Inspire, Inform, Engage

Developing a pragmatic approach to road safety
and sustainable transport education interventions

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In most industrialised societies driving is largely taken for granted. It is perceived as a right, a form of transport that affords freedom of movement, and, for some, expression. However, driving is also a complex skill, possibly the most complex that many will ever attempt to master.

In addition to the motor skills necessary to control the vehicle, driving is a socially regulated, expressive activity involving real-time anticipation of, and negotiation with, other road users and the ever-changing road environment. Every journey requires engagement of numerous mental processes, often while maintaining or enhancing the driver's mood and self-image.

Unsurprisingly, driver behaviour, and the behaviour of all road users, is one of the most important of the many factors that underpin road safety and sustainability. Yet it often comes as a surprise that psychologists conduct research studies in order to advance the integration of humans and transport in society, seeking to do so in a way that improves safety and accessibility for all.

Every four years the International Conference of Traffic and Transport Psychology (ICTTP) allows the opportunity for researchers and practitioners to share state of the art knowledge and experience from around the world. In August 2016, nearly 400

road safety experts from 39 countries attended the conference hosted by CARRS-Q and Menzies Health Institute Queensland. The topics covered were wide ranging and supported by thought-provoking presentations and discussion. The challenge following such an event is for the road safety community to translate this sharing of knowledge into practice.

This paper represents a think piece by Mary Williams, the chief executive of the road safety charity Brake, following her attendance at the ICTTP 2016 conference. Although based on the research she observed and her existing knowledge, the paper is not traditionally academic in nature and instead seeks to be pragmatic in its highlighting of the key points from the conference to support future directions for research and practice in the areas of road safety and sustainability. It is an accessible and thought-provoking piece that anyone in the field of road safety will find of interest as new perspectives for reducing collisions, injuries and deaths on the road are sought.

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Introduction

This report aims to help practitioners' and campaigners' approaches, when considering undertaking education interventions related to safe, sustainable, healthy and fair transport, either in organisational settings such as schools or companies, or through wider communication campaigns.

To inform this report, Brake sought out findings by academics in the fields of transport psychology and health education, and attended the acclaimed International Conference on Traffic and Transport Psychology (held in Brisbane, Australia, in August 2016).

Nearly all crashes involve some element of road user error; therefore it is understandable that there has been a historical focus on funding and delivering extensive road safety education and communication aimed at achieving behavioural change, particularly among drivers, but also notably children and young people. However, as explained further in this report, and stated by numerous academics over many decades "...the predominance of 'human errors' ... does not imply that the practical way to eliminate most crashes is to fix the driver. On the contrary, of the three major traffic components – the driver, the vehicle and the road – the driver is the most difficult to change or improve."[1]

Consequently, the approach favoured by the United Nations and progressive nations is an approach that implements "safe systems", meaning measures are put in place that mitigate the potential for death and injury when, inevitably, people take risks or make mistakes. These measures are often a) engineering solutions, notably vehicle safety systems and improvements to the road environment (for example segregated cycle paths); b) rules and enforcement of rules, at government and organisational levels (for example, driver testing prior to licensing and banning of use of mobile phones); and c) risk reduction (for example, modal shift from cars to public transport). This represents a new trend in considering the road safety 'system' or 'culture' rather than interventions as stand-alone programmes.[2]
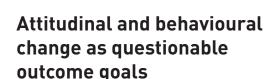
Education and communication is deemed far less effective. This report explains some of the powerful psychological "influencers" on people that can cause them to make poor choices, often despite their attitudes.

However, this does not mean that road safety and sustainable transport education should be abandoned. This report argues education and communication has a role to play in raising awareness and spreading knowledge, to achieve a raft of legitimate and pragmatic outcome goals that are not primarily about behavioural change, but more about inspiring, informing and engaging people in the causes. In companies with employees who drive for work, for example, education can help drivers to understand and accept requirements put upon them to follow certain policies and procedures as part of their employers' risk management systems. This report makes recommendations relating to the undertaking of education and communication interventions in both organisational and wider campaign settings.

This report is valuable for a range of practitioners working to inspire, inform and engage people in the fields of road safety or sustainable and active travel. This includes fleet managers, health & safety professionals, road safety practitioners, emergency service workers and campaigners.

