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Illicit drugs and driving: prevalence, beliefs and accident involvement among a cohort of current out-of-treatment drug users

Ian P. Albery^{a,*}, John Strang^b, Michael Gossop^b, Paul Griffiths^b

^a ICRF Psychosocial Oncology Unit, Guy's, King's College and St Thomas' Hospital's Medical and Dental Schools, University of London, 3rd Floor, Riddell House, St Thomas' Hospital, London, SE1 7EH, UK

^b Addiction Research Unit, National Addiction Centre, Institute of Psychiatry, 4 Windsor Walk, London, SE5 8AF, UK

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Abstract

Drug-driving behaviour among out-of-treatment dependent drug users has not been investigated while a theoretical perspective on the propensity of certain drug users to drive while impaired has not been suggested. This paper examines illicit drugs and driving behaviour and accident involvement among out-of-treatment current drug users. Psychological evidence of belief-based mechanisms to account for the decision to drive while impaired by drugs are provided. A total of 210 out-of-treatment current drug users were interviewed in a non-clinical setting by privileged access interviewers. Questionnaire measures were: current illicit drug use, severity of dependence, illicit drugs and driving behaviour, impaired and unimpaired accident involvement and beliefs and perceptions about the impairing effects of a number of illicit drugs. Analyses are restricted to participants who reported driving during the previous 12 months ($n = 71$). Fifty-eight participants (81.7%) reported driving immediately after consuming illicit drugs, primarily heroin and cannabis. Of these 41.4% ($n = 24$) had at least one road accident as a driver, 15 of whom (62.4%) reported accident involvement following recent drug consumption. Belief-based results showed that participants who reported never driving after using illicit drugs perceived heroin, methadone and alcohol to be greater significance for accident risk and driving skills impairment than other drugs. Those drivers who reported drugs and driving behaviour believed only alcohol to be significantly more impairing than other drugs. Findings indicated that illicit drugs and driving behaviour is common among out-of-treatment drug users. Accident involvement among this cohort is characterised by the previous consumption of illicit substances. Differential beliefs about the effects of drugs on driving performance and accident risk were shown to be dependent upon frequency of drugs and driving behaviour. Results are discussed in terms of experiential factors and consistency theories of attitude formation and change. © 2000 Elsevier Science Ireland Ltd. All rights reserved.

Keywords: Illicit drugs; Impaired driving; Impairment beliefs; Accident involvement

1. Introduction

Evidence suggests an increasing trend for experimental use and abuse of illicit substances across many countries (e.g. Hartnoll, 1994; Parker and Measham, 1994; Pickering and Stimson, 1994; Miller and Plant, 1996). Previous work has shown that more than 50% of young people in the 16–25-year age groups had used illicit drugs (McNeil and Raw, 1997). The number of

UK individuals who drive motor vehicles has increased by 20% during the last decade. Of these drivers 68% (approximately 21 million) are in the 16–50 age group, a range sufficiently large to include distributions of recreational and dependent drug users (Hartnoll, 1994). Given such prevalence trends, it is likely that the proportion of drivers who also consume illicit substances on a recreational or dependent basis is expanding, with the overlap between drug use and driving becoming increasingly significant (Albery and Strang, 1995).

Previous research has described the epidemiology of drug use and driver accident involvement (Ferrara, 1987). Studies of injury and fatality road accidents have

* Corresponding author. Tel.: +44-171-960-5734; fax: +44-171-960-5719.

