



Drivers' perceived legitimacy of enforcement practices for sleep-related crashes: What are the associated factors?

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ARTICLE INFO

Keywords:

Driver sleepiness
Perceived legitimacy
Traffic law enforcement
Attitudes
Personality
Risk taking

ABSTRACT

The purpose of traffic law enforcement is to deter risky driving behaviours. The aim of this study was to examine the individual factors of demographic, personality constructs, and attitudes for their association with perceived legitimacy of traffic law enforcement of sleep-related crashes. In total, 293 drivers completed a survey that assessed perceived legitimacy of enforcement and attitudes towards sleepy driving, as well as individual factors of demographic, personality and risk taking factors. The results demonstrate that younger drivers, drivers with higher levels of extraversion, and those with tolerant attitudes towards sleepy driving were less likely to agree that it is legitimate to charge someone if they crash due to sleepiness. The attitudes towards sleepy driving variable had the largest association with perceived legitimacy. Thus, the factors associated with perceived legitimacy of traffic law enforcement of sleep-related crashes are multifaceted. Overall, the findings have relevance with attitudinal and behaviour change programs, particularly with younger drivers.

1. Introduction

Sleep-related crashes account for a significant proportion to all fatal and severe road crashes. The current estimates suggest that sleepiness is a factor in approximately 20% of all fatal and severe road crashes.^{1,2} Traffic laws heavily regulate use of the road network. There is an increased likelihood for trauma with several risky driving behaviours and therefore, traffic laws are designed to promote safer driving behaviours.³ Many countries have enacted specific traffic laws that allow for subsequent traffic policing activities (e.g., random roadside breath testing, speed cameras use, oral saliva drug screening) aimed at reducing instances of risky driving behaviours such as drink driving, speeding, and drug driving, respectively.

A risky driving behaviour that is not as heavily regulated or enforced is driving while sleepy.^{4,5} The reason for the lack of regulation and enforcement of sleepy driving, is largely due to the absence of an objective, reliable, and validated technology that can quantify an individual's level of sleepiness, akin to a breathalyser for drink driving. After a crash has occurred and the investigating police have concluded the crash was primarily due to sleepiness, formal charges can be laid against the individual driving the vehicle. In Australia, drivers can be charged under the individual jurisdictions *Criminal Code* or *Traffic Act*. The charge of *dangerous operation of a vehicle* (also known as *dangerous*

driving) comes from the jurisdictions *Criminal Code* (s 328A of the Queensland Criminal Code Act, 1899) and is a more severe charge, with a longer term of maximum imprisonment of 3 years for the misdemeanour. Whereas, *driving without due care and attention* from s 84 of the Queensland Transport Operations (Road Use Management) Act (1995), is a less severe charge with a shorter term of imprisonment of 6 months for the maximum penalty.

A number of factors (e.g., quality of evidence, fatal vs. non-fatal crash, medical report, specifics of the case) can however, influence the type of charge laid and if legal prosecution proceeds or whether charges are laid at all.^{6,7} The defence of honest and reasonable mistake (s 24 of the Queensland Criminal Code Act, 1899) is available to those individuals charged with *driving without due care and attention* or the *dangerous operation of a vehicle*. The outcomes of the Australian High Court case of *Jimines v. The Queen* (1992) established that the defence of honest and reasonable mistake is a viable for defendants. Specifically, the High Court's decision that the actions of a driver while asleep "are not conscious or voluntary (an act committed while unconscious is necessarily involuntary) and they could not be criminally responsible for driving the car in a manner dangerous to the public" shifts the focus of any case to the moments leading up to the driver falling asleep. That is, the defendant can propose an honest and reasonable belief that their driving was not dangerous, and thus the burden falls on the prosecution

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<https://doi.org/10.1016/j.jflm.2017.12.005>

Received 30 May 2017; Received in revised form 27 October 2017; Accepted 18 December 2017
Available online 20 December 2017

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to prove beyond reasonable doubt, that the defendant did not have this belief and was cognizant that driving in their current state would ultimately lead to them falling asleep.

In Australia, these legal precedents from the *Jimines* case as well as the previously mentioned factors and the lack of an objective measure of sleepiness mean convictions for sleepy driving are very infrequent.^{4,7} Similar outcomes of infrequent sanctions also occur in countries such as Finland⁸ even though Finnish traffic law explicitly forbidding driving while tired (Article 63 (3.8.1990/676) of the Finnish Road Traffic Act). Nonetheless, despite the difficulties with enforcement of crashes due to sleepy driving, the possibility of being prosecuted is real and this possibility should have an important deterrent role.

Ultimately, risky driving behaviours that are difficult to verify/prove are also difficult to enforce, prosecute, and therefore, it is difficult to modify driver's behaviours through enforcement methods. Even with numerous road safety campaigns describing the dangerousness of driving while sleepy, a substantial proportion of Australian drivers (70%) report they have continued to drive when aware of their sleepiness.⁹ A number of factors can influence performing a risky driving behaviour and the beliefs or attitudes an individual holds towards risky driving behaviour can affect the likelihood of performing that behaviour. Several studies have consistently demonstrated that positive attitudes towards a risky driving behaviour are moderately associated with performing that risky driving behaviour.^{10–13} Other aspects related to attitudes are likely to influence performing risky driving behaviours.

