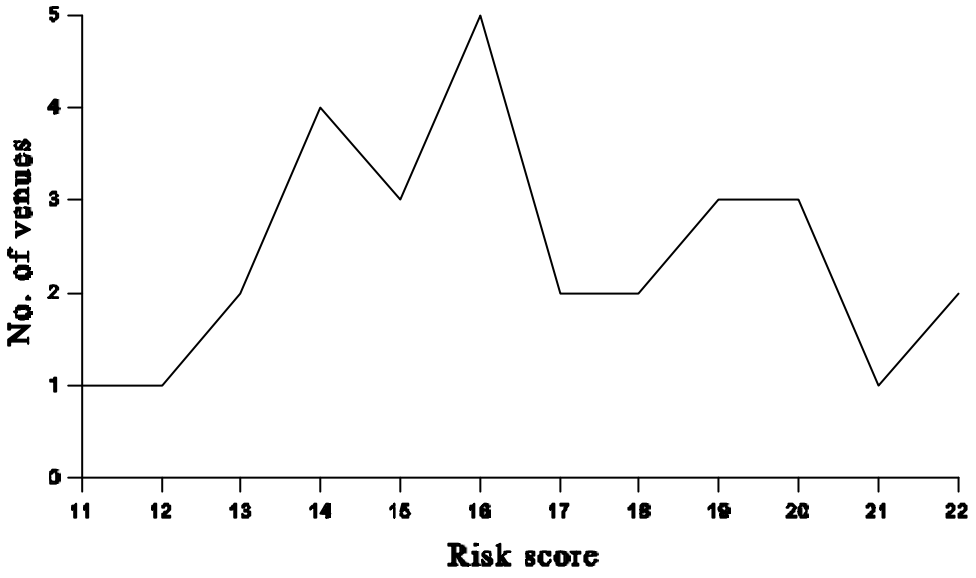
Overall risk rating

A summary score on the level of risk in each venue was calculated, with higher scores indicating greater levels of risk (range 0-31). The mean score was 16.6 (SD 2.9, range 11-22). This suggests that most venues provide an environment which is moderately risky, with minorities providing either quite safe or very unsafe venues (see Figure 2).

While there were no significant differences between the type of venue or city, there was a tendency for Sydney (mean 16.7) and Melbourne (mean 17.4) venues to be riskier than Adelaide venues (mean 15.8), and for nightclubs (mean 17.2) to be riskier than dance parties (mean 15.3) and bars (mean 16.3).

Figure 2:

Level of risk in venues



Users' perceptions of the conditions of venues

Comments about venue conditions were obtained from 112 participants who attended these venues, interviewed as part of a larger survey on MDMA use in Sydney. Most (81%, n=91) provided spontaneous comments about nightclubs. These participants reported that: nightclubs were badly ventilated and overheated environments (75%), water was too expensive (65%), cold taps were sometimes turned off (55%), they were overcrowded (55%), had inadequate or no chill-out areas (41%) and needed first aid facilities (11%). Fifteen percent of these participants believed that some nightclubs were well-run.

Of the 15 participants (13%) who commented on dance parties, most thought that they were well organised events. Two participants (2%) provided comments about the condition of inner city bars, which were positive. In addition, 11 participants (10%) provided some general comments about all types of venues, including that water should be freely available (100%), that staff should be trained in first aid procedures (55%), and that more female toilets should be provided (27%).

DISCUSSION

While venues were relatively good at providing seating, tables and other forms of entertainment to give patrons a rest from physically strenuous dancing, a number of areas for improving the facilities and organisation of the venues in the present study were highlighted. Upon entering the venue, visible information about its hours of operation was not typically provided to patrons, which is important if they are to plan their night (eg. transport to and from the venue, letting others know when they will be home) and reduce the likelihood of problems. Some venues did not conduct age checks of patrons at the door (28%) and some appeared to allow underage patrons to enter the premises, although the latter was based only on observation.