E-mail address: ian.albery@kcl.ac.uk (I.P. Albery)

shown that as much as a quarter displayed positive drug screens (Stoduto et al., 1993), primarily tetrahydrocannabinol (THC), stimulants, opiates and benzodiazepines (Williams et al., 1985; Fortenberry et al., 1986; Budd et al., 1989; Marzuk et al., 1990). Apprehension data has shown that among those drivers with negative blood-alcohol tests between 50 and 75% had used one or more illicit drugs (Poklis et al., 1987; Brookoff et al., 1994). Representative sample studies of the general driving population show conflicting evidence for the prevalence of driving while under the influence of illicit drugs. Elliott (1987) reported 20% of surveyed US drivers to have consumed THC prior to driving, on average 24 times a year, with drivers who consumed two or more drugs (poly-drug users) driving on average 60 times a year. Moreover, for every 100 poly-drug users, 22.74 were accident involved, 11.5% having at least one accident during any single year. In contrast, retrospective reports among Spanish drivers showed that between 3 and 4% of drivers had driven after consuming illicit substances, and that driving while impaired by drugs is associated with younger age groups (Alvarez, 1991; del Rio and Alvarez, 1995). The most obvious explanation for this seeming discrepant finding appears to be methodological. In the Spanish study, the sample comprised those individuals attending for medical examination prior to obtaining a driver's licence, opening up the confounding possibility of social desirable responding. Nevertheless, it is clear from such evidence that a significant proportion of drivers do consume illicit substances and drive on a fairly frequent basis.

This brief overview highlights there to be limited appraisal of the driving behaviour and accident involvement of *recreational* illicit drug users. Research addressing the relationship between levels of substance misuse and dependence, driving behaviour and accident involvement is of greater scarcity. One exception provided evidence for differential accident involvement and aberrant driving behaviour among opiate addicts (on methadone substitution programs) and non-addicted drivers (Blomberg and Preusser, 1974). From retrospective accounts 95% of addicts reported having driven at least once within an hour of consuming heroin and other illicit drugs (THC, stimulants and hallucinogens), 65% driving while under the influence daily. However, an over-representation of addicted drivers among those accident involved or apprehended for serious driving violations (e.g. speeding, reckless driving) was not shown.

In general, recreational drug users and in-treatment drug-dependent users appear to comprise a notable proportion of accident rate figures but no information about the accident histories of out-of-treatment drug users has been presented (Albery et al., 1998). Irre-

spective of accident involvement, little formulation of possible *process* mechanisms by which an individual decides to drive after consuming illicit drugs have been suggested. One possible mechanism involves an individual's perceived risk of skills impairment and accident involvement after consuming drugs, where decreased perceived risks are associated with increased aberrant behaviour (a reliable finding in the drink-driving literature (Albery and Guppy, 1995a,b, 1996). Another mechanism focuses on personal attitudes towards a behaviour and the decision to perform that behaviour. Studies have shown that attitudes and beliefs predict behavioural intention and actual behaviour for both aberrant driving styles (Parker et al., 1992) and for drink-driving behaviour in particular (Åberg, 1993, 1994). This paper reports the results of a study of accident rates and driving behaviours of a UK cohort of out-of-treatment drug users. It aims to delineate the magnitude of the behaviour among drug users, and provide possible belief-based mechanisms to explain driving after the consumption of illicit drugs.

2. Method

2.1. Design and subjects

A cross-sectional study of 210 *current* out-of-treatment illicit drug users was performed. The sample comprised 131 (62.4%) males and 79 (37.6%) females, with a mean age of 30.51 years (S.D. = 7.91, range 16–59).

2.2. Materials and procedure

All subjects were contacted and interviewed in a non-clinical setting by a team of 17 *privileged access interviewers* (PAI) who had existing contacts or who could develop contacts with illicit drug users in the community. The PAI sampling process has been described elsewhere (Griffiths et al., 1993). Demographic information, current illicit drug use and dependence, and items referring to subjects illicit drugs and driving behaviour were included in the questionnaire. Dependence was measured using the Severity of Dependence Scale (SDS) (Gossop et al., 1995). A score of 9 or more on this scale is indicative of dependence (Gossop et al., 1995) and was adopted for this study. Illicit drugs and driving questions were divided into four sections. The first section comprised items which measured driving exposure and experience including length of full driving licence (years), whether the subject had ever driven any type of vehi-

cle, frequency of driving during the past 12 months ('never', 'less than once a week', 'once or twice a week', 'more than once or twice a week', 'every day'), and average weekly mileage.

