A. Bleeker, E. Silins, P. Dillon, M. Simpson, J. Copeland & K. Hickey

The feasibility of peer-led interventions to deliver health information to ecstasy and related drug (ERDs) users

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THE FEASIBILITY OF PEER-LED INTERVENTIONS TO DELIVER HEALTH INFORMATION TO ECSTASY AND RELATED DRUG (ERDS) USERS

Annie Bleeker, Edmund Silins, Paul Dillon, Melanie Simpson, Jan Copeland and Karina Hickey

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ABBREVIATIONS

AOD	Alcohol and other drugs
ACT	Australian Capital Territory
CD	Compact Disc
ERDs	Ecstasy and related drug(s)
GHB	Gamma-hydroxybutyrate
HREC	Human Resources and Ethics Committee
KIS	Keep It Simple
NDARC	National Drug and Alcohol Research Centre
NSW	New South Wales
SAM	Save-a-Mate
SPSS	Statistical Package for the Social Sciences
SS	Serotonin syndrome
UNSW	University of New South Wales

EXECUTIVE SUMMARY

Outcome evaluations of peer education projects amongst ecstasy and related drugs (ERDs) users are rare in the published literature. The aim of this study was to see if health messages can be effectively delivered to ERDs users utilising a peer-led intervention. A quasi experimental study design was used where one group of participants (the experimental group) received unique messages about 'serotonin syndrome' and the need to 'rehydrate before you dehydrate' in addition to routine ERDs peer education messages, while the other group (the control group) received routine ERDs peer education messages only.

The study hypothesis was that patrons at experimental events would have a high recall of the unique messages at three month follow-up. As these unique messages had never been used in Australian ERDs harm reduction activities, participants who recalled these messages were highly likely to have received them from peer educators. A further outcome measure of the study was reported behaviour change in relation to the messages delivered.

The results of the study indicate that there was a good recall of health messages disseminated to ERDs users using a peer-led methodology. At the three month follow-up, there was a high free recall of the two unique messages. The 'serotonin syndrome' message was recalled by 64% of the experimental group at baseline interview and by 46% at follow-up interview, indicating that a significant proportion of the study population remembered what they had discussed with a peer educator at an event three months earlier.

Cued (or prompted) recall of the 'serotonin syndrome' message was greater amongst the experimental group than the control group, with over 85% of the experimental group reporting that they had heard of the 'serotonin syndrome' message from a peer educator at follow-up interview.

There were also some promising results from the control group regarding the generic information about alcohol and other drugs that they received. Among this group there was some evidence of recall of the top two messages addressing the need to drink water and information about the harms of mixing illicit drugs.

There were a range of drug-related behaviour changes noted, most particularly that many participants reported that they intended to reduce their drug use and/or use drugs more safely following contact with a peer educator.

The experimental group had significantly reduced their ecstasy and meth/amphetamine use at follow-up. Almost half the sample reported that they had increased their water use as a result of the information they had received from a peer educator. In addition, the experimental group was more likely to consume only water when using ecstasy than were controls. No significant changes in patterns of mixing of drugs was detected between experimental and control group participants.

The experimental group were significantly more likely to take drug information resources during the peer intervention and more likely to report referring to them at a later date than the control group. Given that young people are high users of information technology, a particularly unexpected finding was that less than 10% of participants reported that they 'often' accessed the internet for information about ERDs. This suggests that ERDs users mainly seek out this kind of information from other sources, such as from their peers. When asked which sites participants did access, most reported pillreports.com, which is a site that contains a global data base of ecstasy pills based on

both subjective user reports and scientific analysis. For this group, it is therefore likely that access to the internet is limited mainly to finding out about the content and purity of pills rather than education or information about the effects of drugs.

The peer educators were also seen as very credible by the majority of participants in this study, with the experimental group significantly more likely to find the peer educator more credible than the control group.

The study's findings support the use of peers in the dissemination of health-related messages to ERDs users and suggests that peer-led interventions are a valuable medium to use in conjunction with other methods of drug education for this difficult to access group.

1 INTRODUCTION

In the past 40 years peer education and peer support interventions have become increasingly popular health promotion tools to reach young people with substance use and sexual health information. Since 1990, peer-led interventions that aim to reduce or prevent drug-related harm and/or sexually transmitted infections amongst young people have increased in popularity (Bament, 1996; Backett-Milburn & Wilson, 2000; Cuijpers, 2002). The principal reason for this is the evidence in the literature pointing towards the strong influence of the peer group during adolescence. As Cuijpers (2002, p. 107) states, "… the important role of peers in the use of drugs by adolescents has strongly stimulated the use of peer-education approaches in school-based drug prevention programs." Many studies have found that an association with peers who use drugs is one of the strongest predictors of adolescent drug use (Romer and Hennessy, 2007; Spooner, 1999; Odgers, 1998).

Despite the proliferation of peer interventions, many question the effectiveness of the model and suggest that projects frequently fail due to the lack of definition in the literature about what constitutes 'good practice' (Walker & Avis, 1999; Shiner, 1999; Milburn, 1995). As Shiner (1999, p. 565) states, "Good practice in relation to peer education involves careful consideration of the extent to which the approach used fits the location and the needs and circumstances of the people involved."

This research study examined the efficacy of peer based education with ecstasy and related drug users in three cities in Australia (Sydney, Adelaide and Canberra) and an international site based in the Netherlands. The Amsterdam site was chosen as an international comparison as the well established peer education project 'Unity' has been operating in that city since 1995. The project is acknowledged as a leader in the peer education field. Unfortunately, a different research methodology was utilised in the Netherlands which has meant that their data was not comparable with data collected in all Australian sites. Although reference will be made to the peer education methodology utilised in the Netherlands, all information presented in this report is based on only the data collected at the Australian sites.

1.1 Ecstasy and related drugs (ERDs) use in Australia

Risk-taking behaviours such as experimentation with licit and illicit drugs and sex predominantly occur during adolescence and into the early twenties (AIHW, 2008). With the prevalence of ecstasy use increasing in all Australian jurisdictions (AIHW, 2008) and the age of initiation into drug use falling (Degenhardt et al., 2000) many young Australians (12–24 year olds) are placing themselves at risk of social and health-related harm and establishing patterns of behaviour that may endure into adulthood (Nutbeam, 1998).

In an effort to group such diverse drugs as an entactogen (ecstasy), a stimulant ('ice'), a dissociative anesthetic (ketamine), and a depressant gamma hydroxy butyrate (GHB) under one classification, the term 'ecstasy and related drugs' (ERDs) has been adopted. This term is used to describe a range of substances that are most commonly used in a particular context (i.e. any environment where young people go to have fun or party), where ecstasy is the illicit drug most commonly used. For the purposes of this report, the term 'ERDs' covers a range of drugs sold under the name of 'ecstasy' in Australia, as well

as a range of other illicit substances such as methamphetamine, cocaine, ketamine and GHB.

In 2007, 8.9% of Australians aged 14 years or older reported ever using ecstasy and 3.5% reported recent use (i.e. last twelve months). Recent use was highest among 20-29 year olds (11.2%) and there was an increasing trend in use amongst 14-19 year old females between 2004 (4.7%) and 2007 (6%) (AIHW, 2008). Some of the perceived positive effects of ecstasy that users report include euphoria, alertness, increased energy and confidence, heightened sensations and closeness to others (Topp et al., 1999). Ecstasy use is also associated with a variety of adverse effects, including weight loss, racing heart rate, tremors and affective problems during the 'comedown period' (Darke et al., 2000; Parrott et al., 2002; Topp et al., 2002).

In 2007, 6.3% of the Australian population reported ever having used meth/amphetamine, and 2.2% had used it in the last 12 months (AIHW, 2008). Eight percent of 12–17 year old males and 7% of 12–17 year old females reported that they had ever used an amphetamine (White, 2001); whereas in the 20-29 year old age group, 16% reported ever using meth/amphetamines and approximately 7.3% reported recent use (AIHW, 2008). The long-term effects of using meth/amphetamines include sleep problems, mood swings, compulsive repetition of actions, paranoia, depression and anxiety, panic attacks, seizures and social and financial problems (McKetin et al., 2005). Amphetamine-induced psychosis or 'speed psychosis' can also occur (McKetin et al., 2005).

Australian ERDs users are a diverse group of young people who use drugs in a variety of social settings including pubs, clubs, dance partys, etc. During their drug-using years most ecstasy and related drug users are unlikely to access drug and alcohol education or treatment services except in the event of an acute medical emergency. Given that many ERDs users will visit nightclubs and/or festivals/dance events, consideration should be given to evaluating the effectiveness of providing vital health and drug information in these settings.

1.2 Research design

The aim of the NDARC peer education research study was to test the effectiveness of peer-led dissemination of health information to ecstasy and related drug users. As young people could not be randomised to a control or experimental event, a quasi-experimental study design was utilised over the three Australian study sites. Interviews were administered to ecstasy users at both control and experimental events in each site.

Peer education projects aimed at clubbers and those attending dance parties have been operating around the world since the early 1990s. At these events, trained volunteers set up a shop front and provide harm-reduction information to young people. The peer education information is presented in a culturally relevant format and messages are disseminated about ways to stay safe when using a range of drugs associated with clubbing, i.e. ecstasy, meth/amphetamines, alcohol, GHB, etc.

In this study, a quasi experimental design was used where one group of participants (the *experimental* group) received unique messages about 'serotonin syndrome' and the need to 'rehydrate before you dehydrate' in addition to routine ERDs peer education messages, while the other group (the *control* group) received routine ERDs peer education messages only.

One unique message highlighted serotonin syndrome (Got SS?) and its associated risk factors; and the second unique message discussed the need to re-hydrate before having a 'big night out' (Planning to Party? Rehydrate before you dehydrate). Merchandising with the unique messages (including flyers, t-shirts, lanyards and water bottles, etc.) were distributed at experimental events to complement the education provided by peer educators. (See Appendix 1 – Project branding and merchandising).

The principal research question for the study was:

> Can health messages be effectively disseminated to ecstasy and related drug users using a peer-led intervention?

The study hypothesis was that patrons at experimental events would have a high recall of the unique messages at three month follow-up. As these unique messages had never been used in Australian ERDs harm reduction activities, participants who recalled these messages were highly likely to have received them from peer educators. A further outcome measure of the study was reported behaviour change in relation to the messages delivered.

A total of 18 events were targeted to participate in the research project during the 2006/2007 summer festival season in Australia (November–April). A total of eight events were targeted in the Netherlands, also during the same time of year. The data collection phase was extended in all Australian sites due to difficulties with securing access to events; this was particularly so in South Australia where access to events became so limited the project completed its data collection at two additional experimental events at a large night club in Sydney, NSW.

The control events were conducted first in all research sites to avoid contamination of the project's unique key messages about serotonin syndrome and the need to pre-load with water to avoid dehydration.

At all events an Information Stand was set up and peer educators provided information on a range of ERDs-related issues and safer partying. Targeted information, designed specifically for the project, was disseminated on the risks associated with mixing ERDs with a range of pharmaceuticals that may act on the serotinergic pathways, e.g. antidepressants. Three control events occurred in each site where information about serotonin syndrome and the need to re-hydrate were *not* distributed.

People visiting the stall were provided with ERDs information from the peer educator and then asked if they would like to participate in a research study looking into the efficacy of peer-based education. Participants were eligible for the study if they:

- were over the age of 18;
- had used ecstasy at least once in the past 12 months;
- were prepared to provide NDARC with a telephone number so that a follow-up interview could be conducted three months later; and
- had not completed the baseline survey before.

The baseline interview took 10–15 minutes to administer and it collected data on the peer education provided, as well as a range of other information about ecstasy and related drug use.

Approximately three months after the dance/music event, study participants were contacted via the telephone (and in some cases email) and the follow-up interview was administered over the phone. Data was collected on the information that they obtained from the peer educator, as well as any behaviour change that may have eventuated as a result of the information that had been provided.

1.3 Ethics approval

Approval for the study was sought through the Human Resources and Ethics Committee (HREC) at the University of New South Wales (UNSW) in September 2006.

1.4 Data analysis

For continuous, normally distributed variables, t-tests for independence were employed and means reported. Where continuous variables were skewed, medians are reported and the Mann-Whitney *U*-test, a non-parametric equivalent of the *t*-test (Siegel and Castellan 1988), was employed. Categorical variables were analysed using chi-square for independence and descriptive statistics. All analyses were conducted using SPSS for Windows, Version 15.0 (SPSS inc. 2005). To compare results between the baselines interviews and the follow-up interviews, a paired t-test was used for continuous normally distributed variables and means and the Wilcoxon signed rank sum test was used for skewed (and ordinal data). Qualitative data was hand searched to identify themes.

1.5 Overview of participating peer education projects

The project utilised already established peer education projects educating ecstasy and related drug users. In Sydney, the project worked with the 'KIS' project based at Manly Drug Education and Counselling Centre. In South Australia, the project worked with the Australian Red Cross 'Save-a-Mate '(SAM*)* program. In the ACT, NDARC worked with the Youth Coalition of the ACT and the Red Cross SAM program.

The 'Unity' project conducted by Jellinek Prevention in Amsterdam was also recruited to participate in the research study. An international site was utilised as it was regarded as important to look at the effectiveness of a well-established peer education program, such as Unity*,* and also useful to collect comparable data on ecstasy users across countries. As noted earlier, data from the Netherlands was not able to be used for this project because the two novel project messages were not distributed as per the study protocol at experimental events. However, the drug use data is comparable and will be examined in future publications.

The KIS project was modelled on Unity, and recruits those who are part of the dance scene and tend to have had personal experience with ecstasy and related drug use.

