participants, or by employing a method that does not rely on institutions for accessing participants.

Conclusion

Overall, this study has added a unique dimension to road safety literature by demonstrating that there is a significant association between personality and hooning-related behaviour. Specifically, it was found that those who engage in the behaviour will be, on average, less agreeable in character than those who do not. No significant differences between drivers who do and do not engage in the behaviour were found for Neuroticism, Extroversion, Openness or Conscientiousness.

Further, results of this study confirm the role of personality, and in particular, the factor of Agreeableness, in explaining LOT hooning-related behaviour over and above the influences of sex and age. These findings can be utilised to better understand those drivers likely to engage in LOT behaviours, and to inform proactive interventions such as advertising and educational programs.

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Parents and young drivers: The role of learning, behaviour modelling, communication and social marketing

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Abstract

The rates of death and injury amongst young novice drivers remain disproportionately higher than for any other group of licensed drivers despite a range of measures such as the Graduated Licensing System (GLS) and mass media-based safety education campaigns. To date, there has been little

research examining the role of a critical reference group – parents – in influencing novice driver learning and behaviour, with studies predominantly concentrating on the role of parental supervision and the effectiveness of the GLS.

In this qualitative study, learner and novice drivers and their parents were recruited take part in a series of focus groups in order to gain insight into how parents teach their children to drive and the perceived experiences of both groups. Research findings suggest the negative behaviour parents modelled conflicted with the safe driving habits they attempted to teach. The research also found parents struggled with confidence, competence and communication while acting as driving instructors. These findings are discussed from both an upstream and downstream social marketing perspective. The development of downstream interventions that focus on parents' role in shaping young drivers' attitudes could positively influence novice driver safety.

Keywords

Young drivers, Parents, Social marketing, Communication, Behaviour modelling

Introduction

Around the world the rate of death and injury among young drivers (17-25 year olds) is disproportionately higher than for other licensed drivers, and is particularly high in the months immediately after licensure [1, 2]. For example, in New South Wales (NSW), young drivers aged 17-25 represented 14% of all licensed drivers, yet in 2006-07 they were involved in 24% of all fatal crashes [3]. Similarly in Victoria in 2008, 27% of fatalities involved 18-25 year old drivers although they accounted for only 13% of all Victorian licence holders [4]. In the USA 15-20 year old drivers accounted for only 6.4% of the nation's licensed drivers, but were involved in 13% of all fatal crashes in 2007 [5].

Driving skill, knowledge and experience of newly licensed drivers have been suggested as factors in their rate of death and injury [6-8], with crash figures particularly high for the first six months of licensure [2]. Major safety education campaigns, changes to legislation and the introduction of the Graduated Licensing System (GLS) represent the mainstay of government strategies to curb these rates of death and injury.

In 2000 the NSW government launched its version of a GLS that restructured training and licensing requirements to complement other initiatives, including ongoing road safety advertising campaigns targeted at young drivers. Further initiatives introduced in 2007 included limits on peer passengers at night, automatic suspension for speeding drivers, and the requirement for learners to complete 120 hours of supervised driving.

While research reveals a decline in young driver crashes in NSW from 1997-2007, 17-year-old drivers are at higher risk despite these regulatory interventions [9]. Crash statistics remain relatively constant in other parts of the world, with the exception of the UK where figures have increased steadily since 2000 [10]. As a result, legislators, researchers and the community remain focussed on improving what is commonly referred to as an 'unacceptably high' fatality rate amongst young novice drivers.

The GLS aims to develop skill and knowledge levels while providing an opportunity to gradually increase on-road experience and exposure to higher risk conditions. Versions have been employed in Australia, the United States, Canada, the United Kingdom and Sweden. There is, however, a significant body of literature suggesting skills- and knowledge-based programs such as GLS alone are not effective in lowering the crash rate amongst young drivers [11-13].

In summary, what can be concluded from a review of this body of research is that the connection between knowledge, skills and behaviour is generally poor, and that crashes and injuries result from what road users choose to do, more than what they are able (or unable) to do. Further, from the literature, it would appear that a driver's choice of action at any given moment is determined by a combination of internal motivations and external influences, some of which have been shaped by parents in the years leading up to licensure.