The second section measured frequency of personal illicit drugs and driving behaviour during the previous 12 months ('never', '1–2 times', '3–10 times', '11–20 times', 'about once a week', 'more than once a week', 'every day') and types of drugs used prior to driving. The next section was concerned with driving accident involvement while under the influence and when not under the influence of illicit drugs. Subjects were first asked whether they had been involved in any type of accident as a driver in the past. Questions then followed which asked specifically about accident involvement as a driver. Accident involvement was defined as any incident the subject was involved with as a driver, not as a passenger, which involved injury to another person or themselves, damage to property, another vehicle or the vehicle being driven by the subject. Subjects were asked to report all accidents however minor. Subjects were asked whether they had been involved in an accident after having taken illicit drugs before driving and also whether they had been involved in an accident when they had not taken drugs or drunk alcohol before driving. (It was stated explicitly that alcohol was not to be considered a drug for the purposes of the study.)

The fourth section measured individual's beliefs and perceptions of the impairing effects of drugs on driving. Subjects marked on fully-anchored scales how far they agreed or disagreed with two core statements ('taking decreases driving skills' and 'the chances of having an accident are greater after taking'). These core statements were presented for each of five types of drugs (heroin, methadone, stimulants, cannabis and alcohol). Response options were 'strongly agree', 'agree', 'neither agree or disagree', 'disagree' and 'strongly disagree'. Two final items measured personal frequency of driving-related convictions and whether the drug user had ever been told by a doctor or drugs worker of the effects drugs could have on driving performance.

3. Results

3.1. Driving demography

Sixty-eight (32.4%) of the sample subjects held full-driver's licences, on average for 11.32 years (S.D. = 7.41, range 1–30). Males were over-represented among licence holders compared with females, 81% versus 19%, respectively ($\chi^2(1) = 14.67$, $P < 0.05$). A total of 119 (57%) subjects reported to have driven a vehicle at some point, 51 (43%) of whom did not hold full driver's licences. Frequency of driving during the previous 12 months showed 48 (40.3%) to have not driven at all, 22 (18.5%) to have driven less than once a week and 49 (41.2%) to have driven once or twice a week or more often. Those drivers who reported driving during the last year drove on average 80 miles per week (S.D. = 90, range 0–550). Subsequent analyses are based on those drivers who reported driving during the previous 12 months ($n = 71$).

3.2. Illicit drug use

Table 1 shows the proportion of drivers who had used illicit drugs during the previous year and the previous month, and frequency of use. The most commonly consumed drugs were cannabis, alcohol and heroin during the past year. This table also shows that of those drivers who reported illicit drug use in the past year, a significant proportion reported use during the previous month. For instance, of the 42 subjects who reported using heroin in the past year, 41 (97.6%) had also used heroin in the past month. SDS scores of illicit heroin use in the past month showed that 51.2% ($n = 21$) of subjects had scores greater than 8, indicative of dependence (mean SDS = 7.98, S.D. = 4.32). For methadone 30 subjects had used during the previous month of which 5 (16.7%) had SDS scores greater than 8 (mean SDS = 2.13, S.D. = 2.43). Twenty-one subjects reported stimulant use during the previous month, 54 reported cannabis use and 56 alcohol consumption. Respective proportions above the SDS cut-off for de-

Table 1
Past year and past month illicit drug use among subjects reported to have driven during the previous 12 months ($n = 71$)

Drug	Past year (n)	% Used	Past month ^a (n)	% Used	Mean days used	Mean amount per day ^b
Heroin	42	59.2	41	97.6	17.73	0.278
Methadone	35	49.3	30	85.7	22.00	0.053
Stimulants	36	50.0	21	58.3	5.83	0.510
Cannabis	57	80.3	54	94.7	19.74	1.33
Alcohol	61	85.9	56	93.3	29.40	10.05

^a As a proportion of past year figures.

^b Illicit drugs are measured in black market weights, methadone in pharmaceutical grams and alcohol in units.

