25. Fitten LJ, Perryman KM, Wilkinson CJ, Little RJ, Burns MW, Pachana N, et al. Alzheimer and vascular dementias and driving: A prospective road and laboratory study. JAMA 1995; 273(17):1360-5.

26. Tuokko H, Tallman K, Beattie BL, Cooper P, Weir J. An examination of driving records in a dementia clinic. J Gerontol B Psychol Sci Soc Sci 1995; 50(3):s173-81.

27. Zuin D, Ortiz H, Boromei D, Lopez OL. Motor vehicle crashes and abnormal driving behaviours in patients with dementia in Mendoza, Argentina. Eur J Neurol 2002; 9(1):29-34.

28. Drachman DA, Swearer JM. Driving and Alzheimer's disease: the risk of crashes. Neurology 1993; 43(12):2448-56.

29. Carr DB, Ducheck J, Morris JC. Characteristics of motor vehicle crashes of drivers with dementia of the Alzheimer type. J Am Geriatr Soc 2000; 48(1):18-22.

30. Trobe JD, Waller PF, Cook-Flannagan CA, Teshima SM, Bieliauskas LA. Crashes and violations among drivers with Alzheimer disease. Arch Neurol 1996; 53(5):411-6.

31. Uc EY, Rizzo M, Anderson SW, Shi Q, Dawson JD. Driver route-following and safety errors in early Alzheimer disease. Neurology 2004; 63(5):832-7.

32. Hunt LA, Brown AE, Gilman IP. Drivers with dementia and outcomes of becoming lost while driving. Am J Occup Ther 2010; 64(2):225-32.

33. Iverson DJ, Gronseth GS, Reger MA, Classen S, Dubinsky RM, Rizzo M. Practice parameter update: Evaluation and management of driving risk in dementia: Report of the Quality Standards Subcommittee of the American Academy of Neurology. Neurology 2010; 74(16):1316-24.

34. Snellgrove CA, Hecker JR. Driving and dementia: General practitioner attitudes, knowledge and self-reported clinical practices in South Australia. Aust J Ageing 2002; 21(4): 210-2.

35. Adler G, Rottunda SJ. The driver with dementia: A survey of physician attitudes, knowledge, and practice. Am J Alzheimers Dis Other Demen 2011; 26(1):58-64.

36. Cable G, Reisner M, Gerges S, Thirumavalavan V. Knowledge, attitudes, and practices of geriatricians regarding patients with dementia who are potentially dangerous automobile drivers: A national survey. J Am Geriatr Soc 2000; 48(1):14-17.

37. Shanahan EM, Sladek RM, Phillips P. Medical aspects of fitness to drive. What do public hospital doctors know and think? Intern Med J 2007; 37(6):372-6.

38. Beran RG. Comment on medical aspects of fitness to drive. What do public hospital doctors know and think? Intern Med J 2008; 38(2):149.

39. Kostyniuk LP, Shope JT. Driving and alternatives: Older drivers in Michigan. J Safety Res 2003; 34(4): 407-14.

40. Charlton J, Oxley J, Scully J, Koppel S, Congiu M, Muir C, et al. Self-regulatory driving practices of older drivers in the Australian Capital Territory and New South Wales. Melbourne: Monash University Crash Research Centre; 2006.

41. Johansson K, Lundberg C. The 1994 international consensus conference on dementia and driving: A brief report. Alzheimer Dis Assoc Disord 1997; 11(1):s62-9.

42. Cooper PJ, Tallman K, Tuokko H, Beattie BL. Vehicle crash involvement and cognitive deficit in older drivers. J Safety Res 1993; 24:9-17.

43. Catchpole J. Why do older drivers have a high rate of involvement in casualty crashes per distance driven? J Aust College Road Safety 2007; 18(4):33-41.

Influences on young drivers' reported driving behaviours and perceptions: a focus group study

by A. Ian Glendon, Associate Professor, School of Applied Psychology (Behavioural Basis of Health and Work and Organisational Wellbeing research centres), Griffith University, Gold Coast Campus, Queensland 4222, Australia

Tel.: +61 7 5552 8964; Fax: +61 7 5552 8291; E-mail: i.glendon@griffith.edu.au

Abstract

Forty-four (25 females) Australian citizens aged 17-24 years, all holding a current driving licence, participated in six focus groups to discuss: personal factors – age, maturity and inexperience; and other factors (including safety campaigns) which could affect driving behaviours. Group discussions were audio taped and data analysis proceeded by grounded theory. Major themes were: intersections, parental influences, inexperience/inattention and safety campaigns. Several sub-themes associated with these major themes were extracted from information provided by participants. Prime influencing parties on early driving experiences are outlined and potential areas for material from this study to contribute to road safety are discussed.

Keywords: Inattention; Inexperience; Parental influences; Qualitative study; Road safety campaigns

Introduction

Reported attempts to identify and assess the extent to which young drivers' behaviours might be rendered less risky include: in-vehicle support systems [1]; skid pan training [2, 3]; simulator training [4]; driving school policies [5]; safety training [6-8]; parenting practices in relation to driving [9]; a cultural approach [10]; safety campaigns [11-13]; and passenger influences [14, 15]. Addressing these topics from a grounded psychological approach might help to provide a framework that could help to guide policy and training in this field. A longer-term objective is to seek information relevant to developing road safety campaign material that would be effective with drivers within this age group.

Data for this study were collected within the context of Queensland's graduated driver licensing (GDL) system. As in a number of overseas jurisdictions, some form of GDL has been introduced in all Australian states. Like all such schemes, Queensland's unique GDL system is based upon a graduated approach to novice driver education and experience. Described in detail on the Queensland Department of Transport and Main Roads web site [16], it comprises these stages:

1. Pre-licencing (up to age 16 years).

2. Learner Licence (from age 16 years to be held for a minimum 1-year period), requiring all on-road driving to be appropriately supervised, leading to the driving test.

3. Provisional Licence P1 (red P plates) for drivers under 25 years of age who have passed both components of the driving test (hazard perception test and practical component).

4. Provisional Licence P2 (green P plates) for drivers who meet the age-related criteria for this stage and who have passed the required driving test components.

5. Open Driver Licence, once all probationary criteria have been fulfilled.

For drivers up to age 25 years, Queensland's GDL has various restrictions at different stages, inter alia, relating to: high powered (performance) vehicles, night-time driving, alcohol consumption, mobile phone use, and peer passengers. Detailed information is available on the relevant pages of the Queensland Government website [16]. Further description of Queensland's GDL is beyond the scope of the current paper. However, researchers have considered the impact on learner drivers' experiences of recent changes to Queensland's GDL [17], a comparison between Queensland and New South Wales in terms of numbers of required hours for learner drivers [18], the effect of peer passengers on young drivers' speeding intentions [15], and development of a nationwide best practice GDL scheme [19].

