The rise of new psychoactive substance use in Australia

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New Psychoactive Substances are now a feature of Australia’s recreational drug market. Little is known, however, about the prevalence of use, the characteristics of people who use them and the relationship between the NPS and ecstasy markets. This study examined the prevalence and correlates of NPS use amongst a group of regular ecstasy users in Australia. Participants were recruited if they had used ecstasy at least six times in the previous six months, lived in a capital city and were over 16 years of age. Purposive sampling was used, recruiting through universities and colleges, word of mouth and street press. 654 participants were recruited in 2013. Respondents who had used an NPS in the past six months were compared to those who had not. NPS were used by 44% of the total sample. In 2013 2C-I (14%) and 2C-B (8%) were the most prevalent NPS. Respondents in the NPS group were younger and reported more frequent use of more types of drugs. They were also more likely to rate the purity of ecstasy as low relative to those in the no NPS group. NPS are now an established part of Australia’s recreational drug scene and NPS with hallucinogenic effects are now used most commonly. Monitoring systems need to develop capacity to monitor this highly dynamic market. Copyright © 2014 John Wiley & Sons, Ltd.

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Introduction

Over the past decade, an alternative drug market has developed as manufacturers began introducing compounds marketed as having similar effects to ecstasy and other drugs, often with analogous chemical structures to these substances. These substances are often referred to collectively as ‘new psychoactive substances’ (NPS). In Australia, the size of the NPS market is estimated from a combination of seizure and arrest data, together with surveys of households and people who regularly use these substances. Thirty-three NPS were reported by Australia to the United Nations on Drugs and Crime (UNOCD) during the first two quarters of 2012, similar to the number reported in the UK (n = 38) and more than the twice the number reported in New Zealand (n = 15).

The NPS market in Australia was initially identified at the same time as the availability of high quality ecstasy (MDMA) was reported as low. Prior to this, Australia had recorded a comparatively high prevalence of ecstasy use internationally. In 2004 and 2007, prevalence estimates among the general population were approximately 3.5% and this declined to 3% in 2010. A similar trend was seen in data from the Australian Institute of Criminology’s Drug Use Monitoring program (DUMA). DUMA seeks to measure drug use among people recently apprehended by police. In that programme, only 5% of police detainees in 2010 and 2011 reported using ecstasy; 50% lower than in 2009 when ecstasy use peaked at 11%. The number of clandestine MDMA laboratories detected in Australia also declined dramatically from 17 in 2009/2010 to just 2 in 2011/2012. More recently, surveys of regular ecstasy users (in 2012 and 2013) have recorded increased numbers of respondents nominating ecstasy as their drug of choice. This, coupled with an increased number of detections of MDMA at the Australian border, suggests some recovery of the ecstasy market since 2011.

To date, research in Australia and internationally has examined NPS use amongst samples of people who regularly use drugs. Indeed, previous work by our group has identified some of the characteristics of NPS users among a sample of regular ecstasy users (REU) in Australia. The current study extends this work by examining, first, the patterns and correlates of NPS among REU in Australia, and, secondly the association between the Australian ecstasy and NPS markets.

Methods

Data for this analysis were taken from the Ecstasy and Related Drugs Reporting System (EDRS), an annual national monitoring project that includes a cross-sectional quantitative survey of sentinel samples of current regular ecstasy users from each capital city in Australia. This repeat cross-sectional survey, conducted in June/July each year, recruits participants using purposive sampling through colleges and universities, advertisements in street press, and peer referral. Eligibility criteria were: aged 16 years or older, used ecstasy at least monthly in the six months preceding interview, and resided in the recruitment city for at least 12 months. The study received approval from the University of New South Wales Human Research Ethics Committee.

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To measure NPS use, respondents were presented with a list of NPS (Table 1) and asked whether they had used any of these in the past six months. Substances included were NPS recorded in previous years and others nominated by key stakeholders. Participants were also asked if they had used any other substances not previously classified and these were also recorded. For each substance respondents were also asked where it had been sourced (dealer, friend, Internet, other). To assess the ecstasy market, self-reported perceived purity and availability of ecstasy from 2010 to 2013 were examined. As participants were recruited on their use of drugs sold as ‘ecstasy’, we examined ecstasy as a drug of choice over time (Figure 2A).

Quantitative data obtained from the EDRS REU interviews were analyzed using SPSS for Window release 20.0. Medians and means are reported for continuous data that are normally distributed, and t-tests used to analyze significance. Medians are presented for non-normal distributions, and the Mann-Whitney U test used. Categorical variables were analyzed using chi-square analyses, using an alpha level of significance of 0.05. Binary logistic regression (using the Wald statistic) was used to estimate adjusted odds ratios after controlling for potential confounders.

**Results and discussion**

**Prevalence and patterns of ecstasy and NPS use**

NPS monitoring began in 2010 and in 2013 just under half (44%) of the sample (n = 654) reported recent use of any form of NPS, although frequency of use was sporadic and low (median of four occasions in the previous six months). Consistent with international findings we found the types of NPS used to be highly dynamic.[5] Figure 1a shows the four most commonly reported NPS, by survey year. Mephedrone was most commonly reported in 2010 (16%); while in 2013 drugs from the 2C-X family (2C-I (8%), 2C-B (14%)) were most common.

Figure 1b shows the source of last use of the three most prevalent NPS nominated by participants in 2013. Most respondents cited friends and dealers as the most common source (2C-B – 56%; 2C-I-58%; mephedrone – 56%). 2C-I was the substance most frequently purchased through the internet (17%).