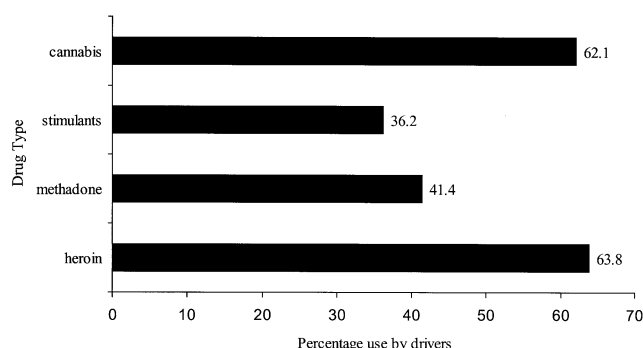


Fig. 1. Types and frequencies (%) of drugs consumed prior to driving among subjects who had driven during the 12 months ($n = 58$).

pendence of 8 for stimulant, cannabis and alcohol use were 23.8% ($n = 5$, mean SDS = 2.35, S.D. = 3.46), 9.3% ($n = 5$, mean SDS = 2.78, S.D. = 3.76) and 33.9% ($n = 19$, mean SDS = 5.81, S.D. = 4.73), respectively.

3.3. Illicit drugs and driving behaviour

Thirteen (18.3%) subjects reported not having driven after consuming drugs during the previous 12 months. Of the 81.7% of those who affirmed some drugs and driving behaviour ($n = 58$), 16 (22.5%) had driven 1–2 times after drug consumption, 12 (16.9%) 3–10 times, 7 (9.8%) 11–50 times, 9 (12.7%) more than once a week but not every day and 14 (19.7%) every day of the previous year. Fig. 1 shows the types and frequencies of drugs used prior to driving by subjects who reported driving during the previous 12 months after taking drugs ($n = 58$). By far the most common drugs used prior to driving were heroin ($n = 37$, 63.8%) and cannabis ($n = 36$, 62.1%). For subsequent analyses, the frequency of illicit drugs and driving (IDDF) was categorised into those who reported *never* having driven after taking drugs during the previous 12 months ($n = 13$), those reported to have driven between 1 and 20 times, *sometimes* IDDF ($n = 30$), and those who reported *frequently* IDDF ($n = 28$), about once a week or more often. (Fluctuations in n for IDDF groups in subsequent analyses is attributable to missing data for subjects on some variables.) ANOVAs showed that the three IDDF groups did not differ in the mean number of days during the last month they reported using heroin, methadone, cannabis and alcohol ($P > 0.05$), nor the amount of each drug used per week ($P > 0.05$). Further analyses also showed that severity of dependence scores for each drug did not differ across IDDF driver groups ($P > 0.05$).

No differences were shown between IDDF groups in the mean driving conviction frequency ($F(2, 68) = 1.75$, $P > 0.05$), although *frequent* drug-drivers were found to account for 53.3% (16/30) of those who reported at least one previous driving conviction. For the item

which measured whether subjects had been told of effects drug consumption could have on their driving, *frequent* drug-drivers were found to be over-represented among those who reported having been informed, while *never* and *sometimes* drug-drivers were over-represented among those who had not been informed ($\chi^2(2) = 9.24$, $P < 0.05$).

3.4. Accident involvement

Among drivers who reported having consumed illicit drugs prior to driving during the previous 12 months ($n = 58$), 41.4% ($n = 24$) reported having had at least one road accident as a driver. Of these, 62.5% ($n = 15$) reported at least one accident after having consumed drugs before driving (mean accident number = 1.4, S.D. = 0.74, range 1–3). Accident involvement after consuming illicit drugs was not found to be associated with IDDF ($\chi^2(1) = 0.411$, $P > 0.05$) (*never* IDDF was eliminated from this analysis). A total of 41.7% of subjects ($n = 10$) reported at least one non-impaired driving accident (mean accident number = 2.4, S.D. = 0.97, range 1–4). Non-impaired accident involvement was not found to be associated with IDDF ($\chi^2(1) = 0.691$, $P > 0.05$). However, drivers involved in drug-impaired driving accidents were less likely to be involved in non-impaired accidents ($r = -0.69$, $P < 0.05$). Drivers appeared to have been involved in either impaired or non-impaired accidents, but not both.

