

**I know, but I Don't Care: How Awareness of Queensland's Drug Driving Testing
Methods Impact Upon Perceptions of Deterrence and Offending Behaviours**

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Abstract

An increasing body of research is highlighting the involvement of illicit drugs in many road fatalities. Deterrence theory has been a core conceptual framework underpinning traffic enforcement as well as interventions designed to reduce road fatalities. Essentially the effectiveness of deterrence-based approaches is predicated on perceptions of certainty, severity, and swiftness of apprehension. However, much less is known about how the awareness of legal sanctions can impact upon the effectiveness of deterrence mechanisms and whether promoting such detection methods can increase the deterrent effect. Nevertheless, the implicit assumption is that individuals aware of the legal sanctions will be more deterred. This study seeks to explore how awareness of the testing method impacts upon the effectiveness of deterrence-based interventions and intentions to drug drive again in the future. In total, 161 participants who reported drug driving in the previous six months took part in the current study. The results show that awareness of testing had a small effect upon increasing perceptions of the certainty of apprehension and severity of punishment. However, awareness was not a significant predictor of intentions to drug drive again in the future. Importantly, higher levels of drug use were a significant predictor of intentions to drug drive in the future. Whilst awareness does have a small effect on deterrence variables, the influence of levels of drug use seems to reduce any deterrent effect.

1. Introduction

Considerable gains to improve road safety outcomes have been made in the last few decades. Yet, a number of safety problems persist which require the attention of policy makers and enforcement agencies. The involvement of illicit drugs in road fatalities is one growing concern [1,2]. Approximately 10% of road injuries and 22-40% of road fatalities have been found to involve drugs other than alcohol [3], with illicit drugs being more prominent.

1.1 Illicit Drug Driving Countermeasures

Advances in drug detection technology have led to quicker and more reliable drug detection techniques. These advances in drug detection technology have facilitated government agencies to develop and implement legislation that empowers police to conduct roadside drug testing practices to detect those driving after consuming illicit substances. Complementary sanctions (including license disqualification and referral to treatment programs) have also been developed. Within Australia, roadside drug testing requires a motorist (while sitting in their vehicle) to run a testing pad over their tongue which can detect the active metabolite of delta-9- tetrahydrocannabinol (THC: cannabis, pot, weed), methylamphetamine (i.e., speed, ice, crystal meth, or base), and methylenedioxymethylamphetamine (i.e., ecstasy) in approximately 5 minutes. If the initial test result is positive, a secondary oral fluid sample is then required for a more sensitive oral fluid screening device which takes approximately 20 minutes. It is anticipated that roadside drug testing will reduce the incidence rates of drug driving in a similar way by which occurred with drink driving through random breath testing, which also relies on the principals of deterrence theory.

1.2 The Role of Deterrence

Criminal justice policy and traffic enforcement have historically utilised deterrence theory as a conceptual framework to reduce the incidence of offending behaviours. The underlying principle of deterrence theory proposes that the perceived penalty of engaging in illegal behaviour will dissuade the illegal behaviour [4]. The effectiveness of being deterred from committing an illegal behaviour is predicated on high perceptions of certainty of apprehension and the severity and swiftness of punishment.

Deterrence theory operates via two forms of deterrence: specific and general deterrence [4]. Specific deterrence operates at the individual level, deterring individuals via direct experiences of the legal sanctions. In contrast, general deterrence operates via the awareness and perceptions of legal sanctions that is held by the public for committing illegal acts. While specific deterrence does contribute to the deterrent effect, general deterrence is by and large, more relied on by traffic enforcement campaigns [5].

Deterrence theory is a perceptual-based theory and, as such, is contingent upon influences to the individual's perceptions. The perceptions of certainty, severity and swiftness are conditional on the intensity and effectiveness of enforcement [6] as well as a high level of publicity of the legal sanctions and associated penalties [5]. Generally, perceptions of certainty have been demonstrated to have the largest influence on the overall deterrent effect, followed by perceptions of severity, with perceptions of swiftness having a much smaller, albeit a non-existent effect on deterrence effectiveness [7]. Drug driving countermeasures (i.e., random roadside drug testing and mass media campaigns) seeks to enhance these perceptions, particularly certainty of apprehension to facilitate a deterrent effect. Previous research has documented that random roadside drug testing is perceived to be a deterrent among some drug drivers [8] with reports that some drug drivers would consider changing their drug driving behaviours with random roadside drug testing [9].