**Ecstasy market indicators**

Figure 2a shows the proportion of respondents who nominated ecstasy as their drug of choice and the proportion who used ecstasy weekly or more frequently. Ecstasy as drug of choice has been steadily declining since EDRS monitoring began in 2003 (from 52% in 2003 to 32% in 2013) although there has been
an increase noted since 2011 (27% to 32%). The proportion of the sample reporting weekly or more frequent ecstasy use declined from one-third (33%) of the sample in 2003 to one-quarter (26%) in 2013, with very little change since 2011 (27% to 26%). Taken together these indicators suggest a recovery of the ecstasy market from 2011 onwards.

Figure 2b compares the perception of the purity and availability of drugs sold as ‘ecstasy’ over time, between those who had used an NPS in the past six months and those who had not. Overall there was a decline in the proportion in both groups who reported ecstasy purity as low (from 50% in 2010 to 16% in 2013 in the non-NPS group and from 64% to 24% in the NPS group). There was also a decline across both groups in the proportion of the sample reporting ecstasy as difficult to access (from 25% in 2010 to 14% in the non-NPS group and from 26% to 13% in the NPS group). Again these indicators suggest a recovery of the ecstasy market.

Respondent in the NPS group were consistently more likely to perceive ecstasy purity as low over time, giving some weight to the hypothesis that low purity of ecstasy (perceived) leads some users to seek out similar substances such as NPS. Future research will examine this further taking into account other factors such as individual differences, supply and demand characteristics including international regulation, fluctuations in other drug markets, the high profile nature of these drugs, and use of the internet in NPS procurement.

Characteristics of NPS users
At the univariate level participants in the NPS group were significantly more likely to have purchased a drug on line at their last transaction (OR 6.33, 95%CI 2.75–14.55), to be under 25 years of age (OR 1.72, 95%CI 1.30–2.28), male (OR 1.75, 95%CI 1.26–2.44), to have first tried ecstasy at less than 18 years old (OR 1.97, 95% CI 1.49–2.62), and were less likely to have completed courses after secondary school (OR 0.63, 95%CI 0.47–0.86) (Table 2).

With respect to patterns of use; the NPS group used more drugs more frequently (had used 9 or more classes of drugs in the last 6 months (OR 5.57, 95%CI 3.28–4.66). They were also more likely to report use of stimulants for 48 hours or more without sleep (OR 2.64, 95%CI 1.48–3.66) and to report symptoms of a stimulant overdose (OR 1.87, 95%CI 1.28–2.68) and were less likely to have completed courses after secondary school (OR 0.63, 95%CI 0.47–0.86) (Table 2).

With respect to sexual health; the NPS group were more likely to report use of stimulants for 48 hours or more without sleep (OR 2.64, 95%CI 1.48–3.66) and to report symptoms of a stimulant overdose (OR 1.87, 95%CI 1.28–2.68) and were less likely to have completed courses after secondary school (OR 0.63, 95%CI 0.47–0.86) (Table 2).
psychological distress) between the two groups. With respect to ecstasy market characteristics, there were no differences between the groups with the exception of perceived purity of ecstasy; as previously noted respondents in the NPS group were significantly more likely to perceive ecstasy as being of low purity compared to the non-NPS group (OR 1.68, 95%CI 1.14–2.46).

After adjusting for these variables some remained significant. Participants in the NPS group were more likely to be male (OR 1.88, 95%CI 1.31–2.72), less than 25 years (OR 1.68, 95%CI 1.31–2.23) and were less than 18 years of age when they first tried ecstasy (OR1.88, 95%CI 1.40–2.61). With respect to drug use variables those in the NPS group were more likely to have used stimulants for 48 h or more without sleep (OR 1.88, 95%CI 1.32–2.68), to have used more than 9 classes of drugs in the past 6 months (OR 3.28, 95%CI 2.31–4.66), had used ecstasy on more than 12 days in the past 6 months (OR 1.48, 95%CI 1.10–2.12) and had purchased any drugs online in the last transaction (OR 3.66, 95%CI 1.50–8.98).

These findings suggest the individual characteristics of users may be important in explaining NPS use. In this study, the NPS group also reported more extensive drug use (daily cannabis use, higher median days’ ecstasy use, and use of more drug classes in the last six months). It may be that REU who use NPS are more experimental in general and this is reflected in use of larger amounts of ecstasy than the non-NPS users. The NPS group were also more likely to have initiated drug use at a younger age, which from previous research, is known to be associated with the development of drug use disorders.\[14\]

Taken together these findings suggest NPS use may be indicative of increased risk.

Counter intuitively, despite their increase in drug use, their risk of poor mental health or engaging in risky sexual behaviour was not increased in comparison to REU who did not use NPS (although it should be noted that the group as a whole were in the moderate category for psychological distress and 1 in 3 respondents self-reported at least one mental health problem in the previous six months). This may be related to factors such as the measures used, age of the respondents and frequency of use. Future research will examine this issue in more detail.

**Conclusion**

NPS are available in Australia and consistent with international findings, the specific types of substances used is highly dynamic. Given this, it is critical that drug monitoring systems have the capacity to detect these rapid changes and will need to incorporate technological measures including Internet use to do so. At this stage there is a trend in Australia and internationally towards use of NPS with hallucinogenic properties. The additional risks conferred by these substances would suggest urgent need for increased public education about the nature and potential impact of NPS including the uncertainty of content. Given the younger age at which ecstasy use commenced among those reporting NPS use, and the potential for access of these substances through the Internet by a large group of young people, research should be undertaken to develop an effective school based prevention campaign targeting NPS.

**References**