3.5. Drug-driving beliefs and perceptions

Analyses of covariance were used to test for differences between IDDF groups (*never*, *sometimes*, *frequently*) across beliefs related to perceived skill and accident likelihood for the different drugs, controlling for the effects of driving exposure. (Previous research has shown that individual differences in risk perception varies as a function of driving exposure (Groeger and Brown, 1989).) One between-subjects factor (illicit drugs and driving frequency [IDDF]), one within-subjects factor (*drug type*) and one covariate (*driving exposure*-miles per week) were included in the analysis. (Means and standard deviations for these analyses are shown in Tables 2 and 3.)

For perceptions of the impairing effects of the different drugs on driving skills, significant main effects were shown for drug type ($F(4, 260) = 14.07$, $P < 0.05$), IDDF ($F(2, 65) = 8.83$, $P < 0.05$), and the interaction term drug type \times IDDF ($F(8, 260) = 2.12$, $P < 0.05$). To explore the interaction effect, simple main effects analysis and Tukey HSD post hoc comparisons were undertaken (Fig. 2 shows the interaction effect). (The description is limited to significant effects only.) Significant simple main effects of drug type were found for all levels of IDDF; *never* IDDF, $F(4, 48) = 8.66$, $P < 0.05$,

Table 2

Means and standard deviations of perceptions of skills impairment for illicit drugs by IDDF group^a

Drug type	IDDF group								
	Never			Sometimes			Frequently		
	<i>n</i>	Mean	S.D.	<i>N</i>	Mean	S.D.	<i>n</i>	Mean	S.D.
Heroin	13	3.08	0.86	28	2.82	1.06	27	2.33	1.14
Methadone	13	3.31	0.48	28	2.54	1.07	27	2.15	0.99
Stimulants	13	2.58	0.84	28	2.41	0.79	27	2.35	0.98
Cannabis	13	2.31	1.18	28	2.54	0.92	27	1.74	1.10
Alcohol	13	3.62	0.51	28	3.46	0.51	27	3.37	0.69

^a Higher scores indicate increased agreement that the drug impairs driving skills.

sometimes IDDF ($F(4, 108) = 8.75$, $P < 0.05$, and *frequently* IDDF, $F(4, 104) = 14.55$, $P < 0.05$. Tukey's HSD showed that those reported to *never* IDDF agreed significantly more that heroin, methadone and alcohol would impair driving skills than cannabis, and that alcohol and methadone impair skills more than stimulants ($P < 0.05$). Those who *sometimes* IDDF agreed significantly more that alcohol would decrease driving skills compared to cannabis, stimulants, heroin and methadone ($P < 0.05$). An identical picture emerged for *frequent* IDDFs. These participants reported significantly more agreement that alcohol would decrease driving skills than cannabis, stimulants, heroin and methadone ($P < 0.05$). Simple main effects analysis for IDDF within levels of drug type showed no significant effects.

For perceptions of increased accident likelihood after taking different illicit drugs, main effects for drug type ($F(4, 260) = 27.01$, $P < 0.05$) and IDDF ($F(2, 65) = 6.12$, $P < 0.05$) were found. The drug type \times IDDF interaction effect bordered significance ($F(8, 260) = 1.94$, $P = 0.054$), and was explored further (Fig. 3). Significant simple main effects of drug type were found for all levels of IDDF; *never* IDDF, $F(4, 48) = 10.71$, $P < 0.05$, *sometimes* IDDF ($F(4, 108) = 9.81$, $P < 0.05$, and *frequently* IDDF, $F(4, 104) = 15.55$, $P < 0.05$. Post hoc analyses showed that, within *never* IDDF, subjects

considered the chances of accident likelihood under the influence of cannabis to be less than for heroin, methadone and alcohol ($P < 0.05$). Results also showed greater agreement that the chances of accident involvement after taking stimulants were significantly less than for methadone and alcohol. In both the *sometimes* IDDF and *frequently* IDDF groups, subjects agreed significantly more that the chances of accident involve-

