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Short Communication

The impact of comorbid cannabis and methamphetamine use on mental health among regular ecstasy users

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ABSTRACT

Objective: Residual effects of ecstasy use induce neurotransmitter changes that make it biologically plausible that extended use of the drug may induce psychological distress. However, there has been only mixed support for this in the literature. The presence of polysubstance use is a confounding factor. The aim of this study was to investigate whether regular cannabis and/or regular methamphetamine use confers additional risk of poor mental health and high levels of psychological distress, beyond regular ecstasy use alone.
Method: Three years of data from a yearly, cross-sectional, quantitative survey of Australian regular ecstasy users was examined. Participants were divided into four groups according to whether they regularly (at least monthly) used ecstasy only (n = 936), ecstasy and weekly cannabis (n = 697), ecstasy and weekly methamphetamine (n = 108) or ecstasy, weekly cannabis and weekly methamphetamine (n = 180). Self-reported mental health problems and Kessler Psychological Distress Scale (K10) were examined.
Results: Approximately one-fifth of participants self-reported at least one mental health problem, most commonly depression and anxiety. The addition of regular cannabis and/or methamphetamine use substantially increases the likelihood of self-reported mental health problems, particularly with regard to paranoia, over regular ecstasy use alone. Regular cannabis use remained significantly associated with self reported mental health problems even when other differences between groups were accounted for. Regular cannabis and methamphetamine use was also associated with earlier initiation to ecstasy use.
Conclusions: These findings suggest that patterns of drug use can help identify at risk groups that could benefit from targeted approaches in education and interventions. Given that early initiation to substance use was more common in those with regular cannabis and methamphetamine use and given that this group had a higher likelihood of mental health problems, work around delaying onset of initiation should continue to be a priority.

1. Introduction

3,4-Methylenedioxymethamphetamine (MDMA) or 'ecstasy' is the second most commonly used illicit drug in Australia. According to the 2010 National Drug Strategy Household survey, approximately 3% of the population had used ecstasy within the past year (Australian Institute of Health & Welfare, 2011).

Research suggests an association between ecstasy use and mental health problems such as anxiety and depression (Lamers, Bechara, Rizzo, & Ramaekers, 2006; MacInnes, Handley, & Harding, 2001; McCardle, Luebbers, Carter, Croft, & Stough, 2004; Parrott et al., 2002), however, findings are mixed. Studies also demonstrate that associations between ecstasy use and current mood symptoms diminishes once other factors are controlled for (Bedi, Van Dam, & Redman, 2010; Daumann et al., 2004; George, Kinner, Bruno, Degenhardt, & Dunn, 2010; Milani, Parrott, Schifano, & Turner, 2005; Scott, Hides, Allen, Burke, & Lubman, 2010).

As polydrug use is the norm amongst individuals who use ecstasy, it may be that other substances serve to modulate the association with mental health (Gouzoulis-Mayfrank & Daumann, 2006). Cannabis is the most commonly used illicit drug in Australia and is commonly used among Australian regular ecstasy users (REU) (Sindicich & Burns, 2011).

An association between cannabis use and mental health problems, particularly psychotic and depressive symptomatology, has been documented (Crippa et al., 2009; Hall & Degenhardt, 2009; Lubman & Baker, 2010). Some studies have found differences between the mental health of ecstasy users and non-using controls disappear once cannabis use is controlled for (Daumann, Pelz, Becker, Tuchtenhagen, & Gouzoulis-Mayfrank, 2001; Daumann et al., 2004), while others have found that ecstasy users reported more symptoms of anxiety and depression despite controlling for cannabis use (Lamers et al., 2006). The role cannabis plays in mental health problems among ecstasy users remains unclear.

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Methamphetamines are also commonly used among Australian REU (Gouzoulis-Mayfrank & Daumann, 2006; Sindicich & Burns, 2010). There is evidence that methamphetamine use is associated with major psychological harms (psychosis, depression, and anxiety) (Darke, Kaye, McKetin, & Doflou, 2008; McKetin, Lubman, Lee, Ross, & Slade, 2011), even among infrequent users (McKetin, Hickey, Devlin, & Lawrence, 2010). Research examining the impact of methamphetamine use on mental health among REU is limited, although a recent Australian study found an association between depressive symptoms and methamphetamine use among REU (Matthews & Bruno, 2010).

Evidence to date is equivocal with respect to the impact of ecstasy in conjunction with other commonly used substances: cannabis and methamphetamine. The aim of the current study was to investigate whether regular cannabis and/or regular methamphetamine use confers additional risk of poor mental health and high levels of psychological distress for REU, above and beyond the contribution of regular ecstasy use.

