

Campaigns, Promotion, Awareness Raising, Education, or Training: When Are These Useful, and When Are They Not?



Purpose of this Brief Note

Campaigns, training, education, promotion, and awareness raising are all commonly used terms in road safety, yet are generally not clearly understood or well used. This note outlines best uses and ineffective uses, in order to inform adoption of best practice and to avoid wasting resources. It also briefly summarises the extensive evidence for the complex underlying psychological processes behind what works and what does not, showing that what are often thought to be “common-sense approaches” to what works will be quite misleading and must be abandoned.

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 Photo in this page [from ADB Flickr](#): Strategies to manage traffic in Asia like here in Xian must include a wide range of measures. The "Avoid-Shift-Improve" approach is central to reducing dependence on individual car dependency. It also ensures a high level of mobility while minimizing greenhouse gas emissions (photo by Armin Wagner).

Campaigns, Education, Promotion, and Awareness Raising Are NOT the Same

Campaigns are processes to provide messages to the community. These can be awareness raising, education, or promotion.¹ As described below, promotion of enforcement is the effective option. Confusingly, sometimes, this is also called public education.

Awareness raising in road safety refers to attempts to increase awareness of the serious crash risk from certain behaviors, such as speeding.

Education refers to more systematic processes to improve knowledge. For example, the crash risks of speeding may be explained in terms of judgement time, reaction time, stopping distances, and the laws of physics. The underlying aim is commonly related to increasing understanding of crash risk.

Promotion in road safety can refer to many areas of content. When communicating to road users, the *most effective promotions for improving safety are based on enforcement risk and penalties*.

Training refers to processes constructed to develop the skills etc. required to perform a task, such as driving. Confusingly, sometimes, this is also called public education.

What Works, What Fails, and Why

Road users only become safer if they change their behavior (for example, by not speeding or by wearing a helmet). Increasing awareness does not necessarily change such behaviors (and in the real world, typically does not).

These are not matters for personal experience or opinion—there is sound fact to guide us. There is abundant



evidence (from many real-world examples) for the following practical consequences in road safety:

- Raising awareness delivers very little if any benefit in road safety
- Education delivers very little if any benefit in road safety, including school-based education. (School based education which includes driver training often makes road safety worse: increasing crashes for those who are trained)
- Campaigns promoting enforcement are often successful in reducing serious crashes.

Annex 1 provides a brief summary of the relevant scientific evidence and references, for those interested in the details.

¹ Campaigns may also be directed to stakeholders who act in road safety such as road agencies and police. In these cases, the content of the message depends on the stakeholder, the nature of the issues being addressed, and current barriers/resistance to effective actions.

“Road users only become safer if they change their behavior. Increasing awareness does not necessarily change such behaviors.”



The psychology behind behavior change is complex, yet the practical outcomes in terms of what works are clear. Education works in many areas, so the failure of education to improve road safety surprises most of us. Education provides knowledge. This does not work in road safety because road safety is not a road user knowledge problem. Road safety is first of all an infrastructure/system problem—safe roads, speeds, and vehicles will save people from death or disability even when they make a mistake. In terms of road users, road safety is a motivation problem.² Speeding is not a skill problem—it does not take more skill to driver slower, it is not a knowledge problem—most speeders know the law. People speed because they are motivated to do so—for fun or with the aim of reaching their destination sooner. Similarly, people drive after drinking because it is convenient to get home.

² Job, RFS (1999). The psychology of driving and road safety. *Current Issues in Road Safety Research and Practice*. J. Clark (Ed.). (pp21-55). EMU Press, Armidale.



Awareness raising provides information on crash risk for the general population, and we hope that this is motivating—but it is not. Through pervasive and powerful psychological errors in judgement (biases), we dismiss risk to others as not applying to us as individuals—as explained in the Annex.

