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# How effective is deterrence theory in explaining driver behaviour: A case study of unlicensed driving

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## ABSTRACT

This paper reports the results of a study undertaken to examine the predictive utility of deterrence theory in explaining unlicensed driving behaviour. The study was based on a cross-sectional survey of 309 unlicensed driving offenders interviewed at the Brisbane Magistrates Court. The dependent variables in the study were the reported frequency of unlicensed driving and the offenders' intention to drive unlicensed in the future. The findings provide minimal support for classical deterrence theory. This perspective suggests that drivers will be deterred from driving unlicensed if they perceive a high likelihood of apprehension, and if the resulting penalties are perceived to be sufficiently certain, severe and swift. However, these variables accounted for minimal variance in the two dependent variables. In contrast, more support was found for an expanded model of deterrence that included the construct of punishment avoidance. Over and above this, the prediction of both dependent variables was significantly improved by the inclusion of various psychosocial variables drawn from social learning theory including: exposure to models who drive while unlicensed and hold positive attitudes to the behaviour; personal attitudes to unlicensed driving and alternative behaviours; and the perceived rewards and punishments associated with the behaviour. At a theoretical level, the results support the proposition that deterrence theory can be subsumed within a broader social psychological perspective. At an applied level, the results suggest that there is a need to improve enforcement practices to reduce instances of punishment avoidance, and to better address the psychosocial factors that contribute to illegal driving behaviours like unlicensed driving.

## INTRODUCTION

Deterrence theory is a criminological perspective that has been used extensively in Australia and other countries to guide the development (and evaluation) of many road safety countermeasures (eg. Homel, 1986; Elliott, 2003). Indeed, South (1998, p.76) has argued: "*The reduction in the road toll . . . has arguably been the most successful example of public action to minimise a social problem in Australia, and there is solid evidence that general deterrence programs have played a major role*". While Harrison (1998) has questioned South's contention that there is 'solid' evidence supporting the role of general deterrence, there is no doubt that deterrence principles have played a pre-eminent role in road safety policy-making.

### *Classical deterrence theory*

Deterrence theory focuses on explaining the conditions under which criminal acts are omitted or curtailed in response to the perceived risk and fear of legal punishment

(Homel, 1986). The traditional or classical form of this theory asserts that the effectiveness of a legal threat is a function of the perceived certainty, severity and swiftness of punishment (Homel, 1986; Vingilis, 1990). It is proposed that deterrence operates through two processes: *specific* and *general* deterrence (Homel, 1986; Akers, 1994). Traditionally, specific deterrence is conceptualised as the process by which an offender is deterred from reoffending through direct exposure to sanctions, while general deterrence concerns the deterring of the general community through the threat of sanctions (Homel, 1986). While a full discussion of the empirical evidence relating to classical deterrence theory is beyond the scope of this paper, it is important to note that mixed results have been obtained from a variety of fields, including road safety. For example, research into the specific and general deterrent effects of road safety policies suggests that they are most effective when they increase the certainty and swiftness of punishment, but not necessarily the severity (Nichols & Ross, 1990; Elliott, 2003).

### *Expanded deterrence theory*

Stafford and Warr (1993) have criticised classical deterrence theory for its failure to adequately account for the effect of *punishment avoidance* on behaviour. They argue that: "*it is possible that punishment avoidance does more to encourage crime than punishment does to discourage it. Offenders whose experience is limited largely to avoiding punishment may come to believe that they are immune from punishment, even in the face of occasional evidence to the contrary*" (Stafford & Warr, 1993, p.125). In addition, they suggest that it is important to not only consider the effect of a person's direct experience with punishment and punishment avoidance, but also their indirect or vicarious experiences obtained through contact with their peer group.

Consequently, Stafford and Warr (1993) proposed a reconceptualisation of deterrence theory that incorporates both personal and vicarious experiences with punishment, as well as punishment avoidance. They argued that specific deterrence should be reconceptualised as the direct effect on an individual of punishment and punishment avoidance, while general deterrence represents an individual's indirect or vicarious experience of these contingencies. As such, specific and general deterrence no longer become mutually exclusive processes operating on different populations (as is the case in classical deterrence theory), but can operate conjointly on individuals. Piquero and Paternoster (1998) found some support for Stafford and Warr's model in a study examining drink driving behaviour. They found that intentions to drink and drive were affected by both personal and vicarious experiences, as well as experience of punishment and punishment avoidance.