Subsequently, social marketing-based interventions that are aimed at changing an individual's beliefs, values, attitudes and – in turn – behaviours, have the potential to improve young driver crash rates. In general terms, social marketing can be described as the application of commercial marketing principles and practices to change behaviour and achieve socially desirable goals [14]. Social marketing strategies involve the development of 'downstream' strategies that provide the individual with tools for a safe and healthy lifestyle, and/or 'upstream' strategies that address the social and physical determinants of a behaviour.

Campaigns designed to change behaviour within a social context are underpinned by understanding the effect of knowledge, attitude and social norms [15] and the eight key determinants of behaviour: intention, environmental constraints, skills, anticipated outcomes (attitude), social norms, self-standards, emotion and self-efficacy [16]. Social marketing, which promotes welfare, safety and risk minimisation by exchanging information and products or tangible incentives for the target audience's behaviour change [17], has been utilised in public health, road safety, child abuse and, increasingly of late, the environment. Social marketing or its 'variations' [18], namely social advertising and social communication, have underpinned adolescent behaviour-change strategies in areas such as the TRUTH campaign to reduce teen smoking [19] and a range of campaigns to reduce alcohol consumption amongst university students [20]. These applications support the use of social marketing in relation to the issue of young driver safety, as suggested in this study.

Effective social marketing-based intervention requires a sound understanding of the underlying beliefs, values and attitudes

associated with a particular behaviour, which in the case of this study is the on-road behaviour of newly licensed novice drivers. Parents form one group – along with peer, personal and other social influences [21] – that shapes young drivers' attitudes and behaviour.

Parents are most often the primary supervising drivers as a novice learns to drive, and they provide a significant model of driver behaviour in the years before and during learning. As such, they are a significant reference group for novice drivers. Reference groups can act as both a comparison for self-appraisal and a source for the establishment of personal norms, beliefs, values and attitude structures [22]. As an important reference group, parents can influence a young driver's skill development through their supervisory role in the learning process and, crucially, influence their driving attitude and behaviour.

Despite parents' potential influence on novice driver behaviour, there has been little research into their role as an important reference group in the formation of young drivers' attitudes to driving. Instead, research has largely focussed on the effectiveness of the Graduated Licensing System and the role of parental supervision [23-26] or the relationship between parenting and teen driving [27]. However, that relationship takes the form of post-licence limitations and monitoring.

Further, most studies of the effectiveness of GLS focus on parent support for and involvement with novice driver restrictions [27-29]. Bianchi and Summala [30] expand the investigation of parental influence; they examine whether parental driving style predicts that of their children and find a significant relationship between the two, principally in terms of dangerous driving behaviours. Similarly, the research of Ferguson, Williams, Chapline and Reinfurt [31] links parents' driving records to those of their children.

A review of extant research on parental role and influence indicates a lack of understanding in two areas: parents' role in the learning process before novices are licensed; and how parents' driving behaviours influence their children's learning and driving behaviours. Researchers have called for a more detailed understanding of parental impact on novice driver safety [27, 32]. Williams [33] describes parents as one influence that is 'largely beyond the reach of driver education instructors'. This paper aims to examine parental influence and communication practices with learner and novice drivers in order to contribute to improving young driver safety through social marketing-based interventions.

Methodology

The lack of prior study and understanding of parental influence on novice drivers justified an exploratory investigation using a qualitative research design. This research approach supported the development of in-depth understanding of what, how and, crucially, why people think and feel as they do [34, 35]. Data was collected through focus group interviews, as this allowed participant interaction that enhanced the detailed exploration of the topic [36]. Focus groups have been used successfully in other road safety studies, including those with young drivers, which added to the case for a qualitative methodology [37].

During 2006 and 2007 participants were recruited from two local government areas on the south coast of NSW, approximately 90 kilometres south of the state capital, Sydney. Advertisements were placed in local papers and expressions of interest distributed during a local council's learner driver training initiative.

The study attempted to explore the topic from the perspective of parents and young drivers; consequently, matched dyadic pairs of parent/s and young drivers were recruited. Participants agreed to their anonymous contribution to the project, signing a consent form approved by the University of Wollongong's Ethics Committee. To ensure participants were able to freely express their opinions, the matched pairs were placed into separate young driver and parent focus groups. As the results indicated, this method revealed the difference in perceptions between the two cohorts on key issues.