1.3 Awareness of Enforcement and Sanctions

Importantly for road safety campaigns, the deterrence factors (i.e., certainty, severity, and swiftness) can be modified to increase the overall deterrent effect. For instance, in Australia roadside breath testing for alcohol involves a highly visible and sustained enforcement effort as well as widely publicised media campaigns. These efforts have historically lead to an increase in perceptions of the certainty of been apprehended when drink driving [10]. The outcome from this type of campaign likely facilitated the reduction in road crashes and deaths which were due to alcohol intoxication [11].

The desire to reduce instances of drug driving and the associated crash incidents with the instigation of roadside drug testing has yet to be comprehensively evaluated. It is assumed that the instigation of drug driving testing legislation and subsequent roadside drug testing will facilitate a deterrent effect via increases in the certainty of apprehension; similar to the way roadside breath testing did for alcohol impaired driving. However, roadside drug testing when compared to alcohol testing is currently much less visible with less enforcement, and not as extensively publicised. Taken together, mass media and education campaigns are an important aspect of any road safety campaign [5]. The resulting awareness of the legal sanctions of the individual could be a critical factor for the effectiveness of deterrence. Therefore, an understanding into the effects of awareness of legal sanctions is an important part of any road safety campaign which utilises deterrence theory principals.

1.4 Drug Dependency Issues

It has been argued that a number of factors (many beyond the principles of deterrence) can influence the decision to drug drive [12-14]. Perhaps the most influential factor for drug driving is the issue of drug dependency and abuse. It is known that higher levels of drug dependency can have a substantial negative impact upon the effectiveness of deterrence [15]. Moreover, higher levels of drug use are related to greater levels of drug driving [14]. In

addition, many illicit drugs can have negative neurophysiological effects, leading to diminished reasoning and cognitive abilities [16, 17] which can be a prevailing factor for the decision to drive.

1.5 The Current Study

The deterrent effect and perceptions of zero-tolerance laws have yet to be fully evaluated by those countries that have instigated specific drug driving legislation and enforcement techniques. Whilst considerable deterrence-based research has been conducted into drink driving, considerably less is known about deterring drug driving. Furthermore, substantially less is known about the impact of awareness levels of legal sanctions both on principles of deterrence and subsequent offending behaviours. This study seeks to assess whether awareness of drug driving testing methods impacts upon deterrence-based principles among a sample of Queensland motorists who have actually engaged in drug driving. Given the limited literature examining awareness and deterrence effectiveness for drug drivers, three research questions were proposed, rather than hypotheses. As such this study seeks to:

- RQ1) Examine the awareness status of the drug driving testing in Queensland;
- RQ2) Determine if awareness status results in differences on the deterrence variables of certainty, severity, swiftness as well as intentions to drug drive in the next six months;
- RQ3) Examine the bivariate and multivariate associations between the deterrence variables, awareness status, drug usage levels, and intentions to drug drive in the next six months.

2. Method

2.1 Participants

The inclusion criterion required eligible participants to have driven while affected by illicit drugs in the last six months. In total, there were 161 eligible participants that volunteered to partake in the study.

2.2 Materials

The collection of data utilised the self-report Drug Driving Questionnaire (DDQ). The DDQ had three sections: a demographic, self-reported drug use, and a deterrence section. These are described below.

2.2.1 Demographic section

The first section of the questionnaire assessed a number of demographic details such as gender, age, employment status, frequency of driving. The demographic section also included items regarding awareness of the testing methods (i.e., random road side drug testing). Examples of the items that assessed the awareness of the testing methods were: "Are you aware of the new drug driving legislation being implemented in Queensland?" and "Are you aware of the new drug driving testing method being implemented in Queensland?" Potential responses were in the form of yes and no. Included in this section were a number of items that assessed participants' drug driving behaviours. These items included: frequency of drug driving in the last six months (e.g., In the last 6 months how often have you driven whilst under the influence of drugs?) and number of times they were a passenger of a drug driver in the last six months (e.g., In the past 6 months, how often have you been a passenger when you thought the driver was under the influence of drugs?). Both of these items potential responses were Never, Once or twice, 3 to 5 times, 6-10 times, and More than 10 times. The participant's age of first drug driving was also recorded (e.g., How old were you the first time you drove when you knew you were under the influence of drugs). The outcome variable was

self-reported intentions to drug drive in the next six months (e.g., How often do you think you will drive after taking drugs in the next six months?); measured on a scale from 0 to 182 days.

