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From the President



Dear ACRS Members,

This year it is anticipated there will be a United Nations sponsored Global Ministerial Conference on Road Safety to be held in Russia in November. Cabinet ministers who are responsible for a coordinated national road safety policy will be invited to participate in this first

global ministerial conference focused on the goal of developing an international protocol to address the global epidemic of rising death and injury rates particularly in developing and transitional countries.

It is hoped that at the Ministerial Conference, experts from the fields of structural and civil engineering, transportation planning, development economics, emergency trauma and rehabilitative medicine, information systems, and justice administration will present research findings on the national, regional and international economic and social development costs and trend implications of existing road traffic management frameworks. One of the advantages of an international meeting such as this will be the increased emphasis provided on road safety initiatives in Australia.

Initial objectives established for the Ministerial Conference include:

- Assess progress at a regional level by considering relevant action plans, reviewing targets set by the UN Regional Economic Commissions such as ASEAN and APEC, and the progress made towards achieving them;
- Agree on common definitions for key road safety data reporting systems, and identify good practice in knowledge transfer on key risk factors and the development of multi-sectoral national road safety strategies;
- Examine the progress of the United Nations World Forum for Harmonisation of Vehicle Regulations and the 1949/1968 UN Road Traffic Conventions, and progress towards wider participation in these efforts;
- Review the work of the Commission for Global Road Safety, UN Road Safety Collaboration, the World Bank Global Road Safety Facility Action Plan, and the implementation of the World Report on Road Traffic Injury Prevention and the related UN Resolutions;
- Identify road safety's contribution to the achievement of the Millennium Development Goals and prepare proposals for the review of the transport dimension of sustainable development to be undertaken by the UN Commission on Sustainable Development in 2010;
- Provide an opportunity for low- and middle-income countries to confirm their commitment to action to implement the recommendations of the World Report on Road Traffic Injury Prevention and adopt national road safety strategies and targets.

The Global Road Safety Forum who published these objectives have invited the community of global road safety stakeholders to work within their own nations to raise awareness of their country's road safety status and to ensure each nation will have high-level participation in the upcoming Ministerial Conference. A specific framework for developing a national mobilization action plan is expected to be available shortly. There is call for "A Decade of Action on Road Safety" from 2010.

I noticed over the Christmas Holiday period the difficulty of encouraging commentators to focus on the "safe systems" model set out in our national road safety strategy and the OECD report "Towards Zero; ambitious road safety targets and the safe systems approach" I mentioned in the last Journal. I did manage to engage with a few radio commentators following the Press Release the College issued in December; "Time for an ambitious plan for a fatality free Christmas period on the roads" However, it is always difficult to encourage a view that is long term, and perhaps difficult to comprehend. I did notice though that the regular reporting of fatality rates did actually show that some jurisdictions were reported as "fatality free" for the early period of the holidays. I think there is a chance that we can extend that period for longer if we set our minds to the task. I also found that keeping journalists and commentators up to date with solutions, technologies, programs that make a difference in reducing crash rates and trauma is a continual task and one I would encourage all College members to do.

Thank you to all the members who have renewed their subscription promptly, the funds keep the wheels turning in the office and in supporting a range of activities.

Already this year the College office has briefed a delegation from China with specific interest in rural roads and rural road safety and we will be presenting to the Tasmanian Legislative Assembly's Road Safety Committee's current inquiry and to the House of Representative's Infrastructure Committee in early February.

I am sure we will have a busy year ahead of us. We expect that COAG will approve a new National Road Safety Council, and hopefully there will be potential for new and increased support for existing initiatives. I encourage you to support your own Chapter meetings, I hope I have opportunities to attend some of them and I would encourage you to apply for registration as a Road Safety Professional as part of our program to improve members' career opportunities by enhancing public recognition of professionalism and specialisation in road safety.

Please note that our AGM teleconference will be held at 4.30pm (EST) on Thursday 21st May. Each Chapter will be organising a local venue for this event and I do urge you to join in if you are able. The meeting usually runs for about one hour.

Lauchlan McIntosh AM

President

Letters to the Editor

Know your speed

ACRS members might be interested in a low-cost speed limit advisory system that is now available in Australia and covers most roads throughout Australia. I have tried it out in Sydney (since mid- 2006), Melbourne, Canberra, Adelaide and Perth. The SpeedAlert system is packaged with the Navig8r M35 sat-nav. Retailers are currently selling it for around \$150. Full activation of SpeedAlert requires a further subscription of \$9.90 and annual updates are the same. For an independent review of the product see my speed control web page:
<http://users.tpg.com.au/users/mpaine/speed.html>

I would like to see all novice drivers encouraged to use this type of device. There are many myths about speed limit advisory systems that are addressed/dismissed in research papers that are included as links on the above page. (Note: I do not sell the M35 or any other products - I am interested as a road safety researcher and saving lives. However I can make some M35 units available for short-term evaluation by ACRS members. My contact details are below)

Michael Paine ACRS member

Phone (+61 2) 94514870 Mobile 0418165741

Diary

6 April 2009 Public Workshop on Universal Access: the practical side of providing for people with disabilities - 9:00 am -2:00 pm Leichhardt Town Hall, Marion St Leichhardt, NSW. The workshop, organised by AITPM, will provide an insight and experiential exercises into the design implications of ensuring access to road infrastructure for people with disabilities, and a summary of current Australian practice..
Speaker: Mr Ben Sgherza. For attendance cost and to register contact: aitpm@aitpm.com

8-9 October 2009 Victorian Biennial RoadSafe Conference, Rydges Bell City Event Centre, Preston, Victoria. The Conference will feature keynote speakers, presentations from local specialists, a conference dinner and associated expo. Be informed and inspired by a number of high profile local speakers from the road safety industry. For more information visit: www.iceaustralia.com/roadsafe09

5-6 November 2009 ACRS Conference 'Road Safety 2020: smart solutions, sustainability, vision' Perth. WA. Sub themes: advances in technology; research advances and solutions (smart systems); high risk road users; current issues. For further information contact: eo@acrs.org.au

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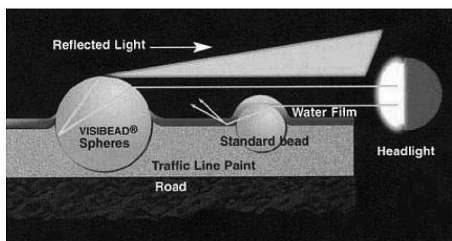
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Quarterly News

Presentation of Fellowship Award for 2007

Finding a suitable opportunity at which to present the annual Fellowship Award is often a headache for the ACRS Executive Committee. This is due to the tyranny of distance and the invariably busy lives of our Fellowship recipients. This year was no exception, as we sought a suitable opportunity for the presentation of the 2007 Fellowship to Professor Raphael Grzebieta. Nevertheless, an opportunity was finally found on 10th December in Sydney. The occasion was a combined seminar and NSW Chapter AGM held at the George Institute of International Health. The presentation was made by Dr Soames Job, himself a Fellow of the College and former College President.

The 2007 Fellowship was awarded to Professor Grzebieta for his work in the area of improving road safety including structural crashworthiness research, accident investigation, failure analysis, numerical modelling and experimental crash testing and for his involvement with the College. Professor Grzebieta has served on the College Executive Committee for many years and as President for three years. He is also Chairman of the Peer Reviewed Papers Editorial Board of the College Journal and Peer Reviewed Papers Editor.

Below is Professor Grzebieta's response on receiving the Fellowship

Dear All,

I would like to thank all of you sincerely for this award. I was truly humbled by Soames' very kind words last night at the Sydney Chapter meeting. You are all wonderful people, all pulling together and carrying out various tasks related to road safety, that is so important to road users and their families. I mentioned yesterday at the Sydney Chapter meeting that I watched, together with my wife Lidka, Sudden Impact on Channel 9 on Tuesday night. Well done David and TAC!

See: <http://www.ebroadcast.com.au/enews/nine/Sudden-Impact-Premieres-On-Nine-281108.html>

<http://channelnine.ninemsn.com.au/suddenimpact>

The three real life stories moved me greatly. One of the stories related to the 8 boys who drove a Nissan 1998 station wagon and crashed into a tree in November 1998, the Peninsula school crash if you recall. It shocked all of us at the ACRS when it happened and we were all determined then to do something about it. Well, many years later we now have the P plate restrictions that we all lobbied strongly for and that evolved from this tragedy. Each of us in some way played a role in



Dr Soames Job presenting the Fellowship to Professor Grzebieta

making this happen. Soames presented some NSW statistics last night showing how many young lives are now being saved and how the regulations are making a significant difference to the well being of our young society.

Watching this show I felt honoured and at the same time truly grateful to be a member of such a great team of like-minded road safety professionals at the ACRS, who really do care and want to make a difference to the senseless suffering we often see on our roads. I can think of no other more nobler pursuit and greater team to be a part off than the ACRS.

Your bestowing this award on me is a great honour. It has inspired me to press on even harder to do what I can, in whatever small way, to lend a shoulder alongside all of you, to bring about relief to the victims of road crashes and their families and friends.

Thank you all and have a safe and joyful Christmas break.

Raph

Prof. Raphael Grzebieta

Chair of Road Safety

NSW Injury Risk Management Research Centre (IRMRC)

Building G2, Western Campus

University of New South Wales (UNSW)

Sydney, NSW 2052

First Book on Driver Distraction Launched

Canberra was the host of the international launch of the world's first book on driver distraction – 'Driver Distraction: Theory, Effects and Mitigation' on 12 December 2008. The book is the brainchild of Associate Professor and Research Director Michael Regan of the French National Institute for Transport and Safety Research, where he is on secondment from the Monash



Kristie Young and Michael Regan at the seminar and book launch.

University Accident Research Centre (MUARC). He is also an Adjunct Professor with the Department of Applied Mechanics at the Chalmers University of Technology in Gothenburg, Sweden.

The NRMA – ACT Road Safety Trust and the Australasian College of Road Safety joined forces to host the launch at the Botanic Gardens Theatre. The Trust had contributed \$20,000 to assist in the development of the book. As Trustee Dr Angus McIntosh OAM observed while welcoming the forty delegates, it is estimated that up to 23% of crashes and near-crashes are caused by driver distraction. That figure is likely to increase as more and more distractions, both inside and outside the vehicle, compete for driver attention.

Professor Regan together with his colleagues Professor John Lee, University of Iowa and Ms Kristie Young a post graduate researcher at MUARC, have compiled a world-first practical resource for understanding, preventing and managing driver distraction. The forty one international and Australian contributors to the book are experts in the field and it contains practical advice on how to mitigate the effects of distraction – through the implementation of a range of integrated countermeasures.

At the launch, three informative and interesting presentations were delivered by Professor Regan and Ms Kristie Young. Some of the key points made included:

- 92% of distractors are things brought into the vehicle;
- Mobile phones and eating/drinking while driving are key distractors; and
- 30% of distractors are outside the vehicle.

The launch created considerable media interest and Professor Regan was interviewed by local radio and was a guest on the ABC's high-rating late afternoon Drive program. The presentations are available on both the College and Trust websites (www.acrs.org.au or www.roadsafetytrust.org.au).

The book has been reviewed by Dr Bob Dewar, a noted international road safety expert, who has commented that "This book is a very thorough treatment of driver distraction, with

everything you ever wanted to know about the topic and more. It is one of the most interesting and informative books on traffic safety I have read in some time." He added the book is a must read for anyone interested in the sources, causes and effects of driver distraction and how distraction can be reduced.

The book is available through CRC Press, many internet distribution outlets (eg Amazon.com) in libraries, universities and bookshops and costs about \$100.

Two of the new book's authors, Michael Regan and John Lee, were keynote speakers at the first ever driver distraction conference, which was held in Sydney in June 2005 under the joint organisation of the Staysafe Committee of the New South Wales Parliament and the ACRS.

ACRS Annual Conference in Perth November 2009

Please put this in your diaries and make an early start to your travel plans!

ACRS Annual Conference 5-6 November 2009, Perth. WA, "Road Safety 2020: smart solutions, sustainability, vision". Sub themes: advances in technology; research advances and solutions (smart systems); high risk road users; current issues. Abstracts open 9/2/09 and close 29/5/09.

Chapter News

Australian Capital Territory and Region

As reported above, on 12 December 2008, the Chapter and the NRMA – ACT Road Safety Trust joined forces to host the launch of a major book - Driver Distraction: Theory, Effects and Mitigation. The Chapter will hold its AGM in mid-February 2009 and is planning a forum on speeding for mid-year. (Robin Anderson)

Queensland

The Queensland Chapter held its last quarterly seminar for the year on Tuesday, 2nd December 2008. The seminar entitled "Road Safety Partnership Project (RSPP)" was presented by Jason Deller, Principal Engineer, Moreton Bay Regional Council. The presentation outlined the development of the RSPP, including the appointment of a Road Safety Officer by Moreton Bay Regional Council.

The Queensland Chapter will hold its next quarterly meeting on 3rd March 2009. Mr Rob McInerney, CEO, iRAP Asia Pacific will provide an overview of the iRAP project. This seminar will be followed by the Chapter AGM.

Sydney

The Sydney Chapter held three seminars and the Annual General Meeting in the past quarter. The seminars were:

- 1) High level review of road safety management: Sweden – case study. Speaker: Jeanne Breen, Editorial Board of the web-based

European Road Safety Observatory (ERSO). The seminar, on 21 November, was held at the George Institute for International Health and attended by 28 people.

2) Risk Indulgence: youth risk attitude.

- The effects of anti-speeding campaigns on the simulated driving performance of youth drivers. Presented by Bernice Plant Graduate researcher, Macquarie University.
- The role of risk propensity in the risky driving of young drivers. Presented by Dr Julie Hatfield, Senior Research Fellow, NSW Injury Risk Management Research Centre.
- Risky attitudes and the risk promoting society. Presented by Sarah Redshaw, Honorary Associate, Macquarie University and Senior Researcher, The Children's Hospital at Westmead.

The seminar, on 27 November, was held Macquarie University and attended by 20 people.

3 Safe System and Ambitious Road Safety Targets: Where does New South Wales sit on the world road safety stage?

Speakers: Dr Soames Job A/Director, NSW Centre for Road Safety, Roads & Traffic Authority and Professor Raph Grzebieta, Chair of Road Safety, NSW Injury Risk Management Research Centre (IRMRC). The seminar, on 10 December, was held at the George Institute for International Health and attended by 26 people.

Nominations for the Chapter Executive were invited prior to the Annual General Meeting, which followed the Safe Systems seminar on December 10th. There being 10 nominations for the 10 positions on the Executive, there was no requirement for members at the AGM to cast votes. The Chair, Ms de Rome, thanked the retiring members of the Executive for their contribution to the work of the Chapter. Retiring members were: Professor Mark Stephenson, Mr Jeff McDougall, Mr Allan Porter and Mr David Tynan. New members are: Ms Pam Albany, Mr Harry Camkin, Mr Peter Croft, Dr Tom Gibson. The following responsibilities were determined at the first Chapter meeting of the incoming Executive on January 28, 2009. Chair: Professor Raphael Grzebieta; Deputy Chair: Dr Tom Gibson; Secretary: Ms Lori Mooren; Treasurer: Dr Teresa Senserrick; Seminar Co-ordinator: Ms Liz de Rome; Web Liaison: Mr Peter Croft. Ordinary members: Ms Pam Albany, Mr Harry Camkin, Mr Ian Faulks and Dr Sarah Redshaw. (Liz de Rome)

Victoria

The Victorian Chapter of the College conducted a Seminar in November 2008 on the topic "Technology - are you being watched?". The seminar was well attended with presenters focusing on the role of the capacity of technology to monitor performance and on the legal divide between individual privacy and the social good.

The first seminar for 2009 will be conducted on 19 March and will focus on the role of environment in influencing road safety outcomes. Issues surrounding the changing size and weight of vehicles together with the relationship between travel speeds and eco-driving practices on safety and the environment will be explored. (David Healy)

Western Australia

The WA Chapter has been very busy over the break working on the preliminary preparations for the ACRS National Conference to be held in Perth on 5-6 November 2009. The theme for this year's conference is extremely topical being 'Road Safety in 2020: Smart solutions, sustainability and vision.' We are very excited the conference will be held in Perth as it not only provides a fantastic opportunity to promote our beautiful State, it also allows those of us scattered across its vast land expanse to get together and showcase the terrific work being done in road safety in our part of the world. We are particularly looking forward to hearing about the latest advances in technology and the experiences of road safety 'in practice'.

We would like to encourage road safety researchers and practitioners to submit an abstract to the conference (see www.acrs.org.au/activitiesevents/ for instruction).

Other WA business

The WA Chapter is supporting a series of motor cycle and scooter safety forums to be convened by the Office of Road Safety to review motorcycle and scooter safety in Western Australia. Participants will be asked to identify problems, list possible, achievable solutions and commit to the implementation of actions under the principle of shared responsibility. The first two-day invitation only forum will be held in early April 2009. We are looking forward to hearing the outcomes from this forum. A seminar will be held on 21 May at 1pm in conjunction with the WA AGM. The topic of the seminar will be 'Care Child restraints – the 1st 1000 days of life'. Director of Kidsafe WA Sue Wicks will give the keynote address.

A subsequent seminar on high risk road users (particularly powered two wheelers) will be held later in the year. (A/Prof Alexandra McManus, Chair WA Chapter ACRS)

Australian News

Grants for Indigenous Road Safety Projects

The following information about indigenous road safety grants may be of interest to ACRS members. The Department of Infrastructure, Transport, Regional Development and Local Government is now inviting applications for Indigenous Road Safety Grants for 2009-2010. One or more grants up to a total of \$30,000 will be awarded to applicants for projects that will help improve road safety for Indigenous people. Application forms and detailed information about the grants are available from the Department's website:

<http://www.infrastructure.gov.au/roads/safety/index.aspx>

Applications close at 5 pm AEST on 27 February 2009. Successful applicants will be required to complete their projects within 18 months.

Promising Treatment for Chronic Whiplash

Following a whiplash injury, about one third of people develop persistent pain and disability. In a series of pilot trials, George Institute researchers in Sydney have developed a new physiotherapy treatment for chronic whiplash. Initial results are very promising and the Institute will now definitively establish the effectiveness of this new treatment in a large clinical trial. (Source: Newsletter of the George Institute December 2008)

New NTC Chairman

The National Transport Commission (NTC) has announced that the Australian Transport Council has appointed Professor Ian Johnston AM as Deputy Chair of the Commission.

Fatality-Free Friday Launched

Fatality Free Friday 2009 was launched at Queensland Parliament House on October 24 with an awards presentation and the unveiling of the 2009 theme – ‘How to Save a Life’.

Fatality Free Friday founder Russell White used the opportunity to thank supporters and sponsors and reveal some of the activities planned for 2009. “We’ve been delighted by the tremendous support from the community as well as our generous corporate sponsors,” said Russell. “Fatality Free Friday has captured the attention of community groups, businesses, schools, individuals as well as the media. “By taking on road safety as a community concern, coupled with personal responsibility, we will start seeing tremendous results in reducing road crashes. “That’s how we save a life.”

A new video promoting the campaign was launched at the lunchtime event with plans to display it on YouTube. Fatality Free Friday 22nd May 2009 will feature an expanded awareness program, activities for children and families as well as more opportunities for community groups to be involved. (Source: Media release - Russell@DriverSafety.com.au)

Transport Incidents Leading Cause of Queensland Child Deaths

Between 1 July 2007 and 30 June 2008, 50 children and young people between the ages of 0-17 years died as a result of transport incidents in Queensland (a rate of 5.0 per 100,000). 54% were the result of motor vehicle crashes (27 deaths), 20% involved pedestrians (10 deaths), 16% involved motorcycles (8 deaths) and 4% involved watercraft (2 deaths). Only 63% of children and young people involved in motor vehicle fatalities were wearing seatbelts at the time of the incident. Likewise, half of the children fatally injured in motorcycle incidents were not wearing helmets. (Source: Annual Report – Deaths of children and young people – Queensland 2007-08 – Commission for Children and Young People and Child Guardian)

ACRS Professional Register News

Correction: The November 2008 Journal stated that Mr Cameron Mercer had been approved for listing on the ACRS Register of Road Safety Professionals in the discipline of ‘Road Safety Audit’. Cameron’s surname is Messer, not Mercer. We apologise for this error.

Congratulations to Senior Sergeant Steven Perry of the Victoria Police, who has been elected to the Register in the discipline of ‘Road Safety Enforcement’. Congratulations also to Registered Road Safety Professional Associate Professor Rebecca Ivers, who was recently awarded ‘2008 Young Tall Poppy of Science’ for excellence in research achievements in road safety and passion for communicating science.

New Zealand News

Tougher Tests for Heavy Vehicle Brakes

New brake tests for heavy vehicles are being introduced throughout New Zealand in a campaign to reduce crashes and enhance the safety of heavy vehicles. The new tests require vehicles to be tested in a laden state for the first time. This is to be part of the half-yearly certificate of fitness test. The new tests will ensure that vehicles can brake safely under all loading conditions. In order to implement the new testing regime, testing stations across the country have been upgraded with brake testing machines capable of simulating a load on a vehicle by pulling the axles or chassis down. The new test involves each of a vehicle’s axle groups being loaded to a minimum of 60% of the manufacturer’s axle rating for the statutory axle limit, whichever is the lesser. (Source: NZ Transport Agency ‘Pathways’ Issue 03 January 2009)

European News

EU Moving to Daytime Running Lights by 2010

A Directive was adopted by the European Commission on 24 September that will require all new cars and small trucks in the EU to be equipped with dedicated daytime running lights as of February 2011, with lorries and buses following suit in August 2012. It is anticipated that this measure will increase vehicle visibility and may save between 1,200 and 2,000 lives per year, according to the European Commission. (Source: ETSC Safety Monitor 74 Oct 08)

Motorcycle Safety in Focus in Europe

The European Commission’s 2011-2020 programme for actions on road safety will particularly focus on the safety of motorcyclists. Making up 17% of total road deaths, they account for 2% of kilometers driven. Speaking at a conference in the framework of the European Road Safety Day in Paris on 13 October, the EU Transport Commissioner Antonio Tajani pledged to reverse this trend. (Source: ETSC Safety Monitor 74 Oct 08)

EU Capitals Ranked for Safety

Over the past ten years, at least 24,000 people were killed in road accidents in the EU-27 capitals, according to the latest ETSC Road Safety PIN study launched in Brussels on 8 October. Despite reduction over the past decade, last year alone the total number of road victims in the EU capitals was 1,560. Dublin, Lisbon and Oslo scored the best year-to-year reductions in the number of victims per 100,000 residents. Another eight capitals – Sofia, Bratislava, Madrid, Bucharest, Warsaw, Paris, Copenhagen and Tallinn – follow with better-than-average reductions. In Helsinki, however, the number of road deaths per population has increased slightly. While in general the risk of dying on the capital cities' roads is half the risk of dying in a collision in the rest of the country, for pedestrians and cyclists this probability is higher: they make up half of road victims in capitals. (Source: ETSC Safety Monitor 74 Oct 08)

Drink Driving Main Cause of Road Fatalities in France

Drink driving has become the main cause of fatal crashes in France ahead of speeding, as was revealed at the Safe and Sober Talk held in December 2008 in Paris by ETSC and the French NGO Association Prévention Routière. Alcohol consumption decreased overall in France by more than 10% between 2001 and 2005, but the percentage of drivers above the legal BAC limit (0.5 g/l) remained stable. Even though it is estimated to be between 1% and 2%, this small group of drivers is responsible for 25% of all road deaths in the country. The French police have recently increased the number of preventative breath tests on the roads from 7.9 mln in 2004 to just over 9 mln in 2005 and 2006. However, police enforcement alone cannot solve the drink driving problem. A set of new road safety legislation has been proposed by the French government earlier this year. It includes combating drink driving through the introduction of alcolock rehabilitation programs, installing alcolocks in all school buses from the start of 2009 school year, and car confiscation for serious and repeat offenders. In order to target the youngest driver group, it has been proposed to install 'alcotests' at night clubs and to prohibit the sale of alcohol in all petrol stations. Earlier this year France set itself a new target of reducing road deaths by 35% by 2012 from the 2007 total of 4,620. (Source: ETSC Safety Monitor 75 January 09)

North American News

Mobile Phone Myth in USA

Two-thirds of Americans who use mobile phones while driving believe it is safer to talk on a hands-free mobile than on a hand-held device, according to a new study released today by the AAA Foundation for Traffic Safety. However, scientific research shows that is simply not the case. As the number of mobile phone subscribers and proportion of drivers using mobile phones continues to increase, studies that have analysed the mobile phone records of crash-involved drivers have reported that using a mobile phone while driving makes you four times as likely to be involved in a crash.