Note on references: A proportion of academic references in this report give the names of academics only, rather than names of their papers. In most cases, this is due to information being sourced from speeches and conversation during ICTTP 2016. For further clarity on these academics' views, contact the academics referenced.

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Attitudinal and behavioural change as questionable outcome goals

There is a growing body of research that questions the validity of educational / communication-based interventions that claim to have an outcome goal of changing attitudes in order to (either explicitly stated or not) achieve positive behavioural change in the way recipients use roads.

Many of the interventions criticised are run for the target audience of young people (often geared around a presumption that young people will learn to drive) and primary road safety topics (seat belts, speed, alcohol, drugs). Some interventions are also run within some companies and organisations operating fleets of vehicles.

These interventions use a variety of techniques, ranging from classroom lectures / workshops, supported by videos and discussion topics, to presentations in large venues such as cinemas, sometimes using techniques such as Theatre in Education or mock "crash extrications" (these are most common for interventions aimed at young people). Such interventions are generally led by volunteers such as people bereaved by road crashes, or by emergency service professionals with first-hand experience of road crashes, or by employers / organisation leaders. Many of these interventions encourage people to consider their options and consider personal strategies for making positive choices.

Academics argue two key points:

1 **"Outcome evaluation"** of such interventions is weak. Largely, we do not know if any behavioural change occurred due to the intervention because usually recipients' behaviour is not monitored in any academically valid way before or after the intervention. This is usually because it is difficult to do so; for example, it would be expensive to track longitudinally the behaviour of teenagers after they have attended a road safety workshop in their school, or to attribute any particular behaviours to their attendance of that workshop.

   One high-profile study by the transport research agency TRL says: "Very few interventions have been evaluated and most evaluations are of such low scientific quality that results cannot be taken as reliable. The evidence base for pre-driver education and training is weak at best, and effectively non-existent when collisions and injuries are used as the outcome of interest. No properly evaluated intervention has demonstrated a reliable reduction in novice driver collisions."[3]

2 **"Process evaluation"** results, for example feedback from recipients, often indicate that recipients found the intervention valuable and their attitudes have changed positively. However, this cannot be perceived as an indicator of future behavioural change, due to the many powerful influences on behaviour. Attitudes alone can wane and change over time without continual reinforcement. A TRL review[4] found: "In those interventions that have been evaluated, some short-term positive effects have been shown on attitudes towards road safety, but these tend not to last beyond a few months, are not consistent and do not guarantee safety benefits."[5]

Put more optimistically: "A consistent complaint is the proliferation of interventions based neither on theory nor on a formal body of work. The assumption has been that educational interventions are effective. The conclusion is *not that no educational interventions can work, but rather that evidence must be provided.*"

The inevitable follow-up questions to the above statement are: Are attitudinal and behavioural change reasonable outcome goals for road safety education and communication interventions to strive for? Or do we need to change the goals to ones that are a) deemed to be more easily achievable and b) easier to evaluate in terms of them being met?

Academics argue there are a range of other powerful influences on what we "think and do", many of which may, depending on a range of factors, counter the possibility that a particular education or communication intervention will permanently and positively change attitude and behaviour.[6]

These influences are listed in the next section, followed by suggestions for practitioners for devising outcome goals and monitoring performance against these goals.

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Behavioural influences

To fully understand the importance of setting achievable outcome goals for an education intervention, it helps to have a basic comprehension of the other, many and varied influences on people. Below is a summary of influences commonly identified as significant by academia.

The world we live in

Where people live, the services and systems they are provided with, the rules they operate within, and their lifestyles (what we are used to doing), can all have a significant effect on the behaviours of people. Professor Tim Jackson of the Centre for Environmental Strategy at the University of Surrey says: "It is clear that achieving pro-environmental behaviour change demands a policy approach. A strategy is needed to make behaviour change easy: ensuring incentive structures and institutional rules favour pro-environmental behaviour."

One example is speed limits combined with speed enforcement through camera technology, which has been universally shown to change behaviour, slowing down drivers.