2.2.2 Self-reported drug use section

Participants' level of drug use was assessed via four items in the drug usage section. Each of the four questions queried the level of usage of cannabis, meth/amphetamine (ecstasy, speed, oil, base, and crystal), cocaine, and heroin. For example, the item that assessed participants' cannabis was "When have you most recently used marijuana/cannabis?" or cocaine use "When have you most recently used cocaine?" Participants indicated their most recent use of the drug via a Guttman scale (i.e., have never used, more than a year ago, within the last year, within the last month, within the last week, within the last 24 hours, within 4 hours). To derive the variable of overall drug consumption, a score of one through to seven was assigned to the response of "have never used" to the last possible response of "within four hours" respectively, then the responses to the use of various drugs were then summated. The variable of overall drug use had a range of 4–28, with higher scores indicating greater levels of drug use.

2.2.3 Deterrence section

The deterrence section assessed participants' perceptions of the legal sanctions for the deterrence variables of certainty, severity, and swiftness of punishment. Each of the variables were assessed via a 10-point Likert-scale scored from 1 (strongly disagree) to 10 (strongly agree). Examples of the items are: "The chances of presently getting caught for drug driving are high" (certainty), "I think the penalties for drug driving would be quite lenient" (severity), "If I was caught for drug driving, it would take a long time before I went to court and was penalised" (swiftness).

2.3 Procedure

Ethical and Health and Safety approval were obtained from the Queensland University of Technology Human Research Ethics Committee and Health and Safety officers. The use of illicit drugs, due to its very nature, is very much a surreptitious activity and difficulties with recruiting this type of population can occur [18]. Therefore, a snowball sampling technique was adopted for participant recruitment. It was anticipated that the snowballing approach would maximise the number of eligible participants (i.e., drug driven in the last six months) as illicit drug users who partook in the study would inform their peers about the study.

Questionnaires were disseminated throughout a number of university campuses and shopping centres. Participants were given an information sheet to peruse, which explained the purpose of the research. Specifically, the procedure to ensure confidentiality and anonymity of responses was described in the information sheet, given the sensitive nature of the data being collected. Finally, participation in the study was voluntary and withdrawal from the study was permitted at any time.

3. Results

3.1 Data Cleaning and Screening

The data set was examined for its distributional properties with departures from normality occurring, which is a common occurrence with illegal behaviours. The direction of skewness of the study variables were the same for the aware and unaware groups. Thus, research question two was evaluated with t -tests; as a t -test can accommodate skewed data so long as the two distributions are skewed in the same direction [19]. Research question three was addressed by calculating Spearman's Rho correlation coefficients and performing a logistic regression to accommodate the non-normal distributions. The outcome variable (self-

reported drug driving in the next six months) was changed to a dichotomous variable for the analysis to those who intend and do not attend to drug drive in the next six months.

3.2 Sample Characteristics

The mean age of the participants was 27.94 years ($SD = 7.61$; range = 17-56) with a higher proportion of males (78.9%) to females (21.1%). A large proportion of the sample reported driving daily (86.3%), or driving three to five times a week (8.1%), with only 5.6% indicating that they drove once a week or less. The majority of the sample reported being employed (87.6%).

3.2.1 Self-reported illicit drug usage

An examination of participants' self-reported drug usage can be found in Table 1 which indicates that the most consumed illicit substance was cannabis. The majority of the sample reported consuming cannabis at least once in their lifetime (93.5%), with approximately a third of participants (30.9%) consuming cannabis with the last 24 hours or less. Meth/amphetamine type substances was the next most consumed illicit substances, then cocaine, with heroin being the least consumed substance.

Table 1

The Percentage of Self-reported Use of an Illicit Substance by Participants

Frequency of drug use	Type of illicit substance							
	Cannabis		MATS		Cocaine		Heroin	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Have never used	8	(5.0)	56	(34.8)	88	(54.7)	131	(81.4)
More than a year ago	24	(14.9)	21	(13.0)	27	(16.8)	23	(14.3)
Within the last year	22	(13.7)	30	(18.6)	32	(19.9)	1	(0.6)
Within the last month	27	(16.8)	25	(15.5)	8	(5.0)	1	(0.6)
Within the last week	32	(19.9)	18	(11.2)	2	(1.2)	2	(1.2)
Within the last 24 hours	25	(15.5)	7	(4.3)	2	(1.2)	1	(0.6)
Within the last 4 hours	23	(14.3)	4	(2.5)	2	(1.2)	2	(1.2)