The Australian Red Cross SAM program tends to recruit young people who are not necessarily part of the dance scene and may or may not have had personal experience with drug use. The SAM program is based on a different model and often has more of a 'roving' role at large dance events (where they look out for people who may have consumed too much alcohol or other drugs and need medical assistance); and the provision of peer education in the true sense is often more of an adjunct to their primary function at events.

1.6 Selection criterion for peer educators

A project coordinator was appointed in each research site, and participating agencies were asked to recruit new or existing peer educators to participate in the study. All project coordinators were provided with a briefing pack on how to recruit appropriate peer educators for the NDARC research project.

The selection criterion for peer educators included the following characteristics:

Essential

- 18 years and over
- good social and communication skills
- affinity with the 'dance scene' and its lifestyle
- interest in learning about drugs and related issues
- non-judgmental attitude towards drugs and drugs users
- able to commit to attending one full day of training
- able to attend four dance/club events between December–February 2006/07.

Desirable

- outgoing and confident
- appeal to the target group
- is a team-player
- does not use alcohol or other drugs while working
- obeys the rules of the party organisation
- does not participate in drug dealing

Is also able to:

- provide information and advice about drugs and referral for drug-related problems
- support in emergency situations (i.e. contact first aid and security personnel, etc.)
- observe and monitor trends in the dance scene.

A total of 43 people were trained to participate in all three Australian sites for the NDARC Peer Education Research Project with ERDs users. In Sydney, 11 people were trained from the KIS project, in Adelaide 14 people were trained from the SAM project and in Canberra, 18 people were trained (six from the Red Cross SAM project and 12 from the Youth Coalition).

The data relating to the geographic location of the peer educators who participated in the project in Australia is included in Table 1.

Table 1: Geographic location of peer educators

City	Percentage (n)
Canberra	38.1 (18)
Adelaide	27.9 (14)
Sydney	23.8 (11)

1.7 Training

NDARC developed and administered a specialised one-day training program for all peer educators participating in the research project. This training was designed as an adjunct to a basic drugs/first aid training that they should have received from the KIS or Red Cross Save-A-Mate program.

The NDARC specialised training program covered the following topics:

- Getting to know each other
- Overview of peer education/NDARC research project
- Statistics on drug use in Australia
- ERDs Update (ecstasy, methamphetamines, cocaine, ketamine and GHB), alcohol and cannabis
- Serotonin syndrome – What is it? How to respond
- Water information – Why is it important?

- Peer Education – Doing it
- Research and data collection tools for the study
- Briefing for events (code of conduct, quizzes, shifts, etc.)

The training day in Sydney was held on a Saturday in mid November 2006 and was split over two evenings in November/December 2006 in Canberra and Adelaide. A total of 43 peers (including three project coordinators in each state) attended the training. All participants reported a very high level of satisfaction with the training provided by NDARC trainers.

A pre-and post-test measuring participants' drug knowledge was administered prior to, and at the conclusion of, the training. A six month follow-up was also administered following completion of the research project in April 2007. A reference from NDARC was also provided to all those that participated in the training and conducted the intervention. Data was also collected on participants' satisfaction with the training.

1.8 Demographic characteristics of peer educators

The demographic characteristics of the peer educators involved in all three Australian project sites were very similar to the target group who took part in the study. There was a gender difference however, with more females being peer educators and more males being in the study group.

Table 2: Demographic characteristics of the peer educators

	Percentage (n)
Female	69.8 (30)
Mean age in years (range: SD)	22.1 (18–29: 2.75)
Born in Australia	81.4 (35)
Completed Year 12 only	37.2 (16)
Enrolled/completed university	51.2 (22)

As Table 2 shows, the large majority of peer educators were female (almost 70%) and their mean age was just over 22 years old (range 18–29 years old; SD 2.75). Most of them were born in Australia (81.4%). This group was also highly educated with over a third having completed Year 12 and an additional 51.2% were enrolled in or had completed a university degree.

Table 3: Peer educators' motivations for becoming involved with the project

	Percentage (n)
Educate others (peer education interest)	30.2 (13)
Increase knowledge of drugs	27.9 (12)
Career development/relates to study area	27.9 (12)
Area of interest	14.0 (6)

As Table 3 shows, just over 30% of participants wanted to be involved with the project to educate others about drugs. Another 27.9% of peer educators wanted to increase their knowledge of drugs; and a further 27.9% became involved with the project because it was related to their study area and/or they thought it was a good opportunity to get some relevant work experience.

1.9 Qualities that make up a good peer educator

All peer educators (n=43) and participants who participated in the follow-up interview (n=349) were asked to nominate what they thought were important qualities that make up a credible and effective peer educator for ecstasy and related drugs. A series of five statements about peer educators were provided and participants were asked if they agreed or disagreed with the statement. (A five point Likert scale where 0 = Strongly disagree; 1 = Disagree; 2 = Neither agree/disagree; 3 = Agree and 4 = Strongly agree was used.) During the data analysis phase the five categories were collapsed into three categories which included the following: Disagree, Neither agree nor disagree and Agree. This information has also been reported in Table 4.

Most follow-up interview participants (78.2%) and peer educators (83.8%) believed it was important that peer educators were the same or similar age to them, suggesting that age is an important factor when choosing peer educators to participate in prevention programs for ERDs users. Almost 60% of study participants and 58.1% of the peer educators also agreed that it is important that the peer educators come from the same subculture as them. It is interesting to note, though, that almost a quarter (22.6%) of ERDs users disagreed with this statement, suggesting some ambivalence about the importance of this particular quality of what constitutes an effective peer educator.

In regards to the statement about peer educators needing to be 'cool', both peer educators and interview participants were more ambivalent about the need to have this 'quality'. Nonetheless, 43% of participants and 46.6% of peer educators agreed with the statement about a peer educator needing to be 'cool'.

The gender of a peer educator did not seem to be important for study participants or peer educators, with almost 89% of study participants and 74.5% of peer educators disagreeing with the statement. (It is interesting to note that most peer educators were female (69.9%) whereas most study participants were male (61.5%.)

There were some differences between study participants and peer educators with regard to the statement which asked if it was important if peer educators had used ecstasy and related drugs. Over 62% of study participants agreed that this was an important characteristic, whereas only 21.5% of peer educators participating in this project agreed with this statement. It is noteworthy that almost 43% of peer educators disagreed with this statement compared to 18.6% of ecstasy users.

The importance that ecstasy users place on a peer educator having had experience with drug use is an interesting finding and not to be underrated when developing an effective peer-led intervention for ERDs users. It also presents an interesting dilemma for funding agencies (as well as those participating in these programs) as illegal drug use (and identifying as a drug user) is highly stigmatised.

Peer educators were also asked to nominate any other qualities that they thought might make a credible and effective peer educator. This list included being: approachable; honest; cool and knows what they are talking about; non-judgmental; sociable; and has confidence in crowds. Characteristics that were regarded as important by the target group included: easy to talk to; needs to be experienced with drug use; non-judgmental, honest, open, and upfront and friendly.

Table 4: Important qualities that make up an effective peer educator for ERDs

	Disagree		**Neither agree/disagree**		**Agree**	
	Participants % (n)	Peer educators % (n)	Participants % (n)	Peer educators % (n)	Participants % (n)	Peer educators % (n)
Important peer educator is same age	10.3 (36)	7.0 (3)	11.5 (40)	9.3 (4)	78.2 (273)	83.8 (36)
Important peer educator is from same subculture	22.6 (79)	7.0 (3)	17.5 (61)	34.9 (5)	59.9 (209)	58.1 (12)
Important peer educator is 'cool'	32.4 (113)	25.6 (11)	24.6 (86)	27.9 (12)	43 (150)	46.6 (9)
Important peer educator is same gender	88.9 (310)	74.5 (32)	8.9 (31)	23.3 (4)	2.2 (8)	2.3 (1)
Important peer educator had used ERDs	18.6 (65)	42.9 (18)	18.9 (66)	35.7 (15)	62.5 (218)	21.5 (9)

1.10 Peer educator pre-and post-test knowledge scores

As described earlier, all peer educators were tested for their drug knowledge pre-and post-NDARC training. This was to ensure that peer educators had the correct information about the area before they began their peer education role. The same test was administered prior to the commencement of training and at the conclusion of the training. The test was also re-administered six months later at the conclusion of the research project to see if the drug information had been retained. These results have been reported in Table 5.

Table 5: Pre-and post-test knowledge scores of peer educators

	Pre-test	**Post-test**	**6 month post-test**
	n=43	**n=36**	**n=24**
Mean score	18.2/30	25.9/30	24.0/30
Percentage	60.7	86.3	80
(SD) Range	(4.79) 7–28	(2.19) 20–29	(4.51) 12–30

The mean score of peer educators' drug knowledge increased significantly from 18.2 at pre-test to 25.9 at post-test ($t(35)=-10.68$, $p<0.0001$). There was also a statistically significant increase in the mean score from pre-test to post-test at six months ($t(23)=-4.99$, $p<0.001$). There was no statistically significant decrease in knowledge from the post-test score directly after the training, and the final post-test score taken six months later ($p<0.303$), indicating that peer educators had retained their drug education knowledge from the training and more importantly were presenting the correct information to ERDs users.

1.11 Events

The data collection phase took longer than expected and lasted seven months, instead of the anticipated three months. It commenced in late November 2006 and was completed in late May 2007. Many projects (particularly in Canberra and Adelaide) had problems securing access to appropriate dance events, reiterating the importance of developing and maintaining good relationships with the nightlife industry if agencies want to implement a successful peer education project for ERDs users.

Data was collected at 18 music and dance events in Australia: four events occurred in Adelaide (3 control, 1 experimental); six occurred in Canberra (3 control, 3 experimental); and a total of eight were conducted in Sydney (3 control, 5 experimental). Two extra experimental events were organised in Sydney because of difficulties encountered in securing appropriate dance events in Adelaide.

All events were licensed and well frequented by young people, including many university students. The size of events where the data was collected ranged from small to larger venues, licensed for anywhere between 250–1500 people, as well as large summer festivals with over 30,000 attendees. This report includes data collected at all 18 Australian events – nine control and nine experimental. As much as possible, control and experimental events were matched in size of event, style of music and patrons attending.

The Project Coordinator in each site was responsible for identifying appropriate events and maintaining the momentum of the project, which included liaising with peer educators, venue owners and the Project Coordinator at NDARC.

The total number of baseline interviews completed was 661. Just over 42% (278) of these interviews were completed at experimental events and almost 58% (383) were completed at control events.

An overview of the data collected at experimental and control events in all Australian sites is provided in Table 6: Geographic breakdown of baseline interviews. The first half of the table shows the number of interviews that were collected at control events, i.e. events where general information about ERDs was given to patrons. At experimental events, the novel messages designed for the project—'Got SS?' (serotonin syndrome message) and the re-hydration message ('Planning to Party? Rehydrate, before you dehydrate') – were disseminated to patrons. However, if the patrons requested additional information about alcohol and other drugs from the peer educators this was also provided.

Table 6: Geographic breakdown of baseline interviews

	ACT	NSW	SA	Total
	% (n)	% (n)	% (n)	% (n)
Experimental group	30.5 (85)	65.5 (181)	4.0 (12)	100 (278)
Control group	24.3 (93)	42.0 (161)	33.7 (129)	100 (383)

As mentioned previously, due to problems with securing dance events in South Australia, only one experimental event was conducted in Adelaide. As a result, two additional experimental events were conducted in NSW.

1.12 Procedure for the administration of the interviews

All baseline interviews in NSW and South Australia were administered to participants by trained peer educators. Care was taken to ensure that the peer educator who provided the education did not conduct the interview with the study participant.

Approximately half the interviews in the ACT were self-completed by research participants with supervision provided by the peer educators. Once the Information Stand was set up at events, some peer educators would stay at the stand while others moved through the crowd and approached those that were standing in groups or people seated outside. All data was collected in the first part of the evening/event; before the main act/band/DJ appeared and before participants became too intoxicated to listen to education or participate in an interview.

Study participants were initially provided with education about ecstasy and related drugs and then asked if they would like to take part in an international study about peer education. At control events, peer educators were encouraged to start conversations with patrons about a range of ERDs-related issues, including the introduction of roadside drug testing. This information was considered relevant to ERDs users and was also a simple piece of information for peer educators to communicate effectively. At experimental events, peer educators were instructed to only educate patrons about the two unique project messages, i.e. serotonin syndrome and the need to rehydrate with water before a big night out.

Once informed consent was provided, participants then completed the interview with a different peer educator than who had provided the drug education. Following completion of the interview, participants were provided with a lollipop, glow stick, drink token and a lanyard (a cord worn around the neck usually for carrying something such as keys) and informed that they would go into the draw for a chance to win an iPod.

A range of drug information resources were available at events; however, the majority of those distributed/collected were pocket-size cards/brochures rather than larger booklets.

At each event, an NDARC representative was present to ensure that the research protocol was adhered to and all drug information delivered to patrons was correct. The Project Coordinator from each state/territory also attended each event in their city.

2 DEMOGRAPHIC CHARACTERISTICS OF PARTICIPANTS

A total of 661 valid interviews were completed with ecstasy users across the three sites. Just over 42% of the sample was from the experimental group who received the special project messages and almost 58% of the sample was in the control group.

2.1 Demographic characteristics of baseline interviewees

The majority of participants in both groups were male (61.5% experimental/58.5% controls). The mean age of the experimental group was 22.5 years old (median 21; range 18–54; SD 5.0). The mean age of control group was the same—22.5 years old (median 22; range 18–43; SD 4.1). Approximately 86% of those interviewed in both groups were born in Australia.