Several studies have demonstrated drivers tend to have ambivalent views regarding the culpability of drivers who crash due to sleepiness,¹⁴ particularly the views of younger drivers.¹⁵ Ambivalent views towards driver sleepiness and culpability likely contribute to more tolerant attitudes towards sleepy driving. It also follows that having positive attitudes towards a risky driving behaviour can also affect perceptions of the legitimacy of enforcement of that behaviour. It has been argued that perceptions of legitimacy and attitudes are separate but related constructs.^{16,17} That is, attitudes of sleepy driving are, by definition, different from perceptions of enforcement of sleepy driving.

Research examining the relationship between perceived legitimacy of traffic enforcement and risky driving behaviours is increasing. However, the individual factors that are associated with perceived legitimacy are poorly understood. Demographic factors such as age, sex, and education level have all been associated with driving while sleepy and with attitudes towards traffic laws enforcement. For instance, younger drivers have been shown to drive more frequently when sleepy¹⁸ and male drivers perform more risky driving behaviour than females.¹⁹ Being a younger driver and being male are also related to negative attitudes towards traffic rule compliance as well as fairness of enforced traffic rules, and respect for the law.^{20,21} Whereas, higher levels of education has been associated with more positive perceptions of the legitimacy of laws and subsequent compliance with the law.^{22,23}

Personality constructs are also likely to be related to perceived legitimacy of traffic law enforcement given the association between such constructs with crash involvement, risky behaviour and attitudes towards traffic safety and traffic law enforcement. Several meta-analytic studies have demonstrated that lower levels of Agreeableness and Conscientiousness as well as higher levels of Extraversion are associated with a greater likelihood of being involved in a crash.^{24,25} Lower levels of Agreeableness and Conscientiousness as well as higher levels of Extraversion are all associated also with various types of risky driving behaviours.^{26–28} Risky driving behaviours are associated with negative perceptions of traffic law enforcement.²⁹ Ulleberg and Rundmo¹⁰ have shown that personality traits have small to moderate correlations with attitudes towards traffic safety and traffic law enforcement. However, af Wählberg et al.²⁵ suggests that personality constructs only account for 1% of the variance of crash involvement. Considered together, personality constructs seemingly have larger associations with attitudes and risky behaviour, than actual crashes which is likely due to the infrequency of crashes.

In summary, a number of factors are likely to influence perceptions of enforcement and sleepy driving behaviours. However, the relationships between individual factors and perceptions of legitimacy of sleepy driving enforcement are relatively unknown. A reanalysis of previously collected data³⁰ was performed to examine these relationships more deeply. As such, the aim of the study was to examine which individual factors were associated with perceived legitimacy of enforcement of sleepy driving.

2. Method

2.1. Participants

Eligibility criteria for taking part in the study required participants to have an Open/unrestricted drivers licence and to be a current driver on the road network. The Open/unrestricted drivers licence criteria was employed to ensure participants had adequate on-road driving experience for the responses they would provide. Overall, 293 participants took part in the study. The average age of participants was 39.20 years ($SD = 15.10$; range = 20–84) with 59.10% of participants being female. Approximately two-thirds of participants (58.70%) reported having a University level of education. On average, participants were licenced for 22.71 years ($SD = 20.44$), with the majority of participants (61.40%) driving between 1 and 10 h per week, whilst 33.07% drove 10–20 h per week and the remaining participants (5.53%) drove greater than 20 h per week. Participants were offered the opportunity to enter a random draw for one of six 50 AUD petrol vouchers for participating in the study.

2.2. Measures

2.2.1. Demographic information

The demographic information collected included participant age, sex, and education level. Traffic-related demographic data, such as the duration of licensure and a measure of driving exposure (i.e., number of hours driven per week) was also collected.

2.2.2. Perceived legitimacy of enforcement of sleep-related crashes

Generally, the enforcement of sleepy driving laws such as dangerous driving for commuter drivers (i.e., non-heavy vehicles) generally occurs in a retrospective manner when a driver has crashed their vehicle, with this being the focus of the perceived legitimacy items. The perceived legitimacy of enforcement of sleepy driving was assessed via two items, which asked participants to indicate their agreement with statements on a 5-point Likert scale scored 1 (strongly disagree) to 5 (strongly agree). The items were “It is fair to charge someone if they crash due to sleepiness?” and “It is fair to enforce dangerous driving due to sleepiness?” A scale score was created by averaging the score from the items.

2.2.3. Attitudes

Personal attitudes towards sleepy driving were measured using the 'definitions' component of Akers' social learning theory.³¹ Participants indicated their agreement with six items (two positive, negative, and neutral items) on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Examples include, “People who drive when they think they are sleepy are generally more careful on the road” (positive), “There is no excuse for sleepy driving” (negative), and “It's okay to drive when you feel sleepy, as long as you don't do it too much” (neutral). An attitudes scale score was created by first reverse scoring the negative items and then averaging all the items. The reliability and validity of the 'definitions' component from Akers' social learning theory has been demonstrated from previous research.^{32,33}

2.2.4. Personality constructs

Personality constructs were assessed via the mini International Personality Item Pool mini-IPIP³⁴. The mini-IPIP utilises a five-factor

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