### *Social learning theory*

Other researchers have criticised deterrence theory for being too narrowly focussed on the role of legal sanctions. For example, Vingilis (1990) has argued that deterrence theory fails to account for a wide range of non-legal factors that can influence compliance with the law, including: social sanctions and rewards; moral commitment to the law; and the opportunity for the commission of crime. Similarly, Akers (1977, 1990) has argued that deterrence theory is not a general or complete model of criminal behaviour. His central thesis is that "*the primary concepts and valid postulates of deterrence and rational choice are subsumable under general social*

*learning or behavioural principles*" (Akers, 1990, p. 655). Indeed, Akers has developed a form of social learning theory, known as differential association-reinforcement theory, which purports to subsume deterrence theory within a broader social psychological framework.

Akers (1977, 1990) argues that social behaviour is acquired either directly through conditioning or indirectly through imitation or modelling of others' behaviour. A person's behaviour is both strengthened (or reinforced) through rewards and avoidance of punishment and weakened (or punished) through sanctions and loss of rewards (a process referred to as *differential reinforcement*). As such, this theory considers legal sanctions (as well as punishment avoidance) within a broader context of the overall balance between punishments and rewards for a particular behaviour. The other key concept in Akers' theory is *differential association*. This refers to the patterns of interaction between a person and other individuals and groups with whom they identify. Most importantly, this relates to interaction with primary groups such as friends and family, but also encompasses secondary groups such as work colleagues. It is through *differential association* that a person is "*exposed to and learns definitions (attitudes), is exposed to behavioural models, and receives social reinforcement or punishment for taking or refraining from some action*" (Capece & Akers, 1995, p.345). Consequently, a person's attitudes and behaviour tends to be congruent with the behaviour of those with whom they associate.

While Akers' theory has been successfully used to investigate a wide range of deviant or non-conforming behaviours including alcohol and drug abuse, adolescent smoking, delinquency and adolescent sexual behaviour (see Akers, 1994), it has not been utilised widely in the road safety field. One exception was a study by DiBlasio (1987), which showed that a social learning model was a good predictor of adolescents' choice to ride with a drinking driver.

Moreover, Akers' theory appears to represent a more comprehensive perspective for explaining many illegal road user behaviours than deterrence theory. In particular, it provides a means of accounting for those factors that not only serve to discourage illegal behaviour on the road (such as the experience of legal sanctions), but also those that encourage or facilitate the behaviour (such as the experience of punishment avoidance and social rewards from peers). It also acknowledges the role of both direct and indirect (vicarious) experiences in shaping behaviour. Accordingly, a key aim of the current study was to compare the relative utility of deterrence theory (both in its classical form and the expanded form proposed by Stafford and Warr) and Akers' social learning theory in explaining illegal road user behaviour.

The particular behaviour selected to undertake this comparison was unlicensed driving. This behaviour was selected for a number of reasons. Firstly, while unlicensed driving does not play a direct causative role in road crashes, there is a growing body of evidence linking it to a cluster of high-risk behaviours, including drink driving, speeding and motorcycle use (eg. Harrison, 1997; Watson, 1997, Griffin & DeLaZerda, 2000). Indeed, recent research suggests that unlicensed drivers are almost three times more likely to be involved in a crash than licensed drivers and that their crashes are twice as likely to result in a fatality or serious injury (Watson, 2004). Secondly, minimal research has been undertaken into the factors that contribute to unlicensed driving, particularly from a theoretical perspective.

## METHOD

### *Participants and procedure*

This study utilised data from a survey of unlicensed drivers conducted at the Brisbane Magistrates Court between June 2001 and April 2002. A detailed description of the survey procedure is provided in Watson (2002). The survey involved a face-to-face interview of people charged with either Unlicensed or Disqualified Driving and took approximately 25 minutes to complete. A wide range of offenders agreed to participate including: disqualified and suspended drivers; expired licence holders; drivers without a current or appropriate licence; and those who had never been licensed. The sample consisted of 309 offenders recruited from 495 eligible offenders (representing a response rate of 62.4%). However, the analyses reported in this paper used a slightly smaller sample (approximately 290) due to missing data on some of the measures.

### *Measures*

The survey questionnaire collected a range of information relating to the attitudes, perceptions and driving behaviour of offenders (see Watson, 2002). From the information collected, two variables were selected to act as dependent variables in the current study: (i) the self-reported frequency of unlicensed driving trips per week; and (ii) the offender's intention to drive unlicensed in the future (measured on a seven-point Likert scale). The first of these variables was selected to measure the extent of law breaking, while the intention to drive unlicensed variable was designed to provide an insight into the psychological processes underpinning the behaviour. A variety of social psychological theories incorporate the concept of intentions as a key predictor of behaviour (Fishbein *et al*, 1991).