"Too many Americans are driving with the false sense of security that hands-free devices are somehow safer, which could be a deadly mistake," said AAA Foundation President and CEO Peter Kissinger. "Evidence shows that using a hands-free phone while driving impairs your reaction time to critical events and increases your crash risk about the same as if you were using a hand-held phone. Drivers need to be aware of the dangers of distracted driving and pay full attention while they are behind the wheel."

Two recent AAA Foundation surveys of the motoring public have found:

- Over half of U.S. drivers admit to using a mobile phone while driving.
- In one survey, 53% of drivers reported having used a mobile phone while driving at least occasionally in the month before they were interviewed; in the other survey, 61% said the same.
- In both surveys, one in six even admitted that they do this regularly.
- Of those who admitted using their mobile phone while driving, 60% used a handheld device and 34% used a hands-free phone.
- One in seven even admitted text messaging while driving in the past 30 days.
- Young drivers were overwhelmingly more likely than older drivers to text message, and somewhat more likely to talk on mobile phones while driving. For example, nearly half of drivers ages 18 to 24 admitted texting while driving at least occasionally, as compared to less than five percent of those ages 45 and older. (Source: AAA Foundation for Traffic Safety media release Dec 08)

Contributed Articles

Please note that our November 2009 Journal will have a major focus on motorcycle safety. If you would like to write a 'Letter to the Editor' or submit an article, please send it as a MS Word document to journaleditor@acrs.org.au by 10th September.

Pre-Driver Education at Charlton, Victoria.

by Brian Heenan, Manager, Charlton Driver Education Centre; tel: 0418 529 718.

The Charlton Driver Education Centre, in central North West Victoria, has, for the last 20 years, focused on providing driver education to students who are about to obtain their Es.

Our experience has shown us that there are advantages in doing pre driver education.

Firstly, these new drivers are shown the basic controls of the car and how to set themselves up to correctly operate them. They are taught the correct techniques by professional instructors, so that, when they hop in the car on the open road, they have a good understanding of how the car operates and the basics of how to control the vehicle. Because they are being taught by professionals whom they are more likely to listen to, they are not going to be adopting the "bad habits" used by a lot of other drivers.

This has proven to be very beneficial as it gives those novice drivers the essential basics of how to drive correctly and safely. The feedback from the parents and police is also very positive, as it makes those first few drives far less stressful because these new drivers have the correct basic information on how to drive.

Talking to ex-students now in their early 20's, the common statement is, "Driver Ed was the best thing I did at school". Another feedback has been; "I have 3 children, two did Driver Ed. I had no trouble supervising them driving. They knew what they had to do and why; the third, all I got was, "why do I have to do that? What do you know?"

The emphasis of the course is on safety and the term "trust nobody". Check that there is no one running a stop sign; a green light means "go, if safe" – always check to make sure no one is running through a red light. (We have had feedback of this happening to past students, who have avoided the collision by checking first!)

An article in this Journal in November 2007, pages 12 & 13, stated the importance and potential for a program to educate learner drivers "before they begin solo driving. The aim of such an approach would be to "knock the top off" the spike in risk that novice drivers face when they first begin driving solo." We believe we are helping to reduce that "spike" by better equipping these students before they start driving, or at least in the very early stages of their driving.

The Centre consists of a track, 1.7 kilometres in length, 800 metres sealed bitumen and the rest gravel. It features operating traffic lights, pedestrian crossing, hill crest, a roundabout, divided roads, stop and give way signs, uncontrolled intersections, angle and parallel parking bays and facilities for U turns and 3 point turns and overtaking. Four Toyota Corollas are used for the program, two are manual sedans and two are automatics.



The normal program is for 6 students to share a car, with half in the car and the other half in the theory room, for approximately three quarters of an hour, and then groups swap over. Having 3 in a car means that the students are learning, not only when they are driving, but also by watching other students and picking up on their mistakes: "it is much easier to drive from the back seat when the pressure is not on you!"

In the theory room subjects covered include speed, alcohol / drugs, aggression, fatigue, peer group pressures, intersections and basic road rules.

Whilst in the car, students learn correct adjustment of all controls, steering techniques, correct road positioning, turns, correct roundabout usage, reversing, angle and parallel parks, U turns and 3 point turns, hill starts, gear changing, overtaking, gap judgment and the vital importance of having good observation to avoid any "potential hazards".

Because there are normally 3 or 4 vehicles on the track at any time, the students are constantly confronted with situations

requiring answers on who has to give way, and to be quickly able to make the correct decisions. The safety advantage here is, if the wrong decision is made, there is an experienced instructor in each car who can quickly intervene.

Approximately 800 students per year, from the West half of Victoria and Southern New South Wales, attend the program, usually year 10 level, as they are generally 15 or 16 years old. Programs operate normally for 2 or 3 days, but are tailored to whatever the school desires. A night drive is normally included in the program.

Students are taught the very basics of how to drive a vehicle in a safe and predictable manner. They are taught how to drive “systematically” (a set order of doing things), and how to develop “good observation” so they are then in a position to take evasive action if needed. Good observation is constantly stressed as the most important thing: observation will keep you alive.

The Charlton Driver Education Centre tries to give these 15 – 16 year olds a “solid foundation” on which to build the rest of their driving experiences,

Delivering Results through Quality Driver Training

By Russell White –Managing Director, Driversafety.com.au; Ph:0419 866 165

Overview

The aim of this document is to provide a general overview on the issue of road safety and driver education. It looks at the road toll as it stands currently and reviews some of the previous research into driver training. In addition it looks at some new areas of research and how a hierarchy for Road Safety Training can be applied to training initiatives and driver education programs.



Introduction

It is well understood that road safety is a complex issue. The impact of road trauma places huge social and economic costs to communities across the globe. The World Health Organisation states that over 1.2 million people are killed each year as a result of road crashes [1] and for every death more than 10 people on average are seriously injured. Road crash fatalities in Australia peaked in 1970 with 3798 killed [2]. Since then the road toll figures have steadily decreased due to a number of initiatives and interventions. These included improved occupant safety, vehicle design rules and enforcement.

However it appears that the national road toll rate has now largely plateaued in recent years. The annual road toll figure in Australia has remained relatively constant at round 1600 people per year. Interestingly, whilst the number of fatalities has decreased overall the number of serious injuries is increasing. This simply means that the improvement in crash survival rates does not reflect a down turn in the crash rates themselves.

Governments, police and road authorities have consistently expressed a concern that current road safety activities have also levelled out. In fact there is evidence to suggest that the road toll figures may again start to increase unless new initiatives can be put in place. The World Report suggests that road fatality rates are forecast to increase by 65% by 2020.

Key Factors for Driving Improvement in Road Safety

Thanks to an enormous amount of ongoing development from key stakeholders driving today is the safest it's ever been. Over the past few decades there has been a significant amount of improvement in road design, enforcement vehicle safety and engineering. Yet despite all these advancements it is clear that a critical piece of the puzzle is still missing because the deaths and injuries from road crashes continue.

By comparison, the only area that has not improved relates to a vehicles biological component ...The driver.

It could be argued that the driver training and licensing have largely remained unchanged whilst almost every other aspect of motoring has experienced significant levels of development and evolution. Driver licensing tends to focus on the fundamentals of vehicle control and the key elements of road law. Whilst these areas are important in early driver development there is little refinement in these base skills once the licence is issued. This can lead to drivers assuming that holding licence means that they have nothing more to learn.

It is also well known that the vast majority of people overestimate their abilities and believe that they have above average driving skills [3]. However, crash data reveals that up to 95% of all road crashes are the result of human error. Logic suggests that if you improve the capabilities of the driver you will improve safety. However, as driving is such a complex task it is important to look at a holistic approach to enhancing overall driver abilities and behaviour. Driver Training offers significant opportunities to reduce road trauma yet in the past it is largely overlooked by academics and authorities as an effective countermeasure.

Previous Research into Driver Training

Many road safety academics have dismissed driver training often stating that it offers little value in the overall road safety strategy. The research literature outlines numerous studies stating that driver training programs are generally ineffective and may also have an adverse impact on road safety [4]. Yet further investigation of the available literature reveals a number of issues regarding the research methodology and the understanding of the issue itself. Therefore it draws into question the results and outcomes from these previous studies.

Definition of Driver Training

One of the first issues is that the literature doesn't clearly define what driver training is and, as a result, there is an assumption that all driver training programs are the same [5]. In fact there have been relatively few studies into post-licence driver training programs. It is inappropriate to use the term "driver training" generically because the design, content and course structure varies from provider to provider. The results of one study may not necessarily accurately reflect the whole industry. In addition many reviews have had too wide a scope and included remedial programs that are meant to deal with specific behavioural issues such as persistent drink drivers.

Structure of the Program

Another key issue relates to the quality of the training provided. Typically the type of training being criticised was short in duration, focused solely on vehicle operation skills and used scare tactics to invoke safe driving [5, 6]. In some cases, the only training a student received was a brief demonstration of a particular driving situation. Whilst this may help to increase an awareness of the situation it does not provide an effective means of training.

A sound training program does need to offer a balance in the curriculum to address the issues holistically rather than dealing with isolated examples with little or no detail on correct actions and perceptions. It also needs to be relevant in the daily on road context. Therefore, such reviews are problematic, biased and controversial, especially as the discussions and conclusions are generalised to general post-licence programs. [5].

A New Direction for Road Safety

Recently, some academics have begun to re-evaluate these issues within the overall context of road safety. Researchers such as Watson [7] have proposed a selection of research priorities for the future development of driver training models. These new priorities will assist in identifying research opportunities for a range of new studies into a higher order of driver training. These would include promoting skill development, hazard detection, situational awareness, attitude, perception and bio-mechanics. More importantly these studies would need to assess the cumulative effect of each of these areas and how they affect driving as a whole. An effective driver training program needs to integrate a number of key elements of scientific knowledge and embrace the following aspects.

1. A Hierarchy for Road Safety Training

There has already been some sound research into this cumulative approach and how it is applied to educational methods [8]. Hatakka et al [8] have looked at identifying a conceptual model of driver training. They have identified a hierarchical approach to the driving task. This approach is based on a solid theoretical framework that covers the task of driving as broadly as possible.

"Although in the past hierarchical approaches have been used mainly for describing the performance aspects of driving behaviour, a hierarchical approach can also be used to combine the motivational and attitudinal aspects of driving behaviour with performance, or operations in certain traffic situations." [8]

Goals for life and skills for living

Goals and the context of driving

Mastering Traffic Situations

Vehicle Manoeuvring

*Illustration of hierarchical levels of driver behaviour
(adapted from Keskinen, 1996)*

The core philosophy in a hierarchical approach is that all these aspects are directly linked as one system. Results at the lower levels will also manifest in the higher levels as well.

This is critical to the overall effectiveness of the training program. It must address this hierarchy across the driving task. This includes both the physical and psychological aspects.

2. Insight Training

"Intelligent measures toward educating the public to drive safely can only be taken when the performance of driving an automobile is thoroughly understood." [9]

This area is critical. In order to be effective driver training needs to combine three key aspects.

These are: **Physical technique; Correct Attitudes; and Commonsense**

Only when all three aspects are present do we have a strong foundation for safety.

3. Visual Performance

Visual performance and information intake are critical for safe driving. Errors in perception and recognition have been reported as the most pervasive cause of road accidents involving normal, sober drivers [10]. Drivers in general have little insight into how to correctly use their visual capability to enhance scanning patterns and avoid eye fixation. Research has repeatedly demonstrated that a driver's skill at scanning for visual information and hazards detection improves with training [11].

4. Focus on Driver Bio-Mechanics and Ergonomics

Driving a vehicle is recognised as a complex perceptual-motor task. Postural stability relates to techniques that will assist the driver in achieving a stable orientation within the cockpit environment. A stable posture optimises driver performance and improves vehicle control by effectively coupling the driver and the vehicle. It offsets the external forces that act on the driver once the car is in motion. Without this postural support a driver will attempt to stabilise themselves by increasing grip on the steering wheel. Treffner [12] regards this as an inappropriate means of postural support and that it reduces the driver's ability to effectively control the vehicle. It can also contribute to an increase in driver fatigue and a reduction in concentration.

Stoffregen et al [13] also investigated the relationship between visual performance and postural control. The results from their research supported the hypothesis that postural control is not an autonomous system, but is organised as part of an integrated perception/action system. Postural control can be used to improve visual performance. Importantly, postural stability should not be considered in isolation, but rather as an essential component of a complete driving style.

Recent studies by Treffner et al [12] have been undertaken to focus on this issue and how it relates to improving driver performance specifically. The studies looked at how the integration of driver posture affected driver performance in a range of driving tasks. It also addressed how these improvements would enhance overall vehicle control and vehicle stability.

In addition the studies highlighted that driver training programs based upon the development perceptual-motor skills through enhanced postural stability demonstrated positive effects on vehicle motion.

Conclusions

This paper was structured to provide a general overview on the road safety issue and outline the current research relating to driver training. It highlighted that whilst there have been numerous studies into driver training few have looked at the post-licence area in any detail. Many past studies have also had significant questions raised about the methods and findings. Therefore the results may limit the development of future training programs. What is clear is that many academics have ruled driver training in the past as an ineffective means of reducing road trauma. However there are new studies that support driver training, especially as it relates to bio-mechanics, visual performance and vehicle control.

The challenge for future studies will be to collect long term research data on these higher order skills and the potential benefits on overall crash reduction. In order to achieve the ambitious road safety targets set by the authorities, focus must be placed on introducing new countermeasures. This must include how drivers are trained and how we develop driving abilities beyond the initial licensing phase.

Quality driver training and education has a critical role to play in our overall approach to reducing road trauma. However the training structure must reflect the key elements from these higher order skills as they apply to motoring safety. They are part of a holistic approach that includes driver behaviour, understanding the full field of driving dynamics and appropriate attitudes towards driver safety.

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The Graduated Driver Licensing System in New South Wales

By Ian J. Faulks & Julia D. Irwin Department of Psychology, Macquarie University, Sydney, NSW 2109 Australia

Abstract

This paper reviews the graduated driver licensing system used in New South Wales to regulate the entry of novice drivers into the driver licensing system, and compares the Australian approaches to graduated driver licensing with systems in use in North America and elsewhere. It is proposed that the Australian approaches, as exemplified by the New South Wales graduated driver licensing systems, is a blue ribbon system demonstrating best practice.

Introduction

The entry into the driver licensing system in New South Wales (described as a graduated driver licensing system) might well be considered a blue ribbon model for such systems in the management of new drivers. This paper provides a brief review of the nature of graduated driver licensing systems for novice drivers in Australia, with a particular focus on the New South Wales system. It is a summary of invited presentations on systems to improve young driver safety made to the US Transportation Research Board Committee on Alcohol, Other Drugs and Transportation Safety in June 2008 [1] and January 2009 [2].

The Australian approach to graduated driver licensing systems

Graduated driver licensing systems were introduced in Australian jurisdictions from the mid 1960s, and there is thus more than four decades of experience with different forms of this licensing approach. A rudimentary graduated driver

licensing system was legislated in New South Wales in 1965 and commenced in 1966. It is useful to examine the features of this basic system. The graduated driver licensing system required novice drivers to complete a period of provisional licensing where several restrictive conditions were imposed (a learner drivers licence had been a requirement for novice drivers since the late 1940s):

- Compulsory carriage of drivers licence (applicable to all New South Wales drivers);
- Minimum age for obtaining a learner drivers licence of 16 years 9 months;
- Knowledge test of road rules before issuing a learner drivers licence;
- Three months tenure of learner drivers licence;
- 40 mph maximum speed limit for learner drivers;
- Requirement to display an L plate on the front and rear of the vehicle to indicate licence status of driver;
- Must be accompanied by a supervising driver in the front passenger seat who is fully licensed;
- On road test by a government (Department of Motor Transport) driving examiner before issue of a provisional drivers licence;
- 12 month period of provisional licensure;
- Requirement to display a P plate on the front and rear of the vehicle to indicate licence status of driver; and
- 40 mph maximum speed limit for provisional drivers.

To summarise, this early form of a graduated driver licensing system was focused on, first, a requirement to provide for the unambiguous identification of novice drivers to other road users, and, as a consequence, the enabling of police enforcement of speed restrictions as facilitated by the open identification of novice drivers through the display of a L or P plate and the compulsory carriage of a drivers licence.

In the late 1990s there was a recognition that driver licensing needed to be managed as a 'whole-of-driving-life' system, from first entry through to management during a lifetime of driving and finally to the cessation of driving; and the driver licensing system then in use in New South Wales had features that 'forced' novice drivers into progressing through the graduated licensing phase as rapidly as possible [3-5].

A revised graduated driver licensing system was introduced in New South Wales in 2000, with significant additions over 2005-2008. The system provides for minimum and maximum tenure of learner and provisional licences, with the aim of reducing any pressure for novice drivers to progress to later licence stages because of licence expiry. In its current form in 2009, the elements of graduated driver licensing system in New South Wales include:

- A two stage provisional licensing system (P1 and P2 licences) – minimum one year as a provisionally licensed P1 driver (maximum tenure 18 months), and two years as a provisionally licensed P2 driver (maximum tenure three years);
- An increase in the minimum tenure period for learner drivers under the age of 25 years old from six months to one year before they can apply for a provisional P1 licence;
- An increase in the maximum length of the licensing period for learner drivers from three years to five years;
- An increase in the mandatory period of supervised driving for learner drivers from 50 hours to 120 hours, and including a minimum of 20 hours of night time driving;
- A log book system requiring the documentation of completion of the required minimum hours of supervised driving;
- Particular speed limits applicable to the novice driver licences classes: learner licence (80 km/h), provisional P1 licence (90 km/h), and provisional P2 licence (100 km/h), with the L, red P1 and green P2-plates showing a driver's allowable speed limit;
- A requirement for display of L, P1, and P2 plates on the front and rear of the vehicle being driven, adjacent to the vehicle registration plates;
- A restrictions on novice drivers being able to drive certain high-powered vehicles (including vehicles with a V8 engine, and vehicle fitted with a turbocharger);

- A peer passenger restriction for provisional P1 drivers under 25 years of age, where only one passenger aged under 21 years of age can be carried from 11:00 p.m. to 5:00 a.m.;
- A licence suspension of at least three months for a provisional P1 driver or motorcycle rider licence holder who commits any speeding offence;
- A requirement for provisional drivers who lose their licence to be restricted to carrying one passenger only for 12 months following the reinstatement of their licence;
- A prohibition on the use of mobile telephones (cell phones)—hand held and hands free—for learner and provisional P1 drivers and riders.

The current driver licensing system in 2009 is now better structured to manage the risks faced by novice drivers. The driver licensing system no longer has administrative features that 'force' novice drivers into progressing through the graduated licensing phase as rapidly as possible (the tenure of the learner and provisional licences has been extended, with minimum tenure periods introduced or extended). Specific novice driver conditions challenge at-risk behaviours associated with alcohol, speeding, use of mobile telephones, and peer passengers. General licensing conditions also apply regarding mandatory seatbelt wearing and driving impaired by drugs others than alcohol (cannabis, amphetamine-like drugs).

The specific risks to novice drivers are managed through:

- Zero tolerance for novice drivers who
- use alcohol or other drugs (cannabis, psychostimulants such as methylamphetamine and ecstasy); or
- use mobile telephones (cell phones) – ban on hands-free or handheld mobile phones for learner and P1 provisional drivers; or
- speed - licence suspension of three months for any speeding offence by a P1 provisional driver
- A night-time driving restriction (11pm–5am) applying to P1 provisional drivers for the carriage of more than one peer passenger unless accompanied by a person aged over 21 years;
- Novice drivers continuing to be clearly identified or 'badged' through the display of L, P1 and P2 plates, clearly visible to other drivers and to police.

More generally, the risks to novice drivers are managed through:

- Licensing at a relatively late age, with a minimum age of 17 years old for unsupervised driving, learner licensing from 16 years old (must be accompanied by a fully licensed supervising driver);
- Modification to the minimum and maximum tenure of learner and provisional licences, with the aim of

reducing any pressure for novice drivers to progress to later licence stages through licence expiry, including the tenure of the learner licence to maximum of 5 years, and a two-stage extended period of provisional licensure, with P1 and P2 provisional licenses for a minimum of three years;

- A focus on restrictions on speed, with speed limit of no more than 80 km/h (50 mph, for learners), higher limits for provisional licence holders
- Restrictions on types of car that can be driven;
- Log book record keeping with minimum 120 hours of driving (20 hours of night-time driving);
- New testing requirements (hazard perception tests and a new on-road driving test, designed to assess anticipation and risk avoidance skills);
- The clear identification of novice drivers to other road users, and to traffic enforcement action; and
- Zero tolerance for alcohol.

These approaches to graduated driver licensing also occur within the context of other strong road safety interventions affecting all drivers, including:

- Compulsory carriage of a drivers licence;
- Mandatory wearing of seat belts (and for motorcycle and bicycle riders, mandatory wearing of helmets);
- Specific targeted traffic enforcement actions in the areas of speeding (speed cameras, LIDAR), drink driving (random breath testing), and drug driving (targeted roadside drug testing) [6].

The North American approach to graduated driver licensing

The New South Wales graduated driver licensing system is an exemplar of best practice for Australian graduated driver licensing. It is relevant to contrast the Australian approach to that of the North American graduated driver licensing systems (also used in New Zealand).

Waller commented on the genesis of graduated driver licensing, arguing that the early research that led to the concept of graduated driver licensing was a 1971 North Carolina study that identified the overrepresentation of young drivers in crashes at night and when another young person was the right front passenger and proposed that New Zealand was the first jurisdiction to adopt a graduated driver licensing system (in 1984) [7]. She did not acknowledge and recognise the Australian systems in place since the 1960s that focused on speed restrictions for novice drivers and the identification of novice drivers to other road users and police enforcement though the display of L-plates and P-plates. It is thus unfortunate that Waller's comments remain widely held among road safety and driver licensing researchers and policy makers.

The North American (and New Zealand) approach to graduated driver licensing systems place an emphasis on passenger restrictions; and nighttime driving curfews. More recently, attention is being placed on seat belt wearing laws, and reduced or zero tolerance for alcohol [8]. Elements which are common to the Australian approaches to graduate driver licensing systems (or to safety countermeasures within our road transport system generally), such as speed restriction, display of identifying plates, compulsory carriage of drivers licence, drug driving interventions, are little recognised [9, 10].

Waller did, it must be noted, emphasise that educational principles to be followed in addressing the crash and injury risk of novice drivers included distributed learning (i.e., over time) progressing from simple to complex skills, with initial experience under low risk conditions, extended supervised practice, a gradual move to more complex conditions, and parental certification of extended supervised driving practice [11]. These principles underpinned the Australian approaches to graduated driver licensing systems that were instituted in the 1960s, and provide a common ground for debate and contrast over the different approaches between the Australian and Northern American systems.

