

Look what I can do while I'm driving: implications for road safety in Australia

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New technologies are often widely available to drivers before their safety can be evaluated

In recent years, the availability of technological devices that can potentially be used while driving has expanded rapidly. One device that has received particular attention due to concern about driver distraction is the mobile phone. In this issue of the Journal, Taylor et al (*page 432*) report on the use of handheld mobile phones by drivers in metropolitan Melbourne.¹ This observational study, which follows up research conducted by the same investigators in 2002, indicates that drivers continued to use handheld phones 4 years later, despite legislative and enforcement practices that prohibit their use and evidence that such use increases the risk of having a crash. On the other hand, the rate of use has remained steady even though mobile phone ownership has increased.

Mobile phones are just one of a number of devices that may distract a driver. These technologies may be driving-related (eg, satellite navigation and intelligent speed adaptation [ISA] systems), or non-driving-related (eg, iPods, personal digital assistants and wireless email). Driving-related technologies seek to enhance drivers' mobility and/or safety while non-driving related technologies do not. However, if poorly designed or used inappropriately, both types of technologies have the potential to compromise road safety. Aside from distraction, safety issues include: poor understanding of system operation; negative behavioural adaptation (drivers potentially taking more risks because their cars are fitted with additional safety equipment); system misuse; and increased driver workload. Thus, research is required to evaluate the safety implications of any device that can be used while driving.

Apart from mobile phones, little is known about the proportion of Australian drivers who use driving-related and non-driving-related technologies and how frequently the technologies are used while driving. One survey conducted in late 2003 found that use of personal organisers and email was very low (0.3%) during a specified driving trip,² but did not collect information on the availability and use of novel driving-related technologies.

How the use of non-driving-related technologies affects driving performance is under investigation. To date, most research has involved the use of driving simulators. Studies have examined the use of mobile phones, stereo equipment and speech-based email systems, and have shown driving impairment.³⁻⁵ Epidemiological studies of the risk of crash relating to the use of devices other than mobile phones are currently lacking. Indeed, the rapid change in non-driving-related technologies means that road safety research can lag behind uptake of these devices by the driving public.

In relation to driving-related technologies, early research is showing promise in enhancing safety, though much work remains to be done. A large field trial of ISA systems in Sweden involving over 10 000 drivers using about 5000 fitted vehicles demonstrated reductions in the mean speeds travelled.⁶ In Australia, the Transport Accident Commission (TAC) SafeCar project, which evaluated four driving-related technologies (ISA, following distance warning [FDW], seatbelt reminder [SR], and reverse collision warning)

among 15 drivers using specially equipped vehicles, found positive effects for the ISA, FDW and SR systems.⁷

Recently, a naturalistic driving method has been developed in which drivers are videorecorded during their everyday driving.⁸ Multiple views are taken, including the driver, console, and the vehicle's forward, rear and lateral views. The data can then be used to quantify drivers' exposure to and interaction with technological devices while driving, and to estimate the risk (or benefit) associated with the use of these technologies. In addition to current research, a large naturalistic driving study to evaluate the safety of technological devices used in vehicles should be conducted in Australia. This will provide locally relevant data to inform the design of these technologies. Periodic surveys to monitor trends in the use of technological devices while driving are also indicated.

The impact of driver distraction in all its forms (technological and non-technological) is considerable. Australian studies have shown that drivers commonly engage in distracting activities while driving, and that distraction is a contributing factor in 14%–21% of crashes;^{2,9} these figures are even higher among inexperienced drivers. In response, passenger restrictions and a ban on all mobile phone use (including hands-free) were introduced for novice drivers in New South Wales and Queensland in July 2007 as part of their graduated driver licensing systems. In Victoria, the TAC has recently launched a driver distraction media campaign to raise awareness,¹⁰ and a complete ban on mobile phone use while driving for novice drivers will be enacted in July 2008.

Considerable gains have been made in the area of road safety in Australia in the past 30 years. If we are to maintain and improve on these gains, then managing the risks and benefits of technologies that can be used while driving will be critical. If certain driving-related devices are found to benefit road safety, then their uptake should be facilitated. Means to achieve this include regulatory requirements to ensure that new vehicles are fitted with the technology, that drivers are educated about the correct use and benefits of the technology, and that the technology is installed in vehicle fleets. Conversely, any technologies found to be unsafe will require measures to limit their use while driving. Car manufacturers and portable device developers will need to consider the potential for design improvements or the use of appropriate warnings.

Acknowledgements

Suzanne McEvoy has received support from a Royal Australasian College of Physicians — Centre of National Research on Disability and Rehabilitation Medicine (RACP–CONROD) Fellowship.

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