There was a high level of educational achievement within both groups, with almost 39% of the experimental group and 34.5% of the control group reporting that they had completed Year 12 only. A further 25.9% of the experimental group and 32.6 % of the control group were enrolled in (or had completed) a university degree. There were no statistically significant differences in either group on any of these variables.

Table 7: Demographic characteristics of baseline interviewees

	Baseline	
	Experimental	**Control**
	% (n)	**% (n)**
Male	61.5 (171)	58.5 (224)
Mean age in years (range: SD)	22.5 (18–54:5.0)	22.5 (18–43:4.1)
Born in Australia	86.96 (240)	85.79 (320)
Completed year 12 only	38.8 (108)	34.5 (132)
Enrolled or completed university	25.9 (72)	32.6 (125)

2.1 Demographic characteristics of follow-up interviewees

As mentioned previously, the follow-up interview was administered over the phone three months post-intervention by trained peer interviewers. Care was taken to ensure that the follow-up interviewer was different (blind) to the person who had administered the education and/or interview at the event. The follow-up interview took approximately 15 minutes to administer and was generally well received by those who chose to participate.

The follow-up rate for interviews was 53.6% (149) for the experimental group and 52.2% (200) for the control group. A significant proportion of the sample in the ACT and Adelaide did not provide contact phone numbers; hence the follow-up rate was slightly lower in those sites than in NSW.

No statistically significant differences were found between the demographic characteristics of those who participated in the follow-up interview and those at baseline.

2.2 Loss to follow-up

Statistical testing was also completed on those participants that were lost to follow-up. It was found that there were no statistically significant differences in the demographic characteristics between those that were followed up by the study and those that were lost to follow-up.

The main reason that study participants in both groups were lost to follow-up was that they could not be reached after four or more attempts to contact them by telephone. No participant responded to the emails that were sent requesting a time for the follow-up interview, suggesting that email addresses are not a useful method for following up ecstasy users. A significant proportion of the sample also provided wrong or incorrect numbers. Less than 10% of the sample contacted refused to participate in the follow-up interview.

3 PEER EDUCATION INFORMATION

The key measures for the project were retention of the project messages by the experimental group, as well as whether the information that was provided to them resulted in any drug-related behaviour change amongst those reached by the intervention.

3.1 Message retention at baseline interview

Participants were asked at baseline and at follow-up interview what information they had received from the peer educator with whom they had spoken.

Approximately 30 different topics about drugs were recorded across the three research sites. The most popular topics have been reported in Table 8: The most commonly recalled topics at baseline and follow-up. (Please note that many people recalled two or more things).

At experimental events, the most commonly reported topics of conversation dealt with information relating to the two unique project messages that were delivered at experimental events – serotonin syndrome (64%) and the need to pre-load with water (37.8%) (this involves having one glass of water for every alcoholic drink consumed in the 24 hours leading up to going out). The next most commonly reported conversations amongst the experimental group was information about the effects of mixing drugs (20.9%) and the need to drink water (19.1%). An additional 10.4% of the experimental group recalled that they had received information about the effects of drugs.

Conversations with peer educators at control events were quite different to those that occurred at experimental events. As discussed earlier, peer educators were asked to initiate conversations with patrons about ecstasy and related drugs including roadside drug testing. Many peer educators also focused on providing harm-reduction information about cannabis, as well as information about the effects of mixing drugs.

No one in the control group reported receiving information about serotonin syndrome or pre-loading with water, indicating that they were not exposed to the two unique messages distributed by peer educators at experimental events and that they were indeed unique messages.

The most reported topics of conversation recorded amongst the control group was about the need to drink water (35%), followed by information about the damage of holding cannabis smoke in the lungs for longer than 1–2 seconds (15.9%). A further 14.9% of control participants reported that they had talked with the peer educator about the effects of mixing drugs, which was also the third most-recalled conversation amongst the experimental group at baseline interview. The fifth most-recalled topic at baseline amongst the control group was regarding drugs and driving (14.1%). Just over 9% of also reported that they had received harm-minimisation information from the peer educator.

Table 8: The most commonly recalled topics at baseline and follow-up

	Baseline		Follow-up	
	Experimental % (n) (n=278)	Control % (n) (n=383)	Experimental %(n) (n=149)	Control % (n) (n=200)
Information about serotonin syndrome	64 (178)	0	46.3 (69)	0 (3)
Pre-load with water before you use ecstasy and related drugs	37.8 (105)	0	28.9 (43)	2.5 (5)
Information about mixing drugs	20.9 (58)	14.9 (57)	28.2 (42)	19.0 (38)
To drink water	19.1 (53)	35.0 (134)	51.0 (76)	54.5 (109)
Effects of drugs	10.4 (29)	3.7 (14)	8.7 (13)	15.5 (31)
Harm minimisation	9.4 (26)	9.4 (36)	7.4 (11)	10.5 (21)
Information about serotonin	8.3 (23)	1.0 (4)	3.4 (5)	2.2 (1)
Miscellaneous information about drugs	4.0 (11)	7.8 (30)	3.4 (5)	9.5 (19)
Drugs and driving	3.2 (9)	14.1 (55)	0	6.1 (12)
Damage of holding cannabis smoke in the lungs	0.4 (1)	15.9 (61)	0	8 (16)
Information about cannabis	0.4 (1)	8.6 (33)	1.3 (2)	4.5 (9)

3.2 Message retention at follow-up interview

At follow-up, participants were also asked if they could recall the message they had received from the peer educator three months previously. The most popular conversation that was recalled amongst the experimental group was about the need to drink water (51%). This was also the message most recalled by the control group (54.5%).

The next most-recalled messages amongst the experimental group were about the two unique messages about serotonin syndrome (46.3%) and pre-loading with water (28.9%), as well as information about the harms of mixing drugs 22.2%. The fourth most recalled message amongst this group was about the effects of mixing drugs (28.2%). It is pleasing to note the high recall of the two unique messages at three month follow-up interview; and also that the other two most popularly-recalled messages amongst cases at baseline interview were the same at follow-up interview.

Information that was recalled by the control group at follow-up interview was a little more mixed, with only two of the top four messages at baseline also being recalled at follow-up interview. The most popular message recalled amongst the control group was about the need to drink water (54.5%), which was also the most popular message recalled at baseline interview. The second most-recalled message was information about mixing drugs (19%), which was also a popular message at baseline interview. The third and fourth most-recalled messages were about the effects of drugs (15.5%) and harm-minimisation information (10.5%).

The data was matched amongst the experimental group to verify that those who recalled the message at baseline were the same people at follow-up. It was pleasing to note that over 40% of cases recalled the same messages from their baseline interview at their follow-up interview, supporting the efficacy of the intervention for delivering health messages to ecstasy users.

It would appear that some messages were succinctly recalled by the target group at follow-up interview. This was particularly so amongst the experimental group whose free recall of the two unique messages about serotonin syndrome (46.3%) and pre-loading with water (28.9%) was very high, once again appearing to indicate the effectiveness of a peer-led model to impart health information to ecstasy users.

3.3 Cued retention of 'serotonin syndrome' message at follow-up interview

In order to check if there was cued retention of the message about serotonin syndrome, participants were asked at follow-up interview if they had heard the term before and, if they had, where/who they had heard it from, and if they knew the correct definition of serotonin syndrome.

At follow-up interview a total of 83.2% of the experimental group (124 people) and 53% of the control group (87 people) reported that they had heard of the term 'serotonin syndrome'. The experimental group were more likely to have reported hearing the term serotonin syndrome than the control group ($\chi 2=55.049$, $p<0.001$), which is to be expected as this message was not distributed at control events. It was pleasing to note that over 85% of the experimental group and only 8.1% of the control group reported that they had heard the message from peer educators and/or venues and parties. The experimental group were more likely than the control group to report that they had heard the message from a peer educator at a party or event ($\chi 2=122.718$, $p<0.001$).

When participants were asked to define what serotonin syndrome means, a range of responses were provided (see Table 9). All responses relating to having an 'overloading' of serotonin caused by using too many drugs that react with the serotonin receptors in the brain were considered to be correct.

Almost 44.3% of the experimental group and 22.5% of the control group reported the correct response to defining the term. A further 10.1% of the experimental group and 22.5% of controls reported that it was about having a lack of serotonin following the use of ecstasy. Just over 1% of the experimental group and 5.4% of controls reported that it was about depression and unhappiness caused through ecstasy use (which is similar to the category above – 'lack of serotonin') and 1.3% of the experimental group and 4.5% of controls reported that it had something to do with the wearing-off of drugs (which again probably related to having a lack of serotonin). Just over a third of all those in the experimental group (36.2%) and 38.5% of controls reported that they did not know what the term meant. The experimental group were more likely than controls to report the correct response to defining the term serotonin syndrome ($\chi 2=21.506$, $p<0.001$).

Table 9: Participants' definition of serotonin syndrome

Response themes	Experimental group (n=149) % (n)	Control group (n=200) % (n)
Too much serotonin*	44.3 ** (66)	22.5 (45)
Lack of serotonin	10.1 (15)	22.5 (45)
Depression/unhappiness	1.3 (2)	5.4 (8)
Wearing-off drugs	1.3 (2)	4.5 (9)
Feeling of happiness	3.4 (5)	1.5 (3)
Don't know/wrong	36.2 (54)	38.5 (77)

* Correct response

** $\chi 2=21.506$, $p<0.001$

3.4 Cued retention of 'rehydrate before your dehydrate' message at follow-up interview

The second message of the project was about the need to re-hydrate with water before a 'big night out', i.e. to plan ahead if they know they are going to have a big night out. This involves having one glass of water for every alcoholic drink consumed in the 24 hours leading up to going out. To determine if participants were aware of the amount of water you would need to drink to compensate for the dehydrating effects of using alcohol and other drugs, all participants were asked at follow-up interview if they could recall the 'rehydrate before your dehydrate' message and, if so, where did they learn about it? This information has been reported in Table 10.

Table 10: Knowledge of water consumption levels to counter the effects of alcohol and other drugs (AOD)

	Experimental group % (n)	Control group % (n)
None	0	2.5 (5)
1 glass of water for each alcoholic drink	43 (64)	41.9 (83)
1 glass of water for every 2 alcoholic drinks	6 (9)	6.6 (13)
1 glass of water for every 3 alcoholic drinks	0	2.5 (5)
Don't know	43 (64)	37.4 (74)
Other	8.1 (12)	9.1 (18)

As shown in Table 10, there appears to be little difference between the experimental and control group with regard to changes in their knowledge regarding the correct amount of water to drink to compensate for the dehydrating effects of alcohol. Forty-three percent of the experimental group and 41.9% of the control group correctly reported that you needed to drink one glass of water for every alcoholic drink you consume in the lead up to a big night out. A further 6% of the experimental group and 6.6% of the control group reported that you needed to drink one glass of water for every 2 alcoholic drinks, with no-one in the experimental group and 2.5% of the control group reported that you needed to drink one glass of water for every three alcoholic drinks consumed. Just over 43% of the experimental groups and 37.4% of controls reported that they didn't know how much water to drink to compensate for the dehydrating effects of alcohol.

There were no statistically significant differences between the experimental and control group on the rates of reporting the correct amount of water to drink to compensate for the dehydrating effects of alcohol.

When participants were asked about where they had heard the information about needing to rehydrate, 22.8% of the experimental group and 34% of the control group reported they weren't sure or had simply guessed the correct answer. Only 14.1% of the experimental group and 5.5% of controls reported that they had heard the information about dehydration from a peer educator/venue. The simplicity of the message and the fact that it is one of many harm-reduction messages about the need to drink water when using ecstasy and related drugs could explain this unexpected result. There was no statistically significant difference between the experimental group and the control group about where they heard the information about re-hydration.

4 BEHAVIOUR CHANGE ASSOCIATED WITH THE PROJECT MESSAGES

Intention to change behaviour was collected at baseline, as was self-reported behaviour change at follow-up.

4.1 Intended behaviour change at baseline

Participants were asked if the information they received from the peer educator would be likely to change the way they used drugs. Over one-third of the experimental group (33.8%) and almost 29% of the control group reported that it would; whereas almost 23.8% of the experimental group and 23.3% of the control group said that *maybe* they would change their drug using behaviour as a result of the information they had received. Over 42% of the experimental group and 48.3% of controls reported that they *wouldn't* change their behaviour as a result of the information they had received from the peer educator.

It was pleasing to note that almost 58% of the experimental group and 51% of the control group either intended, or at least thought about, changing their drug-related behaviour as a result of a conversation they had with a peer educator.

Table 11 provides an overview of participants' intended behaviour change as a result of their conversation with a peer educator.

Table 11: Anticipated drug-related behaviour change at baseline interview

Anticipated behaviour change	Experimental group % (n)	Control group % (n)
Being more aware of effects	62.8 (59)	19.6 (21)
Use safer	31.9 (30)	37.4 (40)
Consider risks more	31.9 (30)	16.8 (18)
Rehydrate with water before going out	27.8 (26)	0
Reduce drug use	22.3 (21)	19.6 (21)
Drink more water when using drugs	17.0 (16)	33.6 (36)
Less inclined to mix drugs	9.4 (8)	6.5 (6)
Not drive under the influence of drugs	1.1 (1)	12.1 (13)

As can be seen in Table 11, more of the experimental group reported that they had intended to change their behaviour as a result of the information they had received from peer educators. Almost a quarter of all participants in the experimental group reported that they would be more aware of the effects of drugs; a further 18.9% said they would drink more water when using drugs; and another 18.9% said they would consider the risks more when they were using drugs. Almost 13% of all participants in the control group said they would use drugs in a 'safer' way and a further 8.6% said they would be more aware of the effects. Almost 9% said they would consider the risks more.