It is tempting to seek to import elements of the North American approach to graduated driver licensing. For example, Stevenson editorialised that ". . .integral to the effectiveness of the graduated licensing system is late night driving and peer passenger restrictions during the early probationary period of licensing." (p.102), citing research evidence from North America and New Zealand to support his proposition [12].

What was not acknowledged, however, was the very different origins, operation and experience of the Australian approaches.

What more can be done?

Given that these elements for a blue ribbon graduated driver licensing system are in place, what more can be done? There are a number of possibilities to support graduated driver licensing systems through enhancements to licence administration, the management of traffic offenders, alcohol control policies and legislation, and police traffic enforcement [13].

Enhancement of administrative features of the graduated driver licensing system

Recent administrative licence enhancements include changes to the New South Wales demerit point system, with learner drivers now able to accumulate 4 demerit points before licence action is taken. Double demerits continue to be used as a countermeasure to target illegal driving at high risk time (school holiday periods, public holiday periods) for speeding offences and non-wearing of seatbelts. However, in New South Wales drink driving and drug driving offences do not have demerit points (fines, licence sanctions, and possible custodial sentences only).

A new driving test provides for a continuous assessment of on-road behaviour, with the emphasis is on a driver establishing and protecting a safety envelop about the vehicle (and designed to test for aspects of driving that are involved in the commonest crash types involving novice drivers)

An important development is increased role for the driving instructor industry within the driver licensing system in New South Wales, under contracted accreditation schemes, with driving instructors now responsible for:

- All motorcycle novice rider training and assessment;
- All heavy vehicle training and assessment in the greater metropolitan Sydney region;
- Conduct of older driver assessments for re-licensing after age 85 years.

As well, the driving instructor industry is playing an increasing role in mentoring learner drivers, through:

- local government sponsored programs offering opportunities for learner drivers to train on graded routes according to level of experience, and event days where a group of novice drivers will travel in an organised fashion through a particular route; and
- the keys2drive program, a Federally supported program to launch in early 2009 providing a free lesson for the learner driver, parent or carer, and a driving instructor

Proof of age is supported by the NSW Photo Card, a voluntary card issued by the licensing agency – the Roads and Traffic Authority – for people aged 16 years of over who do not hold a current NSW driver licence to help them show who they are - it may be used to help access a number of everyday services such as entering licensed premises (also opening bank accounts, etc.). As noted earlier, if a person is caught underage drinking or misusing a NSW Photo Card, then a penalty of a six month extension to the minimum period of a provisional licence is imposed.

Enhancement of the system for intervening with traffic offenders.

The New South Wales graduated driver licensing systems is also supported through enhancement of the system for intervening and dealing with traffic offenders within the criminal justice system, so that young offenders can be detected early and effectively.

In New South Wales, a Sober Drivers Program has operated since 2005 to target repeat drink driving offenders and high rage drink drivers (the program involves use of alcohol ignition interlocks, drug and alcohol interventions, etc.). A Traffic Offender Intervention Program was introduced in New South Wales in 2007, building on a number of community-based programs in place previously.

In late 2008 release of a parliamentary report of an inquiry into young driver safety and education programs, recommending

interventions for young drivers who get into trouble and who are caught for traffic offences, including:

- the development of specific programs for young traffic offenders
- the development of early intervention programs for traffic offenders aged under 18 years of age
- a review of the effectiveness of the Traffic Offender Intervention Program [14]

Enhancement of alcohol control policies and legislation

The New South Wales graduated driver licensing systems is also supported through enhancement of alcohol control policies and legislation, so that young people who drink (and who may be at risk) can be managed more effectively. Liquor licensing policies and laws targeting of young people and their use of alcohol include:

- Legal age for purchase of alcohol in New South Wales is 18 years, but consumption of alcohol commonly starts at younger ages
- To promote healthy drinking and minimise harmful use of alcohol, communities, the government and the alcohol and hospitality industry in New South Wales work together through liquor accords (alcohol accords, or licensing accords) which are voluntary agreements about ways to improve the operation of liquor businesses and liquor licensing within local communities in order to minimise alcohol-related antisocial behaviour and improve community safety
- Liquor accords are used to support drink spiking campaigns, staff training for responsible service of alcohol, and safe transport strategies (with 143 liquor accords now in place across the state, New South Wales currently has more local liquor accords of any state or territory in Australia) [15]

It is acknowledged that recent changes to liquor licensing policies and laws in New South Wales have not been well accepted by, in particular, the hotels industry (see, e.g., the dontpunishus.com.au website which is part of a social marketing campaign instituted to try to reverse the changes to liquor licensing policies and laws).

Enhancement of enforcement actions

Finally, graduated driver licensing in New South Wales is supported through the enhancements of police traffic enforcement actions. Random breath testing (RBT) introduced in December 1982 in New South Wales and is well established as a drink driving countermeasure . . . typically about 1:300 drivers is detected with illegal alcohol at a static RBT operation, with about 1:30 drivers detected with illegal alcohol in more targeted operations (mobile RBT)

Roadside drug screening commenced in New South Wales in January 2007, By mid-2008, the New South Wales Police Force

had conducted 82 operations and administered about 13,000 roadside drug tests . . . typically about 1:44 drivers is detected drug driving in targeted operations (truck drivers, party-goers and night clubbers). The New South Wales Police Force has announced expansion of the roadside drug testing program, with a fleet of eight roadside drug testing trucks in use by end of 2009 and plans for 10,000 roadside drug tests to be conducted in 2009 [16, 17]

New advertising has been introduced in New South Wales brings home a local message about local police enforcement to drivers who may think about drink-driving, or who may have driven drunk in the past [18].

The future for the New South Wales graduated driver licensing system

These changes are unlikely to be the last for the New South Wales graduated driver licensing system.

A particular issue that has arisen relates to the requirement for 120 hours of supervised driving, and it is proposed that tuition obtained from professional driving instructors may qualify as a three hour award for each hour of instruction, up to a maximum of ten hours tuition from a driving instructor (the '3 for 1' proposal; a similar such program is in operation in Queensland [19].

The federal Australian government recently announced that it would fund a one hour tuition for all learner drivers from a professional driving instructor, provided that a parent or other supervising driver is also present so that the parent can be introduced to the concept of a methodical and appropriate curriculum of instruction for the training of a novice driver (the keys2drive program) [20].

Since 2004, work has been progressing on developing a Novice Driver Programme Trial (originally involving the federal Australian government, and the Victorian, New South Wales, and Australian Capital Territory governments). Under this trial program, provisionally licensed drivers would receive post-learner training (classroom and on-road) within the known high risk period for crashes (0-6 months after provisionally licensure) [21].

As well, the possibilities offered by intelligent transport systems are also under consideration and examination [22], particularly in terms of on-board data recorders and intelligent speed adaptation (ISA) [23, 24] and alcohol ignition interlocks [25].

It is recognised that the newly-licensed driver is over-represented in road crashes, so there is an urgent need for evaluation and change to training, testing and licensing requirements. But as well, it is recognised that personal, social, cultural and environmental factors can exercise a strong influence on safe and unsafe behaviour. Relationships with family and friends, the school and educational environment, and also for many young people the work environment, are

important to consider, and there is a focus on developing and delivering effective programs in these areas. Finally, government such as the New South Wales administration recognise the need for public education, and there are specific campaigns aimed at young drivers (see [26]). These include the 'Speeding: No-One Thinks Big Of You' campaign, featuring:

- the 'Little Pinky' advertisement on television and outdoor advertising (road signs, and bus backs), which shows a series of young men speeding and the disapproval reaction of the community to such behaviour—depicted by people crooking their little finger in a judgment of masculinity; and,
- the 'Hectic' internet advertisement, which shows a series of speeding vehicles and offers the drivers of these vehicles very small condoms;

as well as:

- the 'Speed Notes' cinema advertisement, which prompts emotional reactions to post-it notes and other messages left by young drivers to family members as they rush off to school, university, sporting events, or to meet up with friends, and who have been killed in roach crashes during their trip; and,
- the 'Please Slow Down' campaign which comprises two 15-second television advertisements supported by outdoor advertising that shows first a police officer booking a P-plate driver for speeding and second shows the same police officer attending a fatal crash involving a P-plate driver.

Concluding remarks

Entry into the driver licensing system is a defining feature of the transition from childhood to adulthood. One of the most striking aspects of adolescence and youth is the desire to participate in the driver licensing system [27]. An early choice faced by an adolescent wishing to drive a motor vehicle is whether to participate in the driver licensing system, or whether to simply start to drive a motor vehicle without authorisation or licensing. Fortunately, and importantly, a feature of driver licensing systems in motorised nations is that universally adolescents actively seek to become new drivers through entry into, and continued participation within, a driver licensing system. At a period of life where the changes and challenges facing young people are at the most intense, and at a time when the questioning of societal and individual values is at its most vigorous, adolescents identify with, and participate in, the social convention of driver licensing [28]. In fact, it is of particular interest that comparatively little is done within pre-driver and other school-based road safety education programs to introduce and reinforce the notion that a drivers licence must be obtained before driving a motor vehicle is authorised. However, the desire to engage with, and participate in, driver licensing systems develops and is maintained strongly during adolescence.

Adolescence is also a time when more deleterious behaviour may be shown. In particular, adolescence is a time when the drinking of alcohol commences. Further, on average, an adolescent's increasing consumption of alcohol is associated with pre driver and new driver ages. Fortunately, the success of drink-driving deterrence strategies, based heavily on the police conducting random breath testing operations to screen drivers for illegal blood alcohol concentration, has proven a ready counter to alcohol impaired driving. Nonetheless, concern still remains about alcohol use by new drivers, and the possibility of drug impairment of drivers after consumption of drugs other than alcohol [29-31].

This paper has proposed that the nature of the young driver problem cannot be understood without reference to adolescence (and particularly the context in which use of alcohol and other drugs may commence), and to the driver licensing system in which a young person commences to drive a motor vehicle (see also [32]). Overall, the management of young drivers in Australia occurs in the context of what can be described as uniquely Australian graduated driver licensing systems. Australian jurisdictions require the licensing of young drivers at a relatively late age (typically at a minimum age of 17 years old) and impose a number of specific restrictions not commonly seen in overseas graduated driver licensing approaches, including relatively long maximum tenure of learner and provisional licences with the aim of reducing any pressure for novice drivers to progress to later licence stages through licence expiry; requirements for display of a unique identifying plate on the vehicle driven to indicate licence status to other drivers, road users and to police; speed restrictions according to licence category; and a zero alcohol requirement.

New South Wales has a blue ribbon graduated driver licensing system, with zero tolerance for drink driving, drug driving (cannabis and psychostimulants), non-wearing of seatbelts, use of mobile telephones while driving, and speeding by young drivers. Enhancements to licence administration, to interventions targeting drivers who commit traffic offences, liquor licensing and alcohol use policies, and enforcement are all supporting this blue ribbon graduated driver licensing system

It is important to have a balance in the debate over graduated driver licensing systems. Indeed, Williams has commented that there are no hard and fast rules that must apply for a graduated driver licensing system [33, see also comments by Senserrick [34]. Graduated driver licensing is a popular and effective policy, but Williams argues that it can be made to work better. It is important to extend the research base that underpins our understanding of graduated driver licensing systems, so as to determine how best to configure graduated driver licensing systems for particular jurisdictions in terms of factors that maximize both the comprehensiveness of the provisions and compliance with them and which are in accord with the attitudes and expectation of the communities within those jurisdictions [35-37]. This is the research challenge for the future.

Acknowledgments

Ian Faulks is a partner in the transportation consultancy, Safety and Policy Analysis International and an Honorary Associate of the Department of Psychology, Macquarie University. Prior to working as the Director, Staysafe Committee in the New South Wales parliament, 1991-2006, he was a senior behavioural scientist and Leader, Driver Test Development, with the New South Wales Roads and Traffic Authority, where he worked on novice driver licensing issues. Julia Irwin is a lecturer in learning and decision making in the Department of Psychology, Macquarie University, where she manages driving simulator laboratories and conducts research into risk, safety and human factors issues.

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Australian Graduated Driver Licensing Systems

By Teresa Senserrick PhD The George Institute for International Health, Sydney, NSW, Australia

Key words: graduated driver licensing, learner period initiatives, licence testing, provisional restrictions

Abstract

This paper provides an update to an early 2007 review of graduated driver licensing models in operation in Australia and the range of requirements and restrictions for learner and provisional drivers in each state and territory. The most common changes are reviewed, including their likely effectiveness in reducing young driver crashes. These include an increase in the minimum learner period duration and supervised driving hours required, hands-free mobile phone restrictions, hazard perception testing in different phases and various night-time driving and passenger restrictions. Overall, the changes should contribute to considerable crash reductions; however, there is a need to consider potential unintended consequences and to develop appropriate alternatives or support programs for disadvantaged youth and communities.

Background

Graduated driver licensing systems, that is, systems that include supervised learner periods followed by provisional or probationary periods prior to a full ("unrestricted") licence, exist in all Australia states and territories (herein collectively referred to as "states"). Early in 2007, the first author reviewed the systems operating in Australia and summarised key requirements and restrictions for each state and territory

(Senserrick, 2007). In the two years following, significant changes have been effected in several states. This paper seeks to update the earlier publication and present the current systems in operation in Australia, with comments on the likely crash reduction benefits of recent developments. More detailed discussion of individual components and their effectiveness can be found in a prior publication (Senserrick & Whelan, 2003).

Graduated Driver Licensing Models

Several Australian states have moved beyond the typical three-stage learner to provisional to full licence model, with Western Australia (WA) including two learner periods and Queensland (QLD), Tasmania (TAS) and Victoria (VIC) joining New South Wales (NSW) and South Australia (SA) in including two provisional periods. Other jurisdictions are also reviewing their current graduated driver licensing (GDL) models and considering spilt learner and/or provisional stages.

The Australian Capital Territory (ACT), Northern Territory (NT) and South Australia (SA) all allow a choice of two parallel tracks to progress through the learner phase to the provisional phase. The traditional path allows learner drivers to arrange their own supervised driving practice, which may or may not include professional instruction, and requires successful completion of knowledge and practical driving tests to proceed to the provisional stage. The alternative is collectively termed

here as competency based training and assessment (CBTA). In addition to educational components, CBTA requires learners to progress through a series of specified in-vehicle drives with an accredited instructor, with progress to provisional licensure occurring on successful completion of all components and not requiring a traditional practical driving test. The ACT also offers an educational alternative for progressing through the provisional period, including an optional course at six months, incorporating group-based activities and discussions on early provisional driving experiences, which allows removal of P-plates and a higher demerit point threshold for the remainder of the provisional period.

Requirements and Restrictions

Tables 1 and 2 respectively summarise key components of the learner and provisional licence periods in each Australian jurisdiction. While all apply to applicants at least under 21 years of age, some exemptions or alternatives apply for older applicants; primarily reduced minimum learner and provisional licence holding periods between 21 to 25 years, and some are waived if over 25.

The most significant changes to the learner period include increases in the minimum duration from 6 months to 12 months and the introduction of extensive supervised driving requirements (100-120 hour minimums). QLD, following

Table 1. Learner Licence requirements and restrictions in Australian graduated driver licensing systems

Component	ACT	NSW	NT	QLD	SA	TAS*	VIC	WA
Minimum age: years	15.75	16	16	16	16	16	16	L1: 16 L2: 16.5
Mandatory education prior to applying	Yes	No	No	No	No	No	No	L1+L2: No
Eyesight test	Yes	Yes	Yes	Yes	No	Yes	Yes	L1: Yes L2: No
Road law knowledge test	Yes	Yes	Yes	Yes	Yes	Yes	Yes	L1: Yes L2: No
Practical test	No	No	No	No	No	No	No	L1: No L2: Yes
Minimum holding period in months	6	12	6	12	6**	6	12	L1: 6 L2: 6
Display L-plates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	L1+L2: Yes
Mandatory education and instruction	No	No	No	No	No; Yes if CBTA	No	No	L1+L2: No
Mandatory minimum driving hours	No	120 (20 at night)	No	100 (10 at night)	50*** (10 at night)	50	120 (10 at night)	L1: No L2: 25
Supervisory driver minimum requirements	Full licence	Full licence, <0.02% BAC	Full licence	Full licence 1 year same class; <0.05% BAC	Full licence 2 years without suspension	Full licence 2 years violation free	Full licence; <0.05% BAC	L1+L2: 4 years same licence class
BAC limit (g/100ml)	<0.02%	Zero	Zero	Zero	Zero	Zero	Zero	L1+L2: Zero
Maximum speed restriction	No	80 km/h	80 km/h	No	80 km/h; 100 if prof. instruction	80 km/h	No	L1+L2: 100 km/h
Mobile phone restriction – all use	No	No	Yes	Yes	No****	No	Yes	No
Towing restriction	750kg GVM	Yes	No	No	No	Yes	Yes	L1+L2: No
Reduced demerit point threshold	No	No	5 points in 12 months	No	4 points in 12 months	4 points in 12 months	5 points in 12 months	No

Note: CBTA = Competency Based Training and Assessment; L1 = Learn Licence Phase 1; L2 = Learner Licence Phase 2

* It has been announced that a 12-month Learner period will apply in Tasmania from April 2009, with a minimum of 3 months on L1, requiring successful completion of a practical test to proceed to L2; L2 minimum of 9 months

** It has been announced that this will increase to 12 months in 2010

*** It has been announced that this will increase to 75 hours in 2010

**** It has been announced that this will be introduced in 2009/2010

Table 2. Provisional Licence requirements and restrictions in Australian graduated driver licensing systems

Component	ACT	NSW	NT	QLD	SA	TAS*	VIC	WA
Minimum age: years	17	P1: 17 P2: 18	16.5	P1: 17 P2: 18	P1: 16.5 P2: 17.5	P1: 17 P2: 18	P1: 18 P2: 19	17
Practical test	Yes; No if CBTA	P1: Yes P2: No	Yes	P1: Yes P2: No	P1+P2: Yes; No if CBTA	P1: Yes P2: No	P1: Yes P2: No	No
Hazard perception test	No	P1: No P2: Yes	No	P1: No P2: Yes	P1: No P2: Yes	P1+P2: No	P1: Yes P2: No	Yes
Minimum period: months	36	P1: 12 P2: 24	24	P1: 12 P2: 24	P1: 12** P2: 6*** P1+P2 total: longest of age 19 or 24 mo	P1: 12 P2: 24	P1: 12 P2: 36	24
Display P-plates	Yes; No if CBTA at 6 mo	P1+P2: Yes	Yes	P1+P2: Yes	P1: Yes P2: No	P1+P2: Yes	P1+P2: Yes	Yes
BAC limit (g/100ml)	<0.02%	P1+P2: Zero	Zero	P1+P2: Zero	P1+P2: Zero	P1+P2: Zero	P1+P2: Zero	Zero
Maximum speed restriction	No	P1: 90 km/h P2: 100 km/h	100 km/h	P1+P2: No	P1+P2: 100 km/h	P1: 80 km/h P2: No	P1+P2: No	110 km/h
Automatic transmission restriction	No	P1: Yes P2: No	Yes	P1+P2: Yes	P1+P2: No	P1+P2: No	Yes	No
Mandatory education & instruction	No; Yes if CBTA	P1+P2: No	No	P1+P2: No	P1+P2: No	P1+P2: No	P1+P2: No	No
Night-time or passenger restriction	No	P1: 1 passenger <age 21 from 11pm to 5am P2: No	No	P1: 1 passenger <age 21 from 11pm to 5am P2: No	If demerit point, regress stage + 12-5am 1 year	P1+P2: No	P1: 1 passenger age 16-21 P2: No	12-5am first 6 months
Mobile phone restriction – all use	No	P1: Yes P2: No	No	P1+P2: Yes	No****	P1+P2: No	P1+P2: Yes	No
High-powered vehicle restriction	No	P1+P2: Yes	No	P1+P2: Yes	P1+P2: No	P1+P2: No	P1+P2: Yes	No
Towing restriction	750kg GVM	P1: 250 kg P2: No	No	P1+P2: No	P1+P2: No	P1+P2: No	P1: Yes P2: No	No
Demerit point threshold	4 points; 8 if complete CBTA at 6 months	P1: 4 points P2: 7 points	5 points in 12 months	4 points in 12 months	P1: 1 point mandatory education + 12 mo points-free P2: 4 points	4 points in 12 months	P1+P2: 5 points in 12 months	No (but no good behaviour option)
Exit test	No	P1: No P2: Yes	No	P1+P2: No	P1+P2: No	P1+P2: No	P1+P2: No	No
Minimum age for full licence: years	20	20	18.5	20	19; 20 if demerits	20	22	19

Note: CBTA = Competency Based Training and Assessment; P1 = Provisional Phase 1; P2 = Provisional Phase 2

NSW and SA, introduced a hazard perception test to progress from the first to second provisional phase, while in VIC and WA these tests must be passed prior to provisional licensure. The practical driving test to progress from the learner to provisional period was also revised considerably in both NSW and VIC. Restrictions from all mobile phone use, including hands-free use, were introduced for both learners and provisional drivers and nighttime driving and passenger restrictions were introduced in various forms in several jurisdictions. High-powered vehicle restrictions were also introduced in two additional states after being a long-term feature of Victoria's GDL. A good behaviour record is also required to progress from the first to second provisional stage in VIC, and changes to the minimum provisional period duration result in a significant increase in the

minimum full licence age in that state: 22 years – one of the highest known ages internationally (Senserrick & Whelan, 2003).

Several changes to sanctions for traffic offences/excess demerit points have also been implemented that are not fully reviewed here, but include a licence suspension ("zero tolerance") for any first-year provisional speeding offence in NSW, a mandatory alcohol interlock for six months when returning from suspension for an alcohol offence with a Blood Alcohol Concentration (BAC) of .07 or higher in Victoria, and various nighttime driving or passenger restrictions when returning after suspension in several states.

The most commonly applied changes are now explored in further detail, including consideration of their likely effectiveness in reducing young driver crashes and other potential concerns.

Increased Learner Period and Supervised Driving Requirements

QLD now requires 100 hours of supervised practice driving during the learner period and NSW and VIC require 120 hours (with both QLD and VIC specifying that 10 hours must be logged at night). All three states have accordingly extended their minimum learner periods from the most common minimum of six months to 12 months.

Several studies have demonstrated benefits of extending the learner period. A review of 15 Northern American evaluations found crash reductions ranging from 5% to 32% per capita, with a 12-month learner period associated with a reduced crash risk of 31% per licensee and 16% per driver in one jurisdiction and a 27% per capita reduction in another (McKnight & Peck, 2002). In Sweden, an extension of the learner period from 6 months to 2 years, while retaining the minimum mandatory minimum of 6 months was associated with a 40% reduced crash risk for those utilising the full 2 years compared to previous cohorts, and a 24% reduced crash risk compared to those meeting only the 6 month minimum requirement (Gregersen et al, 2000). The overall net reduction in crashes was 15%.

Research on the benefits of extensive mandatory supervised driving hours is less clear. In the abovementioned Swedish study, those utilising the full two-year learner period (and achieving significant crash reductions) on average recorded 118 hours of supervised practice compared to an average of 48 hours for those utilising the six-month minimum only (Gregersen, 1997). The rounded figure of 120 hours was, therefore, only the average number of practice hours achieved and was not directly tested (no minimum hours were mandated). In Europe minimum supervised mileage rather than hours has been mandated at 3,000 kilometres in some jurisdictions, with a crash reduction benefit found in Austria but not in France (Page et al, 2004; Twisk & Stacey, 2007). Therefore, the findings regarding crash reduction benefits of this measure are inconsistent.

There are, however, other benefits of extensive supervised practice, including driving: at a wider variety of times of day, including substantial more driving in darkness; on a wider variety of road types; at a wider variety of speeds; for a wider variety of trip durations; and in unusually inclement weather (Groeger & Brady, 2004). Further, requiring extensive minimum hours can extend the learner period for drivers who might otherwise rush through this period and thereby indirectly benefit drivers by longer learner periods and older age at provisional licensing (Maycock et al, 1991; Mayhew et al, 2003; Twisk & Stacey, 2007).