Another example is reduction in car use by young people in the UK, which is likely due to a range of sociological factors including increasing urbanisation, an increasing tendency of young people to stay in education, cost of car ownership, combined with efforts by city administrations to make it less attractive to use a car, and enable walking, cycling and public transport. Between 1994 and 2014 the percentage of young people aged 17 to 20 with a driving licence dropped from 48% to 29%.[7]

Over the same period, the number of young people aged 21 to 29 with a driving licence dropped from 75% to 63%. In England, 17-20 year olds make more trips by bus than other age groups and twice as many bus trips as the average person.[8]

Socio-economic factors

People with socio-economic challenges such as poverty, poor housing, lack of employment, alcohol or drug abuse, or violence in the home, may be significantly harder to influence through educational interventions. They may, for example, be more likely to consider a car aspirational[9]; representative of freedom, wealth and a personal space. For example, in England, 47% of households in the lowest income group have no car, compared to only 12% of the highest income group.[10]

In one longitudinal study[11], at the ages of 21 and 26, having been studied since birth, links have been found between cannabis use and other identified characteristics such as low "constraint" (harm-avoidance / control) and persistent risk-taking by young (particularly male) drivers (e.g. driving fast for thrills and dangerous overtaking and tailgating).

As well as being more inclined to take serious risks, people prone to risk-taking may be influenced to undertake a behaviour if its riskiness is highlighted – and to their mind glorified – in an education or communications intervention (hence having the opposite effect to that intended by the intervention). For example, presentation of a stereotypical young male driver in intervention material may only serve to reinforce the social norm.

Peer pressure and our own desires

People around us, and our own desires, affect our decision making "in the moment" in ways we can't necessarily predict. For example, someone may have a stated intention, or "planned behaviour", to speak up for safety if they are ever a passenger and the driver is speeding. They may even have pre-prepared what they "will say", and be certain in their own mind that they will say it.

However, in reality they may not say it, because when "in the moment" there is overwhelming unspoken or articulated pressure from those around them. Alternately, the person may be faced with other, conflicting, desires of their own, to not intervene at that time. For example, "I would normally say 'no' to accepting a lift from this driver because I think they are on drugs, but I have no other way to get home and it's only a short journey." We can easily convince ourselves that it is "ok to take a risk, just this once," particularly if we are ourselves impaired, for example through alcohol or even just a heightened emotional state. Psychologists refer to this as "cognitive dissonance",   where a person cognitively excuses their behaviour where it is inconsistent with their thoughts, beliefs or attitudes.

Aspirations, rewards and self-oriented habits

Driving is often highly aspirational for young people, as it is associated with a wide range of perceived positive outcomes. Young people may associate driving with autonomy, identity, opportunity and access to a wide range of things (inclusive of recreation, sport, employment, social networks,

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shops, education, social services, etc.)[12]
When considering travel modes, we may make decisions based on what is "in front of our noses" and seems most convenient and beneficial to us right "now". For example, I will "drive rather than get the bus today because my car is outside my house, I think it's quicker and cheaper and I don't have any change in my pocket right now and I don't know the times."

There can be a particular disconnection between attitudes and behaviour relating to car use; higher income, highly educated respondents tended in one study[13] to be more pro-environmental in their attitudes but less sustainable in terms of their actual transport behaviour than lower income, less well educated respondents.

It is common knowledge that habits can be "hard to break", particularly if perceived as inconvenient. This may be true of someone who is, for example, in the habit of using their car rather than walking or cycling. It may also be true of someone who has habitually crossed a busy road but is now advised to use a footbridge, which requires more effort and time. Conversely, people who have got in the habit of cycling regularly, even a little, are likely to also be people who identify that cycling enables them to feel good about themselves, and be in a virtuous circle of helpful decision making about active travel as well as related decision making (for example eating well).[14]

It won't "happen to me"

Academics argue that road safety education that focuses on the consequence of crashes, with the objective of eliciting an intense fear-response, are particularly ineffective. They argue that for most people, this may result in a strong emotional response that is perceived as powerfully communicating something important, but it may be taken on board as "not something that would ever happen to me" so not have the desired outcome of safer use of roads.[15]

Many people are accustomed to seeing violent road crashes (in movies, and actual road wrecks) and generally understand the gory outcomes of death and serious injuries. People may not, however, connect these things with the possibility of such an outcome for themselves. While people can often associate with the severity of the outcome of a collision, unless they are convinced that they are susceptible to the threat, the message is unlikely to have any effect on their attitudes or behaviour.[16]

Interestingly, academics also point to people not believing that their behaviour causes crashes, and therefore people don't think that crashes are something that they "have control over"; people often fail to see a connection between their vulnerability and their powers of control. Conversely, people can recognise that they do have 'control' over their ability to avoid regulatory penalty by complying with laws (for example, not losing their licence by complying with speed limits).[17]

Situational exposure

Certain demographics of people face a higher situational exposure to risk.