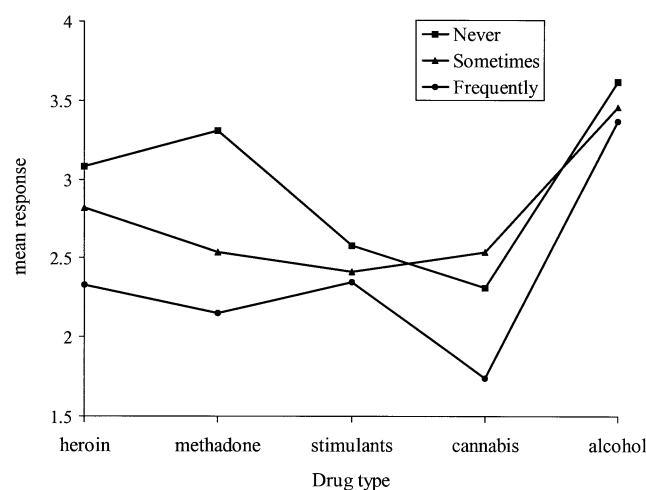


Fig. 2. Mean perceived skills impairment by driver group (higher scores indicates increased impairment).

Table 3

Means and standard deviations of perceptions of accident involvement for illicit drugs by IDDF group^a

Drug type	IDDF group								
	Never			Sometimes			Frequently		
	<i>n</i>	Mean	S.D.	<i>n</i>	Mean	S.D.	<i>n</i>	Mean	S.D.
Heroin	13	3.23	0.44	28	2.89	0.92	27	2.67	1.14
Methadone	13	3.21	0.49	28	2.61	1.03	27	2.22	1.01
Stimulants	13	2.62	0.85	28	2.45	0.69	27	2.37	0.93
Cannabis	13	2.31	1.15	28	2.50	0.84	27	1.78	1.12
Alcohol	13	3.63	0.49	28	3.50	0.51	27	3.52	0.51

^a Higher scores indicate increased agreement of accident involvement after drug consumption

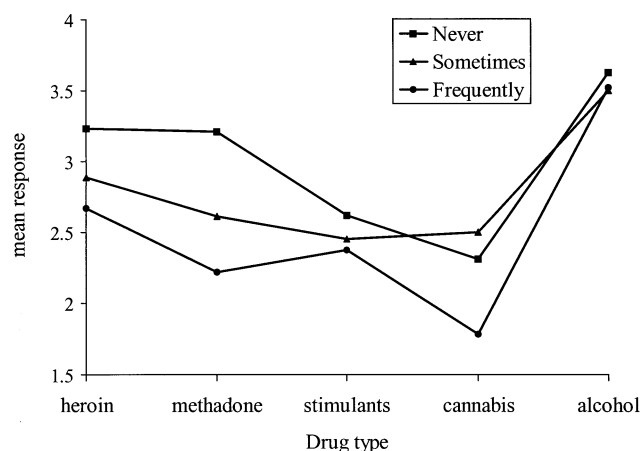


Fig. 3. Mean perceived accident likelihood by driver group (higher scores indicates increased impairment).

ment after consuming alcohol were greater than for cannabis, methadone, stimulants and heroin ($P < 0.05$).

Simple main effects for IDDF within levels of drug type showed one significant effect for methadone ($F(2, 65) = 3.42$, $P < 0.05$). Drivers who reported *never* IDDF agreed significantly more that methadone would increase the chances of accident involvement than both the *sometimes* IDDF and the *frequently* IDDF groups ($P < 0.05$).

