

The Self-Reported Impact of Legal and Non-Legal Sanctions on Drug Driving Behaviours in Queensland: A study of General Motorists and Convicted Offenders

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Abstract

Contemporary research on driving behaviour has indicated a substantial percentage of motorists drive on public roads after consuming illicit substances. This study aimed to examine a group of Queensland motorists' ($N= 516$) perceptions of legal (certainty, severity and swiftness) and non legal (social, internal and physical) sanctions associated with drug driving, as well as investigate the impact of random roadside drug testing and non legal sanctions on intentions to drug drive. Overall, the findings' revealed that respondents considered the recent legal sanctions associated with drug driving to be certain and severe but not swift. In regards to non legal sanctions, majority of respondents reported being concerned about social sanctions such as losing friends' respect, and internal loss, whilst more than half reported being concerned about physical loss such as injuring themselves. In regards to predicting those who intended to drug driving again in the future, perceptions of apprehension certainty, more specifically low certainty of apprehension, were significantly associated with self-reported intentions to offend. The second part of the study compared a group of convicted drug offenders ($N=49$) to a group of demographically matched general motorists, on their past drug driving behaviours, perceptions of legal and non-legal sanctions and intentions to offend. The results revealed that convicted offenders were significantly more likely to drug drive at least once in the last 6 months, and despite being recently apprehended for drug use, were significantly more likely to report intentions to re-offend in the future. This paper will further outline the major findings' of the study and highlight the implications in regards to increasing the deterrent impact of random roadside drug testing in Queensland.

Keywords

Drug Driving, Legal sanctions, Deterrence, Drug Offenders

Introduction

Currently, research has demonstrated that a substantial proportion of motorists are driving after consuming illicit substances [1,2,3,4]. Contemporary research has suggested that the prevalence of drug driving may be significantly higher than drink driving [2]. Furthermore, a 10 year evaluation of road crashes in Australia estimated that approximately 25% of drivers killed in road crashes tested positive to drugs other than alcohol [5]. Consequently, the increasing drug driving problem has resulted in a number of countermeasures being implemented and developed to reduce the prevalence of drug driving in the community.

In general, drug driving countermeasures commonly consist of one of four components which are: prevention, detection, action and research [5]. Action and research have been demonstrated to be effective in determining the prevalence of drug driving amongst the general motoring population [4,5,6] and also in forming and developing anti-drug driving education schemes [7]. However, it appears that the most beneficial and useful of the four elements appears to be associated with detection and prevention. The recent introduction of oral fluid drug testing methods has increased the probability that motorists who consume illicit substances and drive can be detected. As a result, a number of drug testing initiatives have commenced within Australian (e.g., Queensland, Victoria, New South Wales, Tasmania & Western Australia) and preliminary research has produced positive results in regards to the possible detection of drivers under the influence of illicit substances [2].

The current research project aims to provide evidence of the preliminary effect the legislation and the corresponding random testing method are having on drug driving practices among a sample of Queensland drivers. To investigate the initial impact of the drug testing, a deterrence-based model was considered appropriate given the apprehension and enforcement-based approach of the countermeasure.

The Classic Deterrence theory, proposes that individuals will avoid offending behaviour(s) if they fear the perceived punishment of being apprehended for the act, has been the predominant paradigm and foundation within the deterrence field [8,9]. Deterrence based theories are essential to criminal justice policy [9,10,11] and remain the foundation for a number of countermeasures focused at reducing the prevalence of drug driving, including random roadside drug testing, public education and mass media campaigns e.g. radio and television advertising. Overall, the theory suggests that behaviour, specifically illegal offending behaviour, is distinctively related to the certainty, severity and swiftness of the punishment for the crime [12]. As a result, the three factors of perceiving a high probability of apprehension and receiving equally severe and swift punishment have reliably been established as fundamental to deterring offending behaviours.

