Incorporating Safe System in learner driver handbooks

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Abstract

Safe System has been adopted as the guiding principle by all State and Territory road authorities in Australia. The essential goal is to provide a road system in which the road users will never be subject to impact forces in a collision from which they may never recover completely. No road authority has yet communicated the Safe System principles directly to road users. This project tested the viability of introducing Safe System concepts to young drivers in the ACT Road Rules Handbook. Messages related to the Safe System concept were developed. Topics were guided by a comparison of the Safe System principles with safety messages that already existed in the Handbook and the judgments of an expert panel. Message content was informed by an established theory of persuasion and knowledge of motivational factors behind risky driving behaviours. The messages were tested on two focus groups (learner and provisional licence holders aged 16 to 20 years). The Safe System concept was well-received by focus group participants who liked its simplicity and appreciated that their role and responsibilities were immediately clear. Designing Safe System messages for drivers is viable. The concept is worth developing further.

Keywords

Safe System, young driver, novice driver, driver education, risk taking behaviour, motivation

Introduction

This project tested the viability of introducing Safe System concepts to drivers at an early stage in the learning process. Governments set rules for road users to ensure they interact safely with one another. They invest in education and enforcement programs to encourage compliance with road rules. This aligns with the National Road Safety Action Plan 2009 and 2010 [1]. For their part, road users are expected to:

• be aware of, and comply with, the road rules set down by government to protect them
• manage issues that affect their driving that cannot be effectively designed or legislated for, for example fatigue management
• maintain their vehicle to ensure it is safe to drive, for example keeping brakes in good working order.

The expectation is that if the road user does their part then the Safe System principles should ensure that when a crash occurs they neither sustain serious injury themselves, nor cause serious injury to other road users.

In an ideal road system where the principles of the Safe System philosophy are fully realised, the potential for serious harm to road users would be designed out of the system. However, the current reality is that most governments do not have sufficient funds to provide infrastructure that complies fully with Safe System requirements, and vehicle manufacturers are unlikely to be able to provide a full range of vehicles which comply with the Safe System principles at affordable prices.

Therefore, the Safe System relies, to a greater or lesser extent, on an implicit social contract between road users and the road authorities. It is generally accepted by government and practitioners that it helps if road users know what they can do to improve their safety, understand how important their involvement is, and feel like they are an active part of the road safety solution.
No licensing authority has yet attempted to communicate the principles of Safe System directly to drivers. The ACT Government is planning to rejuvenate the Road Ready program and a revamped road rules handbook would complement this development. By introducing the concept in an easy to understand manner in the ACT Road Rules Handbook [2], driver understanding of their role in road safety should be improved. It is hoped that an attitude of partnership and collaboration with authorities can be achieved, and that drivers can become more inclined to adopt safer driving practices. The benefits might include priming road users for attitude and behaviour change. This project was funded by the NRMA-ACT Road Safety Trust.

The project involved the following steps (which are outlined in detail in the method section of this paper):

1. an initial review of the ACT Road Rules Handbook to identify areas where the Safe System message could be overlaid
2. production of proposed new content based on the Safe System philosophy and grounded in established theory of persuasion
3. an expert panel review of proposed new content
4. two focus groups providing young driver opinions and ideas about the style and content of the messages.

The proposed messages documented in this report have had the benefit of both the expert panel review and testing in focus groups.

Conceptual framework for incorporating Safe System in the ACT Road Rules Handbook

The conceptual framework that informed the development of messages about the Safe System in this project was the Elaboration Likelihood Model (ELM) of persuasion [3,4]. Knowledge, whilst necessary, is not sufficient to effect changes in attitude and behaviour. Therefore, more value may be elicited by embedding information about the Safe System in the handbook if it is done in a manner that will help overcome the pressures on drivers to perform illegal and/or unsafe behaviours while in charge of a motor vehicle.

ELM is a well-established and evidence driven theory of persuasion and it is posited that messages developed based on such a theory are more likely to result in positive outcomes. According to the ELM of persuasion, there are two ‘routes’ to attitude change – central and peripheral.