Conversely, there are practical aspects of these requirements that disadvantage certain youth. Licensing support programs in remote areas include short-term visits to communities, where learners can be taken through intensive training and testing to allow them to meet provisional licensing requirements. These programs can be limited when longer minimum learner periods

are mandated resulting in difficulties relocating learner applicants at a 12-month follow up. Some young people also have limited access to practice vehicles and/or to appropriately qualified supervisory drivers in order to achieve extensive practice hours. This can be an issue in small, isolated communities, but also in more populous areas where families only have a work vehicle available that a young driver is ineligible to drive, for example, or in families that have more than one learner requiring practice at the same time. Therefore, consideration must also be given to implementing appropriate alternatives and support programs in conjunction with such requirements to ensure certain youth or communities are not inadvertently and disproportionately disadvantaged.

Hazard Perception Tests

Hazard perception tests are now required to progress from the first to second learner phase in WA, from learner to provisional licence in VIC, and from the first to second provisional phase in NSW, QLD and SA.

Poor hazard perception skills have long been identified as poorly-developed in young drivers relative to older, more experienced drivers (Brown & Groeger, 1988; Mourant & Rockwell, 1972) and are associated with higher crash risk (Horswill & McKenna, 2004). There have, however, been few published evaluations of validity or reliability of licensing-based hazard perception tests, or of their utility in predicting crash risk. Evaluation and psychometric assessment of Victoria's hazard perception test, lead to a revision and a reported increased reliability (Catchpole, Congdon & Leadbeatter, 2001; Congdon, 1999). However, the validity of these tests to be able to identify at-risk drivers is yet to be established (Palamara, 2005).

Hands-Free Mobile Phone Restrictions

Restrictions from all mobile phone use, that is, including hands-free use, now apply to learner drivers and to provisional drivers for at least 12 months in NSW, QLD and VIC.

Research has clearly shown the detriment of mobile phone use, including hands-free use, on driving performance, including slower reaction times and variable speeds and following distances (McEvoy et al, 2006; Patten et al, 2004; Strayer & Drews, 2004). This impacts further with inexperience, with studies demonstrating that, compared to more experienced drivers, novices are more likely not to stop at intersections (Olsen, 2005) and to glance more often at their phone, including significantly longer glances, causing them to wander in their lane (Wikman et al, 1998).

While Australian GDL restrictions on hands-free phone use are too new to have been evaluated, one recent evaluation in a North American jurisdiction (North Carolina) found limited benefit when the restriction was not actively marketed or enforced (Foss et al, 2008).

High-Powered Vehicle Restrictions

High-powered vehicle restrictions have long been in place in VIC and have now been introduced in NSW and QLD. However, there has been no readily identifiable published research to support the restriction. A crash-based evaluation in WA found no association between a high power-to-weight ratio vehicle and increased risk of an injury crash for young, novice drivers (Palamara & Gavin, 2005). The authors recommended that alternative measures should be implemented to combat the speeding behaviour associated with these vehicles.

In addition, the authors cautioned that such a restriction may lead novices to drive less safe vehicles given that high-powered vehicles are among those with the highest occupant protection ratings. Discouraging use may have unintended consequences when a young driver is unable to drive the family vehicle, for example, and instead is given an older/smaller vehicle with less occupant protection (Cammissa et al 1999; Williams et al, 2006). Research also shows that young drivers with access to their own vehicle, as opposed to a shared family vehicle, are more likely to take driving risks and have a higher crash risk, including after adjusting for driving exposure (Senserrick et al, 2007). Further evaluation is warranted to determine any potential crash fatality or injury reduction benefits, as well as any unintended consequences that may negate any such benefits.

Night-time and passenger restrictions for early provisional period

WA is the only state to have introduced a night-time driving restriction (between 12 to 5am), applying to provisional drivers for the first six months; with exemptions for work and education purposes. VIC is the only state to have introduced a peer passenger restriction that operates all day – one passenger aged 16 to 21 years – which applies to the first-year provisional licence. In contrast, NSW and QLD restrict first-year provisional drivers to one passenger aged under 21 from 11pm to 5am only; with exemptions for immediate family members, and in NSW also for work or emergency purposes. Other restrictions such as these only operate in other states on return from a licence suspension.

Driving at night and driving with peer passengers or multiple passengers represent significantly inflated risks to young, novice drivers (Keall et al, 2004; VicRoads, 2005; Williams, 2003). Restrictions on these are among the most effective components of GDL systems in New Zealand and North America, where they have been implemented since the 1990s (Senserrick & Whelan, 2003; Stevenson, 2005). National evaluations in the United States clearly demonstrate that states that include these GDL components achieve substantially higher reductions in fatalities and injuries (Baker et al, 2006, 2007).

The risk to young Australian novices driving at night and driving while carrying multiple passengers has also been clearly demonstrated (ATSB, 2007; RTA, 2004; VicRoads, 2005). There is considerable room to strengthen and extend these

restrictions, particularly given that these driving conditions represent only a small proportion of actually driving time. For example, Victorian novices spend only 9% of their total driving hours driving between 10pm to 6am and also 9% of time carrying passengers, yet one-third of their fatal crashes occur during these nighttime hours and over one-quarter occur when carrying multiple passengers (VicRoads, 2005). While other requirements may disadvantage certain youth from achieving licensure, these restrictions have no such affects and have considerable implications for fatality and injury reductions. All young and novice drivers should be encouraged to continue to use the same alternatives they had in place prior to their provisional licensure or have a supervisory driver present to continue the learning process during these high risk conditions for at least another six if not 12 months.

Concluding Comments

Overall, while there is still room for improvement, several changes are becoming common in Australian graduated driver licensing systems that will likely lead to crash reductions for young drivers, particularly with continued evaluation and refinement. These include longer learner periods, increased supervised driving hours (with additional support programs), mobile phone restrictions (with visible marketing and enforcement), and night-time and passenger restrictions for early provisional drivers.

While a high value must be placed on crash reductions, there is also a need to consider potential unintended consequences of some of the changes implemented. Some young people have limited access to vehicles and/or supervisory drivers in order to meet extensive practice requirements. Licensing support programs operating in remote areas can be limited when long minimum learner periods are mandated resulting in difficulties relocating learner applicants at follow up. High-powered vehicle restrictions may result in some provisional drivers accessing less safe vehicles rather than a shared family high-powered vehicle. Further consideration is needed of exemptions or alternatives to certain requirements and restrictions and of appropriate support programs to be developed and implemented, such as programs that provide vehicles and supervisory drivers for those with limited access. While population-based evaluations and regulations are justified to combat the over-representation of young drivers in road trauma, care must be taken not to inadvertently disadvantage certain sectors of the community, particularly disadvantaged youth.

Correspondence to:

Dr Teresa Senserrick, Deputy Director, Injury Division
The George Institute for International Health, PO Box M201,
Missenden Road

NSW 2050 AUSTRALIA Phone: +61 2 9657 0300 Fax:
+61 2 9657 0301

Email: tsenserrick@george.org.au

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So, the Crash Rate's Down, Where to from Here?

by Jeff McDougall President Australian Driver Trainers Association NSW; email: jeffmcdougall@bigpond.com

Introduction

The last two years have seen some massive changes to young driver licensing and licence conditions, not only in New South Wales, but in all Australian jurisdictions. This article concentrates on the changes and initiatives that have occurred in New South Wales in 2007 and 2008 and has some suggestions as to where young driver safety should progress from here.

Perhaps the most significant change in New South Wales has been the major change to the driving test, initially rolled out in the country areas and finally introduced in the Sydney Metropolitan area in December 2007. As the test has the potential to dictate whatever training and education is obtained by new drivers, it was always going to have the ability to change where the emphasis on road safety should be placed. An analysis of the crash statistics in New South Wales (Roads and Traffic Authority) shows that young driver crashes fall into five main categories and the test was designed to concentrate on the ways to avoid these five main crash types.

Other changes introduced in July 2007 may have had some effect on the crash rate for young drivers in a period when the death rate for crashes in all age groups has been the lowest for many years.

As well as these jurisdictional changes, there are a number of other programs on road safety for young people including the RYDA Program run by Rotary, the Youth and Road Trauma Forum run by the NRMA and Westmead Hospital, U-Turn the Wheel run by Rotary in the Sutherland Shire, "The Power of Choice" in the Port Macquarie area, Reduce Risk Increase Student Knowledge (RRisk) in the North Coast area, other School based programs run by the RTA and concerned community groups that all have the potential to reach huge numbers of young people. There are also programs for parents conducted by Road Safety Officers and Driving Instructors and a concerted effort to form partnerships between Parents and Driving Instructors to get the best results for the learner driver (see Staysafe Committee, 2008).

While there has been some research done on many of these

programs, some of which has claimed that the program has little if any effect on road safety (e.g., Elkington, 2005,; Redshaw, 2005), the fact is that there are many programs and clearly the community wants to have them in place. Perhaps the time has come to simplify the road safety message and to bring it back to those five major crash types. Then try to get the community programs to concentrate on the same messages that can be visited at various stages throughout the graduated licensing period, but more particularly in the learner licence period, then finally assessed in a driving test that can provide the incentive to learn crash avoidance properly.

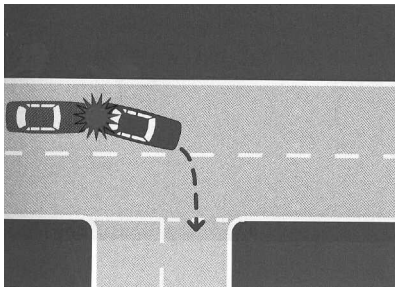
The Driving Test

The new driving test, introduced in New South Wales by the end of 2007, represented a major shift in the whole concept of young driver assessment away from the traditional control use and manoeuvring skills based test to an assessment of five key areas (Roads and Traffic Authority, 2007). They are Speed Management, Road Positioning, Decision Making, Responding to Hazards and Vehicle Control. As previously mentioned, these five key areas are based on the five major crash types for young drivers that are as follows, along with their percentage representation of all young driver crashes (see Figure 1).

The fact that these five major crash types add up to 90% of all crashes was a major factor in determining the way in which the new driving test had to be structured.

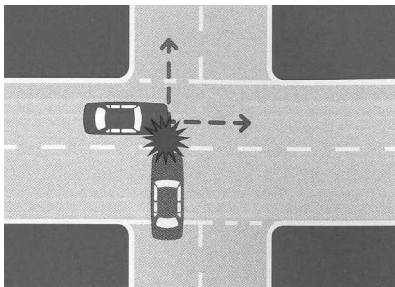
The five most common crashes in order of Prevalence

Figure 1: The five major crash types involving young drivers (Roads and Traffic Authority, 2007).



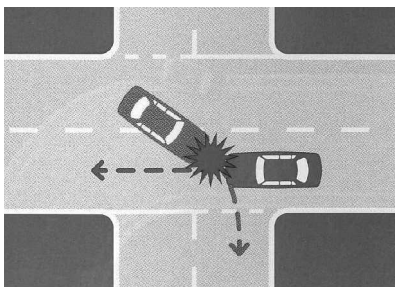
1. Colliding with the rear of another vehicle.

25% of all crashes



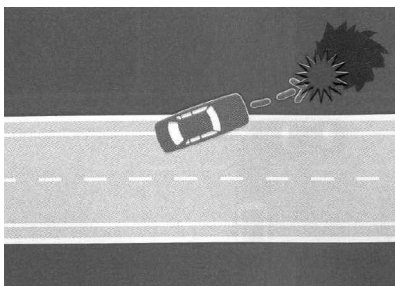
2. Colliding with another vehicle from an adjacent direction (from the side).

19% of all crashes



3. Colliding with another vehicle from the opposite direction.

18% of all crashes



4. Running off the road on a straight section and hitting an object or parked vehicle.

14% of all crashes




5. Running off the road on a curve or bend and hitting an object or parked vehicle.

14% of all crashes

Test Structure

The driving test follows a set course comprising 25 zones. The performance of the driver is recorded on a score sheet and is based on a range of situations and the ability of the driver to demonstrate low risk behaviours. The driver is assessed against the five key performance areas of speed management (S), road positioning (P), decision making (D) responding to hazards (H & R) and vehicle control (C). The duration of the test has increased to about 30 to 35 minutes on road to allow for assessments in as many situations as possible, including higher speed roads. The following diagrams are examples of the assessment score sheet with some explanations:

Assessments



Assessments							
S	P	D	Z	H	R	C	NOTES
P	P	P	1	P	P	○	A
S	P	D	2	H	R	C	F2
S	P	D	3	H	R	C	(M)
S	P	D	4	H	R	C	
S	P	D	5	H	R	○	B
S	P	○	6	H	R	C	H
S	P	D	7	H	R	○	S
S	P	D	8	H	R	C	
P	P	○	9	P	P	○	H(K,S) B
S	P	D	10	H	R	C	
S	P	D	11	P	○	C	
S	P	D	12	←	C		
S	P	D	13	H	R	C	
S	P	D	14	H	R	C	

The testing officer places ticks in the boxes as the test proceeds, if the applicant has demonstrated the appropriate low risk driving techniques throughout the zone.

If the applicant does not demonstrate appropriate use of low risk driving techniques when required then they are given a circle "O" (no score)

A zone where a hazard is present is marked with a tick

No hazard occurred within the zone that required a response.

'NOTES' column is used to record Fail Items manoeuvre and Kerbside Stop locations, control errors, head - check and signal error occurrences

Sample shows in zone 9 a head check error, a kerbside stop with a signal error in the k/side stop, and a control error (B)


(From: Roads and Traffic Authority, 2007)

Some driving behaviours such as breaking road rules, driving too fast for the situation or following vehicles too closely are considered to be high risk and will result in a fail item being recorded. This will mean that the driver will not pass, regardless of their score. As each zone is completed the score sheet is marked and an explanatory code is placed in the notes column. The code is explained on the reverse side of the score

sheet and a copy is given to the driver to allow for focus on practice areas in the event of a fail. The major advantage of the score sheet is that it is easy to mark, compared with the old assessment sheets and this allows the testing officer greater opportunity to observe the driver in more situations.

The following diagrams show how the score is totalled and an example of the fail items:

Assessment totals



P	P	P	20	P	P	P	
P	○	P	21	←	P		
P	P	P	22	←	P		
P	P	○	23	P	○	P	
P	P	P	24	P	P	P	
P	P	P	25	←	P		
23	21	19	YES	9	24	96	
2	4	6	NO	3	1	16	
25	25	25		12	25	112	
						Totals	

All the ticks are added for each of the 5 columns and placed in the 'YES' row.

And all the circles are added for each of the 5 columns and placed in the 'NO' row.

The total of ticks for the 'Hazard' column are placed in the bottom row. **Note, there will not be any circles in the 'Hazard' column.**

All the 'YES' row is added, and the total is placed in the total column

All the 'NO' row is added, and the total is placed in the total column

The grand total is the sum of the bottom 5 figures, $25+25+25+12+25 = 112$ and also equals the sum of the 'YES' and 'NO' totals. $96+16 = 112$

Fail and Immediate Fail Items



The 'Fail and Immediate Fail Items' are marked with a number to represent the number of occasions that the fail item was used

FAIL ITEMS are marked in the left hand column under the heading "F"

IMMEDIATE FAIL ITEMS are marked in the second column under the heading "IF"

Fail items 12 & 19 will only ever have a '1' in either of the left 2 columns, and the number of occasions that the fail item was used is shown in the boxes to the right.

F	IF	Fail and Immediate Fail items
2		1. Disobeying traffic signs, signals or road markings.
		2. Failing to give way when necessary.
		3. Colliding with a vehicle, pedestrian or object.
		4. Performing an illegal act or manoeuvre.
		5. Exceeding the speed limit.
		6. Action requiring testing officer intervention.
		7. Causing a dangerous situation.
		8. Failing to maintain proper control of the vehicle.
		9. Failing to exercise due care to avoid an accident.
		10. Failing to give way to an emergency vehicle.
		11. Disobeying directions from a person controlling traffic.
		12. Frequently not signalling intention. TOTAL
		13. Refusing to attempt any part of the test.
		14. Repeated or deliberate failure to follow directions.
		15. Unreasonably obstructing other vehicles or pedestrians.
		16. Receiving external advice or instruction during the test.
		17. Not parking to the required standard.
		18. Failing to maintain a safe following distance.
1		19. Frequently not making required observation checks. TOTAL 4

(From: Roads and Traffic Authority, 2007)

The test has appeared to have been well received by all who are affected by it. A series of workshops were conducted by the Australian Driver Trainers Association (NSW), with assistance of the Roads and Traffic Authority, for Driving Instructors across New South Wales in 2007 prior to the launch of the new test. These were well attended by more than 80% of the practising instructors and went a long way towards helping a seamless introduction of the Test. A second series of workshops were held in 2008 to allow for further assistance and to cater for any difficulties (Roads and Traffic Authority, 2008).

The July 2007 Changes

As a result of much media and community pressure some major changes to licence conditions were introduced in New South Wales in July 2007. A panel, the NSW Government Young Driver Advisory Group chaired by the Roads and Traffic Authority, had listened to representatives from many different sections of the Community and the following changes were introduced:

- Minimum 120 Hours logged driving on Learners Licence
- Minimum 20 hours night driving included in the 120 hours
- 12 months Learner Licence tenure instead of 6 months tenure
- 5 year tenure of the Learner Licence

- Full display of "L" and "P" Plates on the outside of the vehicle
- No mobile phone use at all in Learner and Red (P1) Provisional years
- Carriage of one passenger only under 23 years of age between 11pm and 5.00 am unless accompanied by fully licensed driver aged over 21 years
- Zero tolerance for speeding on Red (P1) Provisional Licence

The last point has focused on the very real problem of Provisional licence speeding resulting in many thousands of Red P1 Provisional drivers losing their licences for the mandatory three months for excessive speeding. It would appear that many P1 drivers are going to speed anyway no matter the consequences. In fact, the huge numbers losing their licences and also being witnessed exceeding the speed limit are proof enough that the mandatory suspension for speed offences is not working as a motivator to prevent speeding.

It is not the speed limit that is the problem but rather inappropriate speed at the wrong time that is most likely to result in a crash. There are no special speed limits for Learner licence holders or P1 and P2 Provisional licences in the Australian Capital Territory, Queensland or Victoria and those jurisdictions are not reporting anything out of the ordinary for speed related

crashes. The main problem with the speed restrictions is that there is no opportunity for new drivers to be taught to handle speed correctly, for example - to merge properly at speed, to change lanes at speed and, perhaps most importantly, to recognize potential hazards at speed and to then have enough time to react and avoid those hazards. Add to that the very real danger of an 80 km/h Learner Driver on a busy 110 km/h freeway and you have a very real potential for disaster.

Community Based Road Safety Programs

There are many community based Road Safety Programs being run across the country to, what would appear to be, varying degrees of success. Perhaps the degree of success at this stage should be that they are being run. The RYDA Program in New South Wales will have had its one hundred thousandth participant by the time this article goes to print and yet the research says the program has little or no road safety value (Elkington, 2005; Faulks, 2008). Any program that can attract that many participants is worth looking at in the context that if it can be proved the program has no effect, then fix it so that it will have an effect.

Many of these programs are poorly resourced and motivated presenters struggle to maintain the interest of the participants as a result. All too often a road safety program is run by a dedicated presenter but the program is reliant on the use of outdated resources – videos, manuals, and display materials – as more up-to-date resources are simply not available, or are not made available as they are reserved for use in school-based programs and cannot be released for general community use.

A program called the Youth and Road Trauma Forum run by the NRMA and Westmead Hospital has attracted around 30,000 young people over three years, but costs an enormous amount of money to present, most of which is absorbed by the cost of the venue at ACER Arena. A large number of volunteers are necessary and the Emergency Services are well represented. The results of a research program into the event are eagerly awaited, but again it is attracting huge interest. The Youth and Road Trauma Forum was awarded the Australian Chartered Institute of Logistics & Transport (NSW Section) prize for best safety program in 2007.

Parent programs run by Road Safety Officers and some Driving Instructors are being conducted in many areas around the State (Staysafe Committee, 2008) and while there are fairly low numbers of parents attending, there is the potential for real benefits to come from programs like these. A new national program called Keys2Drive is being developed that will allow a parent to sit in the back while a professional driving instructor gives a specially targeted lesson to the learner driver. This will be complemented by an interactive web-based program (Jerrim, 2008). The potential for this to help develop partnerships between instructors and parents for this most important task cannot be underestimated.

There are many more examples of these programs, not only in New South Wales, but around the country. In many cases, they have a potential to reach large numbers of young drivers that could not be easily reached in other ways. What is missing is a common theme that could complement the elements of the Graduated Licensing Scheme (Senserrick & Whelan, 2003; Senserrick, 2009) and provide the repetitious messages that can help in the long term development of the kinaesthetic memory of the new driver.

Where to from Here?

Earlier in this article, the five crash types for young drivers were outlined and the major crash, the rear end collision, was seen to account for around 25% of all the crashes experienced by young drivers. The reasons for this type of crash include following too close, excessive speed, inattention and a lack of forward vision. It is well accepted now that a three second gap between vehicles will go a long way towards preventing this type of crash, but how can that message be instilled into new drivers so that they will feel uncomfortable to be any closer.

If the “Three Second Gap”, which is outlined in the Road User Handbook and followed up with information and diagrams in the Learner Driver Logbook and Guide to the Driving Test, is then discussed as a physics style lesson in schools, demonstrated and examined thoroughly in the stopping distance and hazard perception segments of school-based driver education programs, explained to parents at a parent or home supervisor seminar, taught by a professional driving instructor and practice supervised by both the instructor and the parent and finally tested on the practical driving test, can we not be sure that the message will be absorbed by the new driver (McDougall, in the press)? “Best practice” pedagogy tells us that repetition in different mediums is one of the most successful ways to learn.

This may be a simplistic view of the issue, but our knowledge of the way people learn tells us that the more times an issue is dealt with the more chance there is of the basic message being absorbed. Isn't that the reason we have 120 hour logbooks now?

A focus on the five crash types in driver education should be seen as compatible with, and integral to, the more general safe system approach to road safety management that is being used in New South Wales (Job, 2008). Under the safe system approach there is a focus on route reviews that target the most serious road crashes (fatal crashes, and those crashes resulting in severe injury) with a major input of financial and other resources into road engineering and behavioural programs to eliminate (or at the least reduce) the incidence of these crashes. A more general focus on the five crash types in driver training and other road safety education provides a low cost supplement to this safe system approach and may, in the longer term, contribute to and inspire attitudinal change to improve road safety behaviours by young drivers.

What is needed is a coordinated, yet multifaceted approach to the problem and a means by which the dedicated people, who are out there trying to do a great job, are able to be properly resourced and assisted to do the job in the context of the bigger picture of the reduction of the five crash types.

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Driver Training and Licensing Issues for Indigenous People

By Eve Somssich, Charles Darwin University; tel: 08 89 466 253

Abstract:

This paper looks at some of the impacts of legislative change, the Federal government intervention and other political policies and the way they have impacted on driver training and licensing programs in remote areas of the NT from a practitioner's point of view. It further looks at the long term social costs some of these well meaning policies have on marginalised community groups such as the indigenous people in the Northern Territory, how not having a licence can have a roll-on effect on road safety outcomes and overall disfunctionality, loss of empowerment and community disengagement.

This paper also looks at how some of these policy issues fly in the face of previous lessons learnt when trying to empower and engage indigenous people rather creating yet more barriers.

Introduction

In a previous paper [1] I presented on the positive programs and initiatives in NT to address driver licensing and training in remote communities. Some of these programs were developed in partnership with WA Road Wise and Charles Darwin University and at the time were seen as innovative and responsive in the way they engaged community and overcame barriers.