Focus group size ranged from three to 12 participants, with Table 1 showing a breakdown of representative characteristics. Data was collected in several stages following the principles of 'theoretical sampling' [38, p. 35], with group composition and focus group cues evolving as new themes emerged during the data analysis. After nine focus groups involving 53 participants, the project reached theoretical saturation [36], in which the same pattern of focus group responses became evident, and data collection ceased.

Although data collection and analysis proceeded in an ongoing and concurrent fashion through the constant comparative method [38], the entire body of data was further analysed once collection ceased. Following recommended principles for the analysis of qualitative data [39, 40], the data was coded using identifying titles that were closely linked to and described the concept, and defined so terms were applied consistently during analysis. This process assigned meaning to the descriptive or inferential information compiled. The manual analysis identified

Table 1. Focus group participants

Round	Young driver total	Learner driver	Novice driver	Male	Female	Supervising driver total	Male	Female
1	7	4	3	4	3	6	3	3
2	18	15	3	8	10	15	7	8
3	4	3	1	1	3	3	0	3

and confirmed overall patterns and themes, clarified relationships between themes and allowed further theme explanation [35].

Results

From data analysis four major themes emerged, each of which could inform effective parental driving supervision and the establishment of successful intra-family safety communication about novice driver road safety. These themes were:

1. Parental driver modelling in the pre-learner and learner phases
2. Parents' skills as driving instructors
3. The communication gap between what young people say they need (parental involvement) and what they demand of their parents (driving freedom)
4. The milestone represented by a driver's licence when young people are seeking independence from their family.

Each of these themes is described and discussed in detail in the following sections.

Parental modelling

The data suggested that young drivers did most, if not all, their learner driving with their parents as the primary supervising driver. Parents' comments revealed that the significance of this responsibility was not lost on them, with one mother stating: "This is a very critical thing. The most important thing we are going to teach them is how to get behind this weapon and not die."

Parental influence can be divided into three phases: pre-learner (the childhood and early teenage years); learner (when a young person is learning to drive); and post-licence (which begins when a young person qualifies for a provisional licence). In NSW, even before a learner driver takes the wheel under parental supervision, they have generally spent more than 16 years watching how their parents drive. They develop an opinion about what they observe and are influenced subliminally and directly by this, even before they formally begin learning themselves. The strength of this influence is captured in the following quote from a learner driver: "[Parents] don't realise that it is more of an influence than directly saying something."

Parental awareness of the impact of their children's observation increased once they assumed the role of driving instructor, largely because the task called upon them to consider what they otherwise did automatically or subconsciously. Typically, young learners increasingly criticised parental driving as their road knowledge/skill developed. The contradiction in how parents drove and what they said to young people as driving instructors diluted the effectiveness of any safety message being communicated.

Young people spoke of exposure to positive driving behaviour; however, data revealed the profound impact of observing negative behaviour. Even parents who are seen as 'good' drivers

had concerning habits: a father who was described as "a good driver" was also termed a "casual, street-wise driver" who was "not attentive"; a mother was described as "good with speed limits, except if she is in a hurry."

This brings into question the common understanding of what is good or safe driving behaviour, and what benchmarks young people used to make their judgements. Good or safe driving extends beyond simply observing road rules. Young drivers' responses in this study clearly identified the role of attitude in the development of safe driving behaviour and the role of parents in developing that attitude long before a young driver took control of a vehicle.

Parents as driving teachers

Teaching was the second area in which parents' influence and behaviour modelling significantly affected young drivers. Young people appreciated patience, knowledge and compliance with road rules. However, they were challenged by their parents' approaches to teaching: parental behaviour and knowledge might oppose the current road rule book; parents might be ignorant of these contradictions; or, if aware, parents might concentrate on developing positive behaviour in the learner driver while continuing their own contradictory behaviour.

Young drivers admitted this often resulted in conflict. Many parents in this study took little notice of comments about their driving and were unwilling to engage in discussion. Those aware of the gap between their modelling and their instructions might have attempted some communication, but there was no commitment to changing the underlying problem – their driving behaviour.