Central route

The central route involves reaching decisions via conscious processing of all information presented in an argument. To persuade an audience using this route, the argument must be logical and compelling. The audience must also have the ability and be motivated to engage in conscious processing of the message. Using the example of learning to drive, some learners will be highly motivated to learn the road rules presented in the ACT Road Rules Handbook because they believe they need to master the content of the Handbook to pass their learner licence test and it is very important to them that they get their licence. Some learners may simply feel it is intrinsically important to know all of the road rules. ELM theory posits that these learners will make a significant effort to read and understand the information contained in the Handbook, and if they judge the content to be logical then they will act in accordance with the information they have processed. Some readers who may be motivated to learn the rules and process the information may not have the cognitive capacity or the concentration span to read and process all of the information. Therefore, these learners may tend towards more peripheral route processes.

Peripheral route

The peripheral route involves surface level reactions to the appearance of the message. For example, a learner who is not motivated and/or able to process all of the information in the Handbook may be more inclined to look at the pictures and/or rely on what they already know from their experience of being a passenger to
attempt their learner licence test. Attitude change following the peripheral route is more likely to occur if the message communicator attracts attention to the message and is likable; if the message receiver thinks their peers approve of the message; and if, on the surface, the message is credible. Persuasion under the peripheral route is usually short term unless it is regularly reinforced.

The central route needs to be elicited from readers of the handbook, because this results in long-term attitude change. For central route processing to be achieved, readers have to be compelled to really think about the message they have been presented in terms of consistency with their existing values and behaviours. They are more likely to feel compelled to do this if the message is personally relevant.

For those for whom reading a road rule handbook is simply a path to passing a test, the peripheral route can be used to attract the attention of the reader and draw them into central route thought processes.

Therefore, the Safe System message would benefit from being delivered in the following way:

1. **Likeability**: The message should be visually pleasant to look at and attract the reader’s attention.
2. **Peer approval**: The message should appear to be delivered by somebody who could be the peer of the target audience. A young man and a young woman would be ideal to give both genders someone with whom they can relate, or a role model for young people such as a sporting or music idol. Unfortunately, this would necessitate regular updates.
3. **Credibility**: The message should be supported by easy to understand, demonstrable facts from an authoritative source.
4. **Personal relevance**: In order to motivate individuals to think about the message, it should highlight how it is relevant to the individual.
5. **Strategies to resist peer pressure**: The peer pressure that young drivers will experience once they begin to drive will challenge their commitment to safe driving. They need to be given ideas and encouraged to formulate their own realistic strategies to resist peer pressure and retain ‘peer approval’ whilst still driving safely.

In the development of the messages, the core features such as credibility and personal relevance were concentrated on, as these are the features most important to central route processing. Visual appeal and peer approval aspects are more relevant at the stage of preparing the materials to be used with young drivers, and will need to be developed further at that point to achieve maximum impact.

**Method**

*Review of the ACT Road Rules Handbook*

This involved reading the Handbook to determine what information relevant to the Safe System it already contained and how the information was communicated. A list of issues related to the Safe System were developed and a matrix was filled out to indicate whether the issue was addressed and whether its relationship to the Safe System was communicated to the reader (Appendix A).

*Development of messages*

The selection of topics for development of messages was informed by the analysis of the content of the Handbook against the Safe System principles. The Elaboration Likelihood Model, as described above, informed the message delivery.
Review of the messages by the expert panel

The role of the panel was to provide informed opinions on the initially proposed messages, and make suggestions for improvements. Members of the panel were recognised experts in the broad field of road safety and in young driver research who had experience in the redevelopment of driver handbooks and licensing systems. The messages were revised to incorporate the comments of the panel before being exposed to scrutiny by two focus groups.

Review of the messages by the focus groups

The purpose of the focus groups was to test the acceptability and credibility of the messages to the main target group, learner and newly-licensed drivers. Newspaper advertisements and flyers at educational institutions in Canberra were used to generate participants.

The expert panel recommended that participants be restricted to younger than 25 years of age as this is the primary target audience of the Handbook. Due to the distribution of ages of respondents to the advertising, the 12 participants ranged in age between 16 and 20 years.