This paper further looks at what has worked in the past and what doesn't work.

- How driver training and licensing can be an integral part of indigenous self determination and community capacity building.
- The challenges to training in communities and issues arising when comparing apples with oranges as is the case with mainstream unlicensed drivers as opposed to

remote indigenous unlicensed drivers

- Innovation versus blanket policy
- Is a TV advert really education?
- Impacts on confusing and sometimes opposing policies that influence indigenous communities, Federal, state, regional and local and where does this leave road safety.

This paper aims to create healthy debate and look outside the square of policy and foster inter-agency collaboration when working within the difficult area of indigenous education and road safety, and not to, in any way, criticise Government policy.

Northern Territory Environment

The Northern Territory has a very unique environment. The population base of the NT is roughly

- 200,000 people spread over a very large area.
- Of these 30% are Aboriginal. Of these 30%:-
 - o 70% reside in remote communities
 - o Most speak English as a second or third language
 - o Many live in low socio-economic conditions with high unemployment, poor inadequate housing and poor health.
 - o Most communities do not offer education higher than year 12.
 - o Long distances to travel for shopping or mainstream medical assistance add to the high risk of car crash involvement.
 - o Indigenous people whilst being 30% of our population still continue to make up over 50% of our total road toll.
 - o Indigenous people are 3x more likely to be involved in serious or fatal road crashes in the NT.
 - o Most are unlicensed

Chronology of events

In 1999 Darwin hosted one of the first National Indigenous Road Safety conferences to address the high rate of indigenous involvement in fatal car crashes and the high rate of unlicensed driving amongst this group of people. Whilst it was high in NT because of our indigenous population it appeared the stories were the same in every state. The conference had a very high participation from various indigenous groups such as NT Aboriginal Community Police and their WA counterparts, community leaders, Aboriginal Health delegates and others. Some key outcomes of the conference were

- 1 That community consultation was essential to develop ownership and empowerment of any program initiative.
- 2 That there was a chronic lack of resources available to indigenous groups that recognised their situation, environment and culture. All were focused on mainstream and were not relevant.

- 3 That in successfully implementing change, there must be recognition of the aboriginal way of doing things. This message came out loud and clear and was seen as critical and vital
- 4 That there needed to be a commitment by all governments at state and national levels to ensure aboriginal road safety issues continue to be addressed.

As a result of this conference many partnerships were made to develop relevant indigenous resources and to share information. Much progress was made and many innovative initiatives were instigated across Australia.

In the Northern Territory collaboration between Motor Vehicle Registry, Dept Transport and works, NT police, NT Aboriginal Police Officers, Northern Territory University and Batchelor College led to the development of the Indigenous Driver Licensing Program, which would address the lack of driver training and licensing in remote communities.

Two key initiatives that made this program different from anything that had been developed before were

1. The ability of training providers (Registered Training Organisations (RTO) to be able to deliver and assess competency of people which would be accepted by the licensing authority for purpose of driver licensing. (NT only). Innovation, flexibility and tailored to suit client needs.
2. Development of resources that were culturally appropriate, user friendly for people with low literacy and relevant to community people.

Also Innovation, flexibility and tailored to suit client needs

Outcomes of this program- What worked?

- A huge increase in the uptake of both driver training and licensing in communities.
- Indigenous engagement and ownership in the process-buy in
- Increase in employment opportunities for licensed drivers and progression to heavy vehicles in civil construction and mining.
- Better communication between stakeholders - road safety and driver training worked together to share information and improve overall outcomes. Holistic approach.
- Development of community based driver instructor program.
- Development of national indigenous road safety video and other relevant resources.
- Development of driver training program in NT Correctional Centres.

Success or not?

If targeting driver training and licensing, which was the initial goal, it was extremely successful in significantly increasing the number of people trained and licensed. The understanding of community and cultural dynamics was pivotal to the success of this program. By breaking down many of these barriers well over 3,000 community people have gained their driver's licence.

However it is a bit harder to measure in "road safety" terms. To date the involvement of indigenous people in serious and fatal crashes has not reduced significantly but it also has not risen, but the dynamics of the group have changed. There has been an increase in pedestrian fatalities usually due to alcohol issues which skews the results. There also is evidence that more community people are now driving, more indigenous people have access to vehicles and indigenous people are increasingly more mobile. There has been a reduction of licensed indigenous driver involvement as most indigenous drivers involved in crashes are still unlicensed. Whilst the rate has not increased in 5 years it was continually climbing before the introduction of the program.

In 2005 the Alice Springs correctional Centre records showed that out of 46 inmates that participated in driver training and licensing courses only 3 were reported as coming back into the system in a 12 month span, so reducing the rate of recidivism. In the communities over 3,000 people have been trained by CDU and licensed since the inception of the remote driver education program. The understanding of community and cultural dynamics was pivotal to the success of this program

What has changed and what are the current challenges?

1. September 2005-changes to ID policy

In Sept 05 the Northern Territory Government brought out a policy relating to evidence of ID for driver licensing in line with national fraud prevention policy. How did this effect driver licensing in the bush?

For indigenous communities formal ID in the form of a birth certificate is nearly

always problematic for several reasons.

- Up until the establishment of aboriginal community health clinics, aboriginal births in remote communities were rarely formally recorded.
- Cultural issues can lead to name changes as in the case of the death of someone with the same name.
- Tribal marriages also aren't recorded or
- Information provided initially was by a person who couldn't read or write or simply the information was not available. Therefore for aboriginal people the birth certificate very rarely matches the name of the person.

Whilst a birth certificate was always required as ID a statutory declaration outlining name change and corroborating evidence was sufficient for a licence. However with the policy shift, the name of the person now has to match the name on the certificate for them to be issued a licence. For this to happen now constitutes a formal name change process, lots of paper work and a cost of approx \$400 per person.

It now becomes very difficult for people with low literacy and low income to go through this process. After a ministerial a pilot program was developed between Charles Darwin University and BDM so possible name changes could be made before issue and also the advert in a newspaper could be waved to cut costs. This has still had limited success because it still needs to be driven by someone in the community to make it happen. After the birth certificate is issued with the new name the other supporting evidence also needs to be changed ie Medicare card and bank details etc-**Impediment 1**

The question still has to be asked, why does driver licensing require the default ID, when Centrelink does not require this high level of ID? There needs to be a better system developed to identify people otherwise the dual identities will continue.

2. January 2006 - Establishment of Road Safety Task Force

In Jan 2006 in a serious commitment to improve road safety the NT Government established a road safety task force-to critically examine Territory road use, driver safety and strategies to reduce road crashes in the NT.

3. June 2006 Safety Road Use strategy

June 2006 saw the release of a report from the Road Safety Task force outlining key recommendations that then became the framework for the NT Safer Road Use strategy (Safer Road Use: A Territory Imperative NT Government 2006) [2]

4. November 2006 Abolition of Road Safety Council

In November 2006 as a result of the reform recommendations, the NT Road Safety Council, which was made up of independent people representing many areas and regions in the NT, ceased and was replaced by the "Road Safety Coordination Group" consisting of primarily Government representatives.

There is still debate as to whether the Council was successful or not. However the Council provided a useful forum for consultation and information sharing that fed back to the regional road safety councils and other stakeholders, who were crucial in creating campaigns and community based strategies that raised awareness around road safety. Currently these lines of communications have weakened and wider consultation is limited. This may change once the strategy kicks in on the long term.

5. January 2007

January 2007 saw the introduction of some new reforms including speed limits on open roads and increases in fines and penalties.

6. July 2007

Introduction of reforms to reduce novice driver participation in road crashes, in line with national research and road safety recommendations. The reforms included a graduated driver training system, changes to the minimum licensing age and mandatory learners licence period of 6 months before being able to sit for provisional licence, in line with the national standard. Whilst this is a very sound strategy and all the research supports this, it is based on non-indigenous main stream youth and not indigenous statistics. What does this mean?

For non-indigenous people the vulnerable road user is in the 16-25 age group and usually licensed. For indigenous people in NT the vulnerable group is in the 30 year age group, male and unlicensed. The dynamics are entirely different:

- Mainstream youth have access to driving schools, training, vehicles etc
- Indigenous community dynamic:
 - o 30+ year-old men are the main drivers because there is very little access to vehicles in a community (young people and women low on the list)
 - o Pre driver training program - no formal driver training was available to communities
 - o Limited access to licensing process
 - o Low numbers of licensed drivers
 - o Unroadworthy vehicles
 - o Lack of road safety knowledge
 - o No public transport
 - o Average age of students undertaking driver training programs in communities are usually 25-50 year olds as opposed to mainstream 16-20 year olds. (this is due to lack of access to training and licensing for many years in communities so we are still playing catch-up.

It is clear to see that the one size fits all policy under these conditions would not work. The 80/20 rule cannot work when the 20 is 50% of our road crash fatalities in the NT. So how does the new Graduated Driver Licensing policy act as an impediment to indigenous driver training and licensing and road safety? What has changed?

When the remote area driver training and licensing initiative first commenced there was a waiver on the learners permit period (when linked with training) so people could gain their provisional licence as soon as they were deemed competent after issue of their learner's licence and not based on any time frame. Under new law they must hold their learners licence

for at least six months before doing a test for their provisional licence. The rationale behind this is sound if we look at mainstream novice drivers, as by increasing the learner's phase it is assumed you will increase the direct supervised driving experience. However in communities this does not happen and cannot be assumed to happen as per reasons stated above. As a practitioner I liken it a bit to teaching a person to do an Excel spreadsheet on a computer then taking the computer away and coming back in 6 months to do an assessment.

Impediment 2

The chances of finding the same 12 people in 6 months time in any given remote community and retraining and assessing them are not high given that community people are very transient; have many traditional and cultural commitments etc.

So to complete the course and comply with the policy change we go in good faith, deliver the learners licence part (phase 1) and plan to return in 6 months time for phase 2 the Practical. Since the changes the second part of training has significantly dropped in both numbers and courses leaving us to ponder the viability of the training and its successful outcomes. This leaves indigenous communities once again wondering what has gone wrong and why policy that was finally working for them now has presented yet another barrier.

This particular change in legislation has also put **viability** of training in doubt. It is nothing to do a 6,000km round trip to a community to deliver a Driver Training program. Previously the training was delivered over a 3 week period with approximately 12 people and involved only one trip. The new legislation means we have to do two trips to comply with the 6 month time frame with no additional funding.

Driver training is funded by the Department of Employment and Education (DEET) NT at \$14.00 per nominal hour per person. "UCO 008-Develop Knowledge and skills to gain a drivers licence" the module used for the practical in car component is 20 nominal hours. So for each person we train in communities we are funded at \$270.00 to get a student from no driving skills to a safe skilled driver. In main stream this would equate to 3 1/2 lessons. Now add the second trip in incorporating high cost of vehicles, long distances, cost of highly trained qualified staff, increasing fuel costs, travel allowance staff, and one on one training, it seriously puts in doubt the continued viability of delivery. Impediment 3

(Just to add another touch of bizarre policy, funding to teach the same group to use a fax machine is at 15 nominal hours!)

7. June 2007 Federal Government interventions and removal of land permits

Right or wrong, without even getting into the politics of the intervention or the reasons for it, one thing is clear. There was little or no consultation in many communities as the Federal Government took over. Indigenous people once again were the victims of the political football that has left many communities in a state of shock and disempowerment.

Communities became even more dysfunctional and disillusioned with no clear goals, strategies or directions. How did this affect driver training and licensing? Not a priority any more, survival was more important. Lack of accommodation also prevented many training programs from going ahead due to the increase of non-indigenous people in communities related to the intervention taxing the little existing infrastructure to bursting point. This problem still exists and does prevent us scheduling in training in some communities. Even though the intervention is over accommodation is still at a premium. **Impediment 4**

8. July 2007 - Abolition of Community Development Employment Projects Program

July 2007 saw the closure of the CDEP program and all Indigenous Employment Centres. Whilst CDEP was not an ideal program and was in some ways a work for the dole program, it still gave many community people purpose, some level of structure and empowerment. CDEP's were pivotal for the introduction and organisation of community based training programs to give community people the skills to enter the workforce.

Driver training was well recognised as a prerequisite to employment as driving a vehicle was imperative for most jobs in the bush. CDEP also recognised the need for the communities to become autonomous and self sufficient. To do this people needed to gain a licence so they could eventually upgrade and drive heavy vehicle and plant and equipment thus allowing funding for government contracts to support the community. With the abolition of the CDEP structure, communities were once again thrown into limbo with out a well thought out structure to replace it. Whilst community people still saw the need for driver training and licensing as individuals there was no key driver to organise it. **Impediment 5**

9. July 2007 - Introduction of Job Network Agencies to replace CDEP

Whilst sounding good, the Job Network Agencies had their limitations. High staff turnover prevented any consistency in information. New staff unfamiliar with training programs, licensing issues, and community dynamics led to mismanagement of training monies at times and an uncoordinated approach. In some communities it worked well but in most it would be fair to say they did not achieved its desired results. Other issues that cause problems and frustrations in communities are the three levels of government and their related funding. Job networks were federally funded, then there are state government funded programs, which mostly all operated in isolation and did not always align with the community based goals leaving community people very confused. **Impediment 6**

10. February 2008 - Changes to Shires and Local Government Reforms.

Still waiting to see the effect of this initiative but it will be yet another change in some communities that impacts on the political landscape and decision making process and goals.

11. July 2008 roll back of Federal Intervention and reinstatement of CDEP and land permit system in NT

Now do we go on as though nothing has happened?

In the aftermath of all of this it is hardly surprising that indigenous people become disenfranchised, dysfunctional and disengaged and this is only in a 2 year cycle. Why would indigenous people buy into any road safety strategies when the simple act of gaining a drivers licence is still something many find beyond their reach? This also then leads to other anti social behaviour like drink driving (no licence to loose) unregistered and un-roadworthy vehicles, vehicle overcrowding, non-seatbelt wearing and other related lack of compliance.

Would a few road safety messages really have any effects or contribute to a change in road safety culture under this current climate of continual change and frustration? Is a 2 second TV advert any substitute for structured training and community engagement?

The Vital Need of Indigenous People for Driver Training

There needs to be a serious commitment to indigenous people in the NT when it comes to driver training. Why is this so important when there seems to be so many other problems in communities? How could driver licensing make such a difference to indigenous self determination and capacity building?

The new Federal Government in its social reforms is developing a social inclusion policy to reengage people into the workforce and get them off welfare. The Northern Territory currently has a very robust mining and civil construction industry. We also have a huge skills shortage which will put strain on many organisations. Most mine sites are in remote areas on aboriginal land. Both the Federal and The Northern Territory governments see indigenous participation as one of the major long term solutions to meet our skills shortage in the NT

So with this brief it is critical to target driver training and licensing in indigenous communities and have a collaborative approach to make this happen rather than creating more barriers. Whilst driver licensing isn't the be all and end all, it certainly provides a good foundation to grow on. Most jobs now require an NT driver's licence. Without it, options are extremely limited, particularly in the bush where there is no public transport and no other alternatives other than driving.

Nearly every job in the community needs a licence. Some examples for employment opportunities in a typical community would be: Night Patrol, health workers, teachers, meals on wheels, hospitality and tourism, mechanics, builders, store workers, road works, mining etc. With the latter few, many other training skills need to be added on after the driver training such as forklift licence, heavy vehicle licences, plant and equipment licensing. How can people possibly get this higher order of jobs without access to the basic licensing? The longer we delay the longer it will take.

With greater access to licensing and greater employment opportunities resulting in less welfare, communities will gradually come around and be able to develop community enterprises with higher productivity, higher self esteem and improved abilities to self determination. However, for any of this to work there has to be better interagency collaboration and interaction so every one is working in concert and not in isolation.

Every time there is a change in policy in one area the ripples flow through to other areas and usually the marginalised groups become even more marginalised and feel powerless to make the changes needed to survive. An example of this is the policy of suspending a drivers licence due to non payment of fines for something that is not even traffic related, preventing this person getting a licence upgrade and a job in the mine. How does this help? If the person has no job how are they going to pay?

Policy makers need to go back to the coal face and look at more flexible and innovative solutions rather than hiding behind safe blanket policies. Every conference, forum or information session dealing with indigenous communities/peoples will expound the virtues of communication, ownership, collaboration, innovation and tailor made training and policy so why have we gone the other way? Clearly the events of the past two years demonstrate the frustrations and barriers experienced by indigenous people by ever-changing policy and their inability at times to achieve positive outcomes as a consequence. Communities seem to be the victims of the “policy cycles”.

Conclusion:

In an attempt to standardise mainstream driver licensing and legislation to curb the road toll, many indigenous people have once again inadvertently been marginalised and excluded from successfully gaining a drivers licence. The long term social effects of this are social disengagement which can have significant impact on road safety.

Driver training and licensing for remote indigenous people presents itself with a whole gamut of issues not experienced by mainstream population. Low levels of literacy and English as second language create impediments to the process that need to be overcome. Clearly barriers need to be broken.

Unlicensed driving remains a major road safety, health and social problem for Indigenous communities in the Northern Territory. The lack of access to driver training and licensing has far reaching implication as seen by the high incarceration rate of non-licensed indigenous people in the Northern Territory.

Mainstream training and licensing programs are minimally effective when dealing with indigenous community groups. For any programs to be successful for these groups they need to be targeted and relevant to allow participants to take ownership of them. Only by people having community ownership of driver training and licensing can we then have positive road safety outcomes resulting in the long-term reduction of the high rate of indigenous involvement in fatal and serious crashes in the Northern Territory

What works?

- Tailor made targeted programs that include the indigenous way of doing things
- Inclusive policy rather than blanket policy.
- Interagency collaboration and a holistic view on processes and outcomes
- Consultation and community engagement

Long term benefits of increased access to remote driver training and licensing

By increasing the focus on driver training and licensing in remote areas and breaking down some of the current barriers we expect to see

- Increase in the number of licensed drivers in rural, remote and isolated communities.
- Increased access to driver training and licensing
- Reduction in indigenous involvement in road fatalities and trauma.
- Increase in road safety and road law awareness.
- Reduction in costs to community, insurance companies and emergency services.
- Reduction in incarceration rates particularly non-licensed indigenous people.
- Long-term quality training linked with employment outcomes and social justice.
- Access and equity for remote indigenous communities to licensing and training.
- Increase in community capacity building and community enterprise opportunities.

What doesn't work?

- Blanket policy that does not recognise differences between indigenous and non- indigenous issues and impediments
- Lack of consultation and inclusion
- Mainstream programs

It is hoped that this paper may make people look at more innovative policies and practices to ensure indigenous people are no longer marginalised and have capacity to improve their social and employment outcomes in the future.

Reference

- 1) Eve Somssich: Aboriginal Road Safety - a State Problem or a National Concern? Page 20, 'Road Safety Towards 2000' ACRS 2000
- 2) Northern Territory Government, Safe Road Use: A Territory Imperative June 2006

The Policy Context of Roadside Drug Testing

By David McDonald, Director, Social Research & Evaluation Pty Ltd and Visiting Fellow, National Centre for Epidemiology and Population Health, The Australian National University david.mcdonald@socialresearch.com.au

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Abstract

Roadside testing of oral fluids for a suite of illegal drugs has been taking place in Victoria since late 2004, is now operating in some form in all of Australia's States and the Northern Territory. I suggest that the current roadside drug testing regimes have been introduced with insufficient rigour in the underlying policy analysis. The authorities state that it is a road safety initiative and not about punishing drivers for using illegal drugs, but this assertion can be challenged. The research evidence linking particular levels of drugs in the body and driving impairment is limited, no convincing evidence exists demonstrating that roadside drug testing improves traffic safety at the population level, the initiative fails to target some of the drugs the use of which has been demonstrated to be a traffic safety risk, the opportunity costs seem to have been ignored, and it may well fail the human rights test of proportionality.

Introduction

Roadside testing of oral fluids for illegal drugs has been taking place in Victoria since December 2004, is now operating in some form in all of Australia's States and the Northern Territory, and is under consideration in the Australian Capital Territory (ACT). In most jurisdictions (but not all) the drugs tested for are cannabis (THC), 'ecstasy' (MDMA) and methamphetamine. The legislation in all seven jurisdictions where testing is taking place permits police officers to stop a motor vehicle and require the driver to submit to an oral fluid (saliva) drug test even if the police officer has no reasonable suspicion that the driver's capacity to operate a motor vehicle safely is impaired by one of the target drugs or even that the driver has a detectable level of those drugs in the body. Although this is frequently referred to as 'random drug testing', just as the corresponding regime for alcohol is frequently called 'random breath testing', of course these appellations are wrong as no Australian police service actually implements random testing. Most apply a mix of highly targeted testing for illicit drugs and alcohol, as well as less targeted approaches that are intended to have a general deterrent impact on the broader community.

It is of considerable interest that the roadside drug testing initiative has been developed and implemented with virtually no consultation with the public or professional groups. The policy analyses which underlie them have occurred behind closed doors in a non-transparent manner and without the public

being aware of the scientific evidence justifying the initiatives. Police spokespeople and government ministers make claims about the impact of illicit drugs on driving and on road traffic crashes and fatalities without providing any supporting evidence for their claims. Indeed, frequently their claims are not supported by a body of scientific evidence.

Also of interest is the fact that the community is highly supportive of roadside drug testing. It has high face validity particularly because of the successes, in terms of traffic safety, of roadside breath testing for driver impairment caused by alcohol. But how justified are members of the community in putting their faith in roadside drug testing as a traffic safety initiative? Should the Australasian College of Road Safety develop a policy on roadside drug testing (targeted and/or untargeted) and the use of oral fluids for this purpose? The remainder of this paper addresses these issues.

The process of policy analysis

Before turning to some of the specifics of roadside drug testing I wish to highlight some key issues in the content and process of policy analysis, as I have concerns about the quality of the policy analyses that should underpin an expensive, highly intrusive policy initiative such as roadside drug testing.

Policy analysis is not decision-making. Rather, policy analysis is (or should be) a rational, comprehensive approach that produces the information needed by decision-makers. In other words, it is a decision support activity. Although many descriptions exist, one useful formulation of the steps that compose a rational approach to policy analysis is as follows:

- Formulate the problem.
- Set out objectives and goals.
- Identify decision parameters.
- Search for alternatives.
- Propose a solution or options (1, p. 60).

The steps 'search for alternatives' and 'propose a solution or options' are of particular interest to us here as I suggest that the policy analyses underlying roadside drug testing have been especially shallow in these areas. One of the keys to successful policy analysis is taking great care in judging the alternatives, but this is the hardest of the steps. Bardach (2, p. 26), the author of what is arguably the most prominent text book in the field, clarifies the problem:

Please note that evaluative criteria are not used to judge the alternatives, or at least not directly. They are to be applied to the projected outcomes. It is easy to get confused about this point—and to get the analysis very tangled as a result. This confusion is encouraged by a common-sense way of speaking: ‘Alternative A looks to be the best; therefore let’s proceed with it.’ But this phrasing ignores a very important step: the complete formulation is ‘Alternative A will very probably lead to Outcome O^A, which we judge to be the best of the possible outcomes; therefore, we judge Alternative A to be the best.’ Applying criteria to the evaluation of outcomes and not of alternatives makes it possible to remember that we might like O^A a great deal even if, because we lack sufficient confidence that A would actually lead to O^A, we decide not to choose Alternative A after all. With that judgment on the table, it would be possible to look for other alternatives with a greater likelihood of producing O^A.

The issue is focusing on outcomes rather than on implementation steps. It is concerned with identifying those interventions which are most likely to produce the desired outcomes in the most cost-effective manner and with the minimum level of unintended adverse consequences.

What outcomes are we aiming to achieve with roadside drug testing?