Within the present context, despite the immense research that has focused on drink driving and these assumptions, little is known about the factors that can influence, and possibly deter, drug driving in the community. The lack of research within this area may reflect the infancy of the drug driving research field, and/or the majority of research within this area has focused on crash culpability and/or drug testing technologies. Early preliminary research which has investigated the impact of legal sanctions on intentions to consume illicit drugs and drive has suggested that perceptions of apprehension certainty are an important factor in deterring drug drivers [13, 14]. For example, Jones, et al., (2005) examined the perceptions and driving behaviours of cannabis users in Victoria and found that drug drivers were more likely to be deterred by high certainty of apprehension than either increasing the severity of sanctions or providing factual information about the risks associated with the behaviour.

Taking into consideration that a sizable proportion of drug drivers continue to offend whilst remaining undetected, it is therefore of theoretical importance to investigate whether informal sanctions can also provide a deterrent effect on offending behaviour. A body of research is accruing that is indicating that non-legal sanctions can also provide a deterrent impact on a large scope of offences [15,16,17]. The inclusion of non legal sanctions in the deterrence literature emerged from criticisms that the Classic Deterrence theory does not explain a range of non legal issues that may in fact influence driving behaviours [16,18,19,20,21]. Consequently, little research has been conducted on the impact of non-legal sanctions on drug driving and deterrence. As a result, it was considered appropriate in the current study to explore the non-legal sanctions as well as the legal sanctions on drug driving behaviour. This model originally developed by Homel (1988), was developed to investigate the impact of Random Breath Testing and is now being employed in a variety of road safety deterrent research initiatives [23,24]. The model is composed around four main components that influence driver behaviour including:

1. Traditional legal control mechanisms that are believed to pose a threat of material loss (e.g., fines and licence disqualification);
2. Social stigma as a result of informal sanctions (e.g., peer disapproval);
3. Feelings of guilt from internalisation of norms (e.g., feeling guilty or ashamed); and
4. The risk of physical loss (e.g., an accident or damaging one's vehicle).

The current study was completed during the first 6 months of the implementation of the Drug Driving Legislation and related countermeasures in Queensland. The aim was to conduct an exploratory investigation into the self-reported deterrent influence of random road-side drug testing, and more generally, legal and non-legal sanctions amongst a sample of general motorists in Queensland. Additionally, the study aimed to compare a group of convicted drug offenders to a demographically matched sample of motorists on drug driving behaviours, intentions to offend and perceptions of legal and non legal sanctions. The current study has four main research questions:

- (1) How do drivers perceive the certainty, severity and swiftness of drug driving related sanctions?
- (2) Do motorists report being concerned about non-legal sanctions that may result from drug driving?
- (3) How are the various sanctions associated with intentions to offend?
- (4) How do convicted drug offenders perceive legal and non legal sanctions in comparison to general motorists?

Method

Participants and Design

Over a 6 month period, data was collected using a snowball sampling approach. This method relies on peer networks and referrals and involved encouraging general motorists to participate. In particular, the researchers distributed the questionnaires to university students on a number of campuses, patrons at shopping centres, and spectators at sporting events.

The second part of the study involved 49 participants that were recruited through the Illicit Drugs Court Diversion Program. This program diverts first time offenders apprehended with illicit drugs to an information and education program of approximately 2 hours duration conducted by an allied health professional. This program is voluntary and can be offered at the point of arrest by the arresting police officer or by the Magistrates if the offender is charged and summonsed to appear in Court. One of the current paper's authors was employed as a Diversion Program facilitator. Data was collected over a 2 month period and a 100% response rate was recorded.

Materials

Demographic Details. The first section of the questionnaire was designed to assess a variety of demographic information such as the age, gender, employment and frequency of driving. The demographic section also incorporated questions that relate to the frequency of participants' previous drug driving behaviours in the last six months, as well as intentions to consume illicit drugs and drive in the future. Additionally, questions regarding the effectiveness and awareness of the new drug driving legislation and testing method were included e.g., "How effective do you think the drug testing method will be in detecting drivers who are under the influence of drugs?"