Information about the way participants reported they had changed their behaviour as a result of their contact with a peer educator has been reported in Table 12.

Table 12: Reported changes in participants' use of water, alcohol and other drugs at follow-up interview

Self-reported behaviour change	Experimental group % (n)	Control group % (n)
Water	46.3 (69)	47.0 (94)
Ecstasy	31.5 (47)	29.9 (58)
Alcohol	15.4 (23)	11.0 (22)
(Meth)amphetamine	12.1 (18)	11.5 (23)
Cocaine	11.4 (17)	3 (6)

Almost half of all participants in the experimental (46.3%) and control group (47%) reported that their conversation with a peer educator had resulted in them increasing their water intake when using ERDs. It was pleasing to note that approximately 30% of the experimental and control group reported that they changed the way they used ecstasy as a result of talking with a peer educator at a party or event.

Over 15% of the experimental group and 11% of the control group reported that they would reduce their alcohol use and the mixing of alcohol with other drugs as a result of their conversation with a peer educator.

With regard to the use of meth/amphetamine, 12.1% of the experimental group and 11.5% of controls reported that they had changed the way they used these drugs as a result of speaking with a peer educator. Just over 11% of the experimental group and 3% of the control group reported that they changed the way they used cocaine as a result of a conversation with a peer educator.

There were no statistically significant differences between the experimental and control group with regard to the way they reported they changed their water, ecstasy, alcohol and meth/amphetamine use following a conversation with a peer educator; however, their was a statistical difference between the experimental and the control group with regard to the use of cocaine. The experimental group were more likely to report that their contact with a peer educator had changed the way they used cocaine ($\chi^2 = 9.759$, $p<0.002$).

4.2 Patterns of drug use amongst ecstasy users at baseline interview

In order to gauge the level of ecstasy and related drug use amongst the sample at baseline interview, respondents were asked how often they used the drugs ecstasy, methamphetamine and cocaine. Information was collected on these drugs as they have all been implicated with the development of serotonin syndrome when used in large amounts or in combination.

In accordance with the selection criterion for the research project, the entire sample had used ecstasy at least once in the past 12 months. Sixty-two percent of the experimental group and 62% of the control group had ever used meth/amphetamine; and 50% of the experimental group and almost 46% of the control group had ever used cocaine.

Participants were also asked if they could report on the number of days in the past month they had used ecstasy, meth/amphetamine and cocaine and, on average, how much of the drug they consumed on each occasion. These responses have been reported in Table 13.

The most popular drug that was consumed in the previous month by the experimental group (75%) and controls (65%) was ecstasy. Approximately 30% of both groups reported they had used meth/amphetamine in the last month. To make data on meth/amphetamine consistent, grams of meth/amphetamine were converted to 'points'. One point in this case equals one-tenth of a gram. The median amount of meth/amphetamine used per typical day/occasion was two points for both groups.

Twenty percent of the experimental group and 22% of controls reported using cocaine in the past month. To increase comparability of the data for cocaine use, lines were converted into grams and in this case, 10 lines were considered equal to approximately 1 gram of cocaine. (This amount is more likely to be an over estimation as some users stated they got up to 20 lines out of one gram of cocaine.) The median amount of cocaine used on a typical occasion by both groups was five lines.

The experimental and control group were not significantly different in patterns of drug use except in relation to the recent use of ecstasy (χ^2=4.875, $p<0.05$) and cocaine (χ^2=4.356, $p<0.05$).

Table 13: Patterns of drug use amongst ecstasy users at baseline interview

		Experimental group % (n)	Control group % (n)
Ecstasy	Ever (lifetime) use	100 (277)	100 (380)
	Recent (1 month) use	75 (208)	65 (247)[a]
	Mean days use in previous month	2.0	1.7
	SD (range)	2.48 (0-21)	2.21 (0-20)
	Median amount used on a 'typical' occasion (range)	2 pills (0.5-15)	2 pills (0.33-10)
Methamphetamine	Ever (lifetime) use	62 (172)	62 (238)
	Recent (1 month) use	31 (83)	30 (114)
	Mean days use in previous month	1.4	1.42
	SD (range)	2.97 (0-26)	3.08 (0-31)
	Median amount used on a 'typical' occasion (range)	2 points (0.5-14)	2 points (0.2-40)
Cocaine	Ever (lifetime) use	50 (139)	46 (177)
	Recent (1 month) use	20 (54)	22 (84)[b]
	Mean days use in previous month	1.3	1.2
	SD (range)	2.97 (0-20)	2.03 (0-15)
	Median amount used on a 'typical' occasion (range)	5 lines (1-35)	5 lines (1-40)

[a] $\chi^2=4.875$, $p<0.05$
[b] $\chi^2=4.356$, $p<0.05$

4.3 Patterns of drug use amongst ecstasy users at follow-up interview

The follow-up interview collected the same information about participants' use of ecstasy, meth/amphetamine and cocaine. In relation to ecstasy, methamphetamine and cocaine, participants were asked about ever (lifetime) use, recent (past month) use and mean days use in the previous month (among all participants followed-up). Among subjects followed-up, there were no significant differences between the experimental and control group in relation to patterns of drug use at baseline except in relation to recent ecstasy use, which was significantly higher in the experimental group (Table 14).

At three month follow-up, recent ecstasy use had significantly decreased in the experimental and control group. Further analysis revealed that the proportion which had decreased recent ecstasy use was not significantly different between the experimental and control group. Mean days ecstasy use in the previous month significantly decreased in the experimental group and remained stable among the control group. Recent methamphetamine use and mean days methamphetamine use in the previous month significantly decreased at follow-up among the experimental group but not in the control group. With regard to cocaine, there was a significant increase in ever use between baseline and follow-up among the experimental group, whereas among the control group, there was a significant decrease in mean days cocaine use in the previous month.

Table 14: Patterns of drug use among participants followed-up

		Lifetime use % (n)		Recent (past month) use % (n)		Mean days use in previous month SD (range)	
		Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
Ecstasy	**E**	100 (149)	99 (148)	80 (118)	58 (86)[a]	2.2 2.70 (0-21)	1.7[b] 2.38 (0-14)
	C	100 (199)	98 (186)	64 (120)[c]	50 (99)[d]	1.6 2.17 (0-20)	1.5 2.33 (0-15)
Meth-amphetamine	**E**	65 (96)	69 (103)	31 (45)	12 (18)[e]	1.3 3.06 (0-26)	0.3[f] 0.65 (0-4)
	C	66 (131)	68 (135)	30 (57)	25 (50)	1.3 2.51 (0-20)	1.1 2.29 (0-15)
Cocaine	**E**	53 (79)	64 (96)[g]	19 (28)	21 (31)	1.2 2.74 (0-18)	0.7 1.72 (0-12)
	C	50 (100)	55 (110)	24 (45)	15 (30)	1.1 1.61 (0-8)	0.8[h] 2.65 (0-25)

E=Experimental group, C=Control group, [a] Baseline & follow-up (χ^2=24.976, p<0.01), [b] Baseline & follow-up (z=-2.601, p<0.01), [c] Experimental & control (χ^2=7.819, p<0.01), [d] Baseline & follow-up (χ^2=7.603, p<0.01), [e] Baseline & follow-up (χ^2=18.581, p<0.01), [f] Baseline & follow-up (z=-4.608, p<0.01), [g] Baseline & follow-up (χ^2=7.314, p<0.01), [h] Baseline & follow-up (z=-2.682, p<0.01)

4.4 Polydrug use amongst ecstasy users at baseline interview

Data was also collected from ecstasy users at baseline and follow-up about their frequency of mixing illicit drugs and their perception of the risks of mixing ecstasy, methamphetamine and cocaine.

Respondents were asked how often they used a combination of illegal drugs (not including cannabis) in the past three months. As can be seen in Table 15, over a third of the experimental group (35.4%) and 31.1% of the control group reported that they had *never* mixed illicit drugs in the previous three months, whereas almost a quarter of both groups reported that they *rarely* mixed illicit drugs in the past three months. A further 22% of the experimental group and 25% of the control group reported that they *sometimes* mixed illicit drugs together and just over 11% of the experimental group and almost 13% of controls reported that they had *often* mixed illicit drugs in the past three months. Fewer than 7% of the experimental group and 5.8% of controls reported that they had *always* mixed illicit drugs in the past three months.

There was no statistically significant difference between the two groups in the amount of polydrug use occurring at baseline or at follow-up interview. There was also no reduction in the amount of polydrug use in either group between baseline and follow-up interview, indicating there was no behavioural change against this variable.

Table 15: Participants' frequency of combining illicit drugs in the past three months

	Baseline		**Follow-up**	
Frequency	Percentage (n) Experimental	Percentage (n) Control	Percentage (n) Experimental	Percentage (n) Control
Never	35.4 (98)	31.1 (118)	35.6 (53)	35.7 (71)
Rarely	24.6 (68)	25.2 (96)	27.5 (41)	26.6 (53)
Sometimes	22.0 (61)	25.0 (95)	18.1 (27)	13.1 (26)
Often	11.2 (31)	12.9 (49)	8.1 (12)	14.6 (29)
Always	6.8 (19)	5.8 (22)	10.7 (2)	10.1 (20)

At baseline and follow-up, interview respondents were also asked about their perceptions of the risks of mixing ecstasy with methamphetamine (Table 16) and ecstasy with cocaine (Table 17).

Table 16: Perception of the risks of mixing ecstasy with methamphetamine

	Baseline		Follow-up	
	Ecstasy/methamphetamine		Ecstasy/methamphetamine	
Risk perception	**Experimental**	**Control**	**Experimental**	**Control**
	% (n)	**% (n)**	**% (n)**	**% (n)***
No risk	3.6 (10)	3.7 (14)	1.3 (2)	1.5 (3)
Slight risk	10.9 (30)	13.9 (52)	4.7 (7)	14.1 (28)
Moderate risk	27.3 (75)	34.1 (128)	24.1 (36)	26.6 (53)
Serious risk	28.0 (77)	28.6 (107)	36.3 (54)	31.7 (63)
Very high risk	30.2 (83)	19.7 (74)	33.6 (50)	26.1 (52)

* $z=-2.829$, $p<0.005$

As can be seen in Table 16 the vast majority of participants in both groups at baseline and follow-up interview reported that there were moderate to very high risks to health associated with mixing ecstasy and methamphetamine. Only 3.6% of the experimental group and 3.7% of the control group felt that there was *no risk* associated with mixing these two drugs at baseline interview.

There was no significant change in their perception of the risks of mixing these two drugs from baseline to follow-up interview for the experimental group. There was a significant difference between baseline and follow-up interview ($z=-2.829$, $p<0.005$) for the control group who rated the mixing of ecstasy and methamphetamine as more risky at follow-up interview.

The experimental group were significantly more likely to report they combined ecstasy and methamphetamine at follow-up interview ($z=-4.131$ $p<0.001$) than at baseline interview. Almost 80% of the experimental group reported that they never combined these drugs at baseline whereas almost 70% reported they never mixed the two at follow-up interview.

Participants were asked about their frequency and perception of the risks of mixing ecstasy and cocaine at baseline and follow-up. These responses have been reported in Table 17.

Table 17: Perception of the risks of mixing ecstasy with cocaine

Risk perception	Baseline		Follow-up	
	Ecstasy/cocaine		Ecstasy/cocaine	
	Experimental % (n)	Control % (n)	Experimental * % (n)	Control ** % (n)
No risk	5.1 (14)	4.3 (16)	0.7 (1)	2.5 (5)
Slight risk	10.7 (29)	12.5 (46)	4.8 (7)	7.1 (14)
Moderate risk	23.9 (65)	30.4 (112)	27.2 (40)	28.9 (57)
Serious risk	30.9 (84)	28.9 (107)	38.1 (56)	26.9 (53)
Very high risk	29.4 (80)	23.8 (88)	29.9 (43)	34.5 (68)

* $z=-2.171$, $p<0.030$

** $z=-3.399$ $p<0.001$

There were no significant differences between the experimental and control group on their perceptions of the risks of mixing ecstasy and cocaine at the baseline or follow-up interviews. Of those that were followed up, just over 84% of the experimental group and 83% of the control group thought there was moderate to very high risks associated with the mixing of ecstasy and cocaine. At follow-up interview, almost 91% of the experimental group and over 90.3% of the control group thought there were moderate to very high risks associated with mixing of ecstasy with cocaine at follow-up interview.

It was pleasing to note that there were statistically significant differences between baseline and follow-up interview in both the experimental ($p<0.030$, $z=-2.171$) and control group ($p<0.001$, $z=-3.399$) in their perceptions of the risks of mixing ecstasy with cocaine; with both groups reporting that they thought mixing these two drugs was more risky at follow-up interview.

There was no significant reduction in the mixing of ecstasy and cocaine between baseline and follow-up interview in the experimental group. The control group, however, were more likely to report they had reduced their combining of ecstasy and cocaine ($z=-3.456$, $p<0.001$) from baseline to follow-up interview. At baseline interview 76% of controls reported they never mixed these drugs, compared to 87.9% at follow-up interview.

4.5 Use of prescription medications

4.5.1 Antidepressants

At baseline, only 3% of the experimental group (11 people) and 8.4% of the control group (32 people) reported taking antidepressants for a medical condition such as depression. The experimental group were significantly more likely ($\chi^2 = 5.097$, $p<0.024$) to be using prescribed antidepressants. Of those participants who reported using antidepressants for a medical condition, 36.4% of those in the experimental group (4 people) and 43.8% of the control group (14 people) reported making changes to their antidepressant regime if they had planned to use ecstasy, which indicates a high level of understanding amongst the experimental group and controls about the risks of combining these drugs at baseline.