Materials presented to participants were a booklet of messages. The general procedure was to read out the message text to participants and then ask one or more of the following questions: (1) ‘How relevant do you think that message is?’; (2) ‘How realistic or credible is that message?’; and (3) ‘What strategies do you think would be effective to avoid that risky behaviour / promote safe behaviour?’ The purposes of the questions were to establish whether the message was perceived as relevant, whether it was credible and what, if any, strategies the young drivers had to combat risky behaviours. Where necessary, participants’ responses were probed for clarification or more prompts were given to generate conversation.

Outcome of expert panel meeting

Suggestions from the expert panel were used to improve the way the concept of the Safe System is recommended to be communicated in the Handbook. The context-specific outcomes of the panel discussion were used to finetune the messages before they were presented to focus group participants. The panel agreed that incorporating the Safe System philosophy into the handbook would fulfil the following objectives:

- ‘informing road users about the concept of Safe System and then encouraging them to implement’
- ‘giving road users …a different way of approaching the driving task; what their responsibilities are… how they fit into the system…’

It was recommended that considering the common motivational factors for high risk behaviours might be an effective way to personalise the message for the reader. There has been some considerable research in the area. Some motivational factors for high-risk behaviours among young drivers are discussed in further detail below.

Speeding

Speeding by drivers is an immense challenge for the Safe System and it is one of the most difficult driver behaviours to combat. It is also one of the most common risky driving behaviours among young drivers [5]. ‘Keeping up with the traffic flow’ or feeling pressured by other drivers to drive faster is a powerful motivator for many young drivers, and passing and overtaking vehicles is a powerful motivator for some. Many believe they can judge when it is ‘safe to speed’, and that speeding is more prevalent than it really is [6,7]. Further, because they believe it is prevalent, they also infer that it is socially acceptable.
Fear of getting caught by police and of crashing is a concern for young drivers that can influence their decision not to speed depending on how likely they think they are to crash or be caught [8]. However, drivers are not always aware of their speeding [6].

**Drink driving**

Fear of getting caught is also a major factor in drink driving. However, attitudes, beliefs about one’s ability to control a vehicle after drinking and subjective norms are also very good predictors of whether a person will engage in drink driving behaviour [9].

Thus, the social shift towards disapproval of unsafe driving behaviours may have had more of an effect on drink driving than speeding because:

1. Drinking is usually a much more ‘social’ activity than speeding, allowing social norms to exert a much stronger influence.
2. Upcoming generations of drivers with no experience of drink driving have had no experience to counter the road safety messages they have been exposed to for most of their lives.

**Fatigue**

Driving while fatigued is relatively common among young drivers [5]. Many drivers do not realise that they are fatigued, and many would not stop driving if they did, as they may have time pressures or fear being judged as ‘weak’ for not being able to just continue to their destination [10]. They experience tangible rewards if they do get to their destination and potentially negative consequences if they stop (e.g. being late, losing money, and/or feeling unsuccessful). At best, they will feel that they have done the right thing if they stop, and for some people this is a weak motivator.

**Distraction**

Younger drivers are much more likely to engage in distracting tasks than older drivers. They tend to believe that they are better at using technology than older generations and may even take pride in their ability to ‘multi-task’ [11].

**Seatbelts**

A message regarding seatbelts was not presented to focus group participants because the opinion of the expert panel was that, at present, there is a very good culture of seatbelt wearing in Australia. It is recognised that a disproportionately high percentage of vehicle occupants killed in crashes in Australia were not wearing their seatbelt. However, because wearing rates among the general population are very high [12,13] a strategy specifically targeting segments of the community who have low seatbelt wearing rates is likely to be more effective than using the Handbook, which is designed for a broad audience. Adding material that is not personally relevant to the majority of readers would increase the length of the Handbook, which is already perceived by some as being too long. This increases the likelihood that some learners will not make the effort to read the Handbook.

