How does regular ecstasy use affect sleep?

… and what happens if you add cannabis and methamphetamine?

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Introduction

Sleep is an active state that serves a restorative purpose psychologically and physiologically. Poor sleep is associated with poor cognitive functioning, reduced job performance, increased risk of mood disorders and increased occurrence of breathing disorders and heart conditions[1].

Studies examining the impact of MDMA on sleep have reported contrasting findings. While one study[2] found MDMA users had reductions in total sleep and non-REM sleep (especially stage 2); another recent investigation found no effect of MDMA, per se, once sleep deprivation had been accounted for[3].

Most of the existing studies have administered MDMA in isolation, however, substantial evidence suggests ecstasy users tend to be polydrug users. Studies have traditionally struggled to define and operationalise polydrug use. Thus, the aim of this study was to investigate the relationship between polydrug use and sleep quality amongst a population of regular ecstasy users (REU).

Method

A sub-set (n=219) of the 2011 national sample of REU from the Ecstasy and Related Drugs Reporting System (EDRS) were selected according to the following criteria;

- Ecstasy only **(E Group),** REU who DID NOT regularly use methamphetamine or cannabis (n=93);
- Methamphetamine + E group **(M+E Group**), REU who regularly used methamphetamine BUT NOT cannabis (n=30); and
- Cannabis + E group **(C+E Group),** REU who regularly used cannabis BUT NOT methamphetamine (n=96).

Regular use was defined as fortnightly for ecstasy and methamphetamine and twice per week for cannabis.

Between group comparisons were conducted for demographics, drug use, mental health, the Pittsburgh Sleep Quality Index (PSQI)[4], sleep satisfaction, sleep problems and the use of sleep medications.

Results

Demographics

Overall, the sample was young (22 years), predominantly male (69%) and heterosexual (88%) (Table 1). Rates of injecting drugs use and drug treatment were low. Those in the M+E group were significantly older than the other two groups and also significantly more likely to have a history of injecting drug use. No other demographic differences across groups were found.

Drug use frequency

As expected, the groups differed according methamphetamine and cannabis use while ecstasy use was comparable . The E group reported significantly lower tobacco use and the M+E group reported significantly higher benzodiazepine use than the other two groups (22 days in the past 6 months compared with 5 (C+E) and 6 (E) days).

Mental Health

Similar rates of REU across groups reported having recently experienced a mental health problem (E (31%), M+E (27%), and C+E (33%)). Approximately 3 in 5 had been in contact with a health professional to discuss their mental health problem within the past six months in each group.

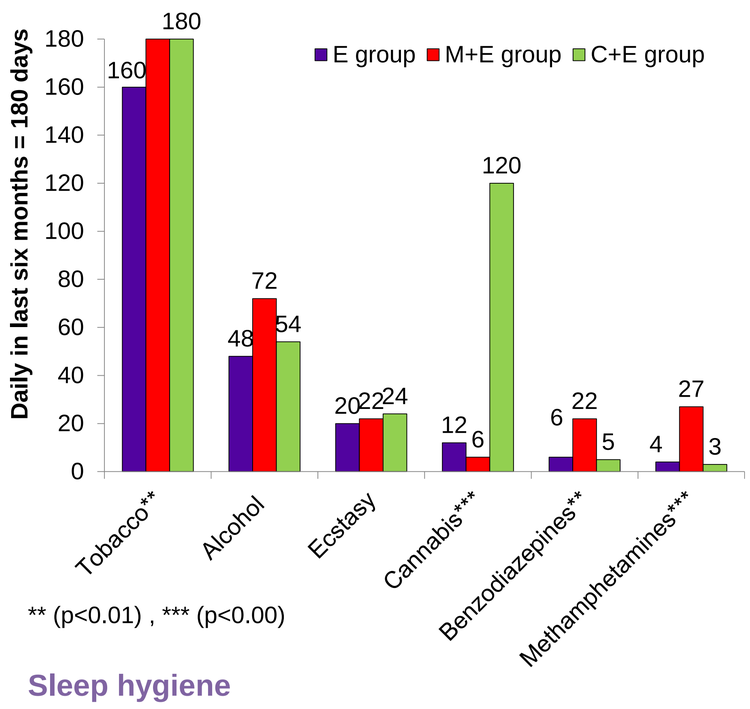
Furthermore, rates of drug related problems (i.e. social, legal, exposure to risk and poor maintenance of responsibilities) were comparable.