The introduction of roadside testing of oral fluids for the three illegal drugs listed above in Victoria in December 2004 was the first time in the world that police had been given a legislative mandate and other resources to test drivers’ oral fluids for illicit drugs even where there is no suspicion that the driver is impaired by those drugs. The Victorian Government has an ‘Arrive Alive’ web page titled ‘Random roadside drug testing’ that states that ‘The random roadside saliva testing is aimed at making Victoria’s roads safer for everyone *by reducing the incidence of drug driving*’ (<http://www.arrivealive.vic.gov.au/node/80>, my emphasis).

Another example comes from the ACT: in an 8 April 2008 media release, Mr John Hargreaves MLA, the then ACT Minister for Transport and Municipal Services, stated (my emphasis):

I needed to be certain that *the testing was about road safety* and not about catching drug users and punishing them for using drugs rather than endangering other road users. As a Minister, I will do whatever I can to improve road safety but I am not going to be involved in punishing ACT drug users for their addiction.

It is clear, from these quotations that the objective of

governments in introducing roadside drug testing is to improve traffic safety. But do the policy analyses indicate that there is a high probability of achieving this goal or, as we have been warned by Bardach in the quotation above, have we fallen into the trap of choosing an alternative which is superficially attractive but is not necessarily the best way of attaining traffic safety objectives? An analysis using logic modelling is helpful.

What is the logic model?

Logic modelling (3) has now become commonplace in both policy analysis and policy evaluation, as well as other areas of research. It has been defined as ‘An articulated model of how a program or project is understood or intended to contribute to its specified outcomes and that focuses on intermediate outcomes rather than tightly specified processes...’ (4, p. 232). So what is the apparent logic model that underlies roadside drug testing? What is the causal chain that links activities to outcomes? The logic model appears to be something like this:

- Some people use illegal drugs.
- Some of them drive after doing so.
- Some of the drivers will be impaired by the drugs to the extent that the impairment will cause a crash.
- Roadside drug testing will reduce the prevalence of drug-impaired driving through general deterrence and specific deterrence.
- This will reduce the incidence of crashes to such an extent as to improve traffic safety.
- The level of improvement in traffic safety will be measurable at the population level.

It would be a valuable exercise, but one which is beyond the scope of this paper, to estimate the numbers of people, drivers and incidents at each steps in the logic model. It is straightforward to start with existing data on the number of people who use illegal drugs and the proportion who drive after doing so.¹ Because of the very limited research evidence usable in the policy context on the relationship between illicit drug use and driving impairment it would be difficult to estimate the number impaired by the drugs to the extent that the impairment will actually cause a road crash, but the number must be very low. The evidence available to date on the deterrence effect of roadside drug testing is disappointing, with levels of driving after using illicit drugs not having fallen in Victoria in the four years in which the regime has been so prominently operating (7). This means that, on current evidence, there is little likelihood of roadside drug testing as it

¹ Some 3.0% of the general population aged 14 years and above reported that they had driven a vehicle ‘while under the influence of illicit drugs’ in the year before they were surveyed in 2007 (5) and a similar proportion of drivers who volunteered to provide a saliva sample in a Queensland study (3.5%) were positive to an illegal drug (6). The Victorian roadside drug testing regime shows a positive test rate of approximately 1.7% (Victorian Transport Accident Commission media release 1 August 2008). This may be compared with 11.9% of the general population reporting that they had driven ‘under the influence of alcohol’ in the 2007 National Drug Strategy Household Survey (5), and the 0.1%-0.5% of drivers usually detected through ‘random breath testing’ programs with blood alcohol concentrations exceeding 0.05g%.

is currently implemented actually causing a reduction in road crash incidence and fatalities that is measurable at the population level.

Is there a convincing body of research evidence demonstrating that roadside drug testing achieves the policy objective of reducing motor vehicle crash incidence?

The logic model presented above provides little encouragement that roadside drug testing, as currently implemented, is likely to achieve significant traffic safety goals. Going beyond the logic model to the research evidence is informative.

First, no conclusive body of literature exists supporting the proposition that roadside drug testing reduces the incidence or severity of road crashes. This is despite the fact that over 62,000 tests of drivers' oral fluids were conducted in the State of Victoria between December 2004 and July 2008 ((Victorian Transport Accident Commission media release 1 August 2008) and that various types of roadside drug testing have been used in other countries for much longer periods.

Secondly, the Victorian evidence about driving among people who regularly use illicit drugs demonstrates no evidence of a deterrent effect. The proportion of Melbourne regular users of MDMA and related drugs who reported that, in the previous 12 months, they have driven soon after taking a drug, was 63% in 2004, 58% in 2005, 68% in 2006 and 71% in 2007 (7).

Thirdly, evidence comes from Sweden where a policy commenced in July 1999 making it an offence for people to have any detectable level of illicit drugs in the body, a 'zero tolerance' approach. Research in that country has shown that high levels of detections of illicit drugs among drivers continue to occur, there have been no research reports showing any reduction in crash incidence or fatalities that are considered to be caused by the drug testing regime, and a very high level of re-arrests of offenders occurs: 68% over four years with an average number of arrests of 3.4 (8).

What are the opportunity costs?

I wonder if decision-makers and their policy advisers have quantified the opportunity costs of moving rapidly to legislate and implement roadside drug testing of oral fluids for illicit drugs? Some of the core opportunity costs might be as follows:

- Failure to implement other interventions that are more efficacious and cost-effective.
- Fewer roadside ('random') breath tests for alcohol impaired drivers.
- A drain on policing resources.
- Loss of community confidence in the legitimacy of law enforcement if it became apparent to the public that this intrusive intervention does not achieve its promised traffic safety goals.

Are there other ways of attaining the road safety goals more effectively?

It would be of great interest to know the extent to which the policy analyses that concluded with recommendations to introduce roadside oral fluid testing for illicit drugs addressed other options for attaining road safety objectives. Did the policy analysts consider more effective use of interventions with known efficacy rather than embark on an intervention which has a shallow and inconsistent evidence base and is not supported through a program logic analysis? Other initiatives that could have received attention include the following:

- More effective and more intense enforcement of roadside breath testing for alcohol impaired drivers. Roadside breath testing is clearly an effective intervention which has the support of the community, but some evidence exists suggesting that new approaches are needed if we are going to achieve further benefits in this area. This includes, for example, implementing testing regimes that are truly random and applying what is known about the optimal testing intensity (for example, number of tests by unit of time by road distance) (9). It is noteworthy, however, that recent research suggests that roadside breath testing has low relative cost-effectiveness: '...although random breath testing is cost-effective and is already being implemented in Australia, the same amount of \$71 million that is currently spent on random breath testing would, if invested in more cost-effective interventions, achieve over ten times the amount of health gain (10, p. 6).
- We have very little evidence that the illicit drugs currently targeted in roadside drug testing regimes—MDMA, THC and methamphetamine—are causally related to road crash incidence to an extent that they are likely to have an effect at the population level (11), although some of the culpability studies suggest, but cannot demonstrate, that this is the case (12). (The responsibility/culpability studies are frequently misused, with people treating the odds ratios produced by the studies as if they are direct measures of relative risk.) On the other hand, there is a body of evidence indicating that prescribed benzodiazepines and opioids are significantly and causally related to road crash incidence (13) but these drugs are not targeted in the current roadside drug testing regime in most of the Australian jurisdictions. The reason given, that it is legislatively and administratively neater to target the drugs for which there is no legitimate medical use, is unconvincing.
- Evidence is rapidly emerging that mandating electronic stability controls in motor vehicles can have very significant impacts on traffic safety. For example, a recent systematic review has concluded that this intervention can reduce fatal single-vehicle car crashes by 30-50% and among SUVs by 50-70%, and can reduce fatal roll-over crashes by 70-90% (14).

It could be argued, then, that a more systematic and intense application of what we know already works to improve traffic safety would have been preferable to introducing a new intervention of questionable or unknown efficacy and cost-effectiveness.

What are the human rights considerations?

It appears that the human rights considerations have been largely ignored in policy analyses on roadside drug testing. This probably reflects the fact that Australia does not have national human rights legislation and that the Victorian regime was introduced before the passage of that State's Charter of Human Rights and Responsibilities Act 2006. There are some in society, including parliamentarians, who fail to embrace contemporary thinking about human rights. For example, in speaking in the Legislative Assembly for the ACT in support of a Bill he had introduced to provide for roadside oral fluid testing for illicit drugs in the ACT, the then opposition front bench Mr Steve Pratt MLA stated that the Government had not itself legislated because it has been '...blindsided by lobbyists who talk about the human rights aspects involved in random roadside drug testing' (<http://www.hansard.act.gov.au/hansard/2008/week04/1165.htm>).

This wholesale dismissal of the significance of human rights in policy analysis is in stark contrast to the position adopted by the ACT Human Rights Commissioner, Dr Helen Watchirs (15). She has concluded that significant human rights issues exist in oral fluid testing for illicit drugs among drivers in situations where there is no reasonable suspicion that the driver is impaired by illicit drug use.

Watchirs has identified the human rights considerations that need attention in this context (15, p. 2, her emphases):

Authorising police to conduct random drug testing of motorists involves the provision of saliva or blood without the request being based upon a reasonable suspicion. In human rights terms this overreaching powers would amount to:

1. arbitrary detention/arrest of the individual, contrary to s.18 of the [ACT Human Rights Act];
2. subjecting people to have medical treatment without free consent - s.10(2);
3. an arbitrary interference with their privacy, violating s.12 of the [ACT Human Rights Act];
4. arguably creating problems of an unfair trial; and
5. negatively impacting on children's rights.

Watchirs goes on to explain that the proportionality test needs to be applied to weigh the human rights of individual drivers with the rights of the community by determining if the proposed intervention is in the public interest, if the intervention is rationally connected to the objective, and to what extent the intervention impairs drivers' rights to freedom. The human rights considerations are important and should not be arbitrarily dismissed just because of the face validity of roadside drug testing.

What has propelled this policy if it is not evidence of relative cost-effectiveness in attaining traffic safety objectives?

In the absence of a body of evidence that roadside drug testing of oral fluids for illicit drugs is both efficacious and relatively cost-effective (compared with other proven traffic safety interventions), why has this policy been so readily taken up with virtually no public debate on the matter? Four possibilities come to mind.

First, our society is enamoured of technology so I wonder if the recent availability of oral fluid testing technology has actually been a driver of policy? Self-evidently, until recent years when the testing technology became available it was not possible to implement an oral fluids roadside drug testing program. Instead, police officers applied standardised behavioural tests for drug-related impaired driving, the results of which were used to obtain convictions of driving under the influence of the drug (16).

The absence of convincing research evidence as to the levels of most illicit drugs detected in the body that are needed to create impairment to such an extent that an elevated risk of road crash exists, has led the seven Australian jurisdictions to introduce per se legislation modelled on the successful approach used with alcohol. As one reviewer has concluded, 'The approach adopted in Australia is one in which the detection capability of the technology, rather than the demonstration of performance impairment, is used to define illegal behaviour' (17, p. 107).

The public has taken on faith assertions about the accuracy of the testing technology used in the different States and Territories of Australia, although authorities in other jurisdictions do not share this confidence. For example, a review recently published by the European Monitoring Centre for Drugs and Drug Addiction concluded that:

Roadside detection mechanisms, whether traffic police with special training, or testing of drivers' biological samples, continue to suffer accuracy concerns, with even the newer technological advances not being considered reliable enough by an international testing project to be recommended for use in EU countries (18, p. 128).

Secondly, once the Victorian Government introduced its oral fluid testing regime there was considerable pressure on the other States and Territories to follow suit. This is the 'catch-up' and 'leap-frogging' phenomenon frequently seen in Australian public policy. Considerable pressure has been placed on governments to follow the Victorian lead, otherwise they could be accused of failing to implement what is seen as an important and useful traffic safety initiative.

The fact that the Government of a large Australian State had implemented the program, apparently successfully and with little opposition, meant that the pressure on the other jurisdictions to conduct sound policy analyses would have been

much less than if they were implementing it without the Victorian model already being in place.

Thirdly, I wonder if the roadside drug testing for illicit drugs is not predominantly a traffic safety intervention but is actually the putting into operation of negative attitudes towards the currently illegal drugs and towards the people who use them? The Australian legislation generally provides that the results of roadside testing of oral fluids for illicit drugs can only be used in prosecutions under road traffic legislation and cannot be used, for example, as evidence for a charge of self-administration of an illicit drug. While this is pleasing in terms of protecting human rights, it still leaves open the possibility that a desire to criminalise non-mainstream behaviour, in this case the use of certain drugs, is mingled with a desire to improve traffic safety. As Australian scholars have explained:

The illegality of cannabis has promoted a zero tolerance approach in Australia, with any detectable amount of the drug tested constituting an offence. On this policy, the definition of a *per se* level is irrelevant because road safety benefits are secondary to enforcement of drug laws (11, p. 102).

Why has the policy not been evaluated?

I am not aware of any comprehensive program to evaluate any of the Australian jurisdictions' roadside drug testing programs. With the Victorian initiative having been in place for over four years, the public would be justified in expecting that we would have not just an evaluation strategy but also the results of evaluation research. Unfortunately we have neither. The only information publicly available on the impacts of these interventions are limited data on the numbers and proportions of positive tests for the various drugs and data on the prevalence of drugs in the bodies of people killed in road crashes. Neither of these indicators is useful for evaluating the efficacy and cost-effectiveness of roadside drug testing.

A thorough policy and program evaluation would look something like this:

- A statement of goals of the intervention
- A statement of the intervention logic
- A thorough description of the intervention
- Development of policy-relevant performance indicators covering:
 - o Inputs e.g., funds, equipment, personnel, etc.
 - o Activities e.g. roadside drug test numbers, locations, time of day, random vs targeted, etc.
 - o Outputs e.g., positive detections, false positives, sanctions applied, etc.
 - o Outcomes e.g., impact on incidence of road crashes, drug driving recidivism, self-reported prevalence of drug driving, community's and drug users' attitudes, etc.

Surely, if we are really dealing with a traffic safety issue, the key indicator is impact on the incidence of road crashes and injuries and fatalities in those crashes. Why has no one conducted an interrupted time series analysis, for example, on the Victorian data? The necessity for such an approach to evaluation seems to me self-evident and the failure to implement it difficult to understand.

Can we apply to illicit drugs the successful model of roadside breath testing for alcohol impairment?

An understandable response to anybody questioning the validity of policies covering roadside testing of oral fluids for illegal drugs is to point out that random breath testing for impairment has been highly effective in reducing road traffic crashes and fatalities. Sound evidence is available supporting this finding and, especially importantly, demonstrating the causal mechanisms in operation (19). Observers point out that, if we had not implemented roadside breath testing simply because it was a new initiative and therefore had not been evaluated, then we would never have achieved the great benefits to society produced by this intervention.

Drug driving is different, however. In the case of roadside breath testing, the evidence was already in place, from the Grand Rapids (20) and other studies. These studies had provided information on how alcohol not only impairs driving to such an extent as to significantly increase the risk of the crash, but also documented the dose-response relationships. This enabled policymakers to make decisions on cut-off levels for blood alcohol concentrations in drivers. The result is the 0.05g%, 0.08g% or 0.1g% cut-offs used in various jurisdictions for the purposes of a *per se* drink (not drunk) driving offence. Subsequent research has confirmed the appropriateness of the 0.05g% cut-off level that applies to most drivers in Australia (21).

The few case control studies that have been conducted provide little information on the contribution of illicit drugs to road crashes, let alone the levels of particular types of drug in the body that correlate with particular levels of impairment and with the relative risk of a crash. It is acknowledged that these studies are difficult to undertake and those that have been attempted have serious limitations, making their findings questionable (22). Culpability studies have been undertaken (12, 23, 24) and are frequently quoted as evidence for the strength and nature of the relationship between illicit drugs and driving, but far more is extrapolated from them than the studies actually reveal. They do not provide direct measures of relative risk and fail to deal with key confounders of the relationship between drug use and drug driving, particularly how willingness to engage in risky behaviour may be causally and independently related to both drug use and to road crashes. The methodological limitations of individual culpability studies, with different studies showing opposite results, militate against their usefulness for policy purposes (22).

As the European Monitoring Centre for Drugs and Drug Addiction concludes, the issues are complex:

...it is difficult to apply the [blood alcohol concentration] parallel to other psychoactive substances because of the vastly different pharmacological natures of the range of substances involved, the limitations of experimental and epidemiological research in trying to determine such a cut-off level, the ethical considerations involved in its enforcement, and the question of combining or separating drug abuse control and road safety measures. Specifically, it is unacceptable to some that a driver be punished for driving with an amount of drug that has no relevant effect on driving, while it is equally unacceptable to others to condone illicit drug use by stating that up to a certain threshold, it will not be punished...On top of all this complexity comes the finding that a considerable number of drivers have been found to have multiple drugs, including alcohol, in their blood, some combinations of which have been proven to have synergistic effects (18, pp. 128-9).

Conclusion

This commentary has addressed one domain of traffic safety policy. It is not an argument for or against the roadside testing of drivers for the presence of illicit drugs in saliva. If this initiative were found to be a cost-effective instrument for achieving traffic safety objectives I am sure that all readers would support it. My argument, however, is that roadside oral fluid testing for illegal drugs, the initiative known as 'random drug testing', has been developed and implemented without a transparent policy analysis underlying it. It is a highly intrusive intervention with significant implications for human rights. It does not have a sound evidence base in research and a program logic analysis raises questions as to the likelihood of achieving its traffic safety goals of reduced crash incidence, injuries and fatalities.

The Australasian College of Road Safety has formal policies covering drink-driving and the impacts of prescribed and over-the-counter pharmaceutical products on traffic crash incidence (<http://www.acrs.org.au/collegepolicies>). Considering the high prevalence in Western nations of driving after using the currently illegal drugs, and the fact that all but one of Australia's States and Territories have legislated to create a per se offence of having any detectable level of certain illegal drugs in the body, the College may care to consider developing a policy on roadside drug testing. In doing so it might address (1) the strength of the evidence base for this intervention in terms of the likelihood that it will reduce road crash incidence to such an extent as to be measurable at the population level, and (2) the desirability of conducting policy and program evaluation research into the existing roadside drug testing regimes.

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Self-Awareness and Self-Monitoring — Important Components of Best Educational Practice for Novice Drivers

By T J Bailey Road Safety Directorate, Safety & Regulation Division, Department for Transport, Energy & Infrastructure, PO Box 1, Walkerville, SA 5081, Australia

Disclaimer: The views expressed in this paper are those of the author and are not necessarily those of the South Australian Department for Transport, Energy & Infrastructure, or the South Australian Government.

Abstract

Self-awareness and self-monitoring of driving are important higher-order cognitive skills indicative of good educational practice for novice drivers. But how can self-awareness and self-monitoring be productively applied in driver training/practice supervision? The author has found that, while many driving instructors consider such higher-order cognitive skills to be particularly important, few could give specific examples of how they actually apply them when teaching driving. This is unfortunate because, when the author followed a small sample of 16 year old Learner's Permit applicants through to their Provisional Licence, not only did most of these drivers respond well to prompts to self-monitor driving behaviour, but they volunteered how self-monitoring had enriched their learning to drive experiences. The paper first examines self-awareness and self-monitoring in the theoretical and research literature on learning to drive and then, as examples of best educational practice for novice drivers, translates this knowledge into practical teaching and learning techniques.

NOTATION

ATSB	the former Australian Transport Safety Bureau (now Department for Infrastructure, Transport, Regional Development and Local Government)
GADGET	Guarding Automobile Drivers through Guidance Education and Technology (European Union Project)
VTI	Swedish Road and Transport Research Institute

1. Introduction

Learning to drive is undoubtedly among the chief life achievements universally valued by young adults. However, it is a complex task, involving acquisition of a range of physical and higher-order cognitive abilities, which, if inappropriately actioned, may lead to crashes involving themselves and other people. Those entrusted with introducing and nurturing in novice drivers the range of skills and competencies required for safe driving should implement best practice approaches to teaching and learning that are commensurate with contemporary thought and research in education.

2. Why best practice?

Many road traffic authorities in Australia, are now requiring fixed amounts of supervised driving practice before a provisional or probationary licence can be gained. This is based on the significantly reduced crash risk beyond the learner phase found in Sweden for learner drivers who practised over two years and obtained an average of 118 hours of supervised driving practice, compared to those who practised for six months and achieved an average of 41 hours [1]. It is also based on the knowledge that the first six months of solo driving attract the highest crash rates for young drivers [2]. Professional driving instructors may supervise some of a learner's driving practice, as well as teaching sessions, but instructors' contact with students may well average just one hour per week.

Instructors often face consumer expectations that they will teach no further than is necessary to enable students to pass their practical driving tests, or to demonstrate set competencies as cheaply and as soon as possible [3]. At the same time,

instructors (as do lay supervisors) operate in what can rapidly become very intense teaching-learning situations. Such critical moments can have profound implications, not only for the safety of both learner and instructor, but also for other road users in the immediate vicinity. For all these reasons, instructors have a vital role to play in their interactions with novice drivers, and as such have a professional responsibility to ensure their teaching approaches accord with considered best practice. There is a growing recognition that such best practice should include a focus on promoting novice driver self-awareness and self-monitoring.

3. Self-awareness and self-monitoring by novice drivers — towards best educational practice

Self-awareness and self-monitoring are among various overlapping higher-order cognitive skills collectively termed ‘metacognition’, that is, forms of strategic processing or executive control, and include, for example: [4, 5, 6]

- Self-feedback
- Self-coaching
- Self-regulation
- Self-efficacy
- Self-reflection
- Self-learning
- Self-evaluation
- Self-reliance
- Self-control
- Self-direction
- Self-pacing
- Self-motivation.

Broadly speaking, metacognition concerns the abilities of individuals in predicting learning outcomes, apportioning learning time and priorities, explaining to oneself in order to improve understanding, self-coaching and noting failures to understand [4]. Whichever contemporary theoretical positions on metacognition are used as bases, numerous empirical investigations have demonstrated that various forms of learning are enhanced when individuals have knowledge of and apply appropriate monitoring or executive strategies during the learning process [7]. These enhancements can include significant changes in beliefs, attitudes and sometimes behaviour, simply by asking respondents to reflect on, or imagine a (driving) circumstance [8]. Moreover, promoting metacognitive strategies has become a common feature of adult learning approaches, which secondary and tertiary students, many of them young drivers, are not only familiar with but come to expect.

3.1 Self-awareness

A self-aware individual is one who is conscious of, or who gains insight in, the knowledge, skills and attitudes they have acquired [5]. The term ‘self-awareness’ can mean just that but, more commonly, its meaning encompasses a range of metacognitive skills, such as those listed above.

Self-awareness is characteristic of the development of expertise and is considered to be relevant in the development of safe driving behaviour — for example, a driver who is aware they

cannot easily resist peer pressure, or who knows their skill limitations on slippery roads, can adapt their driving behaviour accordingly [9]. The significance of driver self-awareness has been recognised for some time. For example, according to Brown and Groeger (1988; cited in Lynam and Twisk [10]), successful hazard perception depends not only on identification of hazards, but also on the self-perceived ability of the driver to handle them.

Self-awareness and self-monitoring of one’s driving behaviour, are now among the higher-order cognitive skills considered in Australia’s National Road Safety Action Plan 2009 and 2010 to be integral to best educational practice for novice drivers. As well, they hold a key status in some recent theoretical models of driver development, and are characteristic of current driver training programs in Scandinavia.