Self Reported Drug Use. Drug consumption levels were assessed using 4 items that enquired to participants most recent drug use. Items on the scale included recent use of cannabis, amphetamine type substance, heroin and cocaine, with the scale ranging from within four hours, within the last 24 hours, within the last week, within the last month, within the last year, more than a year ago and have never used. Additionally, participants responded to a question regarding the likelihood that they will drug drive again in the future e.g., "How often do you think you will drive after taking drugs in the next six months?"

Deterrence Questionnaire. The Deterrence questionnaire consisted of questions that were associated to legal and non-legal sanctions. It consisted of 13 questions, with two to three items focusing on each of the six deterrent factors e.g., certainty, severity, swiftness and social, internal and physical loss. Participants were required to respond on a 10-point scale (1 = strongly disagree, 5 = unsure, 10 = strongly agree). Examples of items include: "If I was to drive after using drugs, I would be concerned that I might lose my friends' respect" (social loss), "The penalty I would receive if I was caught for drug driving would cause a considerable impact on my life" (severity).

Procedure

Participation in the study was voluntary and withdrawal was permitted at any time, without questioning. Prior to completing the questionnaire, participants were requested to sign a consent form which authorised the inclusion of their data in the study. Participants then completed and returned the questionnaire to the researcher.

Statistical Analyses

Respondents' scores on perceptions of legal and non-legal sanctions were separated into 3 equal divisions on a 10-point scale (based on natural breaks in the distribution) representing low (1.00-3.33), medium (3.34-6.66) and high groups (6.67-10.00).

Results

Sample Characteristics

A total of 516 motorists from Queensland volunteered to participate in the study. The average age of participants was 33 years, with a range from 17 to 81. The sample consisted of a similar proportion of both male and female participants (male $n = 269$, 52.3%). Additionally, the majority of participants

reported having some form of employment at the time the questionnaire was completed ($n = 414$, 80.5%). On average, the sample reported predominantly driving daily ($n = 417$, 81.9%) or three to five times per week ($n = 54$, 10.6%). A proportion of the sample ($n = 78$, 15.1%) reported being convicted of a criminal offence, with 9 participants indicating drug driving as the offence.

Self Reported Behaviours

To examine participants self reported drug use, an analysis was undertaken and revealed that cannabis was the most frequently consumed substance followed by amphetamines, cocaine and heroin (as shown in Table 1).

Table 1. Level of Drug Consumption

Drug Type	Cannabis		Amphetamines		Cocaine		Heroin	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Drug Consumption								
Within 4 hours	22	(4.3)	4	(0.8)	2	(0.4)	2	(0.4)
Within the last 24 hours	30	(5.8)	4	(0.8)	1	(0.2)	1	(0.2)
Within the last week	39	(7.6)	15	(2.9)	4	(0.8)	2	(0.4)
Within the last month	43	(8.3)	29	(5.6)	7	(1.4)	1	(0.2)
Within the last year	60	(11.7)	52	(10.1)	36	(7.0)	2	(0.5)
More than a year ago	154	(29.9)	78	(15.1)	64	(12.4)	29	(5.6)
Never	167	(32.4)	333	(64.5)	402	(77.9)	478	(92.8)

In addition to the analysis of self-reported drug consumption, previous drug driving behaviours was also examined. Firstly, regarding the frequency of drug driving in the previous 6 months, almost one third ($n = 143$, 28%) of the sample reported drug driving at least once. More specifically, 14.9% reported drug driving once or twice, followed by 3 to 5 times (4.3%), 6-10 times (2.2%), and 6.7% reported more than 10 times. Lastly, regarding the intentions of participants to drug drive in the next 6 months, 23.4% ($n = 121$) of the sample reported intending to drug drive at least once, with a frequency ranging from 1 to 182 times.

Perceptions of Legal and Non-Legal Sanctions

The first objective of the study was to examine participants' self-reported perceptions of legal sanctions. Respondents' scores were separated into 3 equal divisions on a 10-point scale (based on natural breaks in the distribution) representing low (1.00-3.33), medium (3.34-6.66) and high groups (6.67-10.00). With regard to factors relating to Classical Deterrence, the majority of the sample reported the chances of being apprehended for drug driving to be high, whilst a large proportion of the sample were also unsure. Similarly, perceived severity of sanctions yielded analogous results, with the sample predominately reporting the penalties to be severe (47.8%) followed by a large proportion of the sample again were unsure. In relation to the time between apprehension and conviction, over half of participants reportedly were undecided, however almost a third of participants (32.7%) believed the time between apprehension and conviction to be swift.