Participants were also asked if they had ever used antidepressants for non-medical purposes (i.e. illicitly) and whether they had ever deliberately combined them with ecstasy, methamphetamine or cocaine. Almost 15.5% of the experimental group at baseline (or 43 people) and 9.7% of the control group (37 people) reported that they had used antidepressants in this way. When asked if they combined them with other drugs, 7.2% of the experimental group and 5.5% of the control group reported that they had combined them with ecstasy; 3.6% of the experimental group and 3.6% of the control group reported they had combined them with meth/amphetamine; and 2.5% of the experimental group and 2.1% of the control group reported that they had deliberately combined them with cocaine.

4.5.2 Pharmaceutical stimulant drugs

When participants were asked about their use of dexamphetamine or Ritalin for a medical condition at baseline, 3.3% of the experimental group (9 people) and 2.9% of the control group (11 people) reported they were using these drugs, with 78.8% of the experimental group (7 people) and 63.4% of the control group (7 people) reporting making changes to their regime in anticipation of using ecstasy.

Participants were also asked if they ever illicitly used pharmaceutical stimulants. Use of these drugs was much higher in this sample than was the deliberate use of antidepressant drugs, with 26.3% of the experimental group (73 people) and 24.8% (95 people) of the control group reporting they had used these drugs not as prescribed.

When asked if they had deliberately combined ecstasy, meth/amphetamine or cocaine with pharmaceutical stimulant drugs, 7.9% of the experimental group and 7.3% of the control group reported they had used pharmaceutical stimulants with ecstasy; 5.4% of the experimental group and 4.7% of the control group reported they had used them with meth/amphetamine; and 2.2% of the experimental group and 2.6% of the control group reported they had used them with cocaine. These small numbers preclude significance testing.

4.6 Water consumption

It was hypothesised that at follow-up interview the experimental group would have more knowledge (and may have changed their behaviour) relating to the consumption of water and the need to rehydrate, than the control group who did not receive the special 'water' message.

At baseline interview, 69.1% of the experimental group and 61.2% of controls reported consuming water rather than alcohol when using ecstasy and related drugs (see Table 18). This is pleasing to note and indicates that a significant proportion of the sample are rehydrating and reducing risk by not combining these drugs with alcohol. Of concern, however, is that 20% of the experimental group and almost 18% of the control group reported using only alcohol when taking ERDs. This is considered more risky and increases the likelihood of more toxic and life-threatening reactions. The remainder of the sample consumed a range of alcoholic and non-alcoholic beverages. There was a statistical difference between the two groups, with the experimental group more likely to consume only water when using ecstasy ($\chi^2 = 12.337$, $p<0.030$).

Table 18: Consumption of water, alcohol and other non-alcoholic beverages when using ecstasy and related drugs

	Baseline		Follow-up	
	Experimental* % (n)	Control % (n)	Experimental % (n)	Control % (n)
Water	69.1 (190)	61.2 (232)	53.7 (80)	45.2 (90)
Alcohol	20.0 (55)	17.9 (68)	18.1 (27)	18.6 (37)
Other non-alcoholic drinks	0.7 (2)	2.6 (10)	1.3 (2)	2.5 (5)
Combination of water/alcohol	8.0 (22)	15.3 (58)	9.4 (14)	12.1 (24)
Water/non-alcoholic drinks	2.4 (6)	3.0 (11)	0	4.5 (9)
Didn't use ecstasy	-	-	17.4 (26)	17.1 (34)

* $\chi^2 = 12.337$, $p<0.030$

Despite the fact that fewer participants in the experimental group (53.7%) and control group (45.2%) reported drinking only water when using ERDs at follow-up interview, there were no statistical differences between either group between baseline and follow-up for the amount of water that was drunk when using ecstasy and related drugs.

Participants were asked at baseline and follow-up interview to report on how much water per hour they drank when using ERDs. This has been reported further in Table 19.

Table 19: Water consumption per hour when using ecstasy and related drugs

	Baseline		Follow-up	
Water	**Experimental % (n)**	**Control % (n)**	**Experimental * % (n)**	**Controls ** % (n)**
None	2.9 (8)	3.0 (11)	0	3.6 (7)
< 1 bottle p/hour	27.0 (74)	26.3 (98)	34.2 (51)	26.7 (52)
1 bottle p/hour	52.5 (144)	48.0 (179)	39.6 (59)	43.1 (84)
2 bottles p/hour	11.7 (32)	16.6 (62)	5.4 (8)	5.6 (11)
> 2 bottles p/hour	5.8 (16)	6.2 (11)	2.7 (4)	4.1 (8)
Didn't use ecstasy	-	-	18.1 (27)	16.9 (33)

* $z=-6.817$, $p<0.001$

** $z=-8.576$, $p<0.001$

At follow-up interview it was found that both the experimental ($z=-6.817$, $p<0.001$) and control group ($z=-8.576$, $p<0.001$) had significantly decreased the amount of water they consumed per hour when using ecstasy. At baseline 52.5% of the experimental group and 48% of the control group reported using one bottle per hour when using ERDs, whereas at follow-up interview this had dropped to 39.6% amongst the experimental group and 43.1% for controls.

4.7 Changes in consumption of water and alcohol prior to a 'big night out'

Participants were also asked if they made any changes to the amounts of water or alcohol they drank if they knew they were heading out for a 'big night out'. As shown in Table 20, 77.2% of the experimental group and 75.6% of the control group reported at baseline no change in the amount of water they drank before a big night out, whereas 19.2% of the experimental group compared with 21.5% of controls reported they drank more water (i.e. they pre-loaded with water). There were no statistical differences between either group with the amount of water they would drink before a big night out.

Table 20: Changes in consumption of water prior to a 'big night out'

	Baseline		Follow-up	
Water	**Experimental % (n)**	**Control % (n)**	**Experimental % (n)**	**Control % (n)**
No change	77.2 (213)	75.6 (289)	54.1 (80)	68.2 (135)
Drink more water	19.2 (53)	21.5 (82)	27.7 (41)	13.6 (27)
Drink less water	1.5 (4)	0.8 (3)	0.7 (1)	0
Don't know	2.1 (6)	2.1 (8)	0	2.0 (1)
Didn't use ecstasy	-	-	17.6 (26)	16.2 (32)

At follow-up interview, 54.1% of the experimental group and 68.2% of the control group reported that they had made no change in the amount of water they drank before a big night out. A further 27.7% of the experimental group (n=41) and 13.6% of controls (n=27) reported that they drank more water at follow-up interview.

At baseline, just over 62% of both groups reported that they made no change to their alcohol consumption prior to a big night out Table 21, whereas almost 12% of the experimental group and 10.8% of controls reported that they drank more alcohol. A further 22.8% of the experimental group and 24.7% of controls reported that they drank less alcohol. Statistical testing between the two groups ensured there was no significant difference between the two groups at baseline and follow-up interview with the amount of alcohol they drank before a big night out.

Table 21: Changes in consumption of alcohol prior to a 'big night out'

	Baseline		Follow-up	
	Experimental % (n)	**Control % (n)**	**Experimental* % (n)**	**Control % (n)**
No change	62.3 (172)	62.9 (237)	59.5 (88)	57.1 (113)
Drink more alcohol	12.0 (33)	10.8 (41)	2.0 (3)	7.0 (14)
Drink less alcohol	22.8 (63)	24.7 (93)	20.3 (30)	19.2 (38)
Don't know	2.9 (8)	1.6 (6)	0.7 (1)	0
Didn't use ecstasy	-	-	17.6 (26)	16.7 (32)

$z=-7.261$, $p<0.001$

At follow-up interview, almost 60% of the experimental group and 57.1% of the control group reported that they made no change to the amount of alcohol they drank before a big night out, whereas 2% of the experimental group and 7% of controls reported that they drank more alcohol prior to a big night out. Just over 20% of the experimental group and 19.2% of controls reported that they drank less alcohol. The experimental group were statistically more likely to report drinking less alcohol in the lead up to a big night out ($z=-7.261$, $p<0.001$). At baseline 12% reported they drank more alcohol before a big night out, whereas this had dropped to 2% at follow-up interview.

5 CREDIBILITY OF THE PEER EDUCATION INFORMATION

Respondents were asked at baseline and follow-up interview to rate on a five point Likert scale how credible they thought the information was that they received from the peer educator (0 = not credible, 4 = very credible). This information has been reported in Table 22.

Table 22: Credibility of peer education information at baseline and follow-up

	Baseline		Follow-up	
	Experimental*	**Control**	**Experimental**	**Control**
	%	**%**	**%**	**%**
	(n=278)	**(n=377)**	**(n=148)**	**(n=197)**
0 = Not credible	0	0.3 (1)	0	0
1 = Less than credible	0.4 (1)	1.1 (4)	0	0.5 (1)
2 = Somewhat credible	2.9 (8)	6.6 (25)	6.8 (10)	3.0 (6)
3 = Credible	22.6 (63)	27.1 (102)	25.0 (37)	33.5 (66)
4 = Very credible	74.1 (206)	65.0 (245)	68.2 (101)	63.0 (124)

* U=46832.500, p<0.004

At baseline interview 74% of the experimental group and 65% of the control group reported that they found the education from the peer educator very credible; a further 22.6% of the experimental group and 27.1% of controls reported that they found the education credible. Less than 1% of the experimental group and 1.4% of controls rated the education less than credible which is a testament to the appropriateness of the methodology used to educate ecstasy and related drug users. At baseline interview, the experimental group were significantly more likely to report that the education that they had received from the peer educator was more credible than the control group (U=46832.500, p<0.004).

There were no statistical differences from baseline to follow-up on the credibility of the peer education provided, which once again supports the applicability of a peer-led model for this target group.

Participants were also asked at follow-up if they would approach the peer educators again if they saw them out at an event, with almost 76% of those in the experimental group and 74.5% of controls reporting in the affirmative.

5.1 Other sources of drug information

At baseline interview, respondents were asked if they had heard the drug information provided by the peer educator before elsewhere. Almost 53% of the experimental group and 62% of controls reported that they had. Controls were more likely to report that they had heard the information before ($\chi^2 = 7.311$, $p<0.007$). This result is to be expected as controls were provided with more generic information about ERDs, rather than the two unique messages that were provided only to the experimental group.

When participants were asked where they had heard this information before, most reported that they had heard it from peers and friends, followed by internet, media, schools and the family.

5.2 Drug information resources – baseline interview

At baseline interview, participants were asked if they had collected any drug information resources from the peer educator. Over 63% (n=176) of the experimental group and 24.8% (n=95) of the control group reported that they had collected resources. The most commonly reported resources that were collected by the experimental group included the 'Got SS*?*' flyer (78.9%) and the 'Planning to Party – Rehydrate before you dehydrate' card (54%) which were information brochures developed to support the two unique project messages. (Please note the 'Got SS?*'* flyer and the 'Planning to Party' card were only distributed at experimental events). The next most popular item collected by participants in the experimental group was the KIS website card (18.7%). A further 11.4% of the experimental group reported they had collected condoms from the peer educator.

The most popular resources that were collected by controls at baseline interview were the KIS website card (41%) followed by various NDARC brochures (26.3%) and the SAM brochure (21.1%). Almost 10% of controls reported that they had collected a condom from the peer educator. The experimental group were significantly more likely to collect drug information brochures from the peer educators or Information Stand ($\chi^2 = 97.145$, $p<0.001$).

5.3 Drug information resources—follow-up interview

Participants were also asked in the follow-up interview if they remembered, picked up, or were given any drug information resources from the peer educator. A total of 74.5% (n=111) of those in the experimental group and 46.5% (n=93) of controls reported that they had received an information brochure about drugs from a peer educator at baseline interview. The experimental group were significantly more likely than controls to recall that they had received a drug information resource ($\chi^2 = 40.511$, $p<0.001$).

Participants were also asked if they could remember what the brochure was about and whether or not they referred to it again at a later date. It was pleasing to note that over 44% of the experimental group recalled the 'Got SS?' flyer; a further 29.7% recalled that they had received the 'Planning to Party – Rehydrate before you dehydrate' card. Eighteen percent of the experimental group and 51.6% of controls reported that they received a brochure but could not remember the content of it.

At follow-up interview, over 63.1% of the experimental group (n=70) and 45.2% of controls (n=42) said that they had referred to the brochure again at a later date. The experimental group were significantly more likely than controls to read the drug information at a later date (χ^2 = 6.178, p<0.013). Once again, this result supports the efficacy of a peer led model to distribute health education messages to ecstasy users at music events.

5.4 Internet as a drug information source amongst ecstasy users

At follow-up interview, participants were asked if they had accessed the internet for information about ecstasy and related drugs. Table 23 documents their responses.

Table 23: Ecstasy users' use of the internet for ERDs information

	Experimental % (n)	Control % (n)
Never	43.0 (64)	46.0 (91)
Rarely	32.2 (48)	34.3 (68)
Sometimes	14.8 (22)	12.1 (24)
Often	7.3 (11)	5.6 (11)
Always	2.7 (4)	2.0 (4)

Forty-three percent of the experimental group and 46% controls in this sample reported that they never accessed the internet for information about ecstasy and related drugs. Only 10% of the experimental group and 7.6% of controls reported that they 'always' or 'often' used the internet for such information.

When ecstasy users were asked which internet sites they accessed for information on ERDs, the following three were mentioned in order of popularity: pillreports.com, Google and Erowid.com.