Note: MATS = meth/amphetamine type substances

3.2.2 Drug driving characteristics and awareness status

The study's inclusion criteria required participants to have drug driven in the last six months. One fifth of the sample (23.9%) reported drug driving more than 10 times in the last

six months, followed by 8.7% for 6-10 times, 14.9% for 3-5 times, with approximately half the sample (52.8%) reporting drug driving once or twice in the last six months. The majority of participants (76.4%) reported also being the passenger of a driver whom they thought was under the influence of illicit drugs in the last six months. The average age of participants when they first drug drove was 19 years ($M = 18.64$; $SD = 2.49$; range = 12-26).

Regarding participants' awareness of the drug driving testing methods, the largest proportion of the sample reported being aware of the testing methods ($n = 120$; 74.5%) with approximately one quarter not being unaware ($n = 41$; 25.5%). Approximately a third of the sample (34.8%) also indicated knowing what the penalty would be (i.e., a fine and licence loss) if convicted for drug driving. However, a sizable proportion incorrectly believed the penalty to be a fine, loss of licence, probation, and drug counselling (26.1%). The remainder of the sample (39.1%) reported that one or a combination of these penalties were the correct penalty for drug driving. Taken together, these results indicate a large degree of ambiguity surrounding the correct penalty for drug driving.

3.3 Awareness Status Analyses

The means and standard deviations of the overall drug used, deterrence variables, and drug driving intentions is depicted in Table 2. Higher scores indicate greater overall drug usage, greater perceptions of legal sanctions (deterrence theory), and greater intentions to drug drive in the next six months. Regarding the deterrence theory constructs, on average, the participants perceived the certainty of apprehension to be relatively low, the severity of punishment to be severe, with the perception of the swiftness of punishment as somewhat ambivalent. Considerable variability was found for the variable of intentions to drug drive.

Table 2

The Means and Standard Deviations (SD) of the Overall drug use, Deterrence Theory, and Drug Driving Intentions

Construct	Awareness status Mean (SD)		<i>t</i> -test (df)	<i>p</i>
	Aware	Unaware		
Overall drug usage	10.25 (3.1)	10.75 (5.85)	-.52 ^a (47.88)	.603
Deterrence Theory				
Certainty	3.78 (2.31)	2.93 (2.02)	2.1 (159)	.038
Severity	7.29 (2.34)	6.32 (2.96)	2.14 (159)	.034
Swiftiness	4.53 (2.53)	5.12 (2.74)	-1.27 (159)	.207
Intentions to drug drive	25.23 (52.65)	42.39 (65.46)	-1.52 ^a (58.68)	.134

Note: All variables have a range of 1-10, except for overall drug usage (4-28) and intentions to drug drive in the next six months (0-182). ^a = equal variance not assumed, degrees of freedom adjusted.

3.4 Effects of Awareness of the Testing Methods

3.4.1 Intercorrelations between variables

Table 3 shows the bivariate correlations between the study variables. It can be seen that awareness status (yes) was only significantly correlated with certainty of apprehension ($r_{\text{rho}} = .187, p < .05$). Higher drug usage levels were correlated with lower levels of certainty of apprehension ($r_{\text{rho}} = -.258, p < .01$) and with higher levels of intentions to drug drive in the next six months ($r_{\text{rho}} = .53, p < .01$). Lower perceptions of the deterrence variables of certainty ($r_{\text{rho}} = -.206, p < .01$) and severity ($r_{\text{rho}} = -.156, p < .05$) were also related to greater levels of intentions to drug drive in the next six months.

Table 3

Bivariate correlation matrix between variables of overall drug use, deterrence theory, and drug driving intentions (Spearman's rho)

Deterrence variable	1.	2.	3.	4.	5.	6.
1. Awareness (yes)	1	.045	.187*	.142	-.075	-.103
2. Overall drug use		1	-.258**	-.118	.123	.53**
3. Certainty			1	.156*	-.174*	-.206**
4. Severity				1	-.337**	-.156*
5. Swiftiness					1	.058
6. Intentions to drug drive						1

* $p < .05$ (two-tailed), ** $p < .01$ (two-tailed).