4. Discussion

This study examined personal illicit drugs and driving behaviour among out-of-treatment UK illicit drug users. Specific empirical questions addressed both descriptive and theoretical relationships between the consumption of illicit drugs and driving behaviour. The first issue concerned the prevalence of illicit drugs and driving behaviour among non-recreational substance abusing drivers. Previous studies have examined general prevalence rates among representative samples of driving populations (but not in the UK), but few have examined the behaviour of more dependent drug users. Such research has restricted itself to samples of drug users in treatment. The present study cohort are likely to be excessive substance abusers. For all drugs, except stimulants, a large proportion of those who reported use in the last year had also used in the last month, and had used very frequently over this last month (Table 1). In terms of frequency of drugs and driving behaviour among individuals who reported driving during the past year, a significant proportion reported driving immediately after having consumed illicit substances (81.7%). Nearly half reported such behaviour once a week or more often. Heroin and cannabis were the most commonly cited drugs used prior to driving, although severity of dependence was not shown to differentiate those

who drive after taking drugs from those who do not. Together these results suggest illicit drugs and driving behaviour to be notably common among drugs users, and to be a feature related to drug use regardless of severity of dependence or treatment status.

The second issue addressed whether drugs and driving behaviour (IDDF) was associated with accident involvement. Just under a half of subjects who reported driving after taking illicit drugs in general also reported having had a driving accident. Of greater significance is the finding that nearly two-thirds of these drivers reported accident involvement after taking illicit drugs, while 43% reported a non-impaired accident. (Impaired accident involvement was not associated with non-impaired accident involvement.) For this cohort, such findings suggest accident involvement to be characterised by accidents which have occurred after the consumption of illicit substances, and that these accidents are not uncommon among drug users. In terms of recent IDDF (excluding cases who reported *never* IDDF), drug-related and unrelated accident involvement were not found to be dependent. The frequency an individual drives after consuming illicit substances does not predict whether (s)he will be involved in either an drug-related or unrelated accident. Such self-report evidence is dependent on subjects responses of drug use and driving behaviour being reliable indicators of behaviour. The likelihood of under-reporting of socially undesirable behaviour may be increased by self-report measurement. However, empirical investigation of this issue has demonstrated that self-report of drug-taking behaviour is consistent with objective measurement of drug use such as urine screens and hair analysis (e.g. Sherman and Bigelow, 1992).

This study also examined risk and behavioural perceptions with regard to various illicit drugs to provide a possible mechanistic explanation of individual differences in IDDF. For perceptions of the impairing influence of drugs on driving skills, differential beliefs about such effects were shown to be dependent upon frequency of illicit drugs and driving behaviour. Those who reported *never* IDDF believed heroin, methadone and alcohol to impair skills more than cannabis, and alcohol and methadone to impair skills more than stimulants. In contrast, *sometimes* IDDF and *frequently* IDDF subjects believed that alcohol alone was more impairing than any of the other drugs examined. In general, it was also shown that *never* IDDF subjects reported increased agreement that drugs impaired driving skills.

Similar results emerged for perceptions of accident likelihood after consuming illicit drugs. The comparative chances (between different types of illicit drugs) of accident likelihood after taking drugs were shown to be dependent upon IDDF. Those who reported *never* IDDF agreed the chances of accident involvement to be

increased after taking heroin, methadone and alcohol compared to cannabis, and also for alcohol and methadone compared to cannabis. In contrast, for those who *sometimes* and *frequently* IDDF alcohol was believed to increase the chances of accident involvement in comparison to all the other drugs studied.

These results suggest three possible mechanistic explanations. First, actual experience of driving after taking drugs could create realistic knowledge and hence a more accurate perception or judgement of the differential impairing effects of various illicit drugs. Those who *never* IDDF simply do not have the necessary experience vis-à-vis the impairing effects of different drugs because they have not experienced related drug-driving situations under the influence of those particular drugs. Essentially, these drivers have no behavioural input on which to base and evaluate beliefs.