2. Method

2.1. Participants

The Ecstasy and Related Drugs Reporting System (EDRS) is an annual, national monitoring project that includes a cross-sectional, quantitative survey of sentinel samples of current REU, from each capital city in Australia (Sindicich & Burns, 2011; Topp, Breen, Kaye, & Darke, 2004). Three years of data (2008, 2009 and 2010) were combined in a retrospective cross sectional design. Participants were required to be aged over 16 years and to have used ecstasy regularly (i.e. on at least 6 occasions over the preceding six months).

2.2. Classification of groups

Participants were divided into four groups;

1) Ecstasy only (the 'E group'): regular ecstasy users (as defined above) who did not use either cannabis or methamphetamine regularly over the previous six months;
2) Regular ecstasy users who also used cannabis regularly (i.e. weekly or more) but did not use methamphetamine regularly over the previous six months (the 'E + C group');
3) Regular ecstasy users who also used methamphetamine regularly (i.e. weekly or more) but did not use cannabis regularly over the previous six months (the 'E + M group'); and
4) Regular ecstasy users who also used both cannabis and methamphetamine regularly over the previous six months (the 'E + M + C group').

2.3. Measures

The survey included: demographics, drug and alcohol use, self report measures of mental health, and health service usage. The Kessler Psychological Distress Scale (K10) was administered as a screening tool (Kessler et al., 2002). The questionnaire includes 10 items and yields a global 'psychological distress' score on the basis of the frequency of depression and anxiety symptoms over the previous four weeks. Scores range from 10 to 50 and can be classified into 'low' (scores 10–15), 'medium' (scores 15–29) and 'high' (scores 30–50) scores. People who score in the 'high' range have been demonstrated to show a high likelihood of meeting criteria for an affective or anxiety disorder according to DSM-IV criteria (Furukawa, Kessler, Slade, & Andrews, 2003; Slade, Grove, & Burgess, 2011). K10 scores were binary coded as the presence or absence of a high score.

2.4. Procedure

See Sindicich and Burns (2011) for a detailed description of the EDRS procedure.

2.5. Statistical analyses

Categorical variables were analysed using chi-square and logistic regression. Median days of drug use was analysed using the Kruskal–Wallis Test. Pairwise comparisons were carried out using the Mann–Whitney *U* test and p-values adjusted for multiple comparisons. All variables significant at $p \leq 0.20$ in univariate analyses were included in a forced entry model in multivariate logistic analyses for predicting both self reported mental health and high K10 score. Analyses were carried out using PASW Statistics Version 18.

3. Results

3.1. Demographics

There were 1921 cases included in the analyses (E group n = 936; E + C group n = 697; E + M group n = 108; and E + M + C group n = 180). A significantly larger proportion of the E + C group and the E + M + C group were male compared to the E group (Table 1). The E + M and the E + M + C group were more likely to be older than 22 years old, and more likely to identify as lesbian, gay, bisexual or transgender (LGBT) compared to the E group. All groups were significantly more likely than the E group to be unemployed and to have initiated ecstasy use before the age of 18 (the median age of onset for the whole group).

3.2. Drug use

While groups were compared on their use of 14 distinct drug types, ecstasy, alcohol and tobacco were the only drugs for which there was a median frequency of use above 0 days for at least one group. The E + C, E + M and E + M + C groups used ecstasy significantly more frequently than the E group (Table 1). The E + M + C group consumed alcohol significantly more frequently than each of the other groups. The E group smoked tobacco significantly less frequently than all other groups. Furthermore, the E + M + C group smoked tobacco significantly more frequently than the E + C and the E + M groups.

3.3. Mental health

3.3.1. Self-report

The E group (22%) was significantly less likely to report a mental-health problem in the last six months than every other group (E + C (31%, OR = 1.56, 95%CI: 1.25–1.95); E + M (35%, OR = 1.91, 95%CI: 1.25–2.95); E + M + C (34%, OR = 1.85, 95%CI: 1.31–2.61)). The most commonly reported mental health problems were depression, anxiety and paranoia. The E + M + C group had more than five times the odds of having recently experienced paranoia than the E group (OR = 5.19, 95% CI: 2.77–9.74) and approximately three times the odds of experiencing paranoia compared with the E + M group (OR = 3.25; 95% CI:1.08–9.80) and E + C groups (OR = 2.98; 95% CI:1.64–5.43).

The presence of a self reported mental health problem was significantly related to drug group, sex, sexuality, employment status, use of ecstasy prior to 18 years of age, and number of days used tobacco in univariate analyses. Multivariate analyses found that drug group continued to be a significant predictor of self reported mental health problems (Table 2). The E + C group were significantly more likely to report a recent mental health problem than those in the E group. There was a trend suggesting that the E + M group were more likely to report a recent mental health problem ($p = 0.07$).