Providing more “awareness raising” often has the effect of promoting these biases, because the information seems to confirm that others have more serious crashes than we do and so our belief in our superiority as drivers is supported by the apparent evidence. Thus, as individuals we feel that we are safe to speed, or not wear a seatbelt, even if others are not. So, awareness raising of crash risk not only fails to improve motivation, it often reinforces overconfidence.

Promotion of enforcement and the consequences of being caught often changes road user behavior, saving lives and avoiding injuries. This is because the threat of being caught and paying penalties is not avoided by our overconfidence in our driving abilities. It does not matter how good a driver we are, if we are caught by the police for speeding or not wearing a helmet—we can get fined (possibly as well as other penalties). The extent to which enforcement-based messages (and the beliefs it aims to generate) are effective in changing behavior depends on several factors:

- Belief that a particular behavior (such as speeding) is likely to be detected by enforcement authorities
- Belief that the penalty is unavoidable
- Judgement that the penalty is enough to deter from the unsafe behavior (i.e., it creates a different motivation)
- Belief that the penalty will be applied (and have to be paid) swiftly.

“Promotion of enforcement and the consequences of being caught often changes road user behavior, saving lives and avoiding injuries.”

These beliefs create the ideal conditions for improving road user behavior, called **General Deterrence**, which refers to people being deterred from a particular behavior even without being caught and having a penalty applied. Thus, people may wear a helmet or comply with the speed limit, in order to avoid a penalty, even if they have not themselves been caught.

Specific Deterrence refers to deterring each individual by catching them and giving them a penalty. This is useful, but requires catching everyone who commits an offence. General deterrence is more powerful because it works across the population without catching each person.



Some claim that the solution is more skilled drivers, through more training. However, skill-based training resoundingly fails to improve safety, and often increases crashes. The evidence indicates that this is because this type of training in particular increases driver overconfidence (and thus increases risk-taking). School based driver training has the added disadvantage of starting students driving at younger (less mature) ages. Because of the above (perhaps unexpected) proven factors, messages/campaigns/promotion of enforcement provides the best opportunities for behavior change to improve road safety.

Annex 1: Brief Summary of Relevant Evidence and References

The evidence for optimism bias, driver overconfidence, and illusion of control:

As humans we are not good at judging the risk for events based on personal experience, which is the way most of us judge the risk of having a serious crash, unless we have hard scientific evidence – which is rare in the population.

When judging personal risk almost all of us have a set of related deep psychological biases disrupting our judgements. These are called self-serving biases. One of these is driver overconfidence: most of us believe that we are better drivers than average. Large surveys in Australia revealed that most drivers thought that they were better than average, some thought they were around average and less than 2% though they were worse than average.³ The same bias is found in all countries in which it has been tested.⁴ This is a bias—it just cannot be right. We cannot mostly be better than average with so few of us below average. Somehow the population has to average out as average—we cannot almost all be smarter and better than average. In addition to overconfidence in abilities and behaviors, many studies show that humans overall show over-estimation of our ability to control outcomes (“illusion of control”), and optimism bias about our futures (expecting the have better lives than average with more good things happening to us and less bad things happening to us—including believing we are less likely to have a crash).⁵ Optimism about our future is sometimes referred to as illusion of invulnerability when it is about the risk of bad thing happening, such as causing a serious road crash. It is not surprising that optimism leads to greater risk taking and less caution.⁶

Education generally fails to change behavior in road safety:

An OECD report shows that road safety education for children is ineffective⁷, and other studies confirm this, with the only examples of successes being based on finding that education increases knowledge (without showing that this improves behavior⁸). Thus, while studies show that education on road safety in schools does improve knowledge, there is no evidence that this knowledge changes safety on the road. As explained below for training, the risk is that increased knowledge increases confidence and risk-taking.

(Some studies of “education” really are studies of training and these are covered below.)

³ Job, RFS (1990). The application of learning theory to driving confidence: The effect of age and the impact of random breath testing. *Accident Analysis and Prevention*, 22, 97-107.

