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Factors associated with driving under the influence of alcohol and drugs among an Australian sample of regular ecstasy users

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ABSTRACT

The aim of the present study was to investigate factors associated with driving under the influence (DUI) of alcohol and other drugs (ecstasy, cannabis and methamphetamine) among a group of regular ecstasy users. Participants were those who participated in the Australian Ecstasy and related Drug Reporting System (EDRS) in 2007 and had recently driven a motor vehicle ($n = 573$). Participants were administered a semi-structured face-to-face interview which included questions about ecstasy and other drug use, associated health-related issues, and risk behaviours. Close to half of those who were current consumers of ecstasy, cannabis, and methamphetamine had recently driven under the influence of these drugs, while two-fifths of current alcohol users reported recent drink driving. Frequency of use for each substance was the most significant correlate of DUI of alcohol, cannabis, and methamphetamine, suggesting that interventions targeting high frequency and problematic drug use may be useful in reducing the occurrence of DUI for these substances. Low perception of the likelihood of having an accident was the most significant correlate of DUI of ecstasy and also related significantly to DUI of other substances. Perceptions of low likelihood of being apprehended by police and demographic characteristics such as younger age and male sex were also weakly associated with DUI. Together these findings have important implications for targeted interventions aimed at reducing the occurrence of DUI among regular drug users.

1. Introduction

Driving under the influence (DUI) of alcohol and other drugs is a serious road safety concern due to the potentially impairing effects of these substances on driving ability and the associated increased likelihood of motor vehicle accidents (MVA). Internationally, alcohol and other drugs have been implicated in 10%–50% and 5%–25% of MVA cases respectively, with poly-drug use and alcohol/drug combinations common (see Kelly et al., 2004). For example, among MVA fatalities in Australia (1990–1999), cannabis, opioids, benzodiazepines and amphetamines were the most common drugs detected other than alcohol, with ecstasy (3,4-methylenedioxymethamphetamine, or MDMA) rarely detected (Drummer et al., 2003). Drivers under the influence of alcohol or other drugs are often found to be more likely to be culpable (responsible) for accidents than alcohol- or drug-free drivers, particularly those cases in which both cannabis and alcohol were detected (Drummer et al., 2004; Longo et al., 2000a,b).

Research employing driving simulation, on-road driving, and other cognitive tasks has also aimed to determine the nature of driving-related impairment associated with specific drugs (see Kelly et al., 2004). While alcohol has consistently been found to produce a marked and dose-dependent impairment in the performance of driving simulation tasks and other driving-related cognitive tasks, evidence in relation to other drugs (e.g., cannabis, methamphetamine and ecstasy) has been less decisive (see Kelly et al., 2004) and there is a clear need for further research in this area. For example, low doses of MDMA have been shown to affect some (e.g., accident involvement; risk taking behaviours, accuracy of speed adaptation) but not other (e.g., vehicle control, road tracking, reaction time of speed adaptation) aspects of driving performance (Brookhuis et al., 2004; Ramaekers et al., 2006). Moreover, the complexity of real-life situations, such as driving under the influence of multiple drugs, after extended periods of use or without sleep, is often beyond the methodological scope of such controlled investigations. In summary, however, the bulk of evidence indicates that

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DUI of alcohol and illicit drugs is a serious road safety concern and thus it is pertinent to identify characteristics associated with DUI among regular drug using populations.

DUI of alcohol and other drugs has often been associated with demographic characteristics such as age and sex, patterns of substance use, risk perceptions towards DUI, and personality factors such as risk taking and impulsivity (Kelly et al., 2004). An overall higher prevalence of drug driving has been reported among those aged less than 35 years (Kelly et al., 2004). While some research findings indicate that males are more likely to DUI of drugs in comparison to females (e.g., Davey et al., 2005b; Walsh and Mann, 1999), other studies have reported no gender differences (Alverez et al., 1991; Longo et al., 2000a). However, males are also more likely to be illicit drug users and to be involved in risky driving practices more generally (see Kelly et al., 2004), which may account for this discrepancy in the literature. A relationship has consistently been observed between DUI of alcohol and high alcohol consumption and/or alcohol-related problems (see Kelly et al., 2004). DUI of drugs has also been associated with higher dependence levels, frequency of drug use, polydrug use, and binge drug use among regular drug users (Darke et al., 2004; Duff and Rowland, 2006; Mallick et al., 2007; Matthews and Bruno, 2007) However, Albery et al. (2000) found no association between DUI and frequency of drug use or levels of dependence among out-of-treatment drug users.

Risk perceptions and attitudes also contribute to risky driving behaviour. Drug drivers often perceive that their driving skills are unaffected by drugs, and that alcohol impairs performance and increases accident risk more than drugs such as cannabis, and stimulants (Albery et al., 2000; Darke et al., 2004). Positive attitudes towards DUI of alcohol and drugs (Davey et al., 2005b), and perceptions of low likelihood of an accident (Jones et al., 2007) are also significant correlates of DUI. Individuals are also less likely to drink drive if they perceive that there is a high risk of being detected by police, but this association is less clear for drug driving and the chances of being apprehended while DUI of drugs are typically perceived to be lower (Darke et al., 2004; Davey et al., 2005a; Degenhardt et al., 2004). For example, Davey et al. (2005b) found that attitudes towards law and detection were associated with drink driving but not drug driving among a sample of university students.