For example, in Sweden, Mattsson [11] developed a 5-step model of the successive competencies that drivers need to acquire in order to demonstrate safe driving behaviour. The model represents a distillation of the conceptions of several well-reputed driving instructors and educational researchers on what needs to be learned in driving. The five steps required, from the basic level (i) to safe solo driving behaviour (v), are:

- i. **Vehicle Knowledge and Manoeuvring** [e.g. acceleration, understanding braking distances, cornering skills, use of gears, staying in lane];
- ii. **Applying Traffic Rules in Practice** [e.g. give way signs, road markings, drink drive rules, speed limits];
- iii. **Perception and Awareness (particularly of risky situations)** [e.g. scanning the road ahead, hazard perception, awareness of distractions];
- iv. **Communication and Adaptation to Situations** [e.g. appropriately early signalling of intentions to other drivers, staying within a traffic stream, planning trips according to road/traffic conditions]; and
- v. **Realistic View of Own Capacity and Others** [e.g. awareness of limitations in city/rural driving experience, not being overconfident].

Mattsson’s fifth step can be achieved through teaching/learning approaches that actively develop aspects of self-awareness, such as novice drivers’ abilities to more realistically self-evaluate their performance. Indeed, there is a growing move, particularly in Scandinavia, to adopt driver training approaches that require students to be actively involved in this way in their learning. For example, novice drivers in Finland compare their self-assessments of skills in vehicle manoeuvring and anticipation of risks alongside their instructors’ evaluations, and have reported they are more realistically able to analyse and predict (self-efficacy) their own driving performance as a consequence [12].

Assisting novice drivers to become more self-aware of their learning and driving ability may lead to drivers acquiring ways to modify their motives and goals for driving, in accordance with the risks they experience, their social needs for driving and the prevailing driving behaviour ‘culture’. Differences have been found in Sweden in the ways a sample of crash-involved young drivers reflected on their driving, compared with the self-reflections of non-crash involved young drivers [13]. The crash-involved drivers tended to reflect over specific details of their driving such as physical control skills and compliance with regulations. By contrast, the non-crash group tended to express thoughts about their driving on a higher level that were “interwoven with the social context in which they live” [13, p. 4], without necessarily linking this to specific traffic situations. Gregersen [14] speculated that the limited self-reflection abilities of the crash prone young drivers may be due to the onset of a new phase of brain development, typically at ages 16–17. With respect to the non-crash drivers, Redshaw [15] has demonstrated a range of social and cultural dimensions of driving that can impact on crash risk, such as various values, attitudes, expectations and beliefs about how people drive or should drive. For example, Redshaw [16] found some young drivers, when discussing their speeding behaviours, were not so much wanting to merely demonstrate ability drive at higher speeds, but did so because fast driving was seen as a means to get to places quickly and flexibly, as a characteristic of their youth culture lifestyle. Significantly, Redshaw [16] also noted that driver education needs to encompass self-skills such as self-awareness and self evaluation by novice drivers, particularly of their personal control over their driving, adding that this is more empowering than relying on authoritative external controls on driving (such as compliance with regulations).

Novice driver self-awareness is gaining increasing recognition in Australia, not just in the National Road Safety Action Plan [17], but in its reflection in the adult learning approaches favoured in the current national Novice Driver Education Curriculum Trial. In the Trial’s curriculum document [18], the developers state that they consider the program to represent a best practice approach as a development program for novice drivers who have acquired six months of solo driving experience. In particular, they consider it is sound from both an educational and behaviour modification perspective. The curriculum is focused on providing young drivers with greater appreciation of the risks they face and their own limitations. The aim is to deliver an education program to young newly licensed drivers using an adult education approach, with a view to changing their on-road behaviour in such a way as to reduce their crash risk. It comprises four modules focusing on behavioural factors that lead to a higher level of crash involvement among novice drivers and features best practice learning methods, including facilitated group discussion of safety issues and an on-road mentoring session. [19] The funding partners involved include the Federal Government (Department of Infrastructure, Transport, Regional Development and Local Government), Victorian Government

(VicRoads and TAC), New South Wales Government (RTA), Insurance Australia Limited (IAL), Royal Automobile of Victoria (RACV) Ltd and Federal Chamber of Automotive Industries. [19]

This new Australian curriculum is also based on a hierarchical driver behaviour model developed in the European Union project, GADGET [9]. The Swedish National Road and Transport Research Institute (VTI) also utilised the GADGET model when developing its current curriculum for driver training and licensing in Sweden [20]. The GADGET model places emphasis, not just on vehicle manoeuvring and control skills, but more critically on higher-order skills, such as developing the novice driver’s understanding of the nature of risk, factors influencing driving risk, and risky driving behaviour. Also importantly, novice drivers are encouraged to develop abilities in self-evaluating any risky tendencies and impulses, along with self-evaluating their driving goals and personal driving styles (represented by the peak stage of the GADGET model).

In the model, failures and successes at the higher self-awareness, motivational and attitudinal levels affect psychomotor or physical skills, and hence overall driving performance. In fact, if these higher levels fail to translate to a careful strategy for driving, then no amount of skill in mastering traffic situations or vehicle handling will be sufficient to alone produce a safe driving outcome. This may well explain the apparent failure of much advanced skills driver training to result in hoped for crash reductions [21].

3.2 *Self-monitoring*

Self-monitoring is an aspect of self-awareness involving a cyclic process in which learners monitor the effectiveness of their learning methods and progress, and respond to this feedback in a variety of ways [22]. In a study by Bailey [23], thirteen 16 year old novice drivers were invited over several weeks to self-monitor their strengths and difficulties experienced when learning to drive, and to consider factors they perceived to be influential (causal attributions) on those successes or difficulties. A novice driver who, in self-monitoring, identifies several factors of influence on their learning to drive provides much material for fruitful discussion with an attentive instructor and in group settings with other novice drivers.

In particular, Bailey found that the novice drivers who self-monitored to a greater extent were those whose causal attributions for their driving successes or difficulties over time tended consistently towards a high degree of internality and personal control, considered in the research literature to be most adaptive to the driving task [24]. For example, one driver in Bailey’s study attributed inadvertently cutting another driver off to his own failure to notice the other driver in time. When self-monitoring her learning to drive, another considered she herself had “become better able to ‘suss’ things out”.

The high self-monitoring drivers were often strongly aware of their learning needs and gaps in skills and knowledge. One driver reported how she repeatedly made sure she improved her driving through watching other drivers' manoeuvres and behaviours. These drivers also tended to be aware of automated learning occurring (i.e. without deliberate or conscious thought, such as use of clutch and gear changing). They also tended to appreciate the power of personal motivation in achieving learning success. One such driver said that now he knew what to do in his driving, it made it easier for him to be more relaxed and confident, but also to be more aware of the road ahead.

The high self-monitoring drivers were also very aware of the nature and extent of driving mistakes made, including the contribution of lack of personal effort. One of these drivers conceded she should have slowed down in order to better observe an intersection she was about to pass through. Another in his self-monitoring admitted to a tendency to blame other drivers, but nonetheless understood that many of his errors were mistakes in his own judgment.

Some among this sub-group of drivers were not just aware of their learning needs, but had even developed their own self-coaching strategies and goals, to ensure successful driving performance. For example, they mentally rehearsed correct or otherwise successful driving task sequences for their practice driving, much as they did for other areas of their learning, such as in sports competitions or playing a musical instrument.

The self-monitoring statements made by the novice drivers were in response to prompts from Bailey to self-monitor their driving, either in an overall sense or in relation to specific instances (e.g. "What factors do you think helped you to change lanes so smoothly when you were last driving?"). These prompts were offered by Bailey when discussing previous and future driving sessions with the drivers, either singly or in small groups. Such approaches, as discussed in the next section, are readily transferable to real driving instruction contexts.

3.3 How facilitated discussion opportunities can boost self-awareness and self-monitoring

Various isolated small-scale empirical studies have reported low reductions in traffic offences and/or crash rates for drivers following programs of structured discussions [21]. However, an unexpected but often neglected finding from a landmark study of 4 500 Swedish Telecom drivers was that, a group undertaking traffic safety personal goal setting during group discussions achieved the best road crash costs reduction in the following three years, compared with driver education, financial bonus, media campaign and control groups [25].

Based on a focus group study, Harrison [26] has concluded that discussion of driving errors experienced, although stressful for the learner, may assist in higher-order cognitive processing of the knowledge gained as a result of the errors. Elliott, in discussing an evaluation of a Netherlands post-licence driver training

course, wrote how group discussion became highly valued by the participants,

"The discussion of the way in which somebody contributes to an unsafe situation, for instance, assumes another dimension when this is brought up in discussion. Learning from each other is not the only important issue here. They also realise that other people also have shortcomings." [27, p. 186]

This suggests that self-monitoring was occurring, involving awareness by participants of their own shortcomings, as well as those of others.

Facilitated discussions emphasising higher-order thinking skills such as self-evaluation of driving ability and of crash risk, and/or consideration of causal attributions, seem likely to feature in emergent programs of motor driving instructor training, such as in the draft competency unit Apply Safe Driving Behaviours, being developed by Australia's Transport and Logistics Skills Council [28]. Both Finland's driver training scheme [29] and Sweden's new curriculum [20] already incorporate group discussions to analyse the possibilities of safer driving through reflecting on personal experiences. However, techniques of facilitated discussion and promoting forms of self-awareness go beyond the set of teaching skills driving instructors have traditionally held.

4. How well do driving instructors provide best practice teaching/learning experiences, such as forms of self-awareness?

Despite the critical nature of their teaching situations, very few studies have explored driving instructors' approaches. A study by Britain's Department for Transport [30] involving long-term video-camera recording of twenty learner drivers and their instructors yielded some useful information about instructors' teaching approaches. For example, the teaching comments made by these instructors to their pupils tended to only occur when specific driving tasks were performed. Little advantage was taken of opportunities in between these times for the instructors to draw drivers' attention to broader aspects of the driving task in the context of the surrounding traffic, such as may apply when in novel driving circumstances. In fact, only about six per cent of all instruction made reference to hazards or road dangers and/or traffic judgments, such as whether to show initiative or to hold back. Moreover, while over half of all instruction constituted information advice that was neutral in tone, critical comments were the next most frequent, with praise for effort shown being quite rare. The researchers concluded that adjusting the imbalance in favour of praise-related comments, as best practice by instructors, might encourage greater self-reliance in learning to drive, through decreasing dependency on the instructor. It is significant that increasing self-reliance (though not to the point of overconfidence) is the ultimate step seen earlier in Mattsson's model of the necessary competencies for acquiring safe driving

behaviours.

More recently, Rismark and Sølvyberg [31] recorded ‘behind the wheel’ dialogues between 17 instructors and 32 pupils in Norway. They found that instructors and pupils tended to exhibit different understandings about aspects of the driving task, due to a conceptual mismatch in language use (‘scientific’ concepts versus ‘everyday’ concepts). Their conclusion was that successful learning to drive outcomes are contingent on instructors not just endeavouring to use dialogue techniques that elaborate on the student’s meaning, but aim at co-constructing shared knowledge about particular driving contexts the student has faced or will face. Developing shared understandings would be a best practice pre-requisite skill for instructors in promoting forms of self-awareness by students, such as self-evaluation and self-monitoring of driving, and who then assist the student, through discussion, to identify how this self-feedback may improve their learning to drive.

In Australia, Fitzgerald and Harrison [32] held in-depth interviews with fifty driving instructors to investigate the methods used to teach cognitive-based driving skills. The instructors were asked to select what they thought were the most important skills for safe driving to develop in novice drivers, and they chiefly nominated various high-level cognitive functions such as critical decision making and hazard perception. However, the researchers found that, while the instructors were aware of the skills that are relevant for safe driving, they were generally unable to suggest instructional strategies or teaching approaches specifically targeting these skills. They concluded that there is a need for further work in developing appropriate teaching strategies for driving instructors, especially in relation to developing higher-order thinking skills in novice drivers.

Bailey [33] has made a similar finding in a questionnaire/interview study of 36 driving instructors’ teaching approaches. Various questions were used to engage the instructors in describing their teaching approaches for beginning novice drivers and then for more experienced novices. Bailey found that, although the instructors generally considered that experienced learner drivers are more capable of making their own complex driving decisions, it seemed many instructors were uncertain about how to support this learning. Specifically, they experienced difficulty in giving many tangible examples when responding to open-ended questions about their teaching approaches, even when different prompts were given. Very few instructors, for example, mentioned getting students to comment aloud on their driving while actually driving (commentary driving), drawing diagrams, using model cars, or drawing on other motorists’ behaviours as discussion material.

No instructor in Bailey’s study [33] mentioned learner driver self-awareness, let alone how to foster it. Perhaps instructors tend to lack understanding in this area, but this is unfortunate, given Bailey’s earlier finding [23] that learner drivers are likely to respond well to prompts to self-monitor their driving

behaviour. Moreover, in a recent Australian study of 159 young drivers’ risk perceptions and speeding behaviours, Machin and Sankey [34] concluded that instructors implementing self-awareness exercises can help young drivers gain insight in to how personal motives, such as their tendency to crave excitement and their risk perception, may affect their willingness to speed.

5. What are the implications for instructors in embracing best practice teaching/learning experiences?

While driving instructors certainly require expert knowledge and skills related to driving, expert subject knowledge alone does not produce expert teaching ability [4]. Instructors also need to know how to tap into their students’ learning needs and motivations, and how to meld these with ways of representing aspects of the driving task and learning to drive that make them more comprehensible (put simply, the aspects that make learning to drive easy or difficult). Instructors who foster forms of self-awareness in learners about their learning to drive abilities, needs and motivations will benefit the learner but, just as crucially, the instructor as well, through feedback solicited on his or her attempts to make aspects of driving more easily learned.

Aspects of higher-order thinking in driving, including forms of self-awareness, are best developed in learner drivers by instructors who provide active forms of learning, including self-evaluation, feedback, experiential learning approaches and facilitated group discussion of problems encountered and other experiences [9]. In consequence, the ATSB Novice Driver Curriculum [18] requires driving instructors to possess a much broader and more complex set of teaching skills than they traditionally have had. Importantly, these include a focus on learner-centred and active approaches, such as the following skills favoured by Hatakka et al [9]:

- Modern, participatory/interactive approaches to adult learning, such as coaching and mentoring novice drivers in respect to skills like gap selection, speed control, scanning and hazard perception [the ATSB curriculum includes coaching/mentoring guidelines for instructors to implement];
- Instructors giving feedback to novice drivers, but also instructors receiving feedback on their driving from the novices [and possibly also receiving feedback on their style of teaching];
- Fostering novice drivers’ reflection and self-evaluation skills through appropriate open-ended questioning techniques;
- Facilitating small group discussions, including of participants’ driving experiences and their choice of other driving topics.

Professional development programs that encourage instructors

to self-reflect on and discuss their teaching experiences, in conjunction with formal training, may assist instructors to better understand the newer teaching / learning methods, their relevance to higher-order cognitive skills, and equally important as components of best practice, how to apply them. In this context, this remaining section of the paper focuses on practical coverage of promoting forms of self-awareness in learning to drive. The approaches are not exclusive to instructors, as some techniques can be just as easily implemented by lay supervisors given some guidelines.

5.1 Fostering self-awareness, such as self-monitoring and self-evaluation

Self-awareness, monitoring and evaluation can be fostered in learner drivers simply through instructors asking more open-ended questions requiring reflective answers, for example, “Did you notice anything odd about the way you went around that corner?” However, driving instructors who do this in conjunction with providing learning to drive experiences that successfully connect the current knowledge of the learner with the learning task ahead achieve the shared knowledge basis advocated by Rismark and Sølberg [31], as well as a best practice foundation for fostering various forms of self-awareness.

For example, such driving instructors might assist novice drivers by drawing diagrams or showing video clips of different driving scenarios (either potential or recently experienced by the student) and discuss how the drivers think they might react (or ought to have reacted) to them. Various layers of complexity can be added by the instructor, such as new stationary or moving vehicles, road markings or traffic signals. The driver could be asked to make choices based on his/her own position and to consider how other drivers might perceive the situation and respond [31].

In promoting driver self-evaluation, instructors should become adept at helping drivers to articulate what the drivers themselves consider to be their driving strengths and weaknesses (as distinct from the instructor’s observations and deductions). Other active learning methods, such as questionnaires, rating scales, competency skill assessments, and discussions among groups of novice drivers are also valuable aids in promoting self-evaluation of driving experiences [9]. Note, however, self-evaluation and other self-awareness abilities may not be readily present in some drivers, but may require development through training and practice [9].

5.2 Commentary Driving

Commentary driving is a powerful learning technique that involves talking aloud one’s driving observations, thoughts and actions, for example, “I’m driving just under the speed limit; the car behind me is changing lanes; coming now to a line of parked cars - must watch out for pedestrians”, etc. Such an activity assists in developing the higher-order cognitive skill of personal control in paying full attention to the driving task. However, it can also help learners become more self-aware of

their developing skills when scanning the driving environment, particularly in appreciating salient features and in anticipating and perceiving hazards, as well as in self-monitoring and evaluating their progress in learning such skills. Besides this learning value for the student, the instructor can readily notice what things the driver is attending to and discuss as needed. One of several available useful practical guides to the commentary driving procedure is provided by VicRoads [35].

The instructor should first demonstrate commentary driving for the student to follow, although not every driver finds commentary driving easy, but many do with practice [36, 37]. It is most suited to the later learning consolidation phase, when the student has acquired some automated skills when experiencing moderately demanding traffic conditions, and has found self-reflection and discussion of their experiences to be helpful. A later stage in learning to drive is also advisable because commentary driving adds considerably to the mental workload, which new learners commonly have difficulty in managing.

5.3 Helping learners identify causal attributions for their driving performance

Instructors can help learners become more self-aware of their driving through discussing with them the learners’ explanations (causal attributions) for driving tasks they have performed well, or tasks with which they have had difficulty. Such discussion can lead to learners valuing internal attributions such as their personal control and effort over and above externalities in their driving environment, as factors of influence on their driving performance. An example of this would be when a driver attributes a near crash to their own failure to look out or brake sooner, rather than simply blaming the other driver for not looking where they were going. Internal attributions are considered to be more adaptive to the driving task than attributions to external causes. In-depth information about this and how causal attributions can be discussed with learner drivers can be found in Martin and Horneman [24] and Bailey [23].

5.4 Facilitated discussion sessions

Facilitated discussion (one to one or in a group), as discussed earlier, can rank as a high-quality learning experience for novice drivers, particularly if it prompts self-awareness of learning to drive. Not only may discussion prompt drivers who rarely self-monitor their driving, to do so, it may also offer enrichment to high self-monitoring drivers by encouraging them to reflect on a wider and deeper range of factors surrounding their learning to drive experiences than they had previously considered. Driving instructors can facilitate such discussion before a lesson begins, to provide a reflective focus for the driving tasks to be covered during the lesson. Discussion can also occur during a lesson (once a pupil has pulled over), to discuss possible factors of influence on instances of safe driving, not just mistakes made. As far as is practicable, lessons should frequently conclude with an instructor facilitating some discussion with the driver to prompt self-reflection and self-monitoring on what

was learned and what needs to be learned.

5.5 Improved feedback for the learner

Learner self-evaluations of strengths and weaknesses and areas to focus on (identified through various active learning approaches) can be juxtaposed with instructor/mentor evaluations and feedback. Phrased in appropriately supportive ways, by the instructor, such feedback can stimulate further development of the range of self-awareness skills, now considered to be essential at the higher levels of cognition and behaviour, and which are present in the best practice theoretical models of driver learning and instruction. The United Kingdom's Department of Transport study [30] also demonstrates the importance of feedback that praises drivers, not just for correct manoeuvres executed smoothly and safely, but for exercising sound judgment when making decisions.

6. Conclusions

All these approaches towards promoting self-awareness, and consequently self-reliance in driving, afford life-long self-learning utility once the novice no longer has an instructor alongside to guide them. Not only are they commensurate with best practice as indicated in the theoretical and research literature, but they are best practice teaching/learning approaches that young people are already quite familiar with in a variety of learning endeavours. It is recommended that driving instructors seek to include more best practice educational techniques with learner drivers, and promoting self-awareness and self-monitoring in particular, in order to enhance the total learning to drive experience, right from the first lessons, through to the self-learning that must occur once an instructor is no longer present. In addition, as mentioned early in this paper, instructors operate in what can rapidly become very intense teaching-learning situations with significant safety implications. As well as these professional considerations, instructors also operate in a commercial enterprise environment, one in which driving lessons are not compulsory steps towards a driving licence.

There is a clear need to devise appropriate professional development programs for driving instructors that not only promote best practice educational techniques but, given the factors surrounding their unique teaching situations, also provide motivation for undertaking the professional development. One productive starting point for such programs might be to encourage instructors to reflect on, self-monitor and discuss the strengths and difficulties they perceive to be for the approaches they use in teaching driving. This would set the stage for introducing the notion of promoting self-awareness and self-monitoring among novice drivers.

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Parent and Adolescent Risky Driving Behaviours: New Zealand Drivers Study

By Rebecca Brookland¹, Dorothy Begg¹, John Langley¹, Shanthi Ameratunga²

¹Injury Prevention Research Unit, University of Otago;

²School of Population Health, University of Auckland.

Abstract

Young drivers are over represented in motor vehicle crash statistics. As a measure to reduce young driver crashes many high-income countries operate graduated driver licensing systems, which are designed to limit new drivers' exposure to high risk driving situations. Graduated licensing provides an important opportunity for parents to take an active role in the "learning to drive" process, often as the supervisor or driving coach. Research has shown that driving behaviours of parents can influence the driving behaviours of their children. The aim of the present study was to describe and compare the risky and dangerous driving behaviours of parents and their newly licensed adolescents. The role of parent and adolescent gender in this relationship was also examined. This study was part of a longitudinal study of 3992 newly licensed drivers, the New Zealand Drivers Study (NZDS). At the restricted licence stage 894 young drivers and their parent (who supervised their driving at the learner licence stage) independently reported their risky and dangerous driving behaviours by completing the Manchester Driving Behaviour Questionnaire. Parents and adolescents reported low levels of driving violations and errors overall. A significant, but weak association between parent and adolescent risky driving behaviours was evident.

Keywords

Young drivers, Parental influence, Risky driving

Introduction

Despite the gains made by the implementation of graduated driver licensing systems (GDLS) [1] young drivers are still over-represented in the motor vehicle crash statistics of many high-income countries [2]. In New Zealand motor vehicle crashes are the leading cause of injury mortality and a leading cause of injury morbidity for 15-24 year olds. In 2006, the motor vehicle crash rate for 15-24 year olds was 16.9/100,000 population, compared with 9.4/100,000 for the population as a whole [2].

The first comprehensive GDLS was introduced in New Zealand in 1987 [3], and today many western jurisdictions operate graduated licensing programmes [1]. GDLS are designed to

limit new drivers' exposure to high risk driving situations, such as night-time driving, carrying young passengers and driving after drinking alcohol, with gradual decreases in driving restrictions as drivers advance through the stages of the licensing system.

Although parents have always had a vested interest in their children's early driving experiences and safety, the implementation of GDLS has reinforced the role of parents in this process. This increased parental involvement, via GDLS, can be explicit, as in California where parents need to certify that 50 hours of supervised driving has occurred [4], or implicit as it is in New Zealand. When GDLS was introduced in New Zealand there was an expectation that parents would take an active role by enforcing the restrictions [5], and more recently there have been moves towards encouraging greater parental involvement, through young driver programmes [6]. This increasing role for parents has led to a growing body of international work focused on examining how parental practices shape adolescents driving experiences. Research has shown that parents manage the driving experiences of their children by influencing the age of licensure, placing restrictions on vehicle access and enforcing GDLS conditions [7-14]. Research has also shown that parental attitudes may influence the driving outcomes for young drivers. Hartos and colleagues found fewer parental driving restrictions in the first months of licensure, predicted higher levels of risky driving behaviours one year later [11].