While the evidence for the effectiveness of GDL programs, for example in terms of crash rate reductions, particularly from US research is overwhelming [20-28], the main mechanism for this effect appears to be reduced risk exposure rather than enhancing young novice drivers' driving skills [17, 27, 29, 30]. There is conflicting evidence as to whether such beneficial effects continue after the key elements of a GDL program have been completed, that is by ages 18-19 years. While some researchers have found negative transfer effects [21, 28, 31], others have identified continuing positive effects [19, 22, 32]. What seems to be indisputable is that the key to learning safe driving skills is relevant experience, particularly when this reflects the range of driving situations that the young novice driver will encounter [33, 34]. Therefore, it is incumbent on traffic researchers to determine some of the components of that experience from young drivers themselves. It is to this objective that the current study was directed.

Method

Participants were 19 male and 25 female Australian citizens aged 17-24 years recruited in SE Queensland by local advertising. All held a current driver licence. Six focus groups were run with facilitators imposing minimal direction on discussions, guiding conversation to incorporate themes of: speeding, alcohol and other drugs, fatigue, seatbelts, inexperience and inattention, and intersections. Selection of these themes was based upon recent data concerning vehicle crashes in Queensland. Group discussions, lasting between 75 and 90 minutes were audio taped, and continued until little additional information was extracted. A marginal utility criterion was adopted so that the number of focus groups represented the stage at which little new material was forthcoming.

Characteristic of this approach to data gathering [35], as a purely qualitative study, no attempt was made to quantify the number of times that a point was made. Attempts to quantify could have reduced the variety of data presented while the numbers in any given cell would have been too small for useful further analysis. This criterion also applied to age and gender variables, which are more applicable in quantitative research. Given that the representativeness of any given comment could not be determined, no record was kept of whether either a male or a female participant made a particular statement, nor the age of the person speaking. As a characteristic of the focus group method is that several participants might agree on a particular point, this could make transcribing it as a perception of any given individual problematic.

No attempt was made to ensure that comments were consistent, either within a group, or between groups. This reflects the reality that drivers can hold mutually contradictory perceptions, and that this might be considered

as an aspect of a jurisdiction's driving culture. The aim of the study was not to determine whether young novice drivers held "correct" views on driving and road safety more generally, but to gain a snapshot of what such a range of perceptions might comprise.

The methodology of focus groups is well known [36-39]. The success of using focus groups to understand young drivers' decision processes in respect of drink driving [40], lifestyle impacts on psychosocial functions of driving [41], vehicle identification and driving safety campaigns [42], rural drivers' risk perceptions [35], and risks from hazardous driving behaviours [43], as well as qualitative accounts of driving incidents [44], is well established.

Grounded theory provided the basis for data analysis [45]. Each group discussion was first analysed individually before the data were collated to summarise all discussions. Themes and sub-themes were extracted from the information provided by participants under the headings outlined above [46-48]. Additional categories emerged from the data and some verbatim quotes representing emergent themes were noted. However, in most of the illustrative comments in the current paper, a summary paraphrasing of the content of a theme, idea, perception, or experience was constructed to represent a verbalised point. As far as possible, even when not quoting verbatim, participants' own words have been used. Table 1 summarises the terminological hierarchy used to describe study findings.

Results and Discussion

This section provides a framework for describing the findings. Participants' expressed thoughts are presented as directly as possible. To facilitate appreciation of these views, material drawn directly, for example paraphrasing an idea from the discussions is presented in italic text in bullet points, while verbatim speech is italicised within quote marks. Material from the discussions was coded within major linked domains: external influencing factors, personal factors, and counter strategies. As a qualitative study, no reference is made to the number of times that a particular view was expressed or behaviour described, but merely records that the material emerged from one or more of the discussions.

As far as possible the terminology used by participants has been retained, for example the term "accident" instead of the less attributionally loaded "crash" is used to reflect as accurately as possible the ways in which participants expressed their views. An exception to this general rule is that where an originally intended meaning might have been unclear, the paraphrasing has sought to clarify this.

Where the discussion context made it obvious that comments referred to other drivers or to particular driver groups (e.g., older drivers), this has been identified in the revised text. However, in many cases, it was not clear from the discussion context whether a particular class of drivers was the reference point, and thus comments about these attributed behaviours remain ambiguous. In some cases it was clear that participants were referring either to their own behaviour or to drivers in general. Where the discussion context allowed for unambiguous interpretation, paraphrased extracts described in this section attempt to clarify which, if any, class of driver or road user was the main referent for comments.

Table 1. Terminology

Term	Description/derivation
Domains	Areas for investigation: Behavioural hazards, External influencing factors, Personal factors, Counter strategies
Themes	Selected for study: Intersections, Parental Influences, Inexperience/Inattention, Campaigns
Sub-themes	Emerged from discussion
Components	Perceptions, opinions, expressed thoughts, cognitions, topics, attitudes, emotions, comments, suggestions, reported behaviours, examples, ideas, experiences, views, values, perspectives, illustrations, notions, arguments

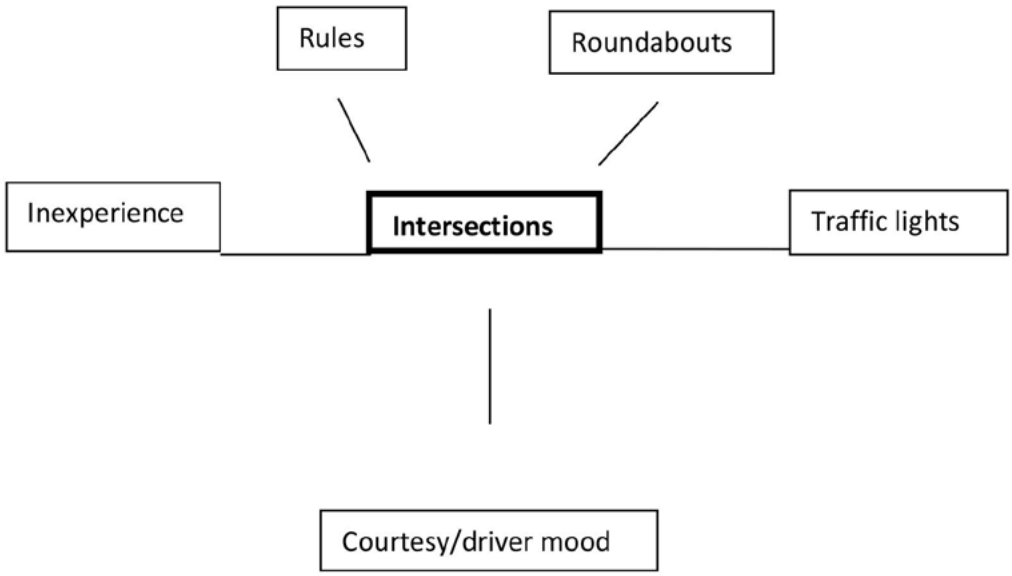

Figure 1. Sub-themes within the intersections theme

Influencing Factors

Intersections. Because of the extent to which they were represented in road crashes in Queensland, intersections were a selected theme topic for this study. Figure 1 illustrates the five sub-themes generated by this theme. The **rules** sub-theme produced these illustrative comments:

- *[other] drivers don't know how to merge;*
- *many people don't know the rules at intersections;*
- *[other people] doing stupid things at intersections, which causes accidents;*
- *[intersections are] the most likely place for "near miss accidents" to happen;*
- *[important to] have your car working properly at intersections;*
- *if your brake lights are not working, this is more likely to cause accidents;*
- *[particular frustration expressed at] drivers who don't turn when the red filter arrow at traffic lights disappears;*
- *"elderly drivers who don't know the road rules, especially at roundabouts"* (the context did not make it clear whether this quote referred to all elderly drivers).