The second objective of the current study was to investigate whether participants are concerned about non-legal sanctions that could result from drug driving. Firstly, in relation to social sanctions, the largest proportion of the sample reported being concerned about perceived penalties for example, losing their friends' respect (45.7%). Similarly, in regards to internal and physical loss, the largest proportion of the sample reported they would feel guilty after drug driving (46.5%), whilst 57.3% reported being concerned about injuring themselves or damaging their car. Examination of the bivariate correlations between the variables and intentions to re-offend revealed a number of significant relationships. Additionally, the results showed some noteworthy bivariate correlations between the variables. For example, intentions to offend appear to have a positive correlation with self-reported frequency of drug driving in the past 6 months ($\tau = .28^{**}$), and drug consumption levels ($\tau = .38^{**}$). Additionally, negative relationships were identified between intention to offend and certainty of apprehension ($\tau = -.43^{**}$), and the three non-legal sanctions: social ($\tau = -.39^{**}$), internal ($\tau = -.44^{**}$), and physical loss ($\tau = -.38^{**}$)¹. In contrast, swiftness and severity of sanctions appeared to have no significant relationship with intentions to offend.

¹ Given the non-normal distribution of the data, rank-order correlations (e.g., Kendall's Tau) were computed in the place of Pearson's correlations to reduce the influence of distribution anomalies.

Table 2. Self-reported Measures of Legal and Non-legal Deterrence

Perceptions	Mean (SD)		Low		Unsure		High	
Certainty	6.47	2.14	10.2%	(n = 49)	39.9%	(n = 191)	49.9%	(n = 239)
Severity	6.63	1.91	5.3%	(n = 26)	46.9%	(n = 232)	47.8%	(n = 236)
Swiftness	6.09	2.48	16.5%	(n = 83)	50.8%	(n = 256)	32.7%	(n = 165)
Social Loss	5.81	3.22	28.9%	(n = 146)	25.4%	(n = 128)	45.7%	(n = 231)
Internal Loss	6.03	3.13	26.5%	(n = 122)	27.0%	(n = 124)	46.5%	(n = 214)
Physical Loss	6.69	3.11	21.9%	(n = 109)	20.8%	(n = 103)	57.3%	(n = 285)

Predictors of Future Drug Driving Behaviour

Lastly, the third objective of the study was to investigate the relationship between perceptions of legal and non legal sanctions and their deterrent impact upon intentions to re-offend. Examination of the descriptive statistics revealed breaches of normality, linearity and homoscedasticity [25]. To accommodate for these breaches, a logistic regression analysis was conducted to investigate the role of the Classic Deterrence Doctrine (For example, certainty, severity and swiftness), non-legal sanctions (social, internal and physical), drug consumption levels and recent drug driving behaviours, to the outcome variable of future intentions to drug drive. The outcome variable, intentions to consume drugs and drive in the next 6 months, was measured on a likert scale that was separated into two groups: (1) those who reported that they would not drug drive again in the next six months (deterred group), and (2) those who reported intending to drug drive again (undeterred group).

Table 3 presents the variables in each model, the regression co-efficients, as well as the Wald and odds ratio values. To investigate the influence of current drug driving behaviour(s), the self-reported frequency of drug driving in the previous 6 months were entered into the first step prior to the inclusion of the deterrent elements. As expected, participants who reported drug driving in the previous 6 months were most likely to indicate that they would drug drive again in the future, $p < .001$. Subsequently, the Classic Deterrence factors (certainty, severity and swiftness), as well as the three non-legal sanctions (social, internal and physical loss), in combination with self-reported drug consumption levels, were inserted to determine whether the proposed deterrent factors enhanced the predictions of drug driving intentions, over and above recent drug driving behaviours (step 2). Drug consumption was measured as a combination of four questions obtained from the self-reporting drug use section of the questionnaire. Participants were assigned a total score based on these questions.