Once inside the venue, there was usually little monitoring by security, and less than desirable conditions in some venues, including unhygienic premises, blocked fire exits, overcrowding, hazardous dancing, high noise levels and overheating. Although food was not usually provided at the venues, most venues were within close proximity to eating outlets due to their inner city locations. Specified chill-out areas were provided by just over half of the venues, and not all of these were considered quieter or less active. A minority of venues (21%) provided both chill-out and outdoor areas, while 31% had neither, a problem reiterated by MDMA users participating in the survey component.

The adequacy of toilet facilities for patrons requires closer examination. Queues were common in about a third of the venues. Some of the larger venues provided a ratio of 1 toilet for every 1300 patrons, which is markedly fewer than that recommended by the Building Code of Australia (1990), which suggests that at least six or seven toilets be provided for this number of patrons (in addition to urinals). Similarly, the number of washbasins or sinks was often unacceptably low (see NSW Ministry for Police, 1997 for further details). The cleanliness of most toilets was also far from adequate.

In terms of water provision, the observers found that some venues had removed cold water taps in toilets, that few offered water free of charge at the bar, and that the price of water was at least twice as expensive as in other outlets such as supermarkets. A concurrent survey of MDMA users suggests that knowledge about accurate levels of water consumption while active and inactive is desired by patrons (Topp et al., 1998). Participants in this study protested overwhelmingly about the provision of water at venues, particularly nightclubs.

Venues did not usually provide health promotion materials, such as information on illicit drugs, alcohol or safe sex, even though these are areas of concern among patrons attending these venues. In addition, except at some dance parties, outreach activities were virtually non-existent.

The need for condoms is an urgent priority, as similar populations have been noted to be sexually active, often involved in non-monogamous relationships, and usually practising unsafe sex (Lenton et al., 1996). An interesting finding was that condoms were more commonly provided to males rather than females, placing the responsibility for safe sexual behaviour onto one partner, thereby limiting the likelihood of safer sexual practices.

While minimal alcohol use among "ravers" has been noted in the literature (e.g. Lenton et al., 1996), excessive use of alcohol was observed by patrons in over half of the venues in the present study. Substantial levels of binge drinking among youth in particular (e.g. Cooney, Dobbinson & Flaherty, 1993) suggests that this is an area requiring interventions for those involved to the dance scene.

Obvious signs of injecting were noted in only two of the twenty-nine venues, although this is probably an underestimate due to the limitations of observational methods. Lenton et al. (1996) noted relatively high levels of injecting among their ravers. Other studies confirm both the increasing popularity of this route of administration (particularly among those using stimulants), and the hazards associated with it (e.g. Hando, Topp & Hall, 1997). Observers noted specific instances of illicit drug use in half of the venues, although behaviours likely to be related to the use of stimulants, such as excessive talking and moving, were noted in up to two-thirds of the venues. While the need for clean injecting equipment remains unclear, caution would indicate the provision of equipment for those who do inject at these venues. Syringe disposal facilities are also necessary.

Severe health reactions such as vomiting and collapsing were noted in some venues, but it is difficult to know whether such symptoms were attributable to alcohol, illicit drugs, polydrug use or other factors (eg. overheating, pre-existing illness). Specific medical facilities were noted in only four venues, although the First-Aid training of staff was not assessed. A concern raised in another study (Moreton, 1997) was a fear among users of using first aid or ambulance services in case parents or police are notified.

Although no significant differences between venues or cities were found in scores on the overall risk summary scale, there was a tendency for venues in Sydney and Melbourne to be riskier, along with nightclubs. For example, security in Adelaide was better organised, there was less evidence of illicit drug use, and there were more options for the provision of water, compared to venues in Sydney and Melbourne. Nightclubs appeared riskier than bars or dance parties, sometimes removing cold water taps in toilets, and providing poorly ventilated and overcrowded conditions. Overall, most venues were

found to contribute to the health and safety risks of drug-taking in these environments to a moderate extent, although some venues were better than others. Further research is needed to examine the effectiveness of information campaigns targeting users/patrons, the need for other resources or services such as injecting equipment and outreach, and the evaluation of initiatives targeting venue operators and promoters. The effectiveness of guidelines for venue operators and promoters may be limited, however, as has been found with alcohol licensing and monitoring.