Although a message was not developed for seatbelts, this does not constitute a recommendation to remove the educational material on seatbelts that is already contained in the Handbook. Rather, the material on seatbelt use that is already in the Handbook may benefit from slight rewording to clarify the place of wearing a seatbelt in the Safe System. For example, the relationship between wearing a seatbelt and the effectiveness of airbags could be briefly highlighted. Seatbelts are a crucial part of the Safe System, but more benefit is to be

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1 This opinion was expressed both by members of the expert panel who had recent exposure to learner drivers in the course of their research and focus group participants.
gained in the Handbook (which targets the general population of pre-learner and learner drivers) by giving more attention to more widespread problem behaviours.

**Results of focus groups and discussion**

The concept of Safe System was generally well received by focus group participants. Participants liked the simplicity of the concept and the fact that their role and responsibilities became obvious very quickly. From looking at the diagram alone (Figure 1, Appendix B), most participants understood there are three elements that contribute to road safety: road user, vehicle and environment. Some also indicated that the elements were ‘intertwined’ or ‘worked together’. They thought that the diagram gave enough information to people who would not read the text, whilst the text added depth to the diagram. They tended to believe that the driver was the most important factor in the Safe System, and whilst this is not strictly true to the ideal of the Safe System, it is probably good that drivers perceive their role as an active participant in road safety. It was generally understood that following rules, being alert and making safe driving decisions were important contributions that drivers were able to make to the Safe System.

Participants in the focus groups generally accepted the Safe System messages:

- **Safe speeds** (Figure 2, Appendix B): The information on speeds and consequences in different circumstances was considered realistic even though the speeds were not considered to ‘feel’ that fast. Participants were particularly receptive to the speed message that included children, partly because of the emotional appeal (it is socially unacceptable to harm children) and partly because it highlighted an irrefutable fact, that they could not control what others do on the road, particularly children.

- **Safe Vehicles** (Figure 3, Appendix B): The message about safe vehicles was perceived as logical and some found the provision of the website location: www.howsafeisyourcar.com.au to be useful information that they would remember when buying a car.

- **Sober driving**: The importance of not drink-driving was so well-accepted that it became apparent that an additional message about drink driving is probably not necessary at present. No final message for drink driving was produced for this and other reasons. The Handbook is studied before attainment of the learner licence and therefore, up to two years before solo driving becomes legal. Attitudes towards drugs and alcohol are influenced by social circumstances and these circumstances can change dramatically between obtaining a learner licence and gaining a full licence. Further, it is when young people are in a position to drive unsupervised that they will need salient strategies to maintain both their social status and commitment to safe driving in the face of peer pressure to do otherwise. Note that this is not a recommendation to remove the educational material on drugs and alcohol that is already contained in the Handbook.

- **Alertness** (Figure 4, Appendix B): Participants felt that fatigue was a very relevant issue for their age group, and that pre-planning was the only real solution. They felt that most of the listed symptoms were realistic. Pre-planning was also the favoured strategy for avoiding drink-driving.

However, there were reservations about some aspects of the messages.

- **Safe System concept**: Participants did not like the wording ‘nobody injured so badly they can’t recover’ because they felt this implied that everybody was ‘unavoidably going to be injured’. They felt that the words ‘serious injury’ did not communicate the seriousness of the outcome, preferring something like ‘life-affecting’ or ‘life-changing’. ‘Life-changing’ was adopted in the final diagram, but further work could be done to develop this. Some participants found the multi-directional nature of the diagram confusing because they did not know where to read first. These participants preferred the text.

- **Safe speeds**: It was generally felt that there was too much text in the speed messages and that some things did not need to be said. The messages included to attract attention in the speed messages, (‘dropping off a 3 storey building is equivalent to crashing at 50 km/h...’) received mixed opinions,
ranging from a feeling that it really illustrated the point to outright dismissal because ‘no-one would do it’.

**Safe vehicles:** Some participants thought that people in their age group would not take any notice of the safety ratings of cars in their purchasing decisions. As they had so little money, they would buy whatever they could afford. If they had more money then they would get the nicest looking vehicle they (or their parents) could afford. They also criticised the credibility of the ‘rules of thumb’ statements because they over-simplified matters and were potentially misleading. For example, the message could be taken to imply that larger vehicles were ‘better’ when in fact they only generally protect occupants better but can be more dangerous for vulnerable road users, produce more emissions and be more expensive to run.