6 DISCUSSION

The aim of this study was to examine whether health messages can be effectively delivered to ecstasy and related drug users using a peer-led intervention. A quasi experimental study design was utilised where some participants (experimental group) received unique messages about 'serotonin syndrome' and the need to 'rehydrate before you dehydrate' and others (controls), under similar conditions, did not.

The study hypothesis was that the experimental group would have a greater recall of the unique messages at three month follow-up, than those who attended the control events. The primary outcome measure for the project was retention of the messages at three month follow-up interview. A secondary outcome measure of the research was reported behaviour change related to the messages delivered.

The results of the study indicate that there was a good recall of health messages disseminated to ERDs users using a peer-led methodology. At the three month follow-up, there was a high free recall of the two unique messages that were provided only to the experimental group. The 'serotonin syndrome' message was recalled by 64% of the experimental group at baseline interview and by 46% at follow-up interview, indicating that a significant proportion of the study population remembered what they had discussed with a peer educator at an event three months earlier.

It was also pleasing to note that the 'rehydrate before you dehydrate' message, recalled by almost 38% of the experimental group at baseline, was also recalled by almost 29% at follow-up interview. The high free recall of the two unique messages amongst the experimental group supports the study hypothesis that health messages can be distributed to ERDs users utilising this methodology.

Cued (or prompted) recall of the 'serotonin syndrome' message amongst the experimental group was also found to be significantly greater than amongst the control group. It was also encouraging to find that at follow-up interview over 85% of the experimental group reported that they had heard the 'serotonin syndrome' message from a peer educator, compared to only 8.1% of controls.

The results with regard to free and cued recall of the 'serotonin syndrome' message amongst the experimental group is a pleasing outcome of the research project, supporting the hypothesis that health messages can indeed be communicated effectively to ERDs users through peer-led programs.

It was disappointing to note that cued recall of the 'rehydrate before you dehydrate' message was not noted amongst either group. One likely explanation for this could have been confusion with a range of other harm-reduction messages that have been previously disseminated amongst the target group about the importance of drinking water when using ERDs. Even though the project message was unique, i.e. drinking plenty of water before going out, it would appear that it could have become confused with others that already exist in the ERDs-using community. There is also the possibility that due to the 'common sense' nature of the message many in the experimental and control group simply guessed the correct response.

There were also some promising results from the control group who did not receive the unique messages, but instead received generic information about alcohol and other drugs. Among this group there was some evidence of recall of the top two messages at baseline interview again being recalled at three month follow-up when unprompted by the interviewer. The messages most frequently recalled by this group related to the need to drink water and information about the harms of mixing illicit drugs.

It is somewhat reassuring that almost 58% of the experimental group and 51% of controls reported an intention to use drugs in a 'safer' way, as a result of receiving information from a peer educator. This included reducing their drug use, drinking more water or considering the risks of using drugs more. It was hoped that the study would be able to measure behaviour change at three month follow-up interview; however, there was no clear evidence of this amongst the experimental group who had received the two unique messages.

The demographic characteristics of peer educators and the sample were very similar. This is likely to be one reason why the information provided by peer educators was perceived as very credible by the target group. Credibility of the drug education provided by peer educators was generally rated highly. Of interest to those planning a peer education program was that participants believed an important quality of being an effective peer educator was that they had used illicit drugs.

The vast majority of participants at baseline and follow-up interview rated the drug education they had received as credible or highly credible. At baseline interview, the experimental group were significantly more likely to report the education they received was more credible than those in the control group. There were no significant differences in perceived credibility of peer educators at follow-up interview amongst either groups, demonstrating that the peer-led education delivered was overwhelmingly perceived as highly credible by the target group. It was also pleasing to note that approximately 75% of ecstasy users in both groups reported that they would approach the peer educator again if they saw them at an event.

From observation, it appeared that peer educators at experimental events more confidently delivered the two unique messages than peer educators at control events where generic messages were delivered. A possible reason for this could have been that it was easier for peer educators to work in a more structured situation and deliver one or two specific messages rather than a range of general drug messages.

Given that young people are high users of information technology, a particularly unexpected finding was that less than 10% of participants reported that they often accessed the internet for information about ERDs. This suggests that ERDs users mainly seek out information about their drug of choice from other sources, such as their peers. When asked which sites participants did access, most reported pillreports.com, a site that contains a global database of ecstasy pills based on both subjective user reports and scientific analysis. For this group, it is therefore likely that access to the internet is limited mainly to finding out about the content and purity of pills rather than education or information about the effects of drugs.

It was interesting to note, however, that many participants in the Sydney sample did report receiving a website card from the KIS project which signifies that the internet could still be useful for supporting the information provided by peer educators. It should be noted that the KIS project has identified a significant increase in hits to its website following their appearance at a dance event.

It also worth noting that the most popular resources collected by ecstasy users were those that were small, i.e. CD sleeve or business card size. It appeared that A5 sized drug information booklets were rarely collected at events because they were too bulky and people wanted information that could fit easily into a pocket or small bag. Condoms were also popular items collected by ecstasy users.

Although this study did not fully explore where ERDs users accessed information about drugs, when asked where they had heard information about serotonin syndrome before, the most popular response amongst in both groups was friends and peers, followed by the media and school-based drug education. The popularity of peers and friends for providing drug education also lends support to a peer-led approach for educating ERDs users.

Approximately half of the sample reported that they had increased their water consumption as a result of talking with a peer educator at a party/event. This is a positive result supporting the efficacy of peer-led interventions in providing harm-reduction information to ERDs users. Increasing water consumption *('*rehydrate before your dehydrate') was a primary message of the project that was distributed at experimental events; whereas at control events peer educators distributed information to ERDs users about correct levels of water to drink when using ecstasy.

No behaviour change was noted between baseline and follow-up interview in either group with regard to their frequency of mixing illicit drugs. It was anticipated that participants in the experimental group might have reduced their frequency of mixing illicit drugs because of their exposure to the 'serotonin syndrome' message. It is interesting to note that approximately 80% of ecstasy users in both groups indicated at baseline and follow-up interview that they never, rarely or sometimes combined illicit drugs, suggesting a high level of awareness of the health-related risks of polydrug use amongst this population. This high baseline awareness of the non-mixing message suggests a ceiling effect in behaviour change amongst this sample. That only the experimental group significantly reduced the use of the most common drugs, ecstasy and meth/amphetamine, is also an important finding.

It was disappointing to note that changes in perceptions, as well as the frequency of use of mixing ecstasy with meth/amphetamine and ecstasy with cocaine between baseline and follow-up interview, were greatest amongst the control group. This somewhat surprising result may be explained by the larger sample size of the control group, meaning that there was more chance to see an effect with regard to behaviour change.

This study also found that both the experimental and the control group had significantly decreased the amounts of water they consumed per hour when using ecstasy between baseline and follow-up interview. This outcome could well be attributed to a seasonal effect, with participants consuming more water in the summer time when all baseline interviews were conducted, versus autumn/winter time when the follow-up interviews occurred. It is interesting to note that the experimental group were significantly more likely to report drinking water than alcohol when using ecstasy than controls. This should not be influenced by seasonal factors as, if it were, we would see it the same across both groups.

7 LIMITATIONS

A significant number of participants (approximately 30%) in the ACT and South Australian component of the study were only willing to provide email addresses to peer educators for the follow-up interviews. One reason for this could be that these are smaller cities and people may have been more conscious about talking with peer educators and identifying themselves as 'drug users'.

Many peer educators in the Canberra and South Australian site were younger, less experienced and less confident in the provision of peer education information than those involved in the Sydney project site. This could have resulted in lower rapport being built with those reached by the intervention at those sites.

The amount of training that could be provided to the peer educators was limited. In Sydney, the KIS project provided a minimum of 15 hours of training to their educators. The NDARC training provided an additional eight hours to this group. Insufficient training time to peer educators in the ACT and South Australia could have influenced the results of the intervention, particularly if the educator was new to peer drug education.

Other limitations to the research study can be summarised as follows:

- Different research methodologies being used in the Netherlands meant that an international comparison was not possible.
- Problems were encountered with securing access to dance events in the ACT and South Australia, meaning that more experimental events occurred in NSW.
- Although the 'serotonin syndrome' message was recalled by 46% of the experimental group at follow-up interview, this could have been improved if the message was less complex and more relevant to the target group.
- Due to the large number of harm-reduction messages circulating about the need to drink water when using ecstasy, it was difficult to note any behaviour change amongst the experimental group in regard to the 'rehydrate before you dehydrate' message.

8 RECOMMENDATIONS

This study found that a peer-led methodology can be effective at imparting health-related messages to ERDs users. However, for this to occur a number of important factors need to be taken into account to deliver a project that adheres to current best practice. As a result of this study, the following recommendations should be considered when attempting to deliver an effective peer-led education program within the ERDs-using community:

Peer educators

Effective peer educators should come from or belong to the 'dance/club' culture and should also be around the same age (or possibly a little older) than the target group.

Although gender was not rated as an important factor for being an effective peer educator, female peer educators may be useful for disseminating information to young men. They may also be regarded by female ERDs users as 'less threatening' and more approachable than male educators.

It is also important to note that the target group thought that it was important that peer educators had some experience with ecstasy and related drugs.

Training

Peer educators require a minimum of 20 hours drugs and communication training to be effective at disseminating health messages to the target group. They also require adequate supervision at events and also need regular follow-up meetings and training sessions.

Delivery of peer education

It is important to note that all peer education that occurred during this research project took place before the main DJ/act appeared and before participants became too intoxicated. If peer education projects are to be effective with ERDs users, it is important that health messages be disseminated early. Trying to disseminate even the simplest of messages after people have become affected by either alcohol or other drugs is extremely difficult and could actually be counterproductive. Consideration should be given to the peer educators changing their roles as the event progresses, becoming 'rovers' after a certain time.

Peer education messages

As the findings of this study show, when two short and simple messages were provided to the target group they were able to be recalled after three months. Conversely when a range of messages about ERDs were disseminated, the study was not able to note a strong recall of the messages.

Through observation it was also noted that peer educators were not as confident at disseminating a range of messages as they were at disseminating one or two messages. In this respect it is recommended that peer education programs targeted at ERDs users focus on the provision or one or two messages per event rather than focusing on a range messages.

Incorporation of peer-led interventions as part of national social marketing campaigns targeting ERDs users

The study has demonstrated peer-led intervention targeted at ERDs users can be successful at imparting important health messages to the target group, particularly in regards to carefully targeted harm-reduction information. Considering the target group rarely access the internet or visit drug and alcohol services, and the methodology is seen as highly credible by ecstasy users, consideration should be given to funding peer-led interventions (that are utilising current best practice) as part of large-scale government campaigns. Supporting national campaigns via peer-led interventions amongst specific target groups could be an extremely effective method of providing important messages to this difficult to access group.

9 CONCLUSIONS

Outcome evaluations of peer education projects amongst ERDs users are rare in the published literature. The results of this Australian study suggest that a peer-led methodology does work in so far as providing relevant and credible drug information to a target group who are using drugs but are generally not accessing information about their harms.

There was high recall at follow-up interview of the two unique project messages that were only provided to the experimental group. There was also strong cued recall by the experimental group of information about 'serotonin syndrome' at three month follow-up interview.

Free recall was greatest amongst the control group, with the same top two messages being recalled at the follow-up interview three months later. This lends support to the need to develop simple messages that can be easily communicated through a variety of media, including via a peer educator. These are significant findings of the study and support the hypothesis that health messages can be distributed and retained by ERDs users via a peer-led methodology.

Further, data from both the baseline and follow-up interviews revealed that peer educators were regarded as highly credible by the target group for delivering drug education messages. This study also identified that many of the ERDs users interviewed consulted their peers and friends for information about drugs and do not necessarily use the internet or access alcohol and other drug services. This finding lends further support to the appropriateness of the model for providing valuable health information to ERDs users.

There were a range of drug-related behaviour changes identified in the study, with many participants stating that they intended to reduce their drug use and/or use drugs more safely following contact with a peer educator. It was also pleasing to note that almost half the sample reported that they had increased their water use as a result of the information they had received from a peer educator.

The study's findings support the use of peers in the dissemination of health-related messages to ERDs users and suggests that peer-led interventions are a valuable medium to use in conjunction with other methods of drug education for this difficult to access group.

APPENDIX A: PROJECT BRANDING AND MERCHANDISING

'Planning to Party' information card that was only distributed at experimental events

1. Drinking alcohol can lead to dehydration (dry mouth, feeling thirsty, headaches, dizziness, nausea and cramps)
2. If you are planning to party and use alcohol, ecstasy or other stimulants it's important not to be dehydrated. Make sure you drink plenty of water to prepare for your big night out.
3. If you have drunk a lot of alcohol in the days before you plan to party, you'll need to drink even more water (one glass of water for each alcoholic drink) than usual to replace lost fluids.

Drinking water can prevent dehydration. The recommended daily water intake is 2.5 litres.

What is Serotonin Syndrome?

Serotonin syndrome is caused by too much serotonin in the central nervous system. Serotonin is the neurotransmitter which regulates mood, sex drive and appetite.

Ecstasy, methamphetamine (speed, base, ice, crystal), cocaine, LSD, a range of pharmaceutical drugs and some herbal supplements act on serotonin and have been linked with serotonin syndrome.

How serotonin syndrome affects people depends on what drugs they have used and how much they have taken. Not everyone experiences serious symptoms, but the effects can be unpredictable and in extreme cases, life-threatening.

What increases the risk of Serotonin Syndrome?