Roundabouts generated specific comments, including:

- *unclear when and when not to indicate at roundabouts;*
- *too much confusion due to different roundabout designs and sizes;*
- *ambiguities in design and the need for standardisation, indicating which lanes to enter and exit from.*

Suggested counters to this confusion were:

- *educating people about how to use roundabouts;*
- *signage at roundabouts to help people understand what to do.*

One perception under the **traffic lights** sub-theme was that:

- *lights are red for too long [in this locality].*

Comments reflecting participants' reported strategies to overcome this perceived problem, included:

- *speeding through/running red lights to avoid waiting for so long – particularly late at night when there's no-one around;*
- *tailgating trucks through red lights to avoid getting a ticket;*
- *avoiding roads with too many lights to reduce the frustration of getting stuck all the time.*

The **courtesy/driver mood** sub-theme generated comments about:

- *[a] lack of courtesy, one comparison being with the greater level of courtesy shown by drivers on English roads;*
- *the role of a lack of courtesy in causing accidents;*
- *impatience – depending on how busy the roads were;*
- *other drivers following too closely at intersections.*

This latter comment was interesting in view of the comment above from a different participant about tailgating trucks through red lights! It was also alleged that:

- *[negative] mood was inspired by other drivers not obeying the road rules.*

Literature on driver stress, age and personality has been reviewed [49], while the role of stress and experience in traffic crash involvement has also been addressed [50].

While the **inexperience** sub-theme is explored in greater detail below, some comments related this issue specifically to intersections. Participants reported that:

- *a driver would be more likely to hesitate at intersections when inexperienced;*
- *an inexperienced driver would be less likely to check for cars entering an intersection;*
- *lots of things to pay attention to at intersections when you were inexperienced;*
- *an inexperienced driver would be concentrating so much on what they were supposed to be doing at intersections that they would not notice other cars so much.*

Parental Influences. The three sub-themes that emerged under this theme are illustrated in Figure 2. While parents are the people most likely to be involved in the early stages of a person's driving career, until relatively recently this was an under-researched and under-estimated area [9, 51, 52]. This theme is revisited later in the paper. The **relationship** that a young person has with their parents was acknowledged to be important by several participants, for example that:

- *parents' word is law when you're a kid;*
- *young people pick up their parents' values in respect of driving, although this depended upon the relationship that you have with them – if they tell you not to speed and you have a bad relationship with them, then you'll do the opposite, whereas if you look up to them it's different;*
- *[the] threat of getting a lecture from my parents is worse than the threat of getting fines or worse than worrying about other consequences – "Mum's gonna kill me!"*

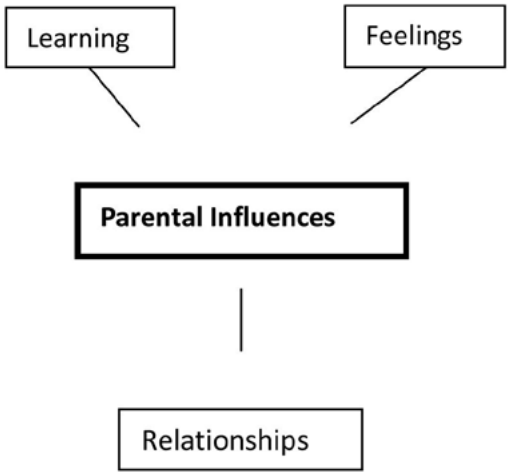

Figure 2. Sub-themes within the parental influences theme

The **feelings** sub-theme was represented by participants' comments acknowledging:

- *feelings of guilt if they went against what their parents had told them;*
- *if parents had faith or trust in you, then you didn't like to disappoint them – " ... my parents trust me on the roads; it's a whole trust thing ... ";*
- *my parents are fearful of me being in a car with inexperienced drivers.*

Perspectives on the **learning from parents** sub-theme were illustrated by several types of comment:

- *it was a lot easier to get your driving licence when your parents learnt to drive, so it is not sensible to follow what they do;*
- *parents don't know the road rules as well as younger people do;*
- *parents telling you that they did lots of bad things in traffic when they were a kid and then teaching you the same behaviour;*
- *[it's] important to learn what not to do from parents;*
- *parental influence is not important but some people recommended following parents' driving;*
- *[desirable to] selectively adopt driving skills from parents;*
- *one parent might be a good role model but not the other, so it made sense to follow the one that was respected;*
- *Mum had the "click-clack front and back" tape in the car for whenever we got in [as children] and this now serves as a permanent reminder to put on the seatbelt every time we get in a car;*
- *" ... my Dad said to me when I first started driving, 'a car is a lethal weapon, treat it like it is one'. Now I'm a lot more careful. It is a lethal weapon. It kills more people than guns."*

Driving Culture. Comments under this theme came mainly from younger participants who were still at school, for example:

- *[school is] a critical period where not everyone has their licence and a small number of people drive a large number of people around with people in the car encouraging stupid behaviour;*
- *you grow out of it once you get a job or everyone else gets a licence;*
- *this is a phase you go through where you test the limits all the time;*
- *you are more likely to do stupid or crazy things with friends in the car when you're young and inexperienced, this being just a stage you go through.*

The inexperience theme is explored further in the section below. The important peer influence aspect of driving culture for this age group was illustrated for example by:

- *backseat drivers – peer pressure telling you to do stupid things on the road;*
- *hoons and risky driving not being self-motivated but a product of peer pressure, and acting "harder" than you really are to impress friends.*

The value for risk emerged by way of the:

- *social hierarchy, such that a young driver climbs the social ladder by doing risky things and having a good car, and that taking risks makes you "harder".*

A "certain mind set" was also held responsible for:

- *knowing that on Saturday night you will go out and drive crazy and take risks.*

On gender differences one opinion was that:

- *males were more confident than females when on "Ls" and "Ps".*

It is known that changes in risky driving behaviours may occur during the early twenties [53]. It has been suggested that by 20-22 years, drivers have passed the age at which the influence of friends as passengers is strongest and are therefore less concerned about what their friends think and do [14]. Engström found that drivers could be under strong pressure from peer passengers, for example to drive faster, but that in most cases they resisted this pressure [14]. Engström interpreted this as self-confidence and responsibility with respect to driving.

Personal Factors

The themes of age, maturity and inexperience are linked. Because age and maturity per se were not introduced as discussion topics, comments within this domain are considered under the inexperience/inattention heading. Comments on age and maturity related to driving were considered above.