⁴ Svenson, O. (1981). Are we all less risky and more skillful than our fellow drivers? *Acta Psychologica*, 47(2), 143-148.

Jonah, B. A. (1986). Accident risk and risk-taking behaviour among young drivers. *Accident Analysis and Prevention*, 18, 255-271.

Walton, D., & Smith, K. (2009). Survival confidence of New Zealanders in outdoor and post-earthquake situations. *Australian Journal of Emergency Management, The*, 24(3), 38-43.

Seaward, H. G., & Kemp, S. (2000). Optimism bias and student debt. *New Zealand Journal of Psychology*, 29(1), 17-19.

⁵ Chua, F.J & Job, RFS (1999). Event-specific versus unitary causal accounts of optimism bias. *Journal of Behavioural Medicine*, 22, 457-491

Weinstein, ND. (1984) Why it won't happen to me: Perceptions of risk factors and susceptibility. *Health Psychology*, 3(5), 431-457.

Weinstein, ND. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology*, 39(5), 806-820.

⁶⁶ Fuller, R. (2005). Towards a general theory of driver behaviour. *Accident Analysis & Prevention* 37(3): 461-472.

Prabhakar, T., Lee, S.H.V., & Job, RFS (1996). Risk Taking, optimism bias and risk utility in young drivers. L. St. John (Ed.), Proceedings of the Road Safety Research and Enforcement Conference. (pp.61-68). Sydney, NSW: Roads & Traffic Authority of NSW.

Weinstein, Neil D. (1988). The precaution adoption process. *Health Psychology*, Vol 7(4), 355-386.

⁷ OECD (2004). Keeping children safe in traffic. OECD: Paris.

⁸ For example: Meehan, G. (2009). School student recognition of in-school road safety education. Proceedings of the Australasian Road Safety Research Policing Education Conference, 2009, Sydney, New South Wales, Australia, 2009. Sydney: NSW Roads & Traffic Authority

Awareness raising generally fails to change behavior in road safety:

In road safety, attempts to change behaviors through awareness of risk fail to achieve the desired behavior change even though self-reports of attitudes change and approval of such campaigns is high. For example, many states and countries have the experience of trying to increase seatbelt use through awareness of the injury and death risks, and finding no change in wearing rates. In many cases, those same countries and states have then implemented seatbelt wearing laws and strong enforcement, resulting in huge increases in seatbelt wearing. As just one example in the Asia-Pacific, the state of New South Wales, Australia, funded awareness raising campaigns on seatbelts for years and wearing rates remained steady around 20% to 25%, but with the introduction of well promoted laws and enforcement, wearing rose sharply to 95%. Similar experiences exist in relation to speeding and drink-driving.⁹

Enforcement based campaigns work best:

As noted above, examples of awareness raising to improve seatbelt use fail, and the enforcement-based campaigns caused huge increases in seatbelt use. Similarly, with extensive education and campaigning on the dangers of drink-driving the alarming 42% of deaths involved drink-driving did not improve, yet with the introduction of a strong campaign warning about impending extensive random breath testing enforcement, drink-driving deaths halved.¹⁰ These effects occurred so quickly (and sometimes the benefits started with the advance warning campaigns, even before the enforcement itself started) that we can know the campaigns themselves change behavior. However, in order to sustain these changes, real enforcement is critical. Real enforcement lies at the heart of these behavior change successes, and without it, all such campaigns lose credibility. This pattern is highly reliable. Multiple studies and reviews of collective evidence show similar patterns of success with speed enforcement.¹¹ Many reviews of evidence show that enforcement-based campaigns work in road safety¹², and work better than campaigns that are not enforcement-based.¹³

Explaining why enforcement-based campaigns work so much better:

The delusional biases (overconfidence, optimism bias, etc.) are one key reason why enforcement campaigns work and crash-based campaigns do not. Most drivers do not believe that they will cause a crash, so crash-based messages (awareness raising) are seen as largely irrelevant to personal risk. However, enforcement-

⁹ For discussion of this seatbelt and other examples, as well as analysis of some of the complex reasons for high fear (of extremely severe events, such as death or serious injury) not working as well as fear of low level fear (of low severity events such as a fine), see: Job, RFS (1988). Effective and ineffective use of fear in health promotion campaigns. *American Journal of Public Health*, 78, 163-167.