- Using a large quantity of ecstasy, or combining ecstasy with methamphetamine or cocaine.
- Combining ecstasy with pharmaceutical stimulants like methylphenidate (Ritalin) and dexamphetamine.
- Combining ecstasy with some antidepressants, in particular MAOIs.

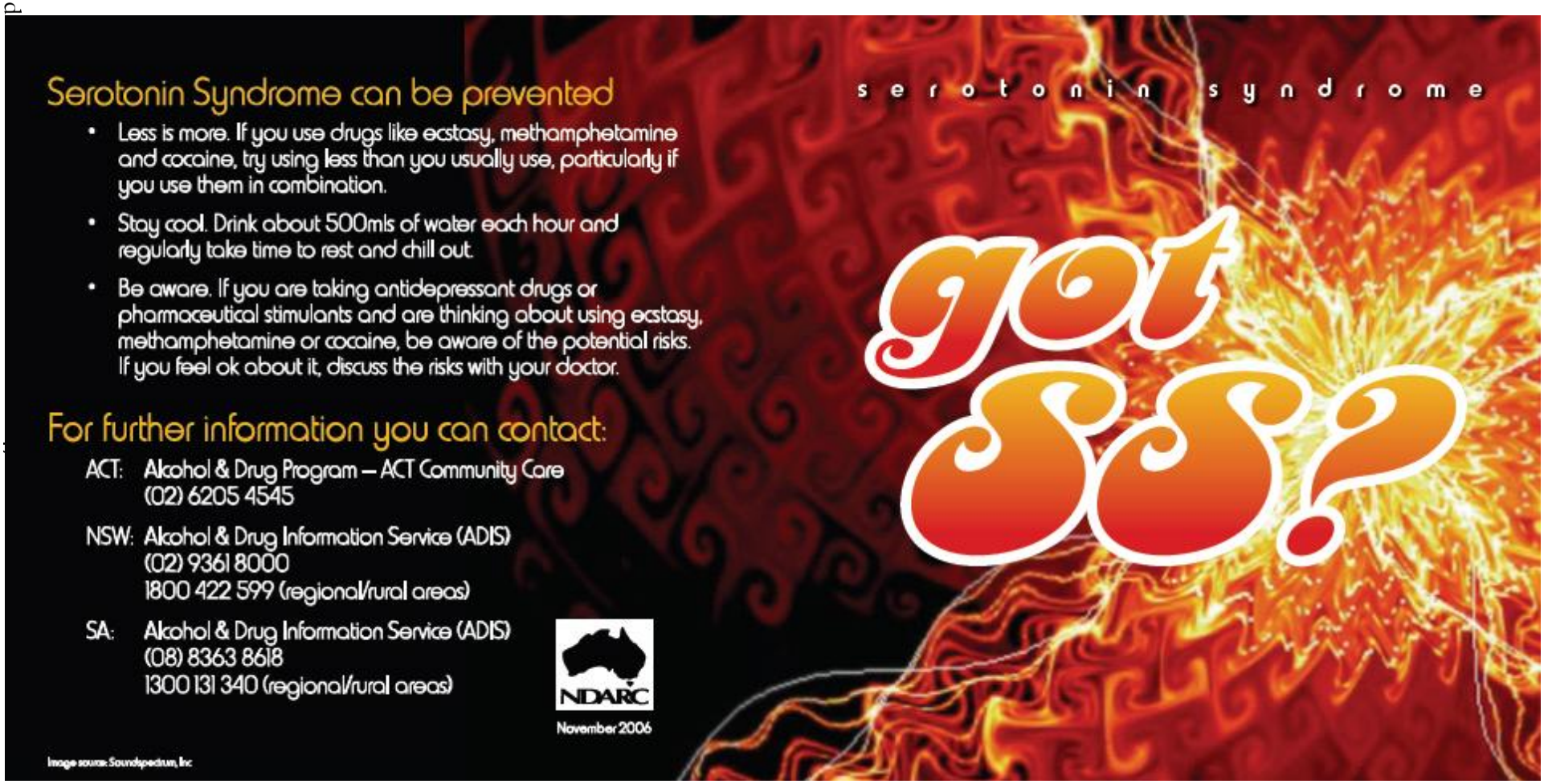
How to recognise Serotonin Syndrome?

The early signs of serotonin syndrome are similar to the reactions some people have when they use drugs like ecstasy or simply have been dancing for long periods. These signs include sweating, excitement, dilated pupils, tremor, rapid heart rate and rapid breathing. For most people, these signs are not usually serious.

If you see someone with the following signs, it's important to seek medical help as they may be developing serotonin syndrome:

- **Fever**
- **Agitation**
- **Distress, confusion**
- **Unusual, jerky muscle spasms in their arms or legs**
- **Muscle rigidity**

Serotonin Syndrome brochure distributed at experimental events


Serotonin Syndrome can be prevented
• Less is more. If you use drugs like ecstasy, methamphetamine and cocaine, try using less than you usually use, particularly if you use them in combination.
• Stay cool. Drink about 500mls of water each hour and regularly take time to rest and chill out.
• Be aware. If you are taking antidepressant drugs or pharmaceutical stimulants and are thinking about using ecstasy, methamphetamine or cocaine, be aware of the potential risks. If you feel ok about it, discuss the risks with your doctor.
For further information you can contact:
ACT: Alcohol & Drug Program – ACT Community Care
(02) 6205 4545
NSW: Alcohol & Drug Information Service (ADIS)
(02) 9361 8000
1800 422 599 (regional/rural areas)
SA: Alcohol & Drug Information Service (ADIS)
(08) 8363 8618
1300 131 340 (regional/rural areas)
NDARC
November 2006
Image source: Soundspectrum, Inc
serotonin syndrome
got SS?

APPENDIX B: BASELINE QUESTIONNAIRE

Peer Education Project 2006/07

Baseline Questionnaire

Participant ID number:

|___|___|___|___|___|___|___|

Interviewer: |___|___|___|

Date of interview: ____/____/____

Party/Event: _____

_____

City: _____

Screening Questions

1. Are you over the age of 18?
   - ☐ Yes
   - ☐ No

2. Have you used ecstasy (MDMA/MDA) in the past 12 months?
   - ☐ Yes
   - ☐ No

3. Are you prepared to allow us to follow you up in three months time for a short interview over the phone?
   - ☐ Yes
   - ☐ No

4. Have you completed this survey before?
   - ☐ Yes
   - ☐ No

***Please note:** Once we have followed you up, your contact details will be removed from this survey and destroyed so that none of the confidential information you have provided can be linked to you!*

(Please note: complete consent form)

Contact name: *(First name only)*

_____

Contact details
What is the best way to contact you in 3 months time? All interviewers will be discrete and state that they are from the University of NSW conducting a health survey.

Mobile number: _____

Email address: _____

Landline: _____

Other contact: *(i.e. Friend, etc)*

_____

Mobile number: _____

What is the best day/time to call?

Date: _____

Day: _____ *Time:* _____

Is there any time when we definitely shouldn't call you?

_____

_____

This section of the survey containing your contact details will be removed so that none of the confidential information you have provided UNSW can be linked to you.

Section 1 – Peer Education Information

Please write in the space provided and tick ☑ the most appropriate response to each question.

1. **What information did you receive from the peer educator you just spoke with?**
(i.e. What was the key message you took away from the conversation?)

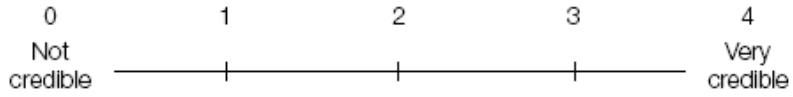
_____

_____

_____

_____

2. **Did you consider the information that he/she communicated with you was credible?**
(Where 0 = not credible, 4 = very credible)



3. **Have you heard this type of information elsewhere before?**

☐ Yes ..... *(go to Question 3a)*
☐ No ..... *(go to Question 4)*

3a. **If yes, where?** *(i.e. what source)*

_____

4. **Did you collect any drug information pamphlets from the peer educator/stand?**

☐ Yes ..... *(go to Question 4a)*
☐ No ..... *(go to Question 5)*

4a. **What pamphlets/info did you collect?**

_____

_____

5. **Do you think the information you received from the peer educator will change the way you use drugs?**

☐ Yes
☐ No
☐ Maybe

If yes/maybe, then how?

_____

_____

_____

Section 2 – Drug Use

6. Have you ever used any of the following drugs? If so, ***on how many days*** have you used them in the ***past month*** and how much on ***average*** would you consume of each drug on a typical ***day/occasion***?

Drugs	Ever used Yes/No	Number of days in past month	Average consumption on a typical day/occasion
Ecstasy (MDMA/MDA, 2cb, etc)	Yes No		Pills/Grams
(Meth)amphetamine (speed, ice, meth, crystal, etc)	Yes No		Points/Pipes/Grams
Cocaine	Yes No		Lines/Grams

7. In the past 3 months, how often have you used a combination of ***illegal*** drugs i.e. 2 or more? *(Including drugs such as ecstasy, cocaine, methamphetamine, etc)*

- ☐ Never
- ☐ Rarely
- ☐ Sometimes
- ☐ Often
- ☐ Always

8. In the past 3 months, how often have you combined ecstasy with (meth)amphetamine (speed, ice, base, meth, crystal, etc)?

- ☐ Never
- ☐ Rarely
- ☐ Sometimes
- ☐ Often
- ☐ Always

9. How would you rate the risk to your health of mixing ecstasy with (meth)amphetamine? *(Where 0 = no risk and 4 = very high risk)*

0	1	2	3	4
No risk	Slight risk	Moderate risk	Serious risk	Very high risk

10. In the past 3 months, how often have you combined ecstasy with cocaine?

- ☐ Never
- ☐ Rarely
- ☐ Sometimes
- ☐ Often
- ☐ Always

11. How would you rate the risk to your health of mixing ecstasy with cocaine? *(Where 0 = no risk and 4 = very high risk)*

0	1	2	3	4
No risk	Slight risk	Moderate risk	Serious risk	Very high risk

Section 3 – Prescribed Medications

In the following section we are interested in your use of prescription drugs with ***illegal drugs*** such as ecstasy, (Meth)amphetamine and cocaine.

12. **Do you take prescribed antidepressants for a *medical condition*?**
(Such as depression, bi-polar, etc?)

☐ Yes ..... *(go to Question 12a)*
☐ No ..... *(go to Question 15)*

12a. **Have you ever made changes in your use of antidepressant medication in *anticipation* of using ecstasy and related drugs?**

☐ Yes
☐ No

13. **Have you ever used antidepressants for any other reason?** *(i.e. not as prescribed)*

☐ Yes
☐ No

14. **Have you ever *deliberately* combined antidepressants with any of the following**

Ecstasy	☐ Yes	☐ No
Cocaine	☐ Yes	☐ No
(Meth)amphetamine	☐ Yes	☐ No

15. **Do you take prescribed medications such as Ritalin or dexamphetamine for a *medical condition*?** *(such as Attention Deficit Disorder (ADD) or Attention Deficit Hyperactivity Disorder (ADHD))*

☐ Yes ..... *(go to Question 15a)*
☐ No ..... *(go to Question 18)*

15a. **Have you ever made changes in your Ritalin or dexamphetamine medication regime in *anticipation* of using ecstasy?**

☐ Yes
☐ No

16. **Have you ever used Ritalin or dexamphetamine for any other reason?**
(i.e. not as prescribed)

☐ Yes
☐ No

17. **Have you ever *deliberately* combined Ritalin/dexamphetamine with any of the following:**

Ecstasy	☐ Yes	☐ No
Cocaine	☐ Yes	☐ No
(Meth)amphetamine	☐ Yes	☐ No

Section 4 – Water Consumption

18. **How many glasses/bottles of water do you normally drink in a day?**
(Interviewers please note 2 glasses is equivalent to 1 small 500ml bottle)

- ☐ 1 – 2 glasses *(1 small 500ml bottle)*
- ☐ 3 – 4 glasses *(2 small 500ml bottles)*
- ☐ 5 – 6 glasses *(3 small 500ml bottles)*
- ☐ 7 – 8 glasses *(4 small 500ml bottles)*
- ☐ 9 – 10 glasses *(5 small 500ml bottles)*
- ☐ Other *(Please specify)*

---

19. **What is the recommended daily water intake for an adult?**

- ☐ Don't know
- ☐ 1 – 2 glasses *(1 small 500ml bottle)*
- ☐ 3 – 4 glasses *(2 small 500ml bottles)*
- ☐ 5 – 6 glasses *(3 small 500ml bottles)*
- ☐ 7 – 8 glasses *(4 small 500ml bottles)*
- ☐ 9 – 10 glasses *(5 small 500ml bottles)*
- ☐ Other *(Please specify)*

---

20. **What do you drink most of when you are using ecstasy and related drugs?**

- ☐ Water
- ☐ Alcohol
- ☐ Other *(non alcoholic drinks)*

21. **How many glasses/small bottles of water (500mls) do you drink *per hour* when you are using ecstasy or related drugs?**

- ☐ None
- ☐ Less than 1 small bottle *(<500mls)*
- ☐ 1 small bottle *(500mls)*
- ☐ 2 small bottles *(1 litre)*
- ☐ More than 2 small bottles *(>1 litre)*

22. Do you know what the recommended guidelines are for drinking water when using ecstasy and related drugs?

☐ Yes ..... *(go to Question 22a)*
☐ No ..... *(go to Question 23)*

22a. Can you tell me what these are?

_____

_____

_____

23. In the 24 hours leading up to using ecstasy and related drugs do you make any changes to the amount of ***water*** you drink?