The deterrence variables measured in the questionnaire drew on both classical deterrence theory (eg. Homel, 1986) and Stafford and Warr's (1993) reconceptualisation of deterrence theory. The classical deterrence variables were:

- perceived risk of apprehension prior to detection and after detection (both of which were measured on seven-point Likert scales);
- knowledge of the fines for unlicensed/disqualified driving;
- the perceived severity, certainty and swiftness of punishment for unlicensed/disqualified driving (each measured on a seven-point Likert scale);
- prior conviction for unlicensed driving; and
- direct exposure to traffic law enforcement while driving unlicensed.

The expanded deterrence variables were:

- direct exposure to punishment avoidance (whether the offenders had failed to have their licence checked on at least one occasion when they came into contact with the police while driving unlicensed);
- vicarious exposure to punishment (whether the offenders had family or friends who had been convicted of unlicensed driving); and
- vicarious exposure to punishment avoidance (whether they knew of another unlicensed driver who had failed to have their licence checked by the police).

The social learning variables operationalised in the questionnaire were based on the theoretical model developed by Akers (1977; 1990; 1994) and included:

- imitation (total number of people they know who have driven unlicensed);
- personal attitudes to unlicensed driving scale (consisting of 12 items measured on a seven-point Likert scale with a Cronbach's alpha of .73);
- personal attitudes to alternative transport scale (consisting of 5 items measured on a seven-point Likert scale with a Cronbach's alpha of .66);
- the behavioural dimension of differential association (whether the offender had any family or friends who currently drove unlicensed);
- the normative dimension of differential association (measured using a scale of 4 items relating to the attitudes of family and friend to unlicensed driving, which had a Cronbach's alpha of .76);
- the anticipated social and non-social rewards for unlicensed driving (a scale of 6 items measured on a seven-point Likert scale with a Cronbach's alpha of .74);
- the anticipated social and non-social punishments for unlicensed driving (a scale of 8 items with a Cronbach's alpha of .68).

### *Statistical analyses*

The main aim of the study was to compare the predictive utility of the different theoretical perspectives, rather than explore the structural nature of these perspectives. Accordingly, it was decided to utilise regression-based techniques to analyse the data, rather than structural analytic techniques like path analysis. Hierarchical multiple regression was selected because both dependent variables were continuous and the aim was to examine the added utility of the expanded deterrence and social learning variables. Both of the dependent variables featured positively skewed distributions with univariate outliers. To overcome these problems, they were transformed using logarithmic transformations.

## **RESULTS**

Table 1 reports the results of the hierarchical regression undertaken to examine the prediction of the frequency of unlicensed driving. The three theoretical perspectives being examined were entered in successive blocks, commencing with the classical deterrence variables. As can be seen, the classical deterrence variables accounted for minimal variance [ $R^2 = .04$ ;  $p > .05$ ] in the frequency of unlicensed driving, with none of the variables proving a significant predictor in the final model. The strongest of the classical deterrence variables was the perceived risk of apprehension, which was approaching significance [ $p = .063$ ]. In contrast, the inclusion of the three expanded deterrence variables led to a significant increase in the variance explained [change in  $R^2 = .08$ ;  $p < .001$ ]. In particular, the punishment avoidance variable proved a highly significant predictor in the final model [ $\beta = .26$ ;  $p < .001$ ]. Finally, the inclusion of the social learning variables led to a further significant increase in the variance explained in the frequency of unlicensed driving [change in  $R^2 = .06$ ;  $p < .05$ ]. Two of the social learning variables were significant predictors in the final model: the normative dimension of differential association [ $\beta = .17$ ;  $p < .05$ ] and attitudes to alternative transport [ $\beta = -.19$ ;  $p < .01$ ]. This indicates that more frequent unlicensed driving was associated with: exposure to family and friends with favourable attitudes to the behaviour; and the holding of personal attitudes unfavourable to alternative behaviours.