Study limitations

The main limitation of the present research stems from the use of observational research, which allows only the more visible aspects of the issue under investigation to be counted. Thus, few specific details were collected on issues such as the size of the venues, the number of patrons, the presence of covert police operations or the First-Aid experience of staff. It was not possible to directly interview venue operators and promoters, either before or after the observation, due to the inability to validate their information. However, observations at each venue were conducted in pairs in an attempt to validate the data, with further confirmation was provided by users in the larger survey.

Another potential problem involved the limited time spent observing each venue (on average 90 minutes), a minority of which were not conducted during peak times. The changing nature of venues was also noted. For example, some of the venues were revisited to collect missing information or to recheck items, and different conditions were sometimes noted between observations. It must be remembered that while every attempt to obtain objective information was made in the present study, the findings may vary from the venue conditions at different times. A recommendation is made for follow-up studies to be conducted at the same time and place to ensure consistency with conditions in the present study.

While none of the observers were refused entry to the venues, "getting in" and "fitting in" was at times difficult due to the often specific styles encouraged by the venues. It was also difficult to complete the check-list in an unobtrusive fashion. At times it was necessary to memorise elements of the venue and periodically retreat to a private area (such as a toilet cubicle or outside area) to record this information.

The present study included three venues where dancing did not occur. Issues related to deaths stem mainly (but not always) from overheating and dehydration in dance venues (White et al., 1996). It is therefore more relevent to focus on dance venues when considering the health and safety aspects of drug use in venues, although any environment where licit and illicit drug use is likely to occur is at risk of potentially hazardous behaviour (Ireland & Thommeny, 1993). Although relatively few outer suburban venues were included in the study, the data suggested that few differences exist between venues operating in different geographical locations. Further research could examine if this is indeed the case.

Raves were not observed in the present study. One would expect these environments to be riskier due to their secret locations such as warehouses, which are often impermanent and changing, and lacking proper facilities. It is generally more difficult to ensure that proper health and safety guidelines are followed in such places. Given this, it is reasonable to assume that the present results underestimate the degree of harm present in dance settings, as more extreme cases were excluded from the study.

Finally, a point should be made about the hazards of this type of research for the observers. The environments visited were often crowded, noisy, smokey and hot. They involved late nights so that observations coincided with the peak operational time of the venues. This hectic schedule was often difficult to maintain in combination with "regular" research duties during working hours, and necessitated the need for several observers to minimise the strains of the task.

Conclusion

There is an urgent need for information about venue organisation and facilities to be disseminated to venue operators and promoters in Australia. In particular, such information should cover: adequate water provision, toilets, ventilation, crowd control, first aid procedures, chill-out areas which are quieter, cooler and less active, regular monitoring of patrons and the dissemination of health promotion materials and equipment to users and patrons.

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Appendix K - Factors associated with criminal activity within the past month from multiple logistic regression analysis

	Coefficient	OR	SE	95%CI
Years of education	-.4007	.6698	.1387	.46, .88
Age began regular ecstasy use	-.0771	.9258	.0285	.88, .98
No. days used ecstasy last 6 months	.0371	1.0378	.0122	1.01, 1.06

$\div^2$ (3df) = 30.954, p = .0000

Appendix L: Factors associated with wishing to reduce ecstasy consumption from multiple logistic regression analysis

	Coefficient	OR	SE	95%CI
No. days used ecstasy past 6 months	.0532	1.0546	.0128	1.03, 1.08
No. psychological side effects	.1912	1.2107	.0626	1.07, 1.37
Ecstasy caused relationship problems	.7654	2.1499	.3030	1.19, 3.89
Ecstasy caused financial problems	.7653	2.1496	.3034	1.19, 3.90

$\div^2$ (4df) = 75.849, p = .0000