3.4.2 Predictions of intentions to drug drive in the next six months

Logistic regression analysis was conducted to determine the predictors of intentions to drug drive in the next six months. The outcome variable of drug driving in the next six months was transformed to a dichotomous variable of those who intended and did not intend to drug drive in the next six months due to its non-normal distribution. Table 4 shows the regression co-efficients, standard errors, Wald statistics, Odds ratio, and 95% confidence intervals for the odds ratios. The first step was to control for the influence of overall drug use, this model was a significant predictor of the outcome variable ($\chi^2(1, 1) = 35.703, p < .001$) and accounted for 28.5% of the variance. The Hosmer and Lemeshow test was not significant ($\chi^2(1, 7) = 8.429, p = .296$), indicating adequate classification accuracy; 75.8% of the sample was correctly classified. Overall drug use was a significant predictor of the outcome variable (OR = 1.45, $p < .001$).

Table 4

Logistic Regression Co-efficients for overall drug use, deterrence, and awareness variables, for intentions to drug drive in the next six months.

Deterrence variables	B	S.E.	Wald	OR	95% Confidence interval for OR	
					Lower	Upper
Model 1						
Overall drug use	0.372	0.075	24.668*	1.45	1.252	1.679
Constant	-2.576	0.684	14.204*	0.76		
Model 2						
Overall drug use	0.383	0.08	23.034*	1.467	1.255	1.716
Certainty	-.121	0.09	1.811	0.886	0.743	1.057
Severity	-.036	0.092	0.157	0.964	0.806	1.154
Swiftness	-.031	0.082	0.144	0.969	0.825	1.139
Awareness (yes)	-.374	0.488	0.588	0.688	0.264	1.79
Constant	-1.885	1.117	2.849	0.152		

Note: * $p < .001$; OR = Odds Ratio.

The second step of the logistic regression model included the deterrence and awareness variables. This second step of including the deterrence and awareness variables was not a significant predictor of the outcome variable ($\chi^2(1, 4) = 3.036, p = .552$). Despite this the model was still significant ($\chi^2(1, 5) = 38.738, p < .001$) and accounted for 30.6% of

the variance. The Hosmer and Lemeshow test remained non-significant ($\chi^2(1, 8) = 13.502, p = .096$) with adequate classification of 73.3% of the sample. However, a slight decrease in the classification accuracy was recorded. The variable of overall drug use remained a significant predictor of intentions to drug drive in the next six months ($OR = 1.467, p < .001$). Forward and backwards stepwise logistic regressions similarly revealed that overall drug use was the only predictor of intentions to drug drive in the next six months for this sample.

4. Discussion

The aim of the present study was to investigate the level of awareness of drug testing methods among a sample of Queensland motorists who reported previously engaging in drug driving behaviours, and whether this awareness had an effect upon the principles of deterrence as well as intentions to drug drive again in the future. Additionally, the study aimed to examine the extent of drug consumption among the sample and determine whether this consumption also had an effect upon drug driving behaviours.

In regards to the sample's behaviour, and consistent with previous research [20], cannabis was the most commonly consumed illicit substance. Additionally, a sizeable proportion of the sample drove regularly after consuming illicit substances, with almost a quarter (e.g., 25%) reporting drug driving more than 10 times in the last six months. Such drug driving practices appear to commence at a relatively early age, with the mean age being 19 years. Therefore among the current sample, it appears they commenced drug driving soon after they were licensed. Furthermore, approximately three quarters of the sample (e.g., 75%) reported being a passenger in a vehicle during the last six months when they believed the driver was under the influence of illicit substances. The latter finding is consistent with similar research in the area [9] and also suggests that social forces may yet be proven to influence drug driving behaviours, particularly among younger cohorts. This finding has been

consistently demonstrated within the wider road safety literature [21] as research has overwhelmingly demonstrated that offences do not occur in a social vacuum [12-14].

4.1 Awareness of Testing Methods

The largest proportion of the sample were aware of the recently introduced drug driving detection methods in Queensland (e.g., 74.5%), although some level of ambiguity existed regarding the associated penalties for a drug driving offence. The former finding is encouraging, as it indicates that the associated media campaigns surrounding this initiative are resulting in some level of awareness for “at risk” groups (e.g., those who engage in drug driving behaviours). Additionally, the latter finding may also be expected, as the number of offenders apprehended and penalised in Queensland can still be considered relatively small at present. That is, of the 23,961 roadside drug tests conducted in Queensland during 2010-2011 only 2.5% of these tests were positive drug test [22]. Further research that examines whether accurate knowledge of the drug driving penalties increases across the driving population over time may be of benefit.