Inexperience/inattention. The sub-themes within this theme are illustrated in Figure 3. The **influences on learning to drive** sub-theme had a number of identifiable components. The first was the environment in which a person first learnt to drive, specifically whether this was the city or the country – each of which was perceived as representing a different type of danger level. It was pointed out that:

- *you start to drive much earlier in the country; the police are [allegedly] more lenient, there were fewer things to hit, although there were more potholes to avoid, more train tracks, kangaroos and poorly lit places;*
- *[you can] learn from mistakes when driving in the country, with less risk;*
- *where you learn to drive affects how much you speed, so that learning in a place in which "everyone" speeds will mean that you will always speed – " ... it all comes back to when you learnt to drive and what you saw at the time ... ".*

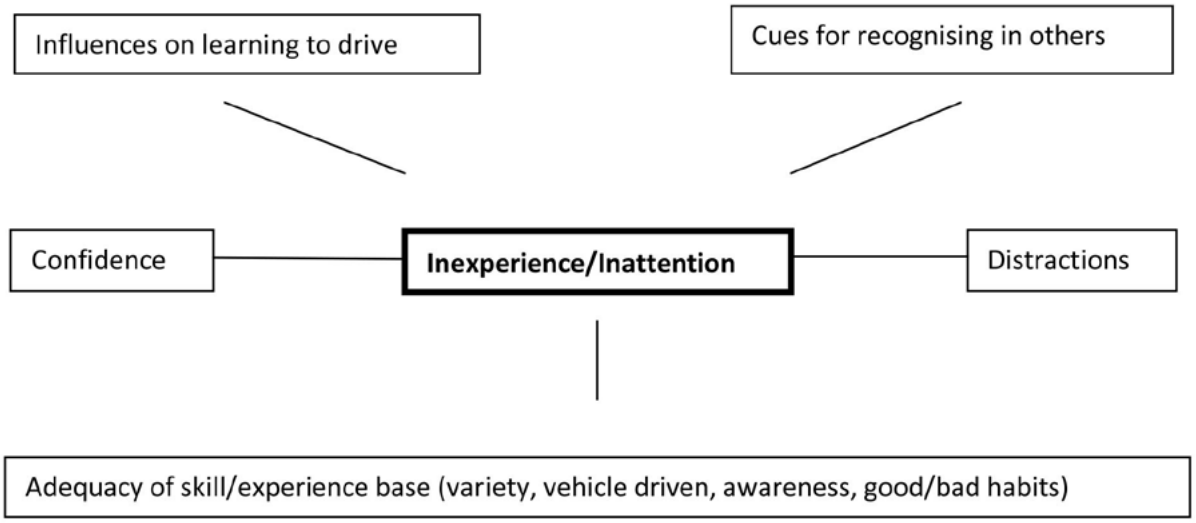

Figure 3. Sub-themes within the inexperience/inattention theme

Another influence upon the learning to drive process was the **presence and role of others** in the vehicle. Thus, if a driver's behaviour was being monitored by others in the vehicle, it was pointed out that:

- *your driving behaviour changes;*
- *[it] depends who is in the car with you as to whether you feel comfortable – [I feel] less confident with kids in the car, being more defensive, watchful of other drivers, and distracted by noises;*
- *you drive more sensibly with other people in the car and take fewer risks.*

The apparent contradiction between this latter comment and the remarks cited above concerning the role of peer pressure upon driving behaviour can be resolved by reference to in-vehicle social facilitation effects [54]. Picking up topics from earlier sections, it was pointed out that:

- *[you] learn from other people's driving – such as parents and friends, and selectively pick skills or traits from them;*
- *parents can interfere with the learning process, particularly if they are critical of your driving and don't let you learn for yourself;*
- *[you should be able to] self-monitor without other people interfering.*

Also finding expression was the notion of gaining a sufficient **quantity of driving experience** – particularly after passing the driving test, one respondent commenting that they were, told:

- *that they could drive after passing the driving test, yet lacked awareness that they were not that good, and continued to do lots of bad things in traffic – quotes included: " ... I've got my licence, but I really don't know how to drive ... "; " ... I've had my licence for a year, but I'm still not aware of everything around me ... ";*
- *a one-hour test is not indicative of how someone really drives;*
- *not enough time is spent in learning to drive before you get on the roads;*
- *it should be obligatory to spend more hours with an instructor.*

Germany was given as an example of where drivers speed more but have fewer accidents because it was claimed that Germany had "more driver education". It was suggested that:

- *["P" provisional or probationary] plates should be standard for all states;*
- *they should be mandatory from the point of view of visibility and giving other drivers the option of "giving you room".*

However, it was also alleged that:

- *you get more hassled by the police when "on Ps".*

A complementary component was the quality of driving instruction available, and some discussion focused upon defensive driving courses, which for those participants who reported having taken one, had:

- *improved my driving and had been "fun";*
- *[defensive driving courses] should be mandatory;*
- *[but] courses had to be paid for;*
- *insurance companies offered courses free to drivers under 25 years of age;*
- *[defensive driving courses] had been offered at school, but not at a convenient time.*

Perceived benefits of defensive driving courses cited included:

- *increases confidence;*
- *learning vehicle control;*
- *gives you skills that you wouldn't have got from ten years of driving;*
- *can minimise damage to other people.*

One view was that after taking such a course the:

- *confidence gained would make a driver speed more.*

An alternative view was that defensive driving courses had a:

- *focus on reducing speeding.*

It was also suggested that while a defensive driving course might:

- *not result in changes to someone's driving style, it prepared them better for emergencies.*

The **adequacy of skill or experience** sub-theme was expressed through a number of components. One of these was the desirability of a variety of driving experiences:

- *experience in all conditions, for example city, country, wet, etc, made for a "good driver";*
- *[desirable to experience] handling a car when out of control in order to find out how much control you have;*
- *desirable to have somewhere to learn your own driving capabilities in a safe environment;*
- *experience of driving different cars;*
- *good to know the differences between driving large and small cars, and where basic features such as wipers and indicators, were located;*
- *[you drive] differently according to the capabilities of the car, pulling in and out of traffic quicker or braking later;*
- *learning to drive and what a car can do in the "back streets" is effective;*

- *important to be familiar with where you are driving;*
- *use the experience to focus upon everything, even in a novel environment.*

As far as type of vehicle driven was concerned, two contrasting views were:

- *learning to drive in an automatic car had the advantage of getting to know the road rules without having to pay attention to changing gears;*
- *everyone should learn to drive a manual car.*

Other suggestions were that an inexperienced driver should:

- *not have a car that was too powerful;*
- *you should have a "bomb" when first driving because you know you're going to crash it!*

The awareness component of this sub-theme took various forms. It was acknowledged that:

- *inexperience was associated with a lesser ability to concentrate on what's going on around you;*
- *you couldn't ever be aware of everything that's happening around you;*
- *[an inexperienced driver] was not as careful a driver;*
- *reaction times are slower;*
- *you are less able to anticipate what other drivers would do;*
- *[while you] may be able to handle the car adequately, inexperience meant that your perception of distance and what is and is not safe, is not good;*
- *an inexperienced driver was conscious of the learning process when they first start, but this type of awareness diminishes over time.*