Collectively, the variables were significant with a chi-square statistic $\chi^2(7, N = 516) = 83.21, p < .001$. Similar to step 1, holding all other variables constant, previous drug driving behaviours was again a significant predictor with those participants who reported drug driving in the previous 6 months were more than twice as likely to report intentions to offend. Additionally, certainty of apprehension was a significant predictor with those reporting lower perceptions of apprehension more likely to offend in the next six months. Therefore respondents who reported a low perceived certainty of apprehension were more likely to drug drive than those who perceived the probability of being caught for drug driving to be high. In addition, the model indicated drug consumption levels were also a significant predictor with those who reported frequently using drugs were 3.38 times as likely to drug drive in the next 6 months. Lastly, perceptions regarding the severity and swiftness of sanctions in addition to the three non-legal sanctions, did not contribute to the prediction of intentions to offend.

To determine the sensitivity of the results, several regression models were estimated. A test of the full model with all independent variables entered collectively, in addition to the two models entered individually, and confirmed the same significant predictors (certainty of apprehension, previous drug driving behaviour and drug consumption). Similarly, forward and backward stepwise regression identified the same predictors. Inclusion of previous drug driving convictions, perceptions of testing effectiveness and socio-demographic characteristics did not increase the predictive value of the model.

Table 3. Logistic Regression Analysis of Intentions to Drug Drive as a function of Legal and Non Legal Sanctions, Drug Consumption Levels, and Previous Drug Driving Behaviours.

Variables	B	SE	Wald	Odds ratio	95% C.I.	
					Lower	Upper
Step 1						
D.D. Last 6 mths ¹	1.85**	.21	76.00	6.38	4.21	9.69
Model Chi-Square 186.59** (df = 1)						
Step 2						
D.D. Last 6 mths ¹	.82**	.20	16.85	2.28	1.54	3.37
Certainty ²	-.30*	.12	6.02	.74	.58	.94
Severity ³	-.10	.11	.86	.90	.73	1.12
Swiftness ²	-.01	.08	.01	1.00	.85	1.16
Social ²	-.09	.11	.75	.91	.74	1.12
Internal ²	-.08	.13	.42	.92	.72	1.18
Physical ²	-.08	.11	.51	.92	.74	1.15
Drug Consumption ³	1.22**	.27	20.35	3.38	1.99	5.74
Model Chi-Square 269.81** (df = 8)						
Block Chi-Square 83.21** (df = 7)						

Note. D.D. in last 6 months = Frequency of drug driving in the last six months; ¹ = 5 point scale, ² = 10 point scale, ³ = 7 point scale, * $p < .05$, ** $p < .01$.

Convicted Drug Offenders Drug Driving Behaviours

The second part of the study compared a group of convicted drug offenders ($N=49$) to a group of demographically matched motorists (age, gender, employment status), on previous drug driving behaviours, intentions to offend and perceptions of legal and non legal sanctions. To assess whether there were any significant differences between the two groups, t -test were performed. To this end, previous drug driving behaviours was a noteworthy difference, with the convicted drug user group, on average, significantly more likely to report a greater frequency of drug driving in the previous 6 months ($M = 2.04$, $SD = 0.2$) than the general motorists group ($M = 1.04$, $SD = 1.41$), $t(98) = 4.9$, $p < .001$). Similarly, examination of intentions to drug drive in the next 6 months revealed that (on average) the convicted drug user group reported a much higher expected frequency of drug driving behaviours ($M = 2.23$, $SD = 5.53$) than the general motorists group ($M = 0.22$, $SD = 0.587$), $t(98) = 2.59$, $p < .01$. More specifically, almost half of convicted drug offenders ($n = 24$, 48.9%) reporting intentions to drug drive at least once in the next 6 months, despite being recently convicted for a drug offence compared to only 2 (0.4%) of the general motoring group. Lastly, analyses of the perceptions regarding legal and non legal sanctions revealed convicted drug offenders ($M = 6.18$, $SD = 1.70$) perceived the chances of being apprehended for drug driving to be significantly higher than the general motorist group ($M = 5.29$, $SD = 2.10$), $t(98) = 2.23$, $p < .05$, and additionally, perceived the time between apprehension and conviction to be swifter in comparison to the general motorist group, $t(98) = 2.98$, $p < .05$. No other significant differences were identified between the two groups on the severity of sanctions and the three non legal sanctions (internal, physical, social loss).