A second explanation follows on from this interpretation. Drug-drivers may report a series of non-differential beliefs about drugs and are more positive about related behaviour in general, as a means to justify personal drug-driving behaviour. Consistency theories of attitude formation and change suggest individuals are primarily motivated to maintain equilibrium between internal representations of beliefs and attitudes (including risk perceptions) and related behaviours (Eagley and Chaiken, 1993). When beliefs are not consistent with actual behaviour the individual experiences an unpleasant psychological feeling (*cognitive dissonance*) which (s)he is motivated to reduce to re-establish a consonant state through either behavioural or attitudinal realignment (Festinger and Carlsmith, 1959). Such theoretical interpretations thus allow for individual differences in beliefs to be dependent upon distinct behavioural patterns.

Other research has also suggested that belief formation and change may be dependent upon the experience of adverse consequences associated with a behaviour (Weinstein, 1980; Burger and Palmer, 1992). If this is the case, differences between IDDF groups in attributions of driving skill and accident likelihood across illicit drugs should be dependent on the main negative outcome associated with drug-driving, i.e. accident involvement. Frequency of drug-driving was not associated with increased accident involvement in general refuting this suggestion.

This study also showed that perceptions of accident involvement and impaired driving skills after drinking alcohol in comparison to other drugs for *frequent* and *sometimes* IDDF groups were consistently more negative than for those drivers who reported *never* IDDF. These drivers agreed significantly more that the chances of accident involvement and impaired driving skills were greater after consuming alcohol than cannabis, methadone, stimulants and heroin. Thus drug-drivers believe alcohol to be more impairing than other drugs.

(In general, perceptions of alcohol impairment and skills impairment per se were not dependent upon IDDF group.) Why should drug-drivers believe alcohol to be more impairing of driving skills than other illicit drugs? One explanation emphasises the role of exposure to persuasive communications. Educational campaigns emphasising the role of alcohol on driving performance and accident involvement and deterrence based initiatives have been constant themes in road safety programmes. In terms of driving after the consumption of illicit substances, this exposure has at best been limited (Albery et al., 1998). Although, driving after consuming illicit substances is illegal in the UK (Albery and Strang, 1995), this deterrent has failed to be fully enforced. It is likely that the majority of drivers (drug users and non-users) are likely to have some awareness of drink-driving related outcomes which campaigns aim to foster in order to stimulate attitudinal and behavioural change. As such drivers have some objective base from which to derive risk perceptions and beliefs systems. If this awareness through education explanation is correct, drug-drivers should not have been exposed to information and advice regarding drug consumption and driving as reflected in reports of disagreement that illicit drugs result in increased accident risk and decreased driving skills. However, findings suggested quite the opposite. *Frequent* IDDF drivers were shown to be over-represented among those reporting having been informed of the possible effects illicit drugs may have on driving behaviour. Such individuals are aware of the effects of drugs on driving (and are also likely to be aware of the effects of alcohol) but continue to report deflated drug-driving risk perceptions relative to alcohol.

This paper has reported findings of current and recent drugs and driving behaviour within a cohort of out-of-treatment drug users. In general, it was shown that driving after the consumption of illicit substances is not uncommon among these individuals. Indeed in excess of three-quarters of drivers reported drug-driving behaviour, a fifth of whom behaved as such every day. The most common drugs used prior to driving were heroin and cannabis. This reflects general drug consumption practices for the sample. Forty per cent of drivers using illicit drugs prior to driving were also shown to have been involved in a road accident, of whom well over half had been involved in a drug-related road accident. Such evidence suggests that not only are these drivers using illicit substances and subsequently driving, they are having road accidents on one or more of these occasions as well. This study also identified differences within the out-of-treatment drug-using population with regards perceptions of the impairing effects of various illicit and licit substances on driving performance and accident likelihood. Drug-drivers were shown to display a contrasting set of

behavioural beliefs to non-drug-drivers. Although such evidence is indicative of distinct belief sets, further research is required to examine the importance of such beliefs on driving behaviour specifically.

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