**Sober driving:** The issue of drink-driving was not believed to be very relevant as drink driving was considered socially taboo. The social unacceptability of drink driving was so well ingrained that being a designated driver was considered an effective way to evade social pressure to drink. However, the issue of drug-driving was not well-understood and there was a sense that it was more socially acceptable (among some social groups) to take drugs and drive than it was to drink and drive. Some possible reasons for this are a lack of awareness of the problem; a perception that drug driving is not as easily detected by police as drink driving; and the reality that taking drugs is more strongly associated with a general tendency towards risk-taking behaviour. There was a sense that a more holistic health and social welfare approach to the issue of drugs and alcohol in the community was warranted.

**Alertness:** Participants were sceptical about the effectiveness and/or practicality of powernaps. Further, for learners, the dot-point about speed creeping up and down was considered unhelpful for helping identify fatigue as maintaining a constant speed is a skill that is still being learned. Other dot-points such as poor gear changes and wandering over lane lines could also be criticised on this basis, but they are good indicators once these skills have been learned as they show significant lapses in concentration. There was also concern expressed about the effects of fatigue for designated drivers.

The proposed messages in Appendix B incorporate this feedback.

Although a specific message for distraction was not presented to participants, participants were asked what they thought about when they heard the term ‘driver distraction’. Participants’ suggestions included a wide range of potential distractions, including: talking and text messaging on the mobile phone; tuning the radio; listening to music; talking to friends inside and outside the car; and environmental intrusions such as roadworks and road signs. When asked specifically about their mobile phone use when driving, the following factors were important: the personal importance placed on the call, the complexity of the driving task (i.e. at least one participant believed it ‘didn’t count’ if you sent text messages whilst waiting at traffic lights) and whether they thought it was likely that police would apprehend them.

In general, participants appreciated simplicity and brevity. This is important, as there was a strong feeling among many participants that the Handbook was already too long and it was easy to pass the learner licence test without reading the Handbook. Participants welcomed messages that provided a realistic depiction of the problem and took a problem solving approach, highlighting what they personally could do about it, not just lecturing them like a parent or teacher about what not to do. They were highly critical of messages that appeared to insult their intelligence whilst commending messages that were supported with a few brief, demonstrable facts which told them something new (generally no more than three bullet points at a time). It is worth noting that participants were also critical of messages that, on the surface, appeared to be outdated purely because of the clothes or hairstyles worn by the characters delivering the message.

The ‘problem solving’ approach in the discussion was particularly successful in engaging participants. Participants appeared to enjoy the opportunity to critique and offer suggestions for improvements to the road safety messages. They particularly enjoyed offering their opinions about road safety problems, and offering strategies and solutions. This would seem to be a fruitful communication technique.
In both the speed and vehicle messages it was considered that some realistic pictures of what happens to vehicles at different impact speeds may make a more powerful impact. This suggestion requires testing before it is implemented. The same applies to any of the other messages considered for implementation. More work to design suitable graphics and finetune the presentation of the messages would be required, in conjunction with testing, to ensure maximum impact.

Conclusion

It is concluded that Safe System is a useful concept for quickly introducing safety considerations to young drivers. Designing Safe System messages for learner drivers is viable. They are well-received by the target audience and are worth developing further.

