

WHAT DOESN'T WORK FOR YOUNG ROAD USERS AND WHY

INTRODUCTION

Outlined below is a summary of the research evidence around a range of approaches that are **not effective** in changing the behaviour of young road users.

FEAR TACTICS

Fear appeals are typically used to vividly show the negative health consequences of dangerous behaviours so people will be motivated to moderate their current risky behaviour and adopt safer alternative behaviours. They can be in the form of advertisements, messages, images, testimonials, discussions or experiences (Witte, 1992).

What does the evidence show?

- › A large body of research has found that in general fear appeals do not lead to positive behaviour change (De Hoog, Stroebe & De Wit, 2005) (Lewis, Watson & Tay, 2007) (Ruiter, Abraham & Kok, 2001).
- › Research has found that some people accept the fear appeal message, whereas others reject it (Ruiter, Abraham & Kok, 2001) (Witte & Allen, 2000). Those who are more likely to accept the message are not usually the ones engaging in the high risk behaviour.
- › Some research has found that fear appeals in some instances have led to an increase in risky behaviour (Taubman, Florian & Miculincer, 2000).
- › An evaluation of a school programme using testimonials from road crash victims found that the programme did not result in behaviour change (Feenstra, Ruiter & Kok).

- › Many reviews of programmes that take young offenders to prisons have consistently shown that this approach is ineffective, and some evaluations found that those young offenders who participated were more likely to offend than those who did not (Petrosino, Turpin-Petrosino, Buehler, 2004).

Why doesn't it work?

The main difficulty with fear appeals is that they seem to be least effective among those people who most need to change their behaviour. Less risky people who are already motivated to behave safely are more likely to accept the fear appeal message (SWOV, 2011).

In contrast, for some people fear appeals tend to invoke defensive mechanisms like:

- › denial ("that is not true")
- › ridiculing the message ("as if that would happen")
- › neutralising ("it won't happen to me")
- › minimising ("that message is exaggerated")

The finding that fear appeals don't seem effective in changing risky behaviour among young people seems to be consistent across a range of approaches and across both offending and non-offending groups of young people.

ONE-OFF EVENTS OR FORUMS

Some communities invite young people to participate in one-day events or forums. These may involve speakers from emergency services and other related fields, victims of road trauma, and traffic offenders to speak to students about their role and experience of road trauma. Sessions may include mock road crash scenarios.

What does the evidence show?

- › A review of effective measures to reduce injury among young people concluded that lasting behaviour change and ultimately a reduction in injuries experienced by young people is beyond the scope of one-off educational programmes or information sessions and presentations (Elkington, Hunter and Makay, 2000).
- › A review of crime prevention programmes showed one-off events can only ever be beneficial as part of an ongoing and multi-action approach to the problem and they should be delivered by trained professionals (Gottfredson, 1997).
- › An Australian evaluation of a one-day school-based programme designed to improve road safety attitudes and risk perceptions among senior students using presentations from police officers and road trauma victims showed disappointing results. The programme had no effect on risk perception, and students who participated had riskier attitudes to road safety rather than safer attitudes after completing the programme (Glendon et al, 2014).

Why doesn't it work?

Many of these education programmes and information sessions need to be fairly non-interactive given the large numbers of students involved. Non-interactive programmes that primarily emphasise knowledge acquisition or the negative affect of unsafe behaviours are unlikely to result in behaviour change (Flay, 2000).

Interactive programmes that involve a discussion format to explore content have been found to be between two and four times more effective than non-interactive approaches (Tobler & Stratton, 1997). Programmes that increase the ability of students to act in safe ways when presented with opportunities to engage in risky behaviour allow them to develop resilience, refusal and coping skills. This is more effective than providing content or building knowledge in students. The effectiveness of such approaches relies on programme facilitators receiving appropriate and regular training (Buckley, 2012).

Other short-comings of this approach are that:

- › Relying on a range of external experts can be difficult, as it relies on experts having a sound understanding of effective health promotion approaches, and being able to engage and interact with students, which requires specific training (Gottfredson, 1997).
- › Developing and co-ordinating the event and getting students to the event is very resource intensive and limited resources could be used in more effective ways (Raferty & Wundersitz, 2011).