These comments, particularly the last one, might be interpreted as acknowledging that knowledge-based behaviour transforms through rules-based actions to skill-based performance as driving experience accumulates. More specific representations of the awareness perspective were that:

- *initial learning focused on the immediate environment, and this moves to concentrating on the self and what's going on around you;*
- *not being aware that losing concentration for two seconds is enough to have an accident;*
- *accidents can help you to become more aware;*
- *[I am] more aware in [urban] traffic than when driving on a freeway.*

This latter comment might be interpreted as reflecting the respective levels of attentional capacity required for driving in these different types of environment. A related comment was:

- *being aware of other drivers so that one could steer clear of such categories as elderly drivers, those who were drunk or on drugs, fatigued or driving erratically.*

Perceptions of what constituted a "good" or "skilful" driver included:

- *[there are] "skilful" and "good" drivers, the latter followed the rules, were aware and had experience of different driving conditions;*
- *good driving habits deteriorate three months [after passing the driving test];*
- *[they – possibly young drivers] should be concentrating on driving but instead were changing CDs.*

The value for risk – in this case in the form of risk compensation (behavioural adaptation), was that while:

- *more experience made you a better driver, this was translated into speeding and drink-driving with greater safety.*

Driving **confidence** was variously expressed and was generally considered to be important to good driving, for example that a driver with:

- *less confidence was more likely to hesitate.*

Various individual differences were considered to be important. For example, in respect of age, reports included:

- *[I was] not confident enough to get my learner's licence when I was first old enough – [I] preferred to wait until I was older and had the confidence to drive;*
- *some people are just more confident personality types and will take risks as a result and do stupid things;*
- *[drivers of a] certain age, perhaps in their early 20s, when you didn't care what you did on the roads, nothing affects them and they think they are "bullet-proof".*

A number of older respondents reflected on their approach to driving:

- *"I thought I was confident when I started but then I realised I wasn't as good a driver as I thought I was when I had my first accident – that was the only thing that stopped me driving like an idiot";*
- *inexperienced drivers are over-confident;*
- *"if I was me three years ago, I would have slapped myself across the face";*
- *[after a personal accident experience] " … I was much more conscious of driving safely … it's so dangerous; there's so much risk around when you're driving … [describes a personal experience] … makes you realise just how bad it is".*

Comments on elderly drivers included:

- *older drivers tend to be over-confident;*
- *keep away from them and give them more room.*

Experiences that were considered to enhance confidence included:

- *driving for a longer period;*
- *driving by yourself – this being the only time that you're completely in control;*
- *personal maturity and confidence make one a better driver;*
- *it takes three months [after passing the driving test] until one was experienced and six months to become confident as a driver;*
- *you can switch your emotions when [you are] more experienced.*

Awareness of the dangers of driving were variously represented, including impersonal attributions, through others' experiences, via emotionally charged reflection, as attempts to impose personal control over driving, or as a component of personal development and maturity, as illustrated by these verbatim quotes:

- *"a car is a metal coffin";*
- *"she lost her licence three times – she'll never learn";*
- *"the scary thing about driving is that anyone can drive – it's a matter of life and death";*
- *"you tend to push the boundaries a bit in controlling your car so you know what you can do – it helps you to avoid accidents";*
- *"it's the way you reflect on your driving – your responsibilities and self-worth".*

Distractions that could affect attention level that were mentioned included:

- *having kids in the car;*
- *changing CDs;*
- *playing music at a high volume;*
- *not knowing where you are going;*
- *checking out guys/girls at the roadside;*
- *other people looking at you while [you are] driving;*
- *mood [could be either highly positive or very negative];*
- *talking on a mobile phone.*

One respondent reported that:

- *because of recently introduced mobile phone laws, I will use the text messaging function instead of calling, which takes greater concentration.*

Cues used to recognise drivers who were not paying attention included:

- *talking on a mobile phone;*
- *speeding or weaving in and out of traffic;*
- *speeding up and slowing down;*
- *the "look on their face".*

Particular categories of inattentive drivers mentioned were:

- *hoons;*
- *hesitant drivers;*
- *elderly drivers;*
- *abusive ["road rage"] drivers.*

Differences of opinion existed as to which states had the worst drivers, for example it was alleged that:

- *Victorians think that Queensland has the worst drivers.*

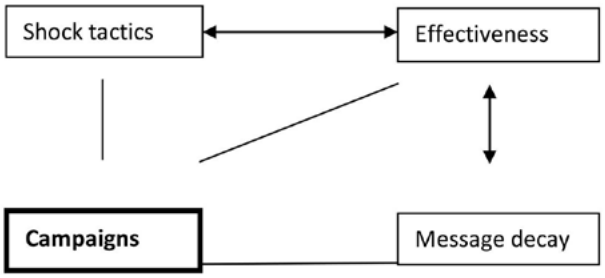

Figure 4. Sub-themes within the campaigns theme

Campaigns

Sub-themes within the Campaigns theme are illustrated in Figure 4. Views on the use of **shock tactics** as a campaign strategy included:

- *shock is good;*
- *ads of pictures of real people that are dead would work;*
- *[some] ads were too shocking, so that people switch off, reject the message and don't want to see really gruesome stuff;*
- *[some ads could be] painful for people who have had something similar happen to someone close to them;*
- *[there is a] limit to shock tactics;*
- *TV ad showing children hitting the roof of a bus was too shocking – it shouldn't be shown;*
- *shock works for the first couple of times but then loses its validity;*
- *same principles might apply, new ads are required.*

A majority of comments on this theme related to campaign **effectiveness**. The four components of any communication are: sender, message content, medium, and target audience. A few comments referred to message senders:

- *who delivers the message is important;*
- *[messages from] accident victims or their family members would hit home more, especially for high school kids;*
- *police don't have the respect, authority or credibility of accident victims;*
- *if people who are recognised from the community are involved, this would have more impact;*

- *Homer Simpson, who was "always driving drunk" and doing bad things on the road – should be countered by messages, perhaps from, parents or from the show, that his actions were bad.*

Message content was referred to in various ways, for example:

- *some ads that aren't that explicit have more impact;*
- *serious ads that you can't make fun of were more effective;*
- *invoking a sense of loss through ads seemed to be more effective, for example, loss of [licence] points, loss of family members – e.g., ads showing a family left behind, or of something really important to you, for example, the model who was burnt in a car accident and lost her beauty forever;*
- *"ads can make you aware, but it's not until it happens to someone close to you ... ";*
- *need for more information about what can happen at different speeds, such as hitting a pothole can send you into the trees;*
- *it is not necessary for other people to be involved in accidents;*
- *emphasise that things such as poor car maintenance, incorrect tyre pressure and faulty brakes can cause accidents;*
- *people should know about their cars and their capabilities.*

Campaigns, such as those concerned with drink-driving, were remembered from a time when participants were younger. It was claimed that these were effective in respect of stopping their parents from drink-driving, but not from speeding.