These studies [7-14] have looked at parental influence, as perceived by their child, and have focussed on parental attitudinal and monitoring measures. There has been little work that has directly examined the influence of parents own driving behaviours on their children's driving behaviours and outcomes. Of the published work in this field two studies, one conducted in North Carolina [15] and the other in British Columbia [16] have utilised official crash reports for parents and their children to determine the association between their respective crash and conviction records. Ferguson and colleagues examined North Carolina driving records and found a significant positive association between parent and adolescent driving records in the preceding five year period. Specifically, young drivers whose parents had committed driving violations were more likely to also have committed driving violations, and young drivers

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¹ The term 'parent' will be used throughout this paper and includes parent, caregiver or guardian.

whose parents had crashed were more likely to also have had a crash [15]. In British Columbia Wilson and colleagues focused on at-fault crashes, as defined by insurance liability, and found adolescent crash risk in the first three years of full licensure was predicted by parent crash records during the four years prior to adolescent licensure. Specifically, for each of the parents at-fault crashes the adolescents crash risk increased by 13% [16].

Two other studies, one with 174 Israeli families [17] and the other with 123 Brazilian families [18] interviewed parents and their children to determine the association between their self-reported driving behaviours. Taubman - Ben-Ari and colleagues used the multidimensional driving style inventory (MDSI) to examine the correlation between the driving styles of parents and their adult children, aged 18 to 33 years. They found both mothers and fathers' anxious, reckless, and careful driving styles significantly correlated to these driving styles in their adult children [17]. Using the 28 item driver behaviour questionnaire (DBQ-28) Bianchi and Summala investigated the association between the risky driving behaviours of parents and their adult children, aged 18 -30 years who had held driver licences for four years on average. They found parent errors, ordinary violations, aggressive violations and lapses significantly correlated with the respective driving behaviour in their child. After controlling for driving exposure and background factors parents driving errors predicted their children's driving errors; and parent's ordinary violations predicted their children's ordinary violations. However parent's aggressive violations or lapses no longer explained these respective behaviours in their children [18].

In New Zealand the minimum age at which an adolescent can obtain a learner licence is 15 years and all their driving during this stage is required to be supervised. The learner licence must be held for a minimum of six months, at which time drivers can take the test for their restricted licence, which allows then to drive unsupervised, except at night (10pm-5am), or when carrying passengers. Therefore potentially in New Zealand 15½ year olds can drive unsupervised. This is of particular concern given that the first six months of unsupervised driving carry the greatest crash risk for novice drivers, and this increased risk is more pronounced in the youngest novice drivers [19].

Collectively the four studies outlined previously indicate that a relationship exists between parents' driving behaviours and the driving behaviours of their children [15-18]. However these studies have all examined the influence of parents driving behaviours when their child had had several years of driving experience. In contrast, this paper examines the influence of parents driving behaviours on young novice drivers. If driving behaviours are transferred from parent to child it is possible that young drivers may enter the most dangerous stage of being a novice driver - driving unsupervised - modelling their parents risky driving behaviours, and consequently increasing their risk of being involved in a motor vehicle crash.

The aim of the present study was to:

- describe the risky driving behaviours of young drivers during their learner licence stage,
- describe the risky driving behaviours of their parent, and
- examine to what extent the driving behaviours of adolescents reflect their parents driving behaviours at this early stage of licensure.

Method

This research was part of a longitudinal study, the New Zealand Drivers Study (NZDS), which is following a cohort of 3992 newly licensed car drivers. The NZDS cohort was recruited between 1st February 2006 and 31st January, 2008 from driver licensing agencies and licensing courses throughout New Zealand, when potential participants passed their car learner licence theory test (Class 1L Licence). At this stage participants completed a selfadministered baseline questionnaire. The follow-up telephone interviews are aligned with the licensing stages of the GDLS, with the first taking place at the restricted licence stage (Class 1R licence) and the second (follow-up telephone interview taking place) at the full licence stage (Class 1F licence). After full licensure, ongoing follow-up will continue through national databases that monitor motor vehicle related crashes, infringements, convictions and hospitalisations.

This research relates to NZDS young drivers, aged 15 - 17 years at the learner licence stage, who had completed their first follow-up interview (restricted licence stage) prior to 1st May 2008, and interviews with their parent who had supervised their driving during the learner licence stage.

Data Collection

After cohort members had passed their restricted licence test they were contacted to complete their first follow-up telephone interview. This was a computer assisted telephone interview that collected information on: driving experience during learner licence stage, attitudes and knowledge regarding GDLS, general alcohol and drug use, intentions for restricted licence stage, traffic infringements and crashes, as well as the driving behaviour measure reported in this paper (described later). Contact details for parents were obtained from all eligible young drivers when they had completed their restricted licence interview. Initial contact with parents was made by a personal letter to the parent informing them about the study, and inviting their participation. This letter was followed by a computer assisted telephone interview for those parents who agreed to participate. In situations where two parents were available to be interviewed the parent whom the young driver deemed their main supervisor was the first preference. If this parent refused then the second parent was invited to take part.

The parent interview gathered the following measures: parent demographics, knowledge and attitudes towards the licensing system and road safety, experience with learner licence stage, expectations for restricted licence stage, their traffic infringements and crashes, and the driving behaviour questionnaire. To help ensure confidentiality for both the parents and the young drivers, their respective interviews were conducted by different trained interviewers.

Participants

In total 1060 young drivers had completed their restricted licence stage follow-up interview by 1st May, 2008. Of these, 919 parents (87%) completed the parent interview. As this paper examined the relationship between parent and adolescent driving behaviours, parents who had not been a supervisor during the learner licence stage were excluded from the analyses. This left 894 parent-adolescent pairings. A further 18 cases were excluded due to missing responses for the driving behaviour measure, leaving 876 young drivers (58% male) and their parent (64% mothers) for analyses. For the young drivers, the mean age at restricted licensure was 16.3 years (s.d. = 0.77) for males, and 16.4 years (s.d. = 0.83) for females, and mean length of time on the learner licence was 9 months (s.d. = 3.07) for males and 10 months (s.d. = 3.70) for females. For parents, fathers mean age was 49.2 years (s.d. = 6.25) and average length of full licensure was 31.7 years (s.d. = 7.74). For mothers, mean age was 46.2 years (s.d. = 4.92) and average length of full licensure 27.3 years (s.d. = 7.20). In total there were 202 father-son pairings, 302 mother-son pairings, 115 father-daughter pairings and 257 mother-daughter pairings, giving 876 pairs altogether.

Risky Driving Behaviour Measure

The Manchester Driving Behaviour Questionnaire (DBQ short form) [20] was used to measure parent and adolescent risky driving behaviours. The DBQ measures driving errors, violations and lapses. The eight lapse questions were not asked as prior research has shown that the lapse subscale has a poor predictive relationship with negative driving outcomes [21], such as crash involvement, which is a main objective of the NZDS. For this study the eight items measuring errors and the eight violation items were included to measure the level of risky driving behaviours engaged in (Table 1 lists the questions in each subscale). For each DBQ question participants had to indicate how often they engaged in the behaviour while driving, using a six point likert scale (range 0-5). Possible response options were 'never', 'hardly ever', 'occasionally', 'quite often', 'frequently' and 'nearly all the time'. After examination of the frequency distributions for each question it was decided to dichotomise the responses for the descriptive analysis. 'Never' responses were coded as '*never done*' any risky driving behaviour and the remaining response options were coded as '*ever done*' any risky driving behaviour. To determine the relationship between the parent and young driver risky driving behaviours the mean score for each subscale was calculated, creating a mean error score and a mean violation score.

Statistical Analysis

Chi Square analyses were used to determine the statistical significance of difference in the frequency of each of the 16 risky driving behaviours, for young drivers by gender, and for parents by gender. To examine the internal consistency of each DBQ subscale score Cronbach's alpha coefficients were calculated. Spearman's rank correlation coefficients (ρ) were calculated to assess the relationship between the risky driving behaviours of parents and their adolescent. Spearman's rank correlation was used as the data was positively skewed and Spearman's is a non parametric measure of association that does not require the assumptions of normality to be met [22].

Results

Young driver risky driving behaviours

Table 1 reports the descriptive statistics for each DBQ item for sons and daughters and shows the gender differences in their risky driving behaviours. The most frequently reported errors by young drivers were 'fail to check in rear view mirror before pulling out' with 55% of sons and 48% of daughters reporting ever doing this ($\chi^2 = 4.92$ $p = 0.027$) and 'underestimate speed of oncoming vehicle when overtaking' (sons 35%, daughters 27%, $\chi^2 = 7.18$ $p = 0.007$).

The most frequently reported violations by young drivers were 'drive faster than the speed limits late at night or early in the morning' (sons 56%, daughters 52% reported ever doing this), 'cross an intersection knowing lights already turned against you' (sons 34%, daughters 27%, $\chi^2 = 4.86$ $p = 0.028$) and 'driving especially close to car in front to signal to the driver to move or go faster' (sons 35%, daughters 22%, $\chi^2 = 16.34$ $p < 0.001$). Significantly more sons than daughters reported committing the following driving violations; 'on a single lane road, become impatient and overtake on the inside' ($\chi^2 = 7.72$ $p = 0.006$), 'show your anger to other people on road' ($\chi^2 = 21.07$ $p < 0.001$) and 'get involved in unofficial street races' ($\chi^2 = 11.41$ $p < 0.001$).

Parent risky driving behaviours

Table 2 reports the descriptive statistics for each DBQ item for fathers and mothers and shows the gender differences in their risky driving behaviours. The most frequently reported errors by parents were 'underestimate speed of oncoming vehicle when overtaking' with 36% of fathers and 26% of mothers reporting ever doing this ($\chi^2 = 9.17$ $p = 0.003$) and 'when queuing to turn left, nearly hit car in front' (fathers 30%, mothers 23%, $\chi^2 = 5.05$ $p = 0.025$). Significantly more mothers than fathers reported that they 'brake too quickly on a slippery road, or steer wrong way into a skid' ($\chi^2 = 10.34$ $p = 0.001$).

The most frequently reported violations by parents were 'drive faster than the speed limits late at night or early in the morning' (fathers 71%, mothers 62% reported ever doing this, $\chi^2 = 7.08$

$p=0.008$), 'cross an intersection knowing lights already turned against you' (fathers 50%, mothers 50%) and 'show anger to other people on road' (fathers 46%, mothers 38%, $\chi^2 = 6.23$ $p=0.013$). Significantly more fathers than mothers reported committing the following driving violations; 'drive especially

close to car in front' ($\chi^2 = 20.83$ $p<0.001$), 'get angered by another drivers behaviour and give chase' ($\chi^2 = 13.14$ $p<0.001$), 'drive even though blood alcohol over legal limit' ($\chi^2 = 25.19$ $p<0.001$), and 'get involved in unofficial street races' ($\chi^2 = 9.93$ $p=0.002$).

Table 1: Distrubtion of response to DBQ item for sons and daughters and χ^2 test gender differences.

		Sons (N=504)		Daughters (N=372)			
		never done	ever done	never done	ever done	ChiSq	p-value
ERRORS <i>How often do you...</i>							
attempt to overtake someone who you hadn't noticed to be signalling a right turn?	n	419	85	325	47	2.99	0.084
	%	(83.1)	(16.9)	(87.4)	(12.6)		
fail to notice that pedestrians are crossing when turning into a side street from a main road?	n	351	153	261	111	0.03	0.869
	%	(69.6)	(30.4)	(70.2)	(29.8)		
when turning left, nearly hit cyclists who come up on your inside?	n	467	37	342	30	0.16	0.691
	%	(92.7)	(7.3)	(91.9)	(8.1)		
when queuing to turn left onto a main road, pay such close attention to the main stream of traffic that you nearly hit the car in front?	n	400	104	301	71	0.32	0.571
	%	(79.4)	(20.6)	(80.9)	(19.1)		
underestimate the speed of an oncoming vehicle when overtaking?	n	327	177	273	99	7.18	0.007
	%	(64.9)	(35.1)	(73.4)	(26.6)		
miss 'Give Way' signs and narrowly avoid colliding with traffic having the right of way?	n	412	92	284	88	3.83	0.051
	%	(81.7)	(18.3)	(76.3)	(23.7)		
fail to check your rear view mirror before pulling out, changing lanes etc?	n	226	278	195	177	4.92	0.027
	%	(44.8)	(55.2)	(52.4)	(47.6)		
brake too quickly on a slippery road, or steer the wrong way into a skid?	n	420	84	309	63	0.01	0.916
	%	(83.3)	(16.7)	(83.1)	(16.9)		
VIOLATIONS <i>How often do you...</i>							
On a single lane road, become impatient with a slower driver and overtake on the left?	n	403	101	324	48	7.72	0.006
	%	(80.0)	(20.0)	(87.1)	(12.9)		
drive especially close to the car in front as a signal to its driver to go faster or get out of the way?	n	328	176	289	83	16.34	<0.001
	%	(65.1)	(34.9)	(77.7)	(22.3)		
cross an intersection knowing that the traffic lights had already turned against you?	n	332	172	271	101	4.86	0.028
	%	(65.9)	(34.1)	(72.8)	(27.2)		
get angered by another driver's behaviour and give chase with the intention of giving him/her a piece of your mind?	n	452	52	344	28	2.01	0.156
	%	(89.7)	(10.3)	(92.5)	(7.5)		
drive faster than the speed limits late at night or early in the morning?	n	223	281	180	192	1.48	0.224
	%	(44.2)	(55.8)	(48.4)	(51.6)		
drive even though you realise that you may be over the legal blood alcohol limit?	n	468	36	356	16	3.10	0.079
	%	(92.9)	(7.1)	(95.7)	(4.3)		
show your anger to other people you dislike on the road?	n	357	147	313	59	21.07	<0.001
	%	(70.8)	(29.2)	(84.1)	(15.9)		
get involved in unofficial 'street races' with other drivers?	n	449	55	355	17	11.41	<0.001
	%	(89.1)	(10.9)	(95.4)	(4.6)		

Table 2: Distribution of response to DBQ item for fathers and mothers and χ^2 test gender differences.

		Fathers (N=317)		Mothers (N=559)			
		never done	ever done	never done	ever done		
ERRORS <i>How often do you...</i>							
attempt to overtake someone who you hadn't noticed to be signalling a right turn?	n	281	36	507	52	0.94	0.331
	%	(88.6)	(11.4)	(90.7)	(9.3)		
fail to notice that pedestrians are crossing when turning into a side street from a main road?	n	243	74	425	134	0.04	0.834
	%	(76.7)	(23.3)	(76.0)	(24.0)		
when turning left, nearly hit cyclists who come up on your inside?	n	279	38	492	67	0.00	0.999
	%	(88.0)	(12.0)	(88.0)	(12.0)		
when queuing to turn left onto a main road, pay such close attention to the main stream of traffic that you nearly hit the car in front?	n	222	95	430	129	5.05	0.025
	%	(70.0)	(30.0)	(76.9)	(23.1)		
underestimate the speed of an oncoming vehicle when overtaking?	n	204	113	414	145	9.17	0.003
	%	(64.4)	(35.6)	(74.1)	(25.9)		
miss 'Give Way' signs and narrowly avoid colliding with traffic having the right of way?	n	265	52	463	96	0.09	0.770
	%	(83.6)	(16.4)	(82.8)	(17.2)		
fail to check your rear view mirror before pulling out, changing lanes etc?	n	232	85	436	123	2.59	0.108
	%	(73.2)	(26.8)	(78.0)	(22.0)		
brake too quickly on a slippery road, or steer the wrong way into a skid?	n	279	38	444	115	10.34	0.001
	%	(88.0)	(12.0)	(79.4)	(20.6)		
VIOLATIONS <i>How often do you...</i>							
On a single lane road, become impatient with a slower driver and overtake on the left?	n	276	41	468	91	1.77	0.184
	%	(87.1)	(12.9)	(83.7)	(16.3)		
drive especially close to the car in front as a signal to its driver to go faster or get out of the way?	n	200	117	433	126	20.83	<0.001
	%	(63.1)	(36.9)	(77.5)	(22.5)		
cross an intersection knowing that the traffic lights had already turned against you?	n	158	159	280	279	0.00	0.943
	%	(49.8)	(50.2)	(50.1)	(49.9)		
get angered by another driver's behaviour and give chase with the intention of giving him/her a piece of your mind?	n	286	31	538	21	13.14	<0.001
	%	(90.2)	(9.8)	(96.2)	(3.8)		
drive faster than the speed limits late at night or early in the morning?	n	92	225	212	347	7.08	0.008
	%	(29.0)	(71.0)	(37.9)	(62.1)		
drive even though you realise that you may be over the legal blood alcohol limit?	n	238	79	493	66	25.19	<0.001
	%	(75.1)	(24.9)	(88.2)	(11.8)		
show your anger to other people you dislike on the road?	n	170	147	348	211	6.23	0.013
	%	(53.6)	(46.4)	(62.3)	(37.7)		
get involved in unofficial 'street races' with other drivers?	n	301	16	551	8	9.93	0.002
	%	(95.0)	(5.0)	(98.6)	(1.4)		

Table 3: DBQ error and violation subscale mean scores and standard deviations for each group and correlations between parent - young driver pairings.

		Mean Score				Spearman Rho (p) Rank Order Correlations ^a				
		Son	Daughter	Father	Mother	All pairings	Father-Son	Mother - Son	Father - Daughter	Mother-Daughter
DBQ	N	504	372	317	559	876	202	302	115	257
Factors ^b	Mean	0.35	0.31	0.26	0.24	p	0.08	0.07	0.16	-0.03
Errors	s.d	(0.31)	(0.34)	(0.27)	(0.29)	p-value	(0.019)	(0.304)	(0.004)	(0.258)
										(0.605)
Violations	Mean	0.40	0.28	0.54	0.41	p	0.10	0.01	0.08	0.11
	s.d	(0.43)	(0.33)	(0.37)	(0.32)	p-value	(0.004)	(0.839)	(0.165)	(0.232)
										(0.013)

^a p = Spearman rho (p) correlation coefficient. ^b range from 0 (never) to 5 (nearly all the time)

Comparison of young driver and parent risky driving behaviours

Table 3 reports the mean scores and standard deviations for the DBQ errors and violations subscale for each group. Mean error scores were similar between the groups with sons reporting the most errors. For violations, fathers had the highest mean violation score, while daughters reported the lowest. To examine the internal consistency of the error and violation subscales Cronbach's alpha coefficients were calculated. For the error subscale, the alpha coefficients were $\alpha=0.59$ for young drivers and $\alpha=0.68$ for parents. For the violation subscale, the alpha coefficients were $\alpha=0.70$ for young drivers and $\alpha=0.53$ for parents. Reliability analyses indicated that removing any item from either subscale would decrease their internal consistency.

Correlations between the parent and young driver pairings showed that overall parent and young driver errors were significantly correlated ($p=0.08$, $p=0.019$) and parent and young driver violations were significantly correlated ($p=0.10$, $p=0.004$). Further investigation of these associations by gender pairings showed that the only associations that were statistically significant ($p<0.05$) were mother and son driving error behaviours ($p=0.16$, $p=0.004$) and mother-daughter driving violations ($p=0.16$, $p=0.013$). Although these correlation are significant the strength of the associations are very low, as shown in table 3.

Discussion

The current study utilised the DBQ to examine adolescent's risky driving behaviour during the early stage of licensure, their parent's risky driving behaviour and the extent of the relationship between them. As indicated by the mean score for each subscale both young drivers and parents reported low levels of driving related errors and violations overall, with the frequency of committing the risky driving behaviours between never and hardly ever. This finding is consistent with the level of risky driving reported in previous studies using the DBQ [20, 23, 24]. In regards to errors, young drivers tended to commit more errors than their parents. For the specific error behaviours there were some gender differences. For example fathers (compared to mothers) and sons (compared to daughters) were more likely to report underestimating the speed of oncoming vehicles when overtaking.

Violations were more commonly reported by males than their comparative female group. For example fathers reported more violations than mothers, and had the highest mean violation score overall; sons reported the same level of violations as mothers but had greater violations than daughters (who reported the lowest level of violations). Examination of the individual violation items highlighted a number of significant gender differences. For young drivers, sons were more likely than daughters to commit violations. Even at this early stage of licensure sons were reporting a greater propensity to engage in aggressive and dangerous driving acts. One third of sons

reported driving especially close to other cars to get the other driver to go faster or move; 30% had shown their anger to other road users; one in five had (on a single lane road) become impatient with a slower driver and overtaken on the inside, and 11% had got involved in 'street racing'. Fathers were significantly more likely than mothers to engage in six out of the eight violation behaviours, which involved speeding, drink driving, and acting aggressively towards other drivers. These gender differences, with males reporting more violations than their comparative female group, are in line with findings of other studies which have used the DBQ [21, 23, 25].

Correlation analysis to examine the extent to which the driving behaviours of adolescents reflect their parents driving behaviours showed significant but weak associations between parent and adolescent errors and also between parent and adolescent violations. The more driving errors parents reported, the more errors reported by their child, similarly the more violations parents reported, the more violations their child reported. However examination of these associations by gender showed that only mothers driving behaviours were associated with their adolescent's, and a different pattern was apparent for errors versus violations. There was an association between mother and son errors, and an association between mother and daughter violations. No relationship was shown to exist between father and adolescent driving behaviours. These findings add to the inconsistencies in the field with regards to the role of gender in the association between parent and child driving behaviours. Taubman - Ben-Ari and colleagues found stronger parent-child associations within gender, rather than across gender; father-son and mother-daughter driving styles were the most similar [17], whereas Bianchi and Summala found adding parent gender to their model as a predictor did not alter the relationship between parent and child driving behaviours [18]. Overall the findings of the current study provide weak support for the previous work in this area which indicated a relationship between parent and children's driving behaviours [17, 18]. Given the increase in parental involvement in the "learning to drive" process under GDLS, and the young age of licensure in New Zealand, the current study focused on to what extent the driving behaviours of adolescents reflect their parents driving behaviours at an early stage of licensure; when young drivers were novice and had to drive supervised. It is possible that the influence of parental driving behaviour becomes more evident as their child's driving experience increases.

There are some limitations with the current study which must be considered. Firstly, an alpha coefficient of 0.70 or above is normally used as the cut-off value for acceptability of a summative scales internal consistency [26]. Some of the alpha coefficients in this study had only low to moderate levels of internal consistency, for example young drivers error $\alpha=0.59$ and parents violations $\alpha=0.53$. It may be that the DBQ error and violation subscale structures, as they stand, may not fit the New Zealand situation as well as they might and further

investigation of the factor structure of the DBQ is needed. Secondly, the DBQ is a measure of risky driving that uses a frequency response scale; therefore people who drive more often have increased opportunity to commit risky driving behaviours and subsequently may report higher levels of errors and violations, compared with people who drive less frequently. There was no attempt in this study to account for the impact of driving exposure on risky driving behaviour.

Thirdly, the DBQ is a self-report measure and as such is open to social desirability bias. This may be even more of an issue in the present study as the DBQ was administered over the telephone, rather than the traditional pen and paper method. Although parent and young driver interviewers were conducted by separate teams of interviewers and confidentiality was assured, participants in this study had reduced levels of anonymity, and therefore they may have given responses that presented themselves in a more favourable manner. The effect of this would be an underreporting of the error and violation behaviours, although this would apply to parents and children.

In conclusion although young drivers and parents had low levels of risky driving overall, examination of responses to individual items suggests the types of behaviours engaged in should cause concern, given the tendency of these behaviours to be major contributing factors in fatal and injury crashes: specifically speed, alcohol, failing to give way or stop [27]. In this study half of all young drivers and 60-70% of parents reported speeding early in the morning, or late at night; one third of young drivers and half of all parents reported crossing intersections against the lights; 25% of fathers and 12% of mothers had driven even when they thought they were over the legal alcohol limit. This study provided weak support for a relationship between parent and adolescent driving behaviours. As the NZDS is ongoing and the recruitment of parents and young drivers continues, this is a work in progress. Therefore the findings presented here should be considered provisional. Once parent recruitment is complete a more comprehensive analysis of parent and adolescent risky driving behaviours, which takes the factor structure of the DBQ measure into consideration and includes a driving exposure measure, will be undertaken.

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