DRIVER SIMULATION

Low-grade simulators are promoted by some organisations as a road safety initiative for young people. Often using one or more computer screens or projections, driving simulators attempt to reproduce some or all of the perceptual experiences of driving a motor vehicle.

Another very low level of simulation used in some programmes involves using alcohol impairment goggles. The broad aim of using these goggles is that young people potentially experience the negative intoxication effects of drinking (blurred vision, loss of balance and coordination) and ultimately change their behaviours as a result. Alcohol impairment goggles only supply visual impairment, whereas the real risk is due to cognitive impairment. People who are significantly impaired by alcohol also lose the ability to assess just how impaired they are (Charlton & Starkey, 2013).

What does the evidence show?

While simulation is a commonly used training tool in aviation, the application of low-level simulation as a training tool for driving has not been shown to be effective (Allen et al, 2007).

- › Research shows that driving simulators cannot faithfully reproduce all the experiences of driving a real motor vehicle on a real road in real traffic (Johanssen & Nordin, 2002), and performance on simulators has not been directly correlated with on-road performance (Straus, 2005).
- › One possible exception to this is the use of simulation to help novice drivers scan for, anticipate and identify hazards (Isla & Starkey 2012) (Chan et al 2010).
- › It has been concluded that in most cases, using real cars on real roads is cheaper, more realistic and more effective in training terms than building and using simulators (Christie, 2008).
- › An evaluation of the use of alcohol impairment goggles as part of a drink-driving programme for US College students found no change in the behaviour of the students who participated in the activity compared with those who did not (Jewell & Hubb, 2005).

The limitation of driving simulators as a training tool for learner drivers is that the learners may develop a set of expectations of the behaviour of other road users based on their experiences in the simulator (SWOV, 2011). Because the real-world driving environment is different to the simulator environment this inconsistency could interfere with the learner's development of safe driving skills (Allen et al, 2007).

However, studies have also found that some simulators that use realistic video scenarios to focus on hazard scanning and identification skills can train novice drivers to adopt more effective visual search patterns and improve their hazard detection performance (Fisher, Pollatsek, Pradhan, 2006) (Pradhan et al, 2009).

Using goggles to simulate the effects of being drunk can have the unintended effect of trivialising the issue, or making being drunk seem like a fun activity. For students with little experience, such lessons may increase interest in alcohol use (Sloboda et al, 2009). Such approaches may also inadvertently imply to young people an expectation that all young people will at some point get drunk and act in an unsafe manner. This can have the unintended effect of normalising the unsafe behaviour (Cahill, 2003).

TRACK-BASED AND ADVANCED DRIVING SKILLS TRAINING

Some programmes encourage young teenagers to participate in go-cart or car-handling training or even car racing in controlled, off-road environments. These programmes may include the provision of information about traffic law, the risks of crashing and sometimes some “emergency handling” exercises. Using track-based training is often championed as a potentially safe and effective way for drivers to gain safety skills. People for whom car-handling skills are vitally important (such as motorsport drivers) often promote such programmes.

For most drivers on public roads, such training is not likely to have any safety benefit. This is because very few crashes on public roads involve car-handling skill as a causative factor (Curry et al, 2011). In contrast, the vast majority of crashes involve some aspect of decision-making, which is in turn influenced by the driver’s attitudes. In reality, if a driver finds himself or herself in a ‘critical’ or ‘emergency’ driving situation, their options for avoiding or lessening the severity of a crash are extremely limited.

It is difficult to construct a track-based training programme that improves driver attitudes and decision-making while avoiding unintended effects such as decreased safety margins and increased driving speeds.

What does the evidence show?

- › Systematic evaluations of driving skill-based programmes have all concluded that the programmes have little or no positive effect on the road safety behaviour of the young people who participate in them (Christie, 2001) (Lonaro, 2008) (Peck, 2011).
- › Some off-road programmes, especially those that include skid control training, have been found to have negative safety effects on those who completed them (Williams et al, 2012). It has been well established that tuition in skid control, in particular, can lead to an increase in crashes for young drivers and should be avoided (Katila, Keskinen, Hatakka, 1996).
- › Track-based training, even when done carefully, is particularly problematic for vulnerable young drivers (Torbjørn, 2008). It can have the unintended consequences of causing over-confidence and increasing risk-taking behaviour.