It must be said that many young drivers participating in the focus groups commended their parents as positive driving role models and good teachers. For their part, parents' awareness of the importance of their role was often accompanied by low confidence in their effectiveness as teachers, as is revealed by the following exchange between two mothers:

Parent 1: "It's hard on parents… what training do parents have to be able to teach the child? We all just fumble through it because it has to be done, but whether you're nervous or a yeller or whatever, the child has to put up with whomever they have to take them. It's the only way that they will get through the hours to get [their licence]."

Parent 2: "And if you're a crummy driver, you've got X hours of crummy driving to get through."

Many parents admitted to teaching subjectively, strongly influenced by how they drove or how they were taught decades ago under different regulations and road conditions. They recognised information currency as a particular issue and felt unsupported in their role. Despite this, few parents had accessed NSW Roads and Traffic Authority (RTA) resources designed to update parental knowledge and improve their teaching techniques; many were unaware that the resources were available, and of those who were aware, only a small proportion had viewed the material

The communication gap

Young drivers appeared fearful, at least initially, about being behind the wheel without the reassurance of a supervising driver. Learners described the prospect of solo driving as "weird" while provisional licensees confessed to feeling nervous. Others admitted their inability or unwillingness to accept advice: "I don't want [my mother's] advice, but I still need it." This comment exemplified the communication dissonance, the discrepancy or gap between what young drivers said to their parents and what they elsewhere admitted to really needing in terms of parental communication. Dissonance increased parents' difficulty when trying to determine the level and type of involvement in their son's or daughter's driving.

Parental communication about safety appeared to take one of two forms: indirect or general communication, such as frequent reminders to "drive safely"; and direct communication, often in the form of counselling about risk behaviour or a conversation about an accident seen in the media. Regardless of the nature of their communication, parents were frustrated that their message was ineffective or young drivers were not receptive, particularly once young drivers became licensed. Some did not begin discussions because of the reception their comments received, while others were challenged by the difficulty of reprimanding their children's poor driving when they were legally young adults and often owned their own car.

Young people revealed that neither a direct nor indirect communication approach appeared to profoundly affect their driving decisions, attitudes and behaviour. The common link throughout the focus groups was that largely they did not listen nor pay attention to parental reminders about safety, although the following comment from a female learner driver shows that delivery, as well as message content, perhaps contributes to this: "If mum just sat me down and said it calmly instead of screaming at me, I would probably take it in more."

The driver's licence as a teenage milestone

During data analysis, distinct differences emerged regarding the significance parents and young drivers attached to obtaining a licence and the act of driving. Parents referred to driving as a "necessity" that served a purpose and allowed other important activities to occur; young people perceived it as less about function, and more about social and enjoyment factors.

To young people a driver's licence represented entrée into a new world of independence, which from their descriptions was somewhat transformational: "At first I just wanted to drive, to keep driving. I had to drive two minutes home from work – that was the first time I drove – but I didn't want to stop because I was in the car by myself and I just felt so free and different." Novice drivers commented how they focussed on reaching this goal, which represented a milestone of independence, rather than developing driving skills.

Once licensed, many young drivers described themselves as confident, even over-confident, which their parents identified as a major risk factor. Young drivers' comments showed that confidence was not matched by competence or, often, the necessary driving attitudes, as shown by this observation from a male novice driver: "We would always notice my friends who had just got their licence. We would go in the car with them but we'd be scared because they wouldn't be a safe driver. You can tell new drivers – they drive a bit fast, they don't pay attention." A contributing factor to low competence could be the focus of young drivers, parents and, according to young people, driving instructors on successfully passing a driving test and obtaining a licence, rather than including the importance of driving safely once licensed.

Discussion

The themes identified from the data in this study highlight shortcomings in current practices to prepare young people to be safe drivers. The data revealed several issues that arise when parents combine the roles of driving instructor, role model and road safety communicator. Participants' responses indicated they perceived a failure in driver training approaches, which emphasise development of skill over attitude. These findings suggest a gap in current approaches to driver training for learners and their parents, a 'gap' that, as we discuss in the following sections, the development of social marketing-based road safety interventions targeting young novice drivers and their parents could help to address.