¹⁰ Job, RFS, Prabhakar, T., & Lee, S.H.V. (1997). The long term benefits of random breath testing in NSW (Australia): Deterrence and social disapproval of drink-driving. In C. Mercier-Guyon (Ed.), *Proceedings of the 14th. International Conference on Alcohol, Drugs and Traffic Safety, Annecy, 1997*. (pp. 841-848), France: CERMT.

¹¹ Job, S., Cliff, D., Fleiter, J.J., Flieger, M., & Harman, B. (2020). Guide for Determining Readiness for Speed Cameras and Other Automated Enforcement. Global Road Safety Facility and the Global Road Safety Partnership, Geneva, Switzerland.

Wilson, C; Willis, C, Hendrikz, J, Le Brocque, R, Bellamy, N (2010). "Speed cameras for the prevention of road traffic injuries and deaths" The Cochrane Library (10): CD004607.

¹² Elvik, R, Høye, A, Vaa, T & Sørensen, M (2009). *The handbook of road safety measures, 2nd ed.* Emerald Publishing Group: Bingley, UK.

¹³ Phillips, RO, Ulleberg, P, Vaa, T. (2011) Meta-analysis of the effect of road safety campaigns on accidents. *Accident Analysis and Prevention* 43, 1204-121.

based messages overcome this problem—it does not matter how good a driver you think you are, you can still be caught for speeding, or not wearing a seatbelt or helmet.

Skill based driver training (and rider training) fail to improve safety, and often make it worse:

Despite our strong faith in education and training, post-license education and training for general car drivers is proven repeatedly to be ineffective, or harmful, for road safety. A highly credible rigorous review of many studies of the evidence by the Cochrane Library showed no safety benefits of driver training. The review of post-license driver training evaluations concluded that there is: “... no evidence that post-license driver education is effective in preventing road traffic injuries or crashes. Because of the large number of participants included in the meta-analysis (close to 300,000 for some outcomes) we can exclude, with reasonable precision, the possibility of even modest benefits.”¹⁴ The analysis of the evidence also found that: “No one form of education ... was found to be substantially more effective than another, nor was a significant difference found between advanced driver education and remedial driver education”. Multiple other studies and reviews have demonstrated increases in crash rates from vehicle handling skills-based training, such as skid-control training.¹⁵ A study by Mueller et al. (2012) found higher crash rates for those trained in the first year after training compared with controls not given the training.¹⁶ Jones found that teenage novice drivers who did the training had increased crash rates—and this effect was quite large in males (a 48% increase in crashes).¹⁷

The same failures to deliver safety benefits are found for extra pre-license training.¹⁸ The same failures to deliver safety benefits are found for motorcycle rider training¹⁹, including studies showing increased crash rates after training compared with controls.²⁰

Many attempts have also been made to improve road safety outcomes for school-aged children through education and training. Based on changes in safe behavior, teaching children how and where to cross the road safely appears to provide benefits.²¹ However, this should only be applied to children of a suitable age (8 to 10 years old) to avoid encouraging more independent (unsupervised) road crossing by younger

¹⁴ Ker K, Roberts IG, Collier T, Beyer FR, Bunn F, Frost C. Post-licence driver education for the prevention of road traffic crashes. Cochrane Database of Systematic Reviews 2003, Issue 3. Art. No.: CD003734. DOI: 10.1002/14651858.CD003734.

¹⁵ Elvik, R., Vaa, T., Høy, A., & Sørensen, M. (Eds.). (2009). *The handbook of road safety measures*. Emerald Group Publishing.