Discussion

The central aim of the present study was to investigate a sample of Queensland drivers' to determine the influence of the countermeasure, as well as other non legal sanctions, on intentions to consume drugs and drive. In particular, the study aimed to investigate how motorists perceived the influence of the legal and non-legal sanctions that may accompany apprehension and punishment for a drug driving offence, and the factors relating to intentions to offend in the future. In addition, the second part of the study aimed to examine and compare a sample of convicted drug offenders' drug driving behaviours, perceptions of legal and non legal sanctions and intentions to offend.

Perceptions of Non-Legal Sanctions

The first aim of the present study was to investigate participants' self-reported perceptions of legal sanctions, which were developed from the Classic Deterrence Doctrine. Firstly, a major finding of the study was that a considerable proportion of the sample was undecided on the chances of being

apprehended for drug driving, which may be reflective of the lack of awareness and understanding that a large proportion of the sample reported regarding the implementation of roadside drug testing in Queensland. Nonetheless, it is also noted that a similar proportion of the sample believed the chances of presently being apprehended for drug driving was high, which is promising in regards to deterrence theory [26,27]. As a result, the findings again support the notion that increasing motorists' awareness about the probability and consequences of being apprehended for drug driving is essential to deterring potential drug drivers. However, as the majority of participants had not been apprehended for a drug driving offence, it therefore may have been likely that a considerable proportion also would remain unsure regarding the severity of the penalties associated with the legislation. Nevertheless, a positive outcome was that a sizable proportion still reported penalties to be severe, which is an important element of the Classical Deterrence Doctrine.

The results regarding the non-legal sanctions may perhaps be considered more positive, as the largest proportion of the sample reported being concerned about such alleged penalties as losing their friends' respect and being ashamed if their friends were notified of their drug driving behaviour. Likewise, the results regarding internal and physical loss suggested that since a vast majority of the sample reported that they would feel guilty after drug driving, and reported being concerned about injuring themselves or damaging their car, the results provide some level of support for the theory that non-legal sanctions have the potential to influence offending behaviours [15,16]. Taking into consideration that the results are preliminary, the findings still suggest that deterrence or education-based campaigns (e.g., media) could benefit from stressing the related non-legal consequences from drug driving such as personal injury, peer loss etc. Nonetheless, in the current study, it is noteworthy that at the multivariate level of analysis, perceptions of apprehension certainty were reported to have a greater deterrent influence than non legal sanctions. As a result, further research is warranted to determine if some level of non-legal sanctions have a deterrent impact amongst motorists who engage in drug driving behaviours.

Predictors of Intentions to Drug Drive

The third aim of the study was to predict those who intended to drug drive again in the future and the results showed that previous offending behaviours, perceptions of apprehension certainty, and drug consumption were all significantly associated with self reported intentions to offend. Firstly, in relation to past offending behaviours, consistent with previous offending research [24], in the current context, past behaviour is in fact a good predictor of future behaviour. In the present study, a sizeable proportion of the sample (23.4%) reported intentions to consume drugs and drive at least once in the next 6 months. This finding accentuates the deleterious and serious effects that drugs may have not only on deterrence but also road safety, as drug consumption may yet prove to negate deterrent effects and/or rational choice.