The findings of this study provide insights into why some existing interventions may have only limited success in curbing the rate of death and injury among young novice drivers and, in particular, why upstream social marketing interventions - that is, legislative and regulatory changes - have not been more successful. For example, the impact of such upstream interventions as the lowering of novice driver speed limits and increasing training hours through GLS models may be limited due to their focus on road skills/vehicle management techniques as opposed to driver attitude formation.

As stated previously, the literature suggests that crashes result from what people choose to do, rather than from what they are or are not able to do in terms of vehicle management skills and knowledge [11-13]. In other words, the attitude of the road user appears to be a critical factor in many road crashes. The link between attitude and behaviour is well documented in various psychological theories of persuasion and behaviour development such as the Theory of Planned Behaviour and Reasoned Action [41]. The Theory of Reasoned Action [15] demonstrates how behavioural intention, and ultimately behaviour, is shaped by knowledge, attitude to the behaviour and perceptions of social norms.

Experience gained from social marketing interventions in the area of adolescent safe sex behaviour and AIDS prevention demonstrate the potential of campaigns that focus on attitude change [42]. For example, Marchard and Filatrault [43], in a Canadian study examining AIDS prevention, identified the

importance of positive attitude formation as a moderating factor in determining safe sex practice and condom use among young adults. The experience gained from these campaigns suggests that developing social marketing interventions that emphasise the importance and role of attitude, specifically attitudes to safe driving, through a focus on parental modelling and teaching may be a direction road safety campaigners could consider.

In terms of downstream social marketing, or individually focussed behaviour-change interventions, the study's findings suggest that social advertising-based TV ads attempting to change attitude and behaviour often overlook the reality that parents are frequently the source of that behaviour. In other words, the results of this study highlight the significance of one key reference group – parents – and how their behaviour influences the attitudes, values and belief structures of young novice drivers.

In this study, four elements emerged as significant in understanding and informing effective parental supervision of young learner and novice drivers: the driving behaviour that parents model, their skill as driving instructors, the young driver communication gap and the milestone that a driver's licence represents. These results could help in devising more effective downstream social marketing interventions targeted at individual behaviour, a distinguishing characteristic of such interventions [44].

A focus on individual behaviour change could help address parental attitudes to their negative driving behaviour both in the years before teaching and during the teaching phase. Young drivers consistently commented on the perceived double standard of watching parents driving to their own set of rules and then teaching another. Parents were disinclined to discuss or permanently improve their behaviour or, if aware, made positive change largely only when the novice was in the car with them.

Interventions aimed at changing parental driving behaviour would need to focus on long-range behaviour change. It may be too late to affect the behaviour of parents when teaching novice drivers, as these same novices have been exposed to more than 16 years of observing parental driving. Perhaps a more effective strategy would be to target parents of much younger children, aiming to educate and raise awareness that their children are watching their driving behaviour from a very young age.

Interventions addressing parental driving behaviour would focus on the behaviour variables of self-standards and social norms. Using Fishbein, Triandis, Kanfer, Becker, Middlestadt and Eichleet's [45] classification of determinants of behaviour, a parent may modify their behaviour and model safe driving if they perceive strong social pressure to drive 'well', or safely, for the sake of their children and if this safe behaviour is consistent with their self image and status as a role model for their children.

Similarly, theories of learning such as Social Cognitive Theory [46] support such an approach. These theories suggest a young driver's knowledge, attitude and behaviour can be directly traced to their observation of significant others (e.g., parents) within the context of their social interactions and experiences. Creating social marketing interventions that highlight to parents of young children how the observation of their driving over 16 years can influence the future driving behaviour of their children may be of value in structuring the driving behaviour of young novice drivers.

Related to the preceding discussion, this study also found that young drivers often lacked confidence in their parents as supervising drivers and, more profoundly, that parents lacked confidence and skill in this role. While most parents recognised their responsibilities, there were a number of challenges: negative behaviour modelling, outdated knowledge, and poor driving and communication skills.

Parents involved in this study required more support to effectively teach young people to drive safely. As they are responsible for the overwhelming majority of that teaching, largely for reasons of cost and practicality, it would appear to be an effective placement of governmental resources. In NSW, for example, the RTA currently offers measures, including workshops and information, for supervising drivers (http://www.rta.nsw.gov.au/licensing). This research reveals, however, that parents were not accessing these resources and/or the resources did not satisfy their needs.