Table 1: Demographics of REU across drug groups, 2012

	E group (n=93)	M+E group (n=30)	C+E group (n=96)	Total (N=219)
Male (%)	63	73	74	69
Age (median;range)*	22 (17-41)	26 (19-43)	21 (16-45)	22 (16-45)
Born in Australia (%)	89	93	87	89
ATSI (%)	1	3	1	1
Gay Lesbian Bisexual & Transgender (%)	12	20	10	12
Unemployed (%)	22	30	18	21
Drug treatment (%)	3	10	4	5
Ever injected (%) ***	16	47	10	8

* (p<0.05) , *** (p<0.00)

Figure 1: Days of drug use (last six months), across groups, 2012

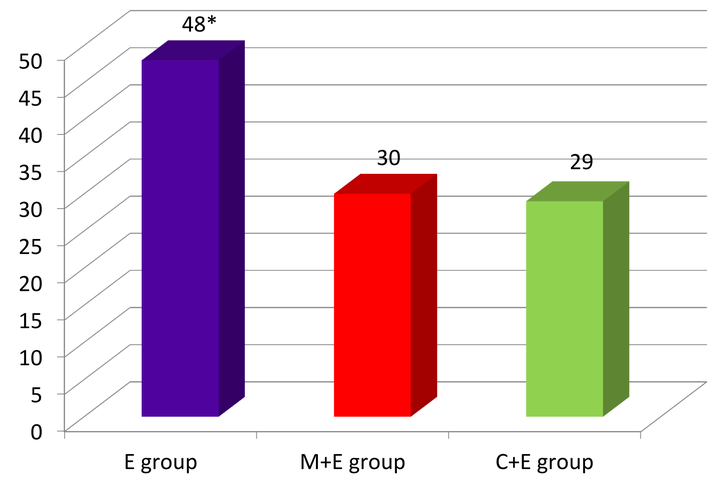


** (p<0.01) , *** (p<0.00)

Sleep hygiene

A larger number of the E group reported recently experiencing a problem with their sleep (Figure 2). Interestingly however, no differences were found in relation to usual hours slept, proportions reporting sleep quality as poor, trouble falling and/or staying asleep. Sleep satisfaction was reported as 7/10 for weekdays and 6/10 for weekends and was equal across groups.

Figure 2: Self reported sleep problems by group, 2012



* (p<0.05)

Pittsburgh Sleep Quality Index (PSQI)

In contrast to expectations, data from the PSQI revealed that the E group scored significantly higher than the other groups (median total score=7). This was also above the average cut off score of 5 (which indicates poor sleep[4]). Responses on the self-report item suggested they took longer to get to sleep and experienced greater sleep disturbance.

Sleep medications

Complimentary with the previous findings, the E group also reported the use of sleep medication more commonly than the other two groups. Benzodiazepines (especially Valium) were the main sleep medications used and were significantly associated with poorer sleep. There were no differences across groups regarding how frequently sleep medications were consumed. Approximately half of each group reported that their use of drugs adversely affected their sleep.

Table 2: Sleep medications and illicit drug use and sleep across groups, 2012

	E group (n=93)	M+E group (n=30)	C+E group (n=96)
Sleep medications (%)*	38	23	20
How often do you take medication for sleeping? (%)			
Not during the past month (%)	66	69	85
Less than 1 per week (%)	17	10	7
1-2 days per week (%)	5	7	7
3+ days per week (%)	12	14	1
Illicit drug use affects sleep (%)	54	62	48

* (p<0.05)

Summary and Implications

The results of this investigation suggest, in contrast to expectations, that ecstasy users who also regularly use cannabis or methamphetamine experience better sleep than those who do not. Data from a standardised questionnaire, self-report data and a behavioural measures (use of sleep medications) support this finding. None of the additional variables examined in this study (including demographics, drug use and mental health) were able to account for this disparity in sleep quality.

One possible explanation for these results is that there is some other confounding variable which may affect results. These may be personality traits such as self-awareness or self-monitoring. It is also possible that the polydrug using groups had systematically poorer sleep prior to onset of drug use. If that were the case, they may not have observed a change in sleep quality of the same magnitude and the ecstasy-only group. Finally, there may be a neuroprotective factor associated with regular cannabis or methamphetamine for REU.

This study raises many questions about the relationship between sleep and polydrug use. Future work could use EEG methods to compliment self-report data and investigate other possible contributors to poor sleep in these groups.

References

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