4.2 Perceptions of Sanctions

Regarding perceptual deterrence, the majority of the sample did not believe that the likelihood of being apprehended for drug driving was high. This is consistent with other drug driving research which has focused on a sample that included those who did and did not drug drive [14]. This finding is also similar to research that has focused on convicted drink driving offenders [23], and overall, indicates that active offenders do not believe it is likely that they will be apprehended for the offence. This result may also highlight the powerful and counterproductive influence of “punishment avoidance”, as an increasing body of research has highlighted that committing an offence and avoiding detection increases the likelihood of re-offending and also reduces perceptions of apprehension certainty [24].

One of the most important findings of the study was that having some level of awareness of countermeasures only slightly increased perceptions of certainty of apprehension, although it did not have a meaningful effect on intentions to re-offend again in the future (see below). Further research is needed to determine whether direct exposure to drug testing methods (e.g., being drug tested or observing random roadside drug testing activities) influences subsequent perceptions of apprehension certainty rather than just being exposed to media campaigns. To a lesser extent, the findings may also reflect the relative infancy of this new countermeasure, and much like the introduction of Random Breath Testing in Australia, it may take some time before the full deterrent impact of the initiative is evident to the wider motoring community.

4.3 Predictors of Intentions to Drug Drive

The final aim of the study was to identify the factors predictive of intentions to drug drive again in the future. More specifically, this was a unique opportunity to identify factors predictive of offending among a group of motorists who admitted to drug driving behaviours. Consistent with previous road safety research, perceptions of apprehension certainty was negatively related to offending behaviours, but it did not prove significant at a multivariate level [14]. Similarly, while awareness of testing methods had a slight impact upon perceptions of certainty at a bivariate level, it also was not a significant predictor in the current model. This analysis should be replicated across time as random roadside drug testing procedures become more prevalent (and recognisable) as well as targeted at known high risk times and places. While an effect was not evident in the current study, previous research that has focused on the effect of speeding campaigns on subsequent offending behaviours has revealed that those exposed to the campaign were less likely to engage in risky driving behaviours across time [25].

However among the current sample, simply being aware that enforcement techniques are being implemented to apprehended drug drivers did not have a significant impact upon intentions to re-offend in the near future. Similar to previous research [12, 13], perceptions regarding the severity or swiftness of sanctions also did not impact upon drug driving predictions in the future. Rather, a combined measure of regular drug consumption proved to be the most efficient predictor of intentions to drug driving again. This is consistent with drink driving research that has demonstrated that frequency and extent of alcohol consumption is the best predictor of recidivism [15]. While dependency criteria were not included in the current study, it may be expected that those who struggle with addiction may be less inclined to make rational decisions about safe travel. In fact, the vehicle may be an vital tool required for obtaining such illicit substances; especially when illicit drugs are often consumed in a vehicle [20].

At the very least, the results of the present study indicate that those who consume illicit substances more frequently are at an increased risk of drug driving, regardless of their own perceptions regarding the likelihood of being apprehended. In regards to the latter, a negative relationship was evident between drug consumption and perceptions of certainty, and thus, future research is needed to determine if this finding is just an artefact of the current sample, or indicative of the impact of regular drug consumption on perceptions of apprehension certainty. Regardless of this, deterrence-based initiatives may not be sufficient to create lasting behaviour change among some populations, although such countermeasures may yet prove sufficient if policy makers and traffic law enforcers can ensure the motoring public perceive the chances of being apprehended as high. Currently, what is known is that drug use and drug driving can both become highly entrenched behaviours [9] which may be resistant to any form of countermeasure designed to separate them apart.

This study's limitations should also be considered when interpreting the results.

Firstly, the participants were not randomly selected, although a snow-balling technique was effectively utilised to increase the current sample size that included only those who admitted to drug driving behaviours. Secondly, the collected data may have been influenced by self-report bias, in particular, items that focused on the admission of illicit drug consumption or offending behaviours.

Notwithstanding these limitations, the present study is one of the first attempts to identify whether awareness of countermeasures that aim to detect offenders subsequently impacts upon the principles of deterrence as well as intentions to re-offend in the future. This study needs to be replicated with a larger sample size over time, and expanded to include those who have actually been stopped and drug tested, in order to determine whether personal experience with such apprehension techniques has the most salient effect. The outcomes of this subsequent research endeavour will have clear implications for policy, in particular, increasing the general deterrent threat by testing as many motorists as possible.

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