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## References

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## Arrive Alive Expo

by Brian Connor and Colin Grigg of the ACRS NSW (New England) Chapter

### Introduction

The Arrive Alive Expo is a three-day event conducted annually for the last six years as an activity of the New England Chapter. It is conducted at the New South Wales Traffic Education Centre in Armidale. Participants are learner drivers from secondary schools in the region. Schools as far afield as Warialda have participated. Tenterfield High School has indicated an interest in attending in future.

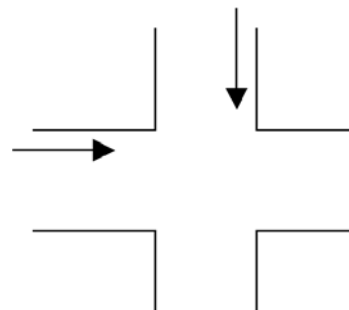
### Work Stations

The Brain Injury Rehabilitation Service, located at the Tamworth Base Hospital, provided a static display and two health care professional staff on each day plus two different brain injured clients for the various sessions on a daily basis. This segment commenced with an overview of the long and short-term effects of brain injury and was then followed by a personal story from one of the brain-injured clients. They described the effects of brain damage on their lives with particular emphasis on their very long and slow periods of recovery. These stories were particularly moving.

The Ambulance session was delivered by an Ambulance Officer who demonstrated emergency equipment from the rear of an ambulance vehicle. The talk emphasised the various procedures performed by ambulance staff on injured road crash victims. These are carried out in the critical period immediately after a crash.

The Alcohol Vision Impairment work station used special goggles that replicated the visual distortions associated with a certain blood level. Students tried to catch balls while wearing the goggles and then drove cars around a small, enclosed motor cycle training area. It was found at the Expo in 2004 that participants at this area tended to correct for distorted lateral vision while driving. Consequently, in 2005 they were required to drive up to a stop sign and to stop the car beside it. They were then asked to drive the car through a series of 'witches hats', which represented an increasingly narrower path.

[What was most surprising about this activity, however, was the interest shown by students in the information provided about the range of penalties that could be imposed on "P" plate holders who had been found to be drinking and driving. Students were also given information about alcoholic drinks because of the confusion over volumes of liquid and the concentration of alcohol in various beverages.]



The Braking and Intersection exercise demonstrated reaction times when required to apply the brakes. Students were given printed material about stopping distances at various speeds and then invited to drive into an intersection

marked by 'witches hats'. They were required to apply the brakes at the appropriate spot when vehicles crossing the intersection would become visible. The spot in the intersection where they stopped was then noted.

The Tyre Demonstration consisted of instruction about tyre technology, the importance of adequate tread and equal tyre pressure for all tyres, according to the recommendations of the vehicle manufacturer. The on-site demonstration consisted of driving standard vehicles, with uneven tyre pressures, at relatively low speeds and then braking. The students sat along side experienced rally drivers who could demonstrate the instability associated with inadequate tyre pressure, even at speeds as low as 20 km/hr.

The Safe Vehicle Following Distance exercise had the aim of demonstrating the importance of the three-second gap behind

the vehicle in front. After demonstrating stopping distances at various speeds, experienced drivers took the students on the Traffic Education Centre's highway circuit and into a situation where the stopping distance was under three seconds. Students observed the problems encountered by the following vehicle. They then drove with the aim of keeping the three-second distance between vehicles and with the possibility of distractions occurring at the same time.

## Evaluation

An evaluation of the event is conducted each year. This has enabled the activities to be modified for effectiveness. Also, students are given a questionnaire at the beginning and conclusion of the event. This provides an indication of the impact of the learning experience.

## The New South Wales Traffic Education Centre

The New South Wales Traffic Education Centre is an off-road training facility in east Armidale. It is composed of an administration building with lecture theatre, motor cycle training area, highway circuit, skid-pan and an area for pre-driver education.

# Fatigue and coping with driver distraction

by Ann Williamson, NSW Injury Risk Management Research Centre, University of New South Wales

*This paper was presented at the International Conference on 'Driver Distraction' in Sydney, 2-3 June 2005, run jointly by the ACRS, the NRMA and the Travelsafe Committee of the NSW Parliament.*

## Abstract

Distraction while driving can divert attention away from the driving task and can, as a consequence, have irretrievable effects on driving performance. Driving is a task that particularly requires selective attention from moment to moment as well as sustained attention over the duration of a drive. Factors, such as fatigue, that reduce the capacity to pay attention to the driving task can seriously impair driving performance. In fact, fatigue can be viewed as an internal source of driver distraction due to its effects on attention. On the other hand, some effects of fatigue suggest that tired drivers may be less affected by distraction. This presentation will review the findings of research on the effects of fatigue on performance, including the effects on vision, reaction speed, selective and sustained attention and decision-making. The implications of these findings for driving and for coping with distraction while driving will be discussed.

## Introduction

Fatigue is recognized as one of the major problems for road safety. Fatigued drivers are at considerably higher risk of crashing due to their reduced capacity to respond to the information processing demands of the driving task. For example, the Auckland Car crash case-control study showed that the risk of injury-related crashes increased significantly for self-reported sleepy drivers, for drivers with five hours sleep or less and for drivers on the road between 02:00 and 05:00 hours (Connor et al, 2002). Similarly, Cummings et al (2001) showed a clear relationship between long distance driving and increased crash risk, with drivers doing more than 600 mile journeys showing a more than ten times increased risk of crashing. Current estimates of the involvement of fatigue in crashes suggest that in NSW fatigue plays a role in around 20 percent of fatal crashes (RTA, 2002). This is a similar level of involvement to the role of alcohol in fatal crashes.

Fatigue presents greater problems for road safety, however than other driver behaviour-related problems like alcohol and speeding. Fatigue is a hypothetical process which cannot be measured directly. Fatigue measurement relies on measures of its effects, such as on self-rated feelings, driver performance and changes in physiological state. Definitions of fatigue emphasise factors like tiredness, adverse effects on performance in response to repeated stimulation by the same stimulus, problems of sustained attention and a range of effort-related experiences such as unwillingness to continue with the task or the inability to continue putting effort into the task. These characteristics make management of driver fatigue a challenge for road safety.

In the context of a discussion on driver distraction, the issue of fatigue may be relevant on at least two levels. First, fatigue, itself may be considered to be a distractor. Second, vulnerability to the effects of distractors while driving may vary when a driver is fatigued. In this presentation, each of these aspects will be considered in turn.

## Fatigue as a distractor

Fatigue can be thought of as a form of internal distraction. Many definitions of driver distraction specify that it is a form of inattention that shifts attention away from the task at hand. For example, the US National Highways and Transport Safety Administration categorised four distinct types of driver distraction including visual, auditory, physical and cognitive distraction. The last category is particularly relevant to the current discussion of fatigue and distraction. The NHTSA definition of cognitive distraction includes "any thoughts that absorb the driver's attention to the point where they are unable to navigate through the road network safely and their reaction time is reduced" (NHTSA, 2002).