¹⁶ Mueller, J., Stanley, L., & Manlove, K. R. (2012). Multi-Stage Novice Defensive Driver Training Program: Does It Create Overconfidence? *Open Journal of Safety Science and Technology*, 2(4), 133.

¹⁷ Jones, B. (1995). The effectiveness of skid-car training for teenage novice drivers in Oregon. *The Chronicle of American Driver & Traffic Safety Education Association*, 43 (1), 1-8.

¹⁸ Poulter, D. & McKenna, F (2010), Evaluating the effectiveness of a road safety education intervention for pre-drivers: An application of the theory of planned behavior, *British Journal of Educational Psychology*, 80, 2, 163-181.

Glendon, A., McNally, B., Jarvis, A., Chalmers, S., Salisbury, R. (2014), Evaluating a novice driver and pre-driver road safety intervention, *Accident Analysis & Prevention*, 64, 100-110.

¹⁹ Kardamanidis, K., Martiniuk, A., Ivers, R. Q., Stevenson, M. R., & Thistlethwaite, K. (2010). Motorcycle rider training for the prevention of road traffic crashes. *The Cochrane Library*.

²⁰ Ivers, R. Q., Sakashita, C., Senserrick, T., Elkington, J., Lo, S., Boufous, S., & de Rome, L. (2016). Does an on-road motorcycle coaching program reduce crashes in novice riders? A randomised control trial. *Accident Analysis & Prevention*, 86, 40-46.

²¹ Oxley J, Congiu M, Whelan M, D'Elio A, Charlton J. (2008). Teaching young children to cross roads safely. *Ann Adv Automot Med.*, 52, 215-23.

children. Even then, the hope that these changes in behavior will produce real safety benefits remains unproven, with no evidence that training improves actual road safety.²²

Although all these results may seem counter-intuitive, the simplest way to understand this is that any benefits that might arise through training are greatly out-weighted by the overconfidence imparted to those involved in these courses—as explained below.

The failure of skill-based driver training is due to increasing overconfidence:

Driver skills training has been shown to increase confidence,²³ making existing general overconfidence worse.²⁴ Such increased confidence is associated with increased risk taking.²⁵ Thus, the likely mechanism by which skill-based driver training quite often results in increasing crash rates is an increase in risk-taking.

This factor (being a motivational factor influencing what people choose to do) is more important to road safety than skill. The latter claim is also supported by studies showing that those drivers with the most skill have the most crashes—this has been known for a long time, since a classic study showed that licensed racing and rally car drivers (i.e., driver with much greater skill) have far more crashes on public roads than do average drivers.²⁶

School-based driver training fails to improve safety, and often make it worse:

Despite the value of education and training in other aspects of life, a comprehensive review of many scientific evaluations of school-based driver training highlights clearly negative results.²⁷ That review concludes that the results “provide no evidence that driver education reduces road crash involvement and suggest that it may lead to a modest but potentially important increase in the proportion of teenagers involved in traffic crashes.”²⁸ Similar conclusions have been reached in more recent studies.^{29,30} No sound

²² Duperrex, O., Roberts, I., & Bunn, F. (2002). Safety education of pedestrians for injury prevention. The Cochrane Library.

²³ Katila, A, Keskinen, O Hatakka, M. Laapotti S. (2004). Does increased confidence among novice drivers imply a decrease in safety? The effects of skid training on slippery road accidents. *Accident Analysis & Prevention*, 36 (4), 543–550;

Gregersen, N. P. (1996). Young drivers’ overestimation of their own skill: An experiment on the relation between training strategy and skill. *Accident Analysis & Prevention* 28 (2), 243-250.;

Horswill, M., A. E. Waylen and M. I. Tofield (2004). Drivers’ Ratings of Different Components of Their Own Driving Skill: A Greater Illusion of Superiority for Skills That Relate to Accident Involvement. *Journal of Applied Social Psychology* 34(1): 177-195.