References


Appendix A

Table 1: Summary of safety content of *ACT Road Rules Handbook*

<table>
<thead>
<tr>
<th>Aspects of Safe System relevant to road user behaviour</th>
<th>Factual information included in handbook?</th>
<th>Communicated relationship to the Safe System?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle choice</td>
<td>No</td>
<td>–</td>
</tr>
<tr>
<td>Vehicle maintenance</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Fatigue</td>
<td>No</td>
<td>–</td>
</tr>
<tr>
<td>Drugs and alcohol</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Seat belt wearing</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Safe speeds</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Distraction (inc. passengers, eating, mobile telephones and other in-car ITS)</td>
<td>Mobile phone only</td>
<td>No</td>
</tr>
</tbody>
</table>
Every road trauma affects somebody personally. The ACT Government wants to reduce the pain and suffering on our roads. We want to make the road system a Safe System through safer vehicles, safer roads and safer drivers. ACT roads are some of the best designed in Australia and vehicle manufacturers are doing their best to improve vehicle safety. We know drivers occasionally make mistakes and we are making these improvements so that drivers don’t pay for mistakes with their lives. However, drivers need to work with the system to experience the safety benefits. The road rules were written to help drivers avoid crashing and to reduce the likelihood of death or life-changing injury in a crash.

Figure 1: The Safe System —diagrammatic and textual representation
Safe speeds

To be included in sections discussing speed limits and braking distances. May benefit from pictures of the different types of crashes at different speeds, although this idea would need to be tested.

### What is a survivable speed?

Speed is the most important factor that you can control in the severity of a crash, even if you are not the driver ‘at fault’. It might not feel like you are going very fast, but:

- If you have a side-impact crash with a solid tree, pole or other vehicle at more than 50 km/h, you or your passengers are extremely likely to be seriously injured or killed.
- If you have a head-on crash with another vehicle at 70 km/h or more you are almost certain to be seriously injured or killed.

Pedestrians and cyclists don’t have the protection of a vehicle to cushion them in a crash. They rely on you to drive carefully around them. In a Safe System, high-pedestrian use areas have a low speed limit. This is because:

- If a pedestrian or cyclist is hit at over 30 km/h they will be seriously injured and may die.

**Be very careful around children.**

- They don’t understand the road rules.
- They aren’t very good at choosing a safe time to cross the road.
- They can be impulsive.
- You might be in control of your vehicle, but you can’t control what they do. The best you can do is reduce your speed and be very alert, particularly in school zones, at crossings and around parked cars.

*Figure 2: Speed and crash outcomes*
Safe vehicles

Suggested for inclusion in the ‘Preparing to Drive’ section of Part D – Road Craft of the current ACT Road Rules Handbook.

In a Safe System, vehicles are designed to protect the people in them as well as other road users like pedestrians and cyclists in an accident.

The NRMA provides easy reference tables for comparing the safety of used cars on their website:


You can find new and used car safety ratings on this website:


Choose the safest car you can afford and keep it well maintained!

Figure 3: Choosing a safe vehicle – diagram and text
Alert and focused drivers

To be included in Part B – First Steps to safe driving.

Even after a full nights sleep, people can still be tired

Driving when tired is a silent killer on our roads, both on long and short trips.

People who are often at risk of driving tired include:
- people who work long hours
- shift workers
- people with a heavy study load
- people with busy lifestyles who enjoy staying out very late
- people who don’t sleep well (e.g., new parents or people with sleep apnoea)
- people who drive long distances (e.g., on holidays or when working).

The signs of being tired or fatigued are:
- yawning
- eyes feeling sore or heavy
- vision starting to blur
- starting to ‘see things’
- daydreaming and not concentrating
- becoming impatient
- feeling hungry or thirsty
- reactions seeming slow
- feeling stiff or cramped
- driving speed creeping up or down or can’t keep a constant speed
- starting to make poor gear changes
- wandering over lane lines.

Some of the ‘signs’ above are very dangerous and you should stop before you are unable to avoid wandering over lane lines or seeing things. The only cure is a good night’s sleep, preferably before the journey! If you can’t do that, a coffee followed immediately by a 10 or 15 minute powernap will help for about two hours but then you must sleep.

Being part of the Safe System means only driving when you are in full control of your vehicle. Sometimes it is not easy to choose not to drive. You might not have a passenger to take over, your passenger may be just as tired, it might not feel like a safe place to stop, you might have important commitments to meet. In short, you may feel like you have no choice but to drive.

The best thing you can do is allow time in your schedule for a good night’s sleep and plenty of rest breaks on long drives. If you find that you have developed a pattern of driving while fatigued, think about how you could improve your routine or whether you have alternative ways of travelling to where you are going.

Figure 4: Preventing driving while tired – text