More specifically, it appears that past behaviours may be counteracting the deterrent impact suggested to stop the offending behaviour (e.g., punishment avoidance), and additionally, that regular drug consumption has a strong influence on patterns of drug driving behaviour(s). Therefore, this finding may indicate that drug driving is somewhat an embedded behaviour for some offenders that may remain resilient to change. Whilst this may be the situation for a small group of heavy drug users, it is yet to be validated that perceptions of low certainty of apprehension presently remain fundamental to the drug driving problem. Since random road-side drug testing is currently within its early stages of implementation in Queensland, it appears that a substantial proportion of the sample, more specifically those who are likely to offend, believe the chances of apprehension to be reasonably low. As previously reported, perceptions of arrest certainty have been considered the most influential in regards to deterring offending behaviour [26,27]. This notion is also supported by the success of Random Breath Testing in Australia based on the idea of increasing the probability of apprehension, which has ultimately resulted in a substantial decrease in drink driving over the past 15 years [28,29]. Consequently, it will be of importance to determine whether motorists' perceptions of the probability of apprehension increase with the growth and expansion of random roadside drug testing in the future, and the impact of increasing such perceptions on offending behaviour. Nonetheless, what appears clear is that still a considerable percentage of motorists believe the chances of presently being apprehended remain low, despite the commencement of testing, and such perceptions are related with future offending behaviours.

Convicted Drug Offenders Drug Driving Behaviours

The fourth aim of the study was to compare a group of convicted drug offenders to a demographically matched group of motorists to differentiate any discrepancies on previous drug driving behaviours, intentions to offend and perceptions of legal and non legal sanctions. Firstly, convicted offenders were in fact more likely to have reported previous drug driving behaviours. Additionally, the findings revealed that drug offenders perceived the chances of being caught to be higher than the general population and the time between apprehension and conviction to be swift. A further concern is that despite being recently apprehended for drug use, almost a third of the convicted offenders reported intentions to offend in the next 6 months. This finding provides support for the assertion that legal sanctions applied in isolation may not be effective in reducing offending behaviours among some repeat offenders [30,31], and that convicted offenders are in fact a distinct group from the general motoring population. Therefore, it appears that frequent drug consumption may be counteracting the deterrent mechanisms proposed to stop the offending behaviour. As a result such offenders may need to address harmful and/or irresponsible drug behaviours, before the drug driving sequence can be effectively broken. What remains evident is that drug consumption in combination with legal and non-legal sanctions does not appear to be the only factors that influence drug offenders' intentions to re-offend.

Some methodological limitations associated with the study should be taken into consideration when interpreting the findings. Firstly, participants were not selected at random but rather selection-bias is evident. As a result, questions remain regarding the representativeness of the samples as a substantial proportion of the current participants can be considered younger motorists and thus are most likely not reflective of the wider general driving population. Therefore, the study needs to be repeated with a much larger sample size that includes a variety of different driving demographics. In addition, self report bias may be evident as the accuracy of the self-report data is susceptible, particularly to responses that are centred on intentional offending behaviours. Furthermore, there remain some uncertainties regarding whether self-reported intentions to offend, are effective predictors of future drug driving behaviours. Lastly, the Deterrence scale which was developed for the present study requires additional validation and revision with a larger and broader age range sample.

In summary, the findings of the current study indicate that low certainty of apprehension, in addition to previous drug driving behaviours, as well as regular drug consumption, may possibly be associated to present drug driving behaviours. As a result, further endorsement and advocating of interventions that are aimed to increase perceptions in addition to the actual likelihood of apprehension are essential to decreasing the burden of drug driving on road safety. Therefore, the challenge for policy makers and researchers is to construct enforcement systems that increase perceptions of arrest certainty, including increased police presence and targeted apprehension approaches at high drug times. Nonetheless, the ongoing dependence on deterrent practices should not decrease the need for a multifaceted approach to implementing countermeasures to combat the increasing drug driving problem. Rather, what appears necessary to reduce the prevalence of drug driving are multi-modal interventions (e.g., education campaigns as well as deterrent-based enforcement). Nevertheless, random road-side drug testing presents with unique possibilities to increase both the likelihood of apprehending offending motorists as well as providing a considerable general deterrent impact, if motorists are both aware of the implementation and associated consequences of the countermeasure.

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