²⁴ Job, RFS (1990). The application of learning theory to driving confidence: The effect of age and the impact of random breath testing. *Accident Analysis and Prevention*, 22, 97-107; DeJoy, D. M. (1989). The optimism bias and traffic accident risk perception. *Accident Analysis & Prevention* 21(4): 333-340.

²⁵ Weinstein, Neil D. (1988). The precaution adoption process. *Health Psychology*, Vol 7(4), 355-386.

Prabhakar, T., Lee, S.H.V., & Job, RFS (1996). Risk Taking, optimism bias and risk utility in young drivers. L. St. John (Ed.), *Proceedings of the Road Safety Research and Enforcement Conference*. (pp.61-68). Sydney, NSW: Roads & Traffic Authority of NSW.

²⁶ Tillman, W. A., & Hobbs, G. E. (1949). The accident-prone automobile driver. *American Journal of Psychiatry*, 106, 321–331.

²⁷ Roberts IG, Kwan I. (2001). School-based driver education for the prevention of traffic crashes. *Cochrane Database of Systematic Reviews* 2001, Issue 3

²⁸ Roberts IG, Kwan I. (2001). School-based driver education for the prevention of traffic crashes. *Cochrane Database of Systematic Reviews* 2001, Issue 3.

²⁹ Poulter, D. & Mckenna, F (2010), Evaluating the effectiveness of a road safety education intervention for pre-drivers: An application of the theory of planned behavior, *British Journal of Educational Psychology*, 80, 2, 163-181.

³⁰ Glendon, A., McNally, B., Jarvis, A., Chalmers, S., Salisbury, R. (2014), Evaluating a novice driver and pre-driver road safety intervention, *Accident Analysis & Prevention*, 64, 100-110.

evidence exists for road safety benefits arising from school-based driver training. Any possible benefits are overcome by increased driver overconfidence and possibly the earlier age of beginning to drive. There is direct evidence for the benefit of starting to drive at an older age, with effects of age on risk independent of driving experience.³¹ This relates to fundamental brain development. No exceptions are identified.

The failure of school-based driver training is due to starting students driving at an earlier—less mature—age (as well as increasing overconfidence):

In addition to the overconfidence created by driver training (as detailed above), school-based driver training has another harmful effect. School based driver training has the effect of starting young people driving earlier—which brings in another deep psychological problem: starting driving when the brain is not mature and ready for it.

It is a mistake to consider the reason for young drivers have more crashes as simply inexperience. Many analyses show that drivers who start driving at a later age have less crashes, even though they have no more driving experience. There is now a sound understanding of why this is true: the frontal cortex of the human brain is responsible of inhibiting impulses (such as the urge to drive faster, or try something risky), but this is the last part of the brain to fully develop—and can still be in ongoing development through ages 18 to 24 years.³² Thus, starting driving younger is starting driving when impulse control is weaker and risk taking is more likely.

³¹ Casey, B.J., Jones, R. M. and Hare, T. A. (2008), *The Adolescent Brain*. Annals of the New York Academy of Sciences, 1124: 111–126. doi: 10.1196/annals.1440.010; Johnson, S. B. and V. C. Jones (2011). Adolescent development and risk of injury: using developmental science to improve interventions. *Injury Prevention* 17(1): 50-54; Oxley J, Congiu M, Whelan M, D'Elia A, Charlton J. (2008). Teaching young children to cross roads safely. *Ann Adv Automot Med.*, 52, 215-23.

³² Casey, B.J., Jones, R. M. and Hare, T. A. (2008), *The Adolescent Brain*. Annals of the New York Academy of Sciences, 1124: 111–126. doi: 10.1196/annals.1440.010

Johnson, S. B. and V. C. Jones (2011). Adolescent development and risk of injury: using developmental science to improve interventions. *Injury Prevention* 17(1): 50-54.