A downstream social marketing intervention to support the teaching role could enhance parents' skills and self-efficacy – their perception of capability to perform the behaviour – as positive and effective driving supervisors. Justification for such an approach can be found in the driver education literature, which suggests that programs aimed at only improving young drivers' knowledge and skills in handling a vehicle do not necessarily result in a safer driver [11 - 13]. These results suggest social marketing interventions aimed at improving parental ability to act as effective role models and teachers of driving skills, knowledge – and attitudes – may also improve the driving effectiveness of young novice drivers.

Communication is another area in which a social marketing intervention could lead to positive behaviour change. Young drivers in this study did not heed parental safety messages. For their part, parents did not feel confident when communicating with the young drivers in their family about these issues, nor were these messages delivered particularly effectively.

Social marketing interventions to develop parental teaching capabilities could support parents in their role as their family's road safety communicator and could also address the behavioural variables of skill and self-efficacy. Social marketing-based campaigns that focus on adolescent behaviours have already been employed effectively in the areas of smoking and alcohol consumption and could be a 'viable companion to control and education approaches to behaviour change to promote teen driving safety' [47, p. 38].

As indicated by the results of this study, a further social

marketing intervention could focus on the driver's licence as a major social milestone for young people. Participants indicated that gaining their licence had a strong impact on their behaviour: the desire to assert independence and experience driving freedom was often coupled with risky behaviour such as speeding. Re-shaping the meaning of this milestone, while maintaining its importance, could result in safer, and therefore life saving, behaviour.

To achieve this, a downstream social marketing campaign could shift the focus from freedom, independence and maturity, as expressed by risky driving choices, to one where independence and maturity are signified by responsible attitudes and behaviours. A campaign of this nature hinges on the development of 'self' in relation to community and could impact on a range of behavioural variables (e.g., self-standards and perceptions of social norms, anticipated outcomes (or attitude), self-standards and emotion) in order to positively influence a young driver's behavioural intentions, that is, to drive safely.

There is a significant body of literature in the field of psychology that examines the concept of 'self' and underpins such a social marketing approach. This body of literature highlights how life milestones such as gaining a driver's licence can be significant in shaping a young person's concept of who they are and, more importantly, how they act in different circumstances including while on the road as drivers [48].

Conclusion

The aim of this study was to increase understanding of parental influence and communication in order to develop social marketing-based interventions to improve young driver safety. Although not attempting to generalise from this study, the consistency of participant responses indicates that parental driving behaviour coupled with their level of skill as supervising drivers could be a contributing factor to effective – or ineffective – teaching and safety communication at a time when young people wanted to increase their independence.

These findings and the social marketing strategies suggested present opportunities for further, long-term study. Further research is also suggested to investigate the meaning of driving and the significance of the social milestone that is represented by obtaining a driver's licence.

This study was not without its limitations, principally in terms of focus group composition and location. The research design attempted to ensure data collection from a cross-section of the population. However, more participation from young people and, in particular, parents from different social and driving backgrounds would have been useful. This would have allowed the comparison of findings across community groups to determine any differences in how young people were taught and what parental driving behaviours were observed prior to gaining a learner's permit. This process would also have

identified if different groups had specific requirements that could be addressed through alternative social marketing interventions. In addition, focus groups were conducted in one regional area in Australia, limiting the study geographically.

In conclusion, this study provides a step toward addressing the gap in understanding the role and influence of parents in developing safe driving practices amongst young novice drivers. The study's findings revealed shortcomings in the manner in which young people were prepared for the task of being a safe driver. Social marketing has proved to be an effective intervention method in changing individual behaviour in a number of fields, including health and the environment [49], and in particular in adolescent behaviour change [19, 20, 43]. This justifies consideration of the application of social marketing-based campaigns and interventions to the issues raised in this study.

The study highlighted issues around parents' roles and provides direction for possible downstream social marketing-based interventions to address this. To lower the rate of death and injury amongst young novice drivers around the globe, governments and road safety administrators are encouraged to consider the findings of this study in the context of existing upstream and downstream social marketing practices.

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