- › Introducing children or adolescents to off-road high speed, skill based driving via go-kart or car racing clubs is not likely to enhance the safety of the children and may increase their crash risk due to increased optimism bias (Christie, 2001).
- › Even as places for learners to master basic skills, research suggests that the best learning environment for the beginning driver is the real road system under the supervision of an experienced driver or instructor (Christie, 2001).

Why doesn't it work?

These programmes mainly focus on driving skills. While drivers need to master basic car control skills, this occurs relatively quickly. Providing too much emphasis on driving skills does not create better safety outcomes. It can lead to an increase in risky behaviours due to the perception among these young people that they are more skilled (Hatakka et al, 2002).

Young drivers are particularly prone to over-estimating their driving ability and under-estimating the risks of various driving situations.

Young people, particularly males, erroneously equate high levels of vehicle control skill with being a good driver. One likely reason why these approaches are ineffective is that some of the young drivers who complete these programmes feel like they were more skilled drivers than they had been previously. As a result, their confidence and level of risk taking as a driver increases leading to a greater involvement in crashes. This is especially the case for young male drivers (Christie, 2001).

Because the track-based facilities are almost inevitably motorsport venues, there is an association created in some participants between the activities and the motor racing culture. Males seem to be more susceptible to the ‘speeding culture’ of motor racing and this attitudinal impact may influence their later speeding violations (Tranter & Warn, 2008).

OFF-ROAD DRIVING

Off-road driving programmes are likely to be particularly unhelpful for higher risk groups and these groups should not be encouraged or required to attend such programmes.

Other things to consider

Other options that can help are helping young people get practical, on-road, driving experience through a community mentoring programme, or working with young people and their parents to learn effective driving supervision techniques.

INFORMATION ONLY APPROACHES

Information-based programmes primarily present the facts about road safety, and outline the negative consequences of unsafe behaviours, in the hope of changing the behaviour of people who are already unsafe, or prevent young people from becoming unsafe.

These approaches are popular in schools, at a community level and sometimes even in offender programmes.

What does the evidence show?

- › Injury prevention programmes that primarily focus on providing information or knowledge to students about health behaviours have had little success in changing behaviour.
- › Research evaluations of road safety programmes (Christie, 2001) as well as the alcohol and drug education programmes in schools (Gottfredson, 1997) have found the same results.
- › Information or education approaches, when used alone, are not effective in influencing the behaviour of traffic offenders (Masten & Peck, 2004).

Why doesn't it work?

Young people need some information about safe driving and the licensing system. However, just providing information about what is safe and what is dangerous or risky does not address the reasons why young people engage in risky behaviours.

Underlying motivations can influence a young person to engage in risky behaviours. They can be influenced by what is normal in their social group, whether they believe they can change their behaviours and also whether they have the social skills and strategies to resist the appeal of certain risky behaviours (Nirenberg et al, 2013).

One reason why just raising awareness of the risks is unsuccessful is that it appears that many adolescents are already aware of the risks of dangerous driving. Studies have shown adolescents who engaged in higher-risk activities are aware that they were at higher risk but engaged in those behaviours anyway (Reyna & Farley, 2006).

As such, just providing these young people with information about the risks of unsafe behaviours does not prevent them from engaging in these behaviours.