The aim of the present research is to examine the extent of DUI of alcohol and other drugs, and perceptions of impairment and risk while DUI among a cohort of participants reporting at least monthly ecstasy use in the preceding 6 months. DUI is an issue of interest among this cohort due to high levels of DUI reported in previous studies (Black et al., 2008). Whereas previous research has identified several correlates of DUI, few previous studies have investigated the relative contribution of these factors to DUI among regular ecstasy users. Thus, a further aim of the present research was to investigate the association of factors such as age, sex, perceptions of risk (both accident and legal), and frequency of use to DUI of alcohol and other drugs (ecstasy, cannabis, and methamphetamine) among this cohort. The identification of factors associated with DUI has important implications for the development of targeted interventions to reduce the prevalence of DUI and improve road safety among this population.

2. Method

2.1. Participants and procedure

Interviews were conducted as part of the Australian Ecstasy and Related Drug Reporting System (EDRS; formerly the Party Drugs Initiative, PDI), a study designed to monitor trends in the markets for ecstasy and other related drugs. The structured questionnaire was based on an instrument devised during the initial feasibility study for the project (Topp et al., 2004). Participants included in the current analysis ($n = 573$) were those interviewed for the 2007 EDRS ($N = 741$) who reported driving a vehicle during the 6 months preceding interview. Participants were recruited through a purposive sampling strategy (Kerlinger, 1986), which included the distribution of posters and flyers at various locations (e.g., cafes, bars, nightclubs, clothing stores, music stores, universities), posting on internet forums, and through 'snowball' methods (word of mouth). Potential participants contacted the researchers and were screened for eligibility. Inclusion criteria required that participants be at least 16 years of age, to have used ecstasy at least once a month during the preceding 6 months, and have been a resident of the jurisdiction in question for the past year. Ethics approval was granted by relevant ethics committees in each jurisdiction. Participants gave written informed consent prior to the interview and all information provided was confidential and anonymous.

Interviews took between 45 and 60 min to complete and were administered by trained interviewers at locations that were mutually acceptable to respondent and interviewer (e.g., coffee shops, university campuses). All participants were reimbursed $30AUD to cover travel and out of pocket expenses. A structured interview was administered including questions on demographic characteristics, patterns of ecstasy and other drug use, criminal activity, problems attributed to ecstasy and other drugs, and risk behaviours such as intravenous drug use, sexual risk taking, and driving under the influence of alcohol and other drugs.

For the present study, participants were asked if they had used each substance (ecstasy, alcohol, cannabis, and methamphetamine) during the 6 months preceding the interview, and if so, how many days they had used the substance, and whether they had driven under the influence of the substance during this time. DUI of alcohol was defined as driving while self-perceived to be over the legal limit (blood alcohol content, BAC, greater than 0.05), DUI of illicit substances was defined as driving a vehicle within an hour of taking a given substance. Those who had driven under the influence of illicit drugs in the last 6 months were asked the last drug they had DUI under, and to rate how impaired they perceived their driving to have been on this occasion, on a Likert scale ranging from 1 (quite impaired) to 5 (quite improved). All participants were asked to rate their perception of both the likelihood of having an accident (risk perception: accident) and the likelihood of being apprehended by police (risk perception: legal) if they were DUI of alcohol (over the legal limit), ecstasy, cannabis, and methamphetamine on a 5 point Likert scale ranging from 1 (very unlikely) to 5 (very likely).

2.2. Design and data analysis

All statistical analyses were conducted using SPSS 12.0.1 for Windows (SPSS Inc., 2003). The χ^2 test and 95% confidence intervals were used to compare categorical data and the non-parametric Mann–Whitney U test was used to compare continuous data. Based on variables known to be associated with risky driving behaviour, a series of regression analyses were conducted to examine the correlates of DUI of alcohol, ecstasy, cannabis, and methamphetamine for those who had used each drug in the last 6 months. Logistic regression with stepwise removal was performed, in order to avoid the erroneous exclusion of variables involved in suppressor effects, using significant change ($p < 0.10$) in the likelihood statistic as criterion (due to the exploratory nature of the analyses). However, to provide an estimate of the influence of each factor, the change in Nagelkerke R^2 values on entry, using a forward stepwise entry approach, are provided. For all analyses, the following variables were assessed: age (in years), sex (male = 0, female = 1), frequency of target drug use in the preceding 6 months (days), risk perception (accident) and risk perception (legal) for each target drug (ranging from 1 to 5, where higher scores reflect increased risk). For each regression analysis, those who had not used the target drug in the preceding 6 months, those with 'don't know' responses for risk perception variables, and those with missing data on other variables were excluded.

3. Results

3.1. Demographic characteristics of regular ecstasy users

The 573 participants had a median age of 23 years (range 17–54) and were predominantly male (60%, 95% CI 56–65). The majority of participants were heterosexual (82%, 95% CI 79–86) and all spoke English as their main language. Three-quarters of the sample (75%, 95% CI 72–79) had completed secondary education (year 12), and the majority were either employed (61%, 95% CI 54–69) or students (23%, 95% CI 19–26). Only a minority had ever received a custodial sentence (5%, 95% CI 3–7) or were currently in drug treatment (2%, 95% CI 1–4).

3.2. Recent drug use and DUI among regular ecstasy users

Table 1 shows recent drug use, frequency of drug use, and prevalence of DUI of alcohol and drugs during the 6 months preceding