☐ No change
☐ Yes I drink more water
☐ Yes I drink less water
☐ Don't know

24. In the 24 hours leading up to using ecstasy and related drugs do you make any changes to the amount of ***alcohol*** you drink?

☐ No change
☐ Yes I drink more alcohol
☐ Yes I drink less alcohol
☐ Don't know

Section 5 – Demographics

25. **How old are you?** *(Please specify)* _____ years

26. **Are you?**

- ☐ Female
- ☐ Male

27. **Where were you born?**

- ☐ Australia
- ☐ Other *(Please specify)*

_____

28. **What is the city/town where you live?**
(Please specify eg Sydney, Adelaide, ACT, Bathurst, etc)

_____

29. **What is the highest level of education that you have achieved?**

- ☐ Prior to Year 10
- ☐ Year 10 (School Certificate)
- ☐ Year 12 (Higher School Certificate)
- ☐ TAFE (Trade/Technical Diploma)
- ☐ University (BA, Masters, PhD, etc)
- ☐ Vocation course *(Please specify)*
- ☐ Other *(Please specify)*

_____

30. **What is your current employment situation?**
(You may tick more than one)

- ☐ Full-time employed
- ☐ Part-time/casually employed
- ☐ Unemployed
- ☐ Studying full time
- ☐ Studying part time
- ☐ Other *(Please specify)*

_____

The survey is complete. Thank you for your time.

APPENDIX C: FOLLOW UP QUESTIONNAIRE

Peer Education Project 2006/07
Follow up Questionnaire

Section 1 – Peer Education Information

Please write in the space provided and/or tick ☑ the most appropriate response to each question.

1. **Can you tell me what information you received from the peer educator at the party/event you attended 3 months ago?**
(i.e. What was the key message you took away from the conversation?)

_____

_____

_____

_____

2. **Did you consider the information that he/she communicated with you was credible?**
(Where 0 = not credible, 4 = very credible)

0	1	2	3	4
Not credible	———	→	———	Very credible

3. **Did you share the information you received from the peer educator with any of your friends?**

☐ Yes ..... *(go to Question 3a)*
☐ No ..... *(go to Question 4)*
☐ Maybe

3a. **If yes, how many friends?**

☐ 1 – 2 friends
☐ 3 – 5 friends
☐ 6 – 10 friends
☐ >10 friends

4. **Did your conversation with the peer educator prompt you to seek further information about alcohol and other drugs?**

☐ Yes ..... *(go to Question 4a)*
☐ No ..... *(go to Question 5)*

4a. **If yes, What information source did you access?**
(i.e. internet, drug/alcohol service, etc)

_____

5. **Did the information you received from the peer educator change the way you used any of the following?** *(Please circle either yes or no and specify how, if yes)*

	Yes/No		If yes, how?
Alcohol	Yes	No	
Ecstasy	Yes	No	
(Meth)amphetamine	Yes	No	
Cocaine	Yes	No	
Water	Yes	No	
Other *(Please specify)*	Yes	No	

6. **Do you remember if you collected (or were given) any drug information pamphlets from the peer educator/stand?**

☐ Yes ..... *(go to Question 6a)*
☐ No ..... *(go to Question 7)*
☐ Maybe

6a. **Do you remember what the brochure/leaflet was about?**

_____

_____

6b. **Did you read/refer to the information again at a later date?**
(i.e. When you were not intoxicated)

☐ Yes
☐ No

7. **Would you approach these peer educators again if you saw them at a party/night club or dance event?**

☐ Yes
☐ No
☐ Maybe

For questions 8-13 below, we'd like to find out how much you ***agree*** or ***disagree*** with the following statements about the qualities that make up a peer educator for ecstasy and related drug users. Could you please specify how important you think these qualities are. *(Where 0 = strongly disagree and 4= strongly agree)*

8. **I think it is important that a peer educator is the same (or similar) age to me?**

0	1	2	3	4
Strongly disagree	Disagree	Neither disagree/agree	Agree	Strongly agree

9. **I think it is important that a peer educator comes from the same sub-culture as me?**
(i.e. that they have similar clothing, music tastes and lifestyle choices)

0	1	2	3	4
Strongly disagree	Disagree	Neither disagree/agree	Agree	Strongly agree

10. **I think it is important that a peer educator is "cool"** *(i.e. that the are hip/trendy, etc)*

0	1	2	3	4
Strongly disagree	Disagree	Neither disagree/agree	Agree	Strongly agree

11. **I think it is important that a peer educator is the same sex (gender) as me?**

0	1	2	3	4
Strongly disagree	Disagree	Neither disagree/agree	Agree	Strongly agree

12. **I think it is important that a peer educator has used ecstasy and related drugs?**

0	1	2	3	4
Strongly disagree	Disagree	Neither disagree/agree	Agree	Strongly agree

13. **Are there any other comments you would like to make about what makes up an effective and credible peer educator?**

_____

_____

_____

Section 2 – Drug Use

14. **Have you ever used any of the following drugs? If so, *on how many days* have you used them in the *past month* and how much on *average* would you consume of each drug on that *day/occasion*?** *(Interviewers please circle either yes or no and specify days/ amounts of drugs consumed)*

Drugs	Ever used Yes/No		Number of days in past month	Average consumption on day/occasion
Tobacco	Yes	No		Cigarettes
Alcohol	Yes	No		Standard drinks
Cannabis	Yes	No		Joints/Bongs/Pipes
Ecstasy (MDMA/MDA, 2cb, etc)	Yes	No		Pills/Grams
(Meth)amphetamine (speed, ice, meth, crystal, etc)	Yes	No		Points/Pipes/Grams
Cocaine	Yes	No		Lines/Grams
Hallucinogens (LSD, mushrooms)	Yes	No		Tabs/Mushrooms
Gamma-hydroxy Butrate (GHB)	Yes	No		Mls/Grams
Ketamine (K, special K)	Yes	No		Bumps/Grams
Other *(Please specify)*	Yes	No		

15. **In the past 3 months, how often have you used a combination of *illegal* drugs i.e. 2 or more?** *(Including drugs such as ecstasy, cocaine, (Meth)amphetamine, etc)*

- ☐ Never
- ☐ Rarely
- ☐ Sometimes
- ☐ Often
- ☐ Always (or almost always)
- ☐ Other *(Please specify)*

---

16. **On your last 'big' day/night out which drugs did you use?**

Drugs	*Circle*		Drugs	*Circle*	
Tobacco	Yes	No	**Cocaine**	Yes	No
Alcohol	Yes	No	**Hallucinogens** (LSD, mushrooms)	Yes	No
Cannabis	Yes	No	**Gamma-hydroxy Butrate** (GHB)	Yes	No
Ecstasy (MDMA/MDA, 2cb, etc)	Yes	No	**Ketamine** (K, special K)	Yes	No
(Meth)amphetamine (speed, ice, meth, crystal, etc)	Yes	No	**Other** *(Please specify)*	Yes	No

17. **In the past three months, how often did you combine ecstasy with (meth)amphetamine?** *(speed, ice, base, meth, crystal, etc)*

- ☐ Never
- ☐ Rarely
- ☐ Sometimes
- ☐ Often
- ☐ Always or almost always
- ☐ Other *(Please specify)*

---

18. **How would you rate the risk to your health of mixing ecstasy with (meth)amphetamine?** *(Where 0 = no risk and 4 = very high risk)*

0	1	2	3	4
No risk	Slight risk	Moderate risk	Serious risk	Very high risk

19. **In the past 3 months, how often did you combine ecstasy with cocaine?**

- ☐ Never
- ☐ Rarely
- ☐ Sometimes
- ☐ Often
- ☐ Always (or almost always)
- ☐ Other *(Please specify)*

---

20. **How would you rate the risk to your health of mixing ecstasy with cocaine?**
(Where 0 = no risk and 4 = very high risk)

Section 3 – Prescribed Medications

In the following section we are interested in your use of prescription drugs with ***illegal drugs*** such as ecstasy, cocaine, (Meth)amphetamine. *(Please tick the most appropriate response to each question)*

21. **When we last spoke with you, were you taking prescribed antidepressants for a *medical condition*?** *(Such as depression, bi-polar, etc)*

☐ Yes ..... *(go to Question 21a)*
☐ No ..... *(go to Question 22)*

21a. **Are you still taking prescribed antidepressants now?**

☐ Yes ..... *(go to Question 21b)*
☐ No ..... *(go to Question 22)*

21b. **In the past three months, did you make any changes in your use of antidepressants medication in *anticipation* of using ecstasy and related drugs?**

☐ Yes
☐ No

22. **In the past three months, did you ever use antidepressants for any other reason?** *(i.e. not as prescribed)*

☐ Yes
☐ No

23. **In the past three months, have you ever *deliberately combined* antidepressants with any of the following?**

Ecstasy	☐ Yes	☐ No
Cocaine	☐ Yes	☐ No
(Meth)amphetamine	☐ Yes	☐ No

24. **When we last spoke with you, were you taking prescribed medications such as Ritalin or dexamphetamine for a *medical condition*?** *(Such as Attention Deficit Disorder (ADD) or Attention Deficit Hyperactivity Disorder (ADHD)*

☐ Yes ..... *(go to Question 24a)*
☐ No ..... *(go to Question 25)*

24a. **Are you still taking Ritalin or dexamphetamine now?**

☐ Yes ..... *(go to Question 24b)*
☐ No ..... *(go to Question 25)*

24b. In the past three months, did you make any changes in your use of Ritalin or dexamphetamine in ***anticipation*** of using ecstasy and related drugs?

☐ Yes
☐ No

25. In the past three months, have you ever used Ritalin or dexamphetamine for any other reason? *(i.e. not as prescribed)*

☐ Yes
☐ No

26. In the past three months, have you ever ***deliberately combined*** Ritalin/ dexamphetamine with any of the following?

Ecstasy	☐ Yes	☐ No
Cocaine	☐ Yes	☐ No
(Meth)amphetamine	☐ Yes	☐ No

27. Have you ever heard the term '***serotonin syndrome***'?

☐ Yes
☐ No ..... *(go to Question 30)*

28. Where did you hear about it?

_____

29. What do you think '***serotonin syndrome***' means?

_____

_____

_____

Section 4 – Water Consumption

30. How many glasses/bottles of water do you normally drink in a day?
(Interviewers please note 2 glasses is equivalent to 1 small 500ml bottle)

☐ 1 – 2 glasses *(1 small 500ml bottle)*
☐ 3 – 4 glasses *(2 small 500ml bottles)*
☐ 5 – 6 glasses *(3 small 500ml bottles)*
☐ 7 – 8 glasses *(4 small 500ml bottles)*
☐ 9 – 10 glasses *(5 small 500ml bottles)*
☐ Other *(Please specify)*

_____

31. Do you know what the recommended daily water intake is for an adult?

- ☐ 1 – 2 glasses *(1 small 500ml bottle)*
- ☐ 3 – 4 glasses *(2 small 500ml bottles)*
- ☐ 5 – 6 glasses *(3 small 500ml bottles)*
- ☐ 7 – 8 glasses *(4 small 500ml bottles)*
- ☐ 9 – 10 glasses *(5 small 500ml bottles)*
- ☐ Other *(Please specify)*

_____

32. In the past three months, what did you drink most of when you are using ecstasy and related drugs?

- ☐ Didn't use ecstasy
- ☐ Water
- ☐ Alcohol
- ☐ Other *(Non alcoholic drinks)*

33. In the past three months, how many glasses/small bottles of water (500mls) did you drink ***per hour*** when you were using ecstasy or related drugs?

- ☐ Didn't use ecstasy
- ☐ None
- ☐ Less than 1 small bottle *(<500mls)*
- ☐ 1 small bottle *(500mls)*
- ☐ 2 small bottles *(1 litre)*
- ☐ More than 2 bottles *(>1 litre)*

34. Do you know what the recommended guidelines are for drinking water when using ecstasy and related drugs?

- ☐ Yes
- ☐ No

34a. Can you tell me what these are?

_____

_____

35. In the past three months, in the 24 hours leading up to using ecstasy and related drugs did you make any changes to the amount of ***water*** you drink?

- ☐ Didn't use ecstasy
- ☐ No change
- ☐ Yes I drink more water
- ☐ Yes I drink less
- ☐ Don't know

36. In the past three months, in the 24 hours leading up to using ecstasy and related drug use did you make any changes to the amount of ***alcohol*** you drank?

- ☐ Didn't use ecstasy
- ☐ No change
- ☐ Yes I drank more alcohol
- ☐ Yes I drank less alcohol
- ☐ Don't know

37. In the 24 hours leading up to using ecstasy and related drugs, how much water would you be need to drink to compensate for each alcoholic drink consumed?

- ☐ None
- ☐ 1 glass of water (250mls) for each alcoholic drink
- ☐ 1 glass of water (250mls) for every 2 alcoholic drinks
- ☐ 1 glass of water (250mls) for every 3 alcoholic drinks
- ☐ Don't know
- ☐ Other *(Please specify)*

_____

37a. Where did you hear this information?

_____

38. Approximately how often did you go out to bars, clubs and/or party/festivals events?

	Never (0)	1 or 2 times a year (1)	Once every 2–3 months (2)	Once a month (3)	Once a week (4)	Less than once a week (5)
Bars						
Clubs (dancing)						
Festival/event						

39. How often do you access the internet for information about ecstasy and related drugs?

- ☐ Never
- ☐ Rarely
- ☐ Sometimes
- ☐ Often
- ☐ Always (or almost always)

40. What are your favourite internet sites?

_____

_____

_____

_____

The survey is complete. Thank you for your time.

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