REFERENCES

- Allen, R., Park, G., Cook, M. & Fiorentino, D. (2007) *The Effect of Driving Simulator Fidelity on Training Effectiveness*, Paper presented at the Driving Simulator Conference, North America, Iowa City, September 2007.
- Buckley, L. (2012) *Identification Of Curriculum Content For Peer Discussion Materials*, Unpublished VicRoads Report.
- Cahill, H. (2003) Taking an evidence-based approach to classroom drug education, www.education.vic.gov.au/about/programmes/health/Pages/drugedubbackground.aspx
- Chan, Pradhan et al 2010, Are driving simulators effective tools for evaluating novice drivers' hazard anticipation, speed management, and attention maintenance skills?, *Transportation Research Part F* 13 (2010)
- Charlton G., Starkey N. (2013) Driver Risk from Blood Alcohol Levels. University of Waikato. <https://www.nzta.govt.nz/resources/research/reports/541/index.html>
- Christie, R. (2001) The Effectiveness of Driver Training as a Road Safety Measure: A Review of the Literature, RACV Report 01/03 and Christie, R. (2011), The Effectiveness of Driver Training/Education as a road safety measure, 2011 edition update
- Christie, R. (2008) Driving Simulators, Paper prepared for the TAC by Dr Ron Christie.
- Curry, Hafetz et al, (2011) Prevalence of teen driver errors leading to serious motor vehicle crashes in *Accident Analysis & Prevention*, Vol 43, Issue 4, July pp.1285-1290
- De Hoog, N., Stroebe, W. & De Wit, J. (2005) The impact of fear appeals on processing and acceptance of action recommendations, *Personality and Social Psychology Bulletin*, vol. 31,1, pp. 24-33.
- Elkington J., Hunter K. & Makay, L. (2000) *A systematic review of the evidence on preventing injuries to young people (15-24 years)*, Youthsafe www.youthsafe.org.
- European Commission (2009) Annex 1: The GDE Matrix. Retrieved from http://ec.europa.eu/transport/road_safety/consultations/doc/2009_06_22_training_education_consultation_paper_annex.pdf
- Feenstra, H., Ruiter, R. & Kok, G. (In press) Evaluating Traffic Informers: Testing the behavioural and social cognitive effects of a traffic safety education programme for adolescents, *Psychology and Health*
- Fisher, D.L., Pollatsek, A., & Pradhan, A. (2006). Can novice drivers be trained to scan for information that will reduce their likelihood of a crash? *Injury Prevention*, 12 (Suppl.1), 125-129
- Flay, B. (2000) Approaches to substance use prevention utilizing school curriculum plus social environment change, *Addictive Behaviours*, vol. 25, pp. 861-865
- Glendon, A., McNally, B., Jarvis, A., Chalmers, S. & Salisbury, R. (2014) Evaluating a novice driver and pre-driver road safety intervention, *Accident Analysis and Prevention*, vol. 64, pp. 100-110.
- Gottfredson, D. (1997) School Based Crime Prevention, In Sherman, Gottfredson, Layton, McKenzie, Reuter, Bushway. *Preventing Crime: What Works, What Doesn't, What's Promising, A Report to the United States Congress*. College Park, MD: University of Maryland, Department of Criminology and Criminal Justice.
- Hatakka, M., Keskinen, E., Gregersen, N. P., Glad, A. & Hernetkoski, K. (2002) From control of the vehicle to personal self-control; broadening the perspectives to driver education, *Transportation Research*, Part F, pp. 201-215.
- Ho, K., Litton, E., Geelhoed, E., Gope, M., Burrell, M., Coribel, J., McDowall, A. & Rao, S. (2012) Effect of an injury Awareness Education Programme on Risk-Taking Behaviours and Injuries in Juvenile Justice Offenders: A Retrospective Cohort Study, *PLoS One*, vol. 7, 2, e31776.
- Isler, R., Starkey, N. (2012) Driver Education and Training as evidence-based road safety Interventions, Paper presented to the Australasian Road Safety Research, Policing and Education Conference, Wellington, 2012.
- Jewell, J. & Hubb, S. (2005) Examining the Effects of Fatal Vision Goggles on Changing Attitudes and Behaviors Related to Drinking and Driving, *The Journal of Primary Prevention*, vol. 26, 6, pp. 553-565.