Some comments incorporated both medium and message:

- *a billboard with a smashed car on it;*
- *radio ads with real statistics of accidents and deaths in your area on that day would be a great deterrent;*
- *not too long;*
- *the "reality factor" is important;*
- *"graphic ads" make you think more and send shivers down your spine;*
- *in-school campaigns were very effective, particularly when they were very graphic and smashed cars were involved.*

Suggestions for targets included:

- *school kids should be targeted, one specifying 14-15 year-olds just before they learn to drive so that they have time for the awareness of the dangers of driving to set in;*
- *campaigns are more effective when you're younger because you believe the ad, but once you start to drive, you realise that ads are computer generated or that the people in the cars portrayed are dummies, so that it is less horrific and less real.*

Suggestions for the forms that campaigns could take included:

- *"if the target is safe driving, they should be targeting for safety reasons instead of fines";*
- *"stop wasting money on ads and put more police on the streets".*

The topic of driver safety campaigns is further comprehensively explored by Redshaw [42].

The problem of **message decay** was also revealed by some comments:

- *[a] campaign had impact for a while but not for long enough to carry over when driving;*
- *you just don't remember ads when you're in the car;*
- *"I can recall ads in detail but it doesn't affect my driving – I never think about them in the car";*
- *ads were not on often enough – they used to be seen "all the time".*

Conclusions

In addition to participants' comments under the thematic headings, the study revealed a number of sub-texts, which are considered in this final section. While a number of the comments revealed a level of naivety, possibly reflecting poor driving habits or perceptions (e.g., "running" close to red lights), others could be considered as reasonably representative of research findings, for example, the perceived importance of both quantity and variety of driving experience in the early stages of solo driving, and the desirability of driving practice in relatively forgiving environments throughout the learning to drive stages. Also recognised by participants were the potential for distractions to serve as antecedents to crashes or incidents, and possible adverse impacts arising from peer passenger pressure. Other evidence for the developmental aspect of the study was the awareness shown by at least some participants of the possible effects of inexperience, for example at intersections. Thus, part of the overall picture from this study is one of a work in progress, that is, of young drivers in a transition phase, and showing a reasonable degree of awareness of the transitory nature of this phase of their driving career. Further evidence for the developmental aspect of the study are the occasional contradictory or conflicting comments, which were presented as data arising from the group discussions. Further work is required to unravel these contradictory comments.

Further research and applications

To extend the utility of its main findings, topics and issues identified through this study could be converted into statements for a psychometric instrument to derive quantitative data from a large sample of young novice drivers. Worthwhile comparisons might be with parents' views on the same issues. In the meantime policy makers might use findings from this study to inform decision making on road safety campaigns, particularly those targeted at young novice drivers at different stages of their driving careers. A possible framework for planning such campaigns is shown in Table 2. Illustrative issues arising from this study that have the potential to be developed into road safety campaigns include those outlined in the paragraphs below.

Evident from some of the comments from this study was that participants correctly perceived that learning to drive was a developmental process, for example progressing from a relatively high to successively lower levels of risk. As has been pointed out, task components of the learning to drive process do not advance at the same rate [33, 55, 56], suggesting that different approaches are required to target each phase of the learning to drive process (see Table 2). These approaches would need to be consistent with a jurisdiction's GDL program, for example pre-driving teens, learner driver under instruction, the critical immediate 6-month post-test period, and the maturing novice driver.

In particular there is considerable scope for enhancing the messages that are part of the continuing education of young novice drivers after they have passed the driving test as they enter their life-long solo driving career. For example, such campaigns might incorporate a "think risk" approach that encourages (particularly young novice) drivers to carry out risk assessments as part of their cognitive driving skills repertoire. To some extent findings from this study have challenged the traditional view that fear/threat/shock-oriented messages as media campaign components should always be accompanied by an explanation of how the negative outcome could be avoided. It seems that young drivers might find their own ways of coping with such messages. However, further research is required to determine how such messages are processed, how explicit such messages should be for maximum effectiveness, and the role of problem solving by drivers confronted with such messages. As part of a campaign to educate young drivers to perceive their driving as one component of their developing maturity and increasing control over their environment, free "calming" music CDs might be made available to young drivers. Research has identified a possible approach for such an intervention [57], which should be evaluated.

Several recent studies have highlighted the importance of parental driving in shaping young drivers' behaviours [58-62]. Parents of young novice drivers and pre-drivers could be targeted to emphasise the strong influence of parental driving behaviours, particularly those that are illegal (e.g., speeding, drink-driving) upon their sons'/daughters' driving performance. The undesirability of transmitting bad driving habits to their children might be emphasised in such campaigns. Other studies have found that feedback from parents via in-vehicle technology can lead to improved teens' driving behaviour [63, 64]. Interestingly, the legality or illegality of various driving behaviours was not referred to in the group discussions, perhaps indicating that while the GDL system provided the jurisdictional framework for the young novice drivers' perceptions, it might not have figured prominently in their everyday driving experiences and influencing factors, which seemed to reside much more in personal traits, social orientation and the general driving environment.

Table 2. Early driving developmental stages and associated prime influences

Developmental stage	Prime influences on driving
Pre-driving experiences	Parents, School, Peers, Media
Early driving experiences (pre-test)	Parents, Driving instructor
Driving test (involves psychological change)	Driving instructor, Examiner
Immediate post-test driving experiences	Self, Peers, Parents
Driving maturity	Self, Parents, Other role models

A finding from the study was the potential for mutual learning between young novice drivers and their parents. For example, the comment that young drivers are better acquainted than their parents with the current road rules may not be an idle boast given the rapidity with which road rules can change. More critically, it could provide the basis for a more equal learning status between parents and their novice driver children, whereby the novice driver helps the parents to gain greater familiarity with the current road rules, while the parents help the novice driver to acquire greater driving experience. Analogous with other health campaigns (e.g., relating to smoking or diet), young people could usefully be encouraged to take responsibility for educating their parents about the current road rules in exchange for acquiring quality driving experience, while both parties could be engaged in adopting improved driving habits.

Another issue from the discussions concerned relationships with other drivers, particularly of the negative variety. These varied from the highly prejudicial categorising of older drivers along with drink/drug drivers and fatigued drivers, through over-reacting to other drivers' perceived shortcomings, to impatience at other drivers' behaviours, for example older drivers at traffic lights. Extrapolating from these findings, this might suggest that many young drivers remain relatively unaware of the range and extent of risks encountered on the road as well as lacking the knowledge or insight that, as a group, they pose the greatest risk to the safety of other road users, rather than the older drivers who they seem to think they should avoid.

A more generic issue from these findings is that of driving courtesy on Australian roads, which was compared unfavourably with that existing in at least one other jurisdiction. These findings could serve as a potential indicator for implementing either national or local courtesy campaigns, for example encouraging drivers to acknowledge courtesies by others, and to accept that it is desirable to gesture an apology to another road user when appropriate. Such campaigns would need to involve all drivers and not just young novice drivers, and could be part of a more inclusive attempt to change this aspect of Australian driving culture. Examples include a "celebrity" backed local media campaign that was attempted in Sydney (*Bring back 'The Wave'*) a few years ago [65] and a high-profile road safety organisation that has produced a brief driving courtesy guide [66]. However, these ad hoc approaches are unlikely to have much impact and their effectiveness has almost certainly not been evaluated.