**Table 1: Hierarchical regression of deterrence and social learning variables on frequency of unlicensed driving (n=287)**

Variables	Mean	Std. dev	B	Std. error	$\beta$	$R^2$	Adj $R^2$	$\Delta R^2$
<b>Step 1 - Classical deterrence variables</b>								
Perceived risk of apprehension (prior to detection)	3.30	1.82	-.03	.02	-.11			
Knew fine for unlicensed driving	.14	.34	.02	.08	.01			
Perceived severity of punishment	4.55	1.83	-.02	.02	-.09			
Perceived certainty of punishment	5.35	1.92	.00	.01	-.04			
Perceived swiftness of punishment	5.16	1.79	-.02	.06	-.03			
Prior conviction for unlicensed driving	.39	.49	-.02	.07	-.02			
Exposure to enforcement	.26	.44	-.02	.07	-.02			
						.04	.02	
<b>Step 2 – Expanded deterrence variables</b>								
Punishment avoidance	.37	.48	.26***	.06	.26			
Vicarious exposure to punishment	.29	.45	.01	.07	.01			
Vicarious exposure to punishment avoidance	.36	.48	-.01	.06	-.01			
						.12***	.09	.08***
<b>Step 3 – Social learning variables</b>								
Total unlicensed driving models	4.38	5.98	-.00	.01	-.05			
Differential association (behavioural dimension)	1.23	.42	.10	.07	.09			
Differential association (normative dimension)	10.63	5.56	.01*	.01	.17			
Attitudes to unlicensed driving	37.63	12.11	-.00	.00	-.12			
Attitudes to alternative behaviours	18.84	7.12	-.01**	.00	-.19			
Anticipated rewards	9.67	5.35	-.00	.01	-.02			
Anticipated punishments	38.87	9.07	-.00	.00	-.08			
						.18***	.13	.06*

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

Table 2 reports the results of the hierarchical regression undertaken to examine the prediction of intentions to drive unlicensed in the future. Once again, the variables from the three theoretical perspectives were entered in successive blocks, commencing with the classical deterrence variables.

**Table 2: Hierarchical regression of deterrence and social learning variables on intention to drive unlicensed in the future (n=290)**

Variables	Mean	Std. dev	B	Std. error	$\beta$	$R^2$	Adj $R^2$	$\Delta R^2$
<b>Step 1 - Classical deterrence variables</b>								
Perceived risk of apprehension (after detection)	4.60	2.00	-.04	.02	-.09			
Knew fine for unlicensed driving	.13	.34	.07	.12	.03			
Perceived severity of punishment	4.56	1.83	-.02	.02	-.07			
Perceived certainty of punishment	5.37	1.92	.00	.02	.00			
Perceived swiftness of punishment	5.17	1.78	-.00	.02	-.01			
Prior conviction for unlicensed driving	.39	.49	.23**	.08	.15			
Exposure to enforcement	.26	.44	.07	.10	.04			
						.09***	.07	
<b>Step 2 – Expanded deterrence variables</b>								
Punishment avoidance	.37	.48	.13	.09	.08			
Vicarious exposure to punishment	.29	.45	-.02	.10	-.01			
Vicarious exposure to punishment avoidance	.36	.48	-.02	.09	-.01			
						.13***	.10	.04**
<b>Step 3 – Social learning variables</b>								
Total unlicensed driving models	4.37	5.96	.01	.01	.10			
Differential association (behavioural dimension)	1.23	.42	.24*	.11	.13			
Differential association (normative dimension)	10.58	5.56	.02	.01	.13			
Attitudes to unlicensed driving	37.59	12.12	.01**	.01	.22			
Attitudes to alternative behaviours	18.84	7.17	-.01*	.01	-.11			
Anticipated rewards	9.63	5.33	-.01	.01	-.09			
Anticipated punishments	38.95	9.09	-.01**	.01	-.17			
						.34***	.30	.21***

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

Contrary to the previous analysis, the classical deterrence variables (as a whole) did prove a significant predictor of intentions to drive unlicensed in the future, accounting for 9% of the variance [ $R^2 = .09$ ;  $p > .001$ ]. However, the only variable that was significant in the final model was prior conviction for unlicensed driving [ $\beta = .23$ ;  $p < .01$ ]. Moreover, this variable was positively associated with future intentions (rather than negatively as would be expected from deterrence theory).

As in the first analysis, the inclusion of the expanded deterrence variables led to a significant increase in the variance explained [change in  $R^2 = .04$ ;  $p < .01$ ]. However, the additional variance in this case was more modest and none of the expanded deterrence variables proved significant predictors in the final model. Finally, the inclusion of the social learning variables led to a substantial increase in the variance explained in intention to drive unlicensed in the future [change in  $R^2 = .21$ ;  $p < .001$ ]. Four of the social learning variables were significant predictors in the final model: attitudes to unlicensed driving [ $\beta = .22$ ;  $p < .01$ ]; anticipated (social and non-social) punishments [ $\beta = -.17$ ;  $p < .01$ ]; the behavioural dimension of differential association [ $\beta = .13$ ;  $p < .05$ ]; and attitudes to alternative transport [ $\beta = -.11$ ;  $p < .05$ ]. These results indicate that participants had stronger intentions to drive unlicensed in the future if they: held favourable attitudes to unlicensed driving and unfavourable attitudes to alternative behaviours; anticipated lower social and non-social punishments for driving unlicensed; and associated with family and friends who engaged in the behaviour.