- Johanssen, M. & Nordin, J. (2002) *A survey of driving simulators and their suitability for testing Volvo cars*. Goteborg, Sweden: Department of Machine & vehicle systems, Chalmers University of Technology.
- Katila, A., Keskinen, E. & Hatakka, M. (1996). Conflicting goals of skid training. *Accident Analysis & Prevention*, 28, 785-789.
- Lewis, I., Watson, B. & Tay, R. (2007) Examining the effectiveness of physical threats in road safety advertising: The role of the third-person effect, gender, and age. *Transportation Research Part F: Traffic Psychology and Behaviour*, vol. 10, 1, pp. 48-60.
- Lonaro, L. (2008) Trends in Driver Education and Training, *American Journal of Preventive Medicine*, vol. 35, 3, pp. S316-S323
- Masten, S. & Peck, R. (2004) Problem driver remediation: a meta-analysis of the driver improvement literature. *Journal of Safety Research*, vol. 35, pp. 403-425.
- Nirenberg, T., Baird, J., Longabaugh, R. & Mello, M. (2013) Motivational counselling reduces future police charges in court referred youth, *Accident Analysis and Prevention*, vol. 53, pp. 89-99.
- Peck, R. (2011) Do driver training programmes reduce crashes and traffic violations? — A critical examination of the literature, *IATSS Research*, vol. 34, pp. 63-71.
- Petrosino, A., Turpin-Petrosino, C. & Buehler, J. (2004) "Scared Straight" and other juvenile awareness programmes for preventing juvenile delinquency, *Campbell Systematic Reviews* DOI: 10.4073/csr.2004.2.
- Pradhan A.K, Pollatsek A., Knodler, M. & Fisher, D.L. (2009). Can young drivers be trained to scan for information that will reduce their risk on roadway traffic scenarios that are hard to identify as hazardous? *Ergonomics*, 52(6), 657-673
- Raftery, S. & Wundersitz, L. (2011) *The efficacy of road safety education in schools: A review of current approaches*, Centre for Automotive Safety Research. Report no. CASR077. Adelaide, South Australia.
- Reyna, V. & Farley, F. (2006) Risk and rationality in adolescent decision-making: implications for theory, practice, and public policy, *Psychological Science in the Public Interest*, vol. 7, pp. 1-44.
- Ruiter, R., Abraham, C. & Kok, G. (2001) Scary warning and rational precautions: a review of the psychology of fear appeals, *Psychology & Health*, vol. 16, 6, pp. 613-630.
- Sloboda, Z., Stephens, J., Stephens, P., Grey, S., Teasdale, B., Hawthorne, R., Williams, J. & Marquette, J. (2009) The Adolescent Substance Abuse Prevention Study: A randomised field trial of a universal substance abuse prevention programme, *Drug and Alcohol Dependence*, vol. 102, pp. 1-10.
- Straus, S. (2005) *Driving Simulation: Implications for use in Transportation License Testing Applications*, Paper presented at the Driving Simulator Conference, North America, Orlando, November 2005.
- SWOV (2011) Fear-based information campaigns Fact Sheet, Institute for Road Safety Research. Netherlands www.swov.nl/rapport/Factsheets/UK/FS_Fear_appeals.pdf
- SWOV Fact Sheet Simulators in Driver Training (2010) Institute for Road Safety Research. Netherlands www.swov.nl/rapport/Factsheets/UK/FS_Simulators_in_driver_training.pdf
- Taubman Ben-Ari, O., Florian, V. & Miculincer, M. (2000) Does a threat appeal moderate reckless driving? A terror management theory perspective, *Accident Analysis and Prevention*, vol. 32, 1, pp. 1-10.
- Tobler, N. & Stratton, H. (1997) Effectiveness of School-based drug prevention programmes: A meta-analysis of the research, *Journal of Primary Prevention*, vol. 18, pp. 71-128.
- Torbjørn Tronsmoen, 2008, "Associations between self-assessment of driving ability, driver training and crash involvement among young drivers" *Transportation Research Part F* 11 (2008) 334-346.
- Tranter, P. & Warn, J. (2008) Relationships between interest in motor racing and driver attitudes and behaviour amongst mature drivers: An Australian case study, *Accident Analysis and Prevention*, vol. 40, pp. 1683-1689
- Williams, A. & O'Neill, B. (1974) On-the-road driving records of licensed race drivers. *Accident Analysis and Prevention*, vol. 6, pp. 263-270.
- Williams, A., Tefft, B. & Grabowski, J. (2012) Graduated Driver Licensing Research, 2010-Present, *Journal of Safety Research*, vol. 43, 3, pp. 195-203.
- Witte, K. (1992) Putting the fear back into fear appeals: the extended parallel process model, *Communication Monographs*, vol. 59, 4, pp. 329-349.
- Witte, K. & Allen, M. (2000) A meta-analysis of fear appeals: Implications for effective public health campaigns, *Health, Education & Behaviour*, vol. 27, 5, pp. 608-632.