To address the acknowledged attributional biases that have been documented as generic to many drivers self-perceptions, de-biasing techniques could be used selectively where they have been shown to be effective, for example to moderate driving over-confidence and the driver's illusion of control [67, 68]. Further research is also required in finding optimum ways of using peer pressure positively, for example emphasising peer responsibility in helping a mate who is a novice driver to improve their driving skill and awareness [8, 69, 70].

It would be useful for further research to assess the extent to which young novice drivers are exposed to courses that are represented as "defensive driving courses", and more critically to evaluate their effects upon driving performance, ideally over an extended period. As a general principle an essential aspect of all driving interventions is that they should be evaluated, as recommended by a number of authorities [71-73].

Study limitations

While the data were relatively rich in terms of content and the insights that they provided, the small number of participants was a limitation of this study. This could be balanced by a more extensive quantitative study based on the findings, as described above. In addition, because participants self-selected for this study their representativeness in comparison with the driving population of this age group is unknown. For example, it is possible that these volunteering participants had a particular motivation to engage in group discussions on driving. One factor suggesting that this might have been the case was that in most of the groups at least one person knew a friend who had been killed in a traffic incident. How this might have affected the findings cannot be known.

Acknowledgements

Participants for giving of their time, experiences, and views; Michelle Hanisch for assistance with data collection and analysis; Queensland Department of Transport and Main Roads for funding the research described; two anonymous reviewers for helpful comments on an earlier version of this paper.

References

1. Gregersen NP, Falkmer T. In-vehicle support systems and young, novice drivers. In L Dorn (Ed.) Driver behaviour and training. Aldershot, UK: Ashgate, 2003, 277-291.
2. Jorgensen F. Measuring car drivers' skills: an economist's view. Accident Analysis and Prevention 1993; 25:555-559.
3. Katilla A, Kestinen E, Hatakka M. Conflicting goals of skid training. Accident Analysis and Prevention 1996; 28:785-789.
4. Regan MA, Triggs TJ, Godley ST. Evaluation of a novice driver CD-ROM based training program: a simulator study. Proceedings of the Human Factors and Ergonomics Society Annual Meeting (Vol. 2). Santa Monica, CA: 2000, 334-338.
5. Gregersen NP. Systematic cooperation between driving schools and parents in driver education: an experiment. Accident Analysis and Prevention 1994; 26:453-461.

6. Gregersen NP. Young drivers' overestimation of their own skill – an experiment on the relation between training strategy and skill. Accident Analysis and Prevention 1996; 28:243-250.
7. Walker L, Butland D, Connell RW. Boys on the road: masculinities, car culture and road safety education. Journal of Men's Studies 2000; 8:153-169.
8. 8. Lenné MG, Liu CC, Salmon PM, Holden M, Moss S. Minimising risks and distractions for young drivers and their passengers: an evaluation of a novel driver-passenger training program. Transportation Research Part F: Traffic Psychology and Behaviour 2011; 14:447-455.
9. Hartos JL, Eitel P, Simons-Morton B. Parenting practices and adolescent risky driving: a three-month prospective study. Health Education and Behaviour 2002; 29:194-206.
10. Redshaw S. Changing driving behaviour – a cultural approach. Australian Journal of Social Issues 2001; 36:315-331.
11. Donovan RJ, Jalleh G, Henley N. Executing effective road safety advertising: are big production budgets necessary? Accident Analysis and Prevention 1999; 31:243-252.
12. Fry TL. Advertising wearout in the Transport Commission road safety campaigns. Accident Analysis and Prevention 1996; 28:123-129.
13. Rundmo T, Iversen H. Risk perception and driving behaviour among adolescents in two Norwegian counties before and after a traffic safety campaign. Safety Science 2004; 42:1-21.
14. Engström I. Passenger influence on young drivers. In L Dorn (Ed.) Driver behaviour and training. Aldershot, UK: Ashgate, 2003, 191-199.
15. Horvath C, Lewis I, Watson B. Peer passenger identity and passenger pressure on young drivers' speeding intentions. Transportation Research Part F: Traffic Psychology and Behaviour 2012; 15:52-64.
16. Queensland Department of Transport and Main Roads. http://www.tmr.qld.gov.au/Licensing/
17. Scott-Parker BJ, Bates L, Watson BC, King MJ, Hyde MK. The impact of changes to the graduated driver licensing program in Queensland, Australia on the experiences of learner drivers. Accident Analysis and Prevention 2011; 43:1301-1308.
18. Bates L, Watson B, King M. Required hours of practice for learner drivers: a comparison between two Australian jurisdictions. Journal of Safety Research 2010; 41:93-97.
19. Senserrick TM, Williams AF. Development of a best practice model graduated licensing scheme for car drivers: Final report. Austroads Project SS1707. Sydney, NSW: Austroads, 2012.
20. Lyon JD, Pan R, Li J. National evaluation of the effect of graduated licensing laws on teenager fatality and injury crashes. Journal of Safety Research 2012; 43:29-37.
21. Masten SV, Foss R, Marshall S. Graduated driver licensing and fatal crashes involving 16-to 19-year-old drivers. Journal of the American Medical Association 2011; 306:1099-1103.
22. McCartt AT, Teoh ER, Fields M, Braitman KA, Hellinga LA. Graduated licensing laws and fatal crashes of teenage drivers: a national study. Traffic Injury Prevention 2010; 11:240-248.
23. Russell KF, Vandemeer B, Hartling I. Graduated driver licensing for reducing motor vehicle crashes among young drivers. Cochrane Database of Systematic Reviews 2011; 10:CD003300.
24. Shope JT. Graduated driver licensing: review of evaluation results since 2002. Journal of Safety Research 2007; 38:165-175.
25. Shope JT, Molnar LJ. Graduated driver licensing in the United States: evaluation results from the early programs. Journal of Safety Research 2003; 34:63-69.
26. Williams AF. Licensing age and teenage driver crashes: a review of the evidence. Traffic Injury Prevention 2009; 10:9-15.
27. Williams AF, Shults RA. Graduated driver licensing research, 2007–present: a review and commentary. Journal of Safety Research 2010; 41:77-84.
28. Williams AF, Tefft BC, Grabowski JG. Graduated driver licensing research, 2010-present. Journal of Safety Research 2012; 43:195-203.
29. Ferguson SA. Other high-risk factors for young drivers – how graduated licensing does, doesn't, or could address them. Journal of Safety Research 2003; 34:71-77.
30. Karaca-Mandic P, Ridgeway G. Behavioural impact of graduated driver licensing on teenage driving risk and exposure. Journal of Health Economics 2010; 29:48-61.
31. Fell JC, Romano E, Todd M, Jones K. National evaluations of graduated driver licensing laws. Calverton, MD: Pacific Institute for Research and Evaluation, 2012.
32. Healy D, Catchpole J, Harrison W. Victoria's graduated licensing system evaluation interim report. Melbourne, VIC: VicRoads, 2012.
33. Groeger JA, Banks AP. Anticipating the content and circumstances of skill transfer: unrealistic expectations of driver training and graduated licensing? Ergonomics 2007; 50:1250-1263.
34. Williams AF, Ferguson SA. Driver education renaissance? Injury Prevention 2004; 10:4-7.
35. Knight PJ, Iverson D, Harris MF. Early driving experience and influence on risk perception in young rural people. Accident Analysis and Prevention 2012; 45:775-781.
36. Barbour RS. Doing focus groups. London: Sage, 2007.
37. Kitzinger J. The methodology of focus groups: the importance of interaction between research participants. Sociology of Health and Illness 1994; 16:103-121.
38. Krueger RA, Casey MA. Focus groups: a practical guide for applied research (4th edn.). Los Angeles: Sage, 2009.
39. Vaughn S, Schumm JS, Sinagub J. Focus group interviews in education and psychology. Thousand Oaks, CA: Sage, 1996.
40. Basch CE, DeCicco IM, Malfetti JL. A focus group study on decision processes of young drivers: reasons that may support a decision to drink and drive. Health Education Quarterly 1989; 16:389-396.
41. Møller M. An explorative study of the relationship between lifestyle and driving behaviour among young drivers. Accident Analysis and Prevention 2004; 36:1081-1088.
42. Redshaw S. Dangerous safety: extreme articulations in car advertising and implications for safety campaigns. Journal of the Australasian College of Road Safety 2011; 22(4):47-53.
43. Glendon AI. Young drivers' attitudes towards driving risks arising from hazardous behaviours. In L Dorn, (Ed.) Driver behaviour and training. Aldershot, UK: Ashgate, 2005, 193-206.