## DISCUSSION

Together, the results of this study provide limited support for classical deterrence theory. Firstly, the variables drawn from this theory did not significantly predict the frequency of unlicensed driving. Although the perceived risk of apprehension approached significance, no other variables were significant in the overall model. Secondly, while the classical deterrence variables significantly predicted intention to drive unlicensed in the future, the amount of variance explained was relatively modest (9%). Finally, the only classical deterrence variable that proved significant in the overall model for future intentions was prior conviction for unlicensed driving. However, contrary to the tenets of deterrence theory, this variable was positively associated with future intentions. In other words, rather than be deterred by their exposure to punishment, those participants who had a prior conviction for unlicensed driving reported a stronger intention to drive unlicensed in the future. Although this finding appears inconsistent with deterrence theory, similar findings have emerged in other recent studies (eg. Piquero and Pogarsky, 2002).

The above findings do not necessarily invalidate classical deterrence theory. Rather, it could be countered that they merely indicate that the necessary conditions for deterring unlicensed driving are not currently being achieved. However, other results suggest that alternative theoretical perspectives provide a more comprehensive explanation of unlicensed driving. For example, in both of the regression models the inclusion of the three expanded deterrence variables significantly increased the amount of variance explained (over and above the classical deterrence variables). These findings provide support for Stafford and Warr's (1993) reconceptualisation of deterrence theory, particularly in relation to the role of punishment avoidance. This variable was the strongest predictor of the frequency of unlicensed driving in the overall regression model. This result is not surprising given the high level of punishment avoidance reported by the participants in this study. As previously reported (Watson, 2002), 113 offenders (36.6%) were able to evade detection from the police on one or more occasions when they could otherwise have been identified. In particular, 97 (31.4%) of the offenders reported that they didn't have their licence checked at an RBT operation during the time they were driving unlicensed. At a practical level, these results highlight the need to enhance enforcement practices to

reduce instances of punishment avoidance. In particular, consideration needs to be given to the more widespread, routine checking of driver's licences to ensure that offenders do not evade detection.

In both of the regression models, the addition of the social learning variables significantly increased the amount of variance explained in the dependent variable. This was particularly the case for intention to drive unlicensed in the future, where the variance explained increased by 21%. These findings provide support for Akers (1977; 1990) contention that deterrence theory can be subsumed within social learning theory. While the classical and expanded deterrence constructs examined in this study were labeled as deterrence variables, they are consistent with the constructs proposed in Akers' theory. Moreover, the inclusion of the additional social learning constructs further improved the predictive utility of both models.

At an applied level, the findings relating to social learning theory highlight the need to consider other psychosocial factors that appear to contribute to unlicensed driving. Across the two regression models, a range of psychosocial factors proved significant predictors including: attitudes to unlicensed driving and alternative behaviours; exposure to significant others who engage in unlicensed driving and hold positive attitudes to the behaviour; and the anticipated social and non-social punishments associated with the behaviour.

## **CONCLUSION**

A number of potential limitations need to be borne in mind when interpreting the results of this study. Firstly, while the survey on which this study was based achieved a relatively high response rate, it was exclusively drawn from a metropolitan setting (see Watson, 2002). Secondly, it is unclear to what extent the behaviour of the sample is indicative of unlicensed drivers as a whole. It is possible that offenders who remain undetected are somehow different to those caught by the police (although many of the offenders in the sample were detected through random enforcement processes). Thirdly, in both regression models a considerable amount of variance remained unexplained, suggesting that there are important factors not accounted for by all three theoretical perspectives. Finally, it is unclear to what extent the findings relating to unlicensed driving can be generalised to other illegal driving behaviours. For example, the difficulties involved in enforcing unlicensed driving (compared to drink driving or speeding), may reduce the relevance of deterrence mechanisms in explaining the behaviour. Bearing these limitations in mind, however, the current study has important theoretical and applied implications. At a theoretical level, the results highlight the need to consider broader theoretical perspectives than classical deterrence theory in the design and evaluation of countermeasures targeting illegal driving behaviours. At an applied level, they suggest that there is a need to improve enforcement practices to reduce instances of punishment avoidance, and to better address the psychosocial factors that contribute to illegal driving behaviours, like unlicensed driving.

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