44. Dorn L, Brown B. Making sense of invulnerability at work – a qualitative study of police drivers. Safety Science 2003; 41:837-859.
45. Pidgeon N, Henwood K. Grounded theory: practical implementation. In JTE Richardson (Ed.) Handbook of qualitative research methods for psychology and the social sciences. Leicester, UK: British Psychological Society, 1996, 86-101.
46. Berg BL, Lune H. Qualitative research methods for the social sciences (8th edn.). Upper Saddle River, NJ: Prentice Hall, 2011.
47. Coffey AJ, Atkinson PA. Making sense of qualitative data: complementary research strategies. Thousand Oaks, CA: Sage, 1996.
48. Glesne C. Becoming qualitative researchers: an introduction (4th edn.). Upper Saddle River, NJ: Prentice Hall, 2010.
49. Langford C, Glendon AI. Effects of neuroticism, extraversion, circadian type, and age, on reported driver stress. Work and Stress 2002; 16:316-334.
50. Legree PJ, Heffner TS, Psotka J, Martin DE, Medsker GJ. Traffic crash involvement: experiential driving knowledge and stressful contextual antecedents. Journal of Applied Psychology 2003; 88:15-26.
51. Ferguson SA, Williams AF, Chapline JA, Reinfurt DW, de Leonardis DM. Relationship of parent driving records to the driving records of their children. Accident Analysis and Prevention 2001; 33:229-234.
52. Hartos JL, Eitel P, Simons-Morton B. Do parent-imposed delayed licensure and restricted driving reduce risky driving behaviours among newly licensed teens? Prevention Science 2001; 2:113-122.
53. Begg D, Langley J. Changes in risky driving behaviour from age 21 to 26 years. Journal of Safety Research 2002; 32: 491-499.
54. Baxter JS, Manstead ASR, Stradling SG, Campbell KA, Reason JT, Parker D. Social facilitation and driver behaviour. British Journal of Psychology 1990; 81:351-360.
55. Foss RD, Martell CA, Goodwin AH, O'Brien NP. Measuring changes in teenage driver crashes during the early months of driving. Washington, DC: AAA Foundation for Traffic Safety, 2011.
56. Groeger JA, Brady SJ. Differential effects of formal and informal driver training. Road Safety Research Report No. 42. London: Department for Transport, 2004.
57. Brodsky W, Kizner M. Exploring an alternative in-car music background designed for driver safety. Transportation Research Part F: Traffic Psychology and Behaviour 2012; 15:162-173.
58. Brookland R, Begg D. Adolescent, and their parents, attitudes toward graduated driver licensing and subsequent risky driving and crashes in young adulthood. Journal of Safety Research 2011; 42:109-115.
59. Brookland R, Begg D, Langley J, Ameratunga S. Risk perceptions and risky driving behaviour of adolescents and their parents. Injury Prevention 2010; 16:A170.
60. Miller G, Taubman-Ben-Ari O. Driving styles among young novice drivers: The contribution of parental driving styles and personal characteristics. Accident Analysis and Prevention 2010; 42:558-570.
61. Prato CG, Toledo T, Lotan T, Taubman-Ben-Ari O. Modeling the behaviour of novice young drivers during the first year. Accident Analysis and Prevention 2010; 42:480-486.
62. Taubman-Ben-Ari O, Katz Ben-Ami I. The contribution of family climate for road safety and social environment to the reported driving behaviour of young drivers. Accident Analysis and Prevention 2012; 47:1-10.
63. Carney C, McGehee DV, Lee JD, Reyes ML, Raby M. Using an event-triggered video intervention system to expand the supervised learning of newly licensed adolescent drivers. American Journal of Public Health 2010; 100:1101-1106.
64. Farmer CM, Kirley BB, McCartt AT. Effects of in-vehicle monitoring on the driving behaviour of teenagers. Journal of Safety Research 2010; 42:39-45.
65. http://www.radioinfo.com.au/news/10227/
66. http://www.mynrma.com.au/about/courtesy-on-our-roads.htm
67. McKenna FP, Myers L. Illusory self assessments – can they be reduced? British Journal of Psychology 1997; 88:39-51.
68. McKenna FP, Albery I. Does unrealistic optimism change following a negative experience? Journal of Applied Social Psychology 2001; 31:1146-1157.
69. Goodwin AH, Foss R, O'Brien NP. The effect of passengers on driver behaviour. DOT HS 811 540. Washington, DC: National Highway traffic Safety Administration, 2011.
70. Mirman JH, Albert D, Jacobsohn LS, Winston FK. Factors associated with adolescents' propensity to drive with multiple passengers and to engage in risky driving behaviours. Journal of Adolescent Health 2012; 50:634-640.
71. Clinton K, Lorenzo L. Evaluating driver education programs: comprehensive guidelines. Washington, DC: AAA Foundation for Traffic Safety, 2006.
72. Haworth N, Kowadlo N, Tingvall C. Evaluation of pre-driver education program. Report No. 167. Monash University Accident Research Centre, Melbourne: Vic, 2000.
73. Queensland Government. A guide to evaluating road safety education programs for young adults. Brisbane: Department of Transport and Main Roads, 2009.