Most notably, young people are most likely to be:

• out at night, on weekends, recreationally, at times when more people are impaired by alcohol and drugs;

• driving in older and smaller cars;

• driving with multiple peer passengers.

Some at-work drivers are also more exposed to particular types of risk, for example fatigue due to shift work, driving for long periods of time and over long distances, and driving familiar routes leading to inattention. Surveys of at-work drivers by Brake have also shown they are more likely to take risks such as speeding and using a mobile phone at the wheel, than other drivers.[18]

Emotions and influence of family and others

For many people, experiencing a range of emotions is normal, but a heightened emotional state may have a negative effect on a person's safe use of roads.

Transport psychologists have utilised a number of tools to assess people's tendencies towards being anxious, angry, and seeking sensations, and the relationship between these tendencies and their driving. These include the Trait Anxiety Inventory (1 and 2)[19], the Sensation Seeking Scale[20], the Driving Anger Scale[21], and the Proneness for Reckless Driving Scale[22]. Correlations have been found between self-reported driving behaviour and scores on these scales.[23][24]

There is also a tool that assesses the degree to which young drivers feel they are supported by their family to be safety conscious – the Family Climate

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for Road Safety Scale[25]. Correlations have also been found between driving behaviour and scores on this scale.[26] A separate study has also found that driving in the presence of a peer who is "risk-accepting" (thinks taking risks is OK) increases driving risk.[27]

Thinking about other things

Whether we are emotionally charged or not, when using roads, our thought processes easily wander to things other than the safety of the task at hand. Driving, for example, particularly on a familiar route, can be perceived as something we can do on semi-automatic, or a car can become a place where we consciously decide to "think about other things", such as work or relationships, or listen to a song, or reflect on a memory. This can be particularly the case in a "busy world" where there is little "down time" to be on our own and sit with our own thoughts. In one study, more than half of drivers' thoughts ("what are you thinking about?") were on subjects unrelated to driving.[28]

Distractions

Distractions around us, ranging from electronic devices, to people, to things we see and hear, impact on ability to focus on safety. For drivers, this can include things inside their vehicles or outside their vehicles. Younger generations are particularly prone to distraction. Responding to a smart phone is increasingly being identified as an addictive trait. Distractions can vary in effect on people, depending on their timing, intensity, duration, frequency, resumability (the extent to which a task can be dropped and restarted efficiently – for example, it's easier to stop eating a bar of chocolate than stop a conversation mid flow), and the "hangover effect" (residual cognitive or emotional distraction once a task is ended).[29]

At-work drivers are also prone to distraction, and are more likely to engage in certain distracting behaviours than non-work drivers. For example, in one Brake study, 55% of at-work drivers admitted talking on a phone (either hands-free or hand-held) at the wheel, compared to 36% of non-work drivers. 35% of at-work drivers admitted to using a hand-held phone at the wheel (illegal in many countries), compared to 25% of non-work drivers.[30]

If poorly implemented, vehicle technologies (even those which are intended to benefit road safety) also "have the potential to do harm by increasing road user distraction."[31]

Inattention: failing to look and "looked but failed to see"

A person may also develop a habit of failing to look properly, particularly on a route that is familiar to them and often quiet / empty of traffic, but lack "metacognitive awareness" about their behaviour (they think they look properly). Their attention may be restricted, diverted, misprioritised, neglected or cursory. Differences between people makes, at best, only a small contribution to inattention; the main predictors are the aspects of the task, environment and situation.[32]

It is common to hear that an experienced driver "looked but didn't see". Studies of experienced drivers have found that the attention they give to motorcycles (in terms of duration of gaze) is less than the length of gaze they give to cars, when it should be more. Novice drivers, by contrast, were found to give cars and motorcycles equal "gaze lengths", demonstrative of more care.[33]

This may explain why motorcyclists involved in crashes are often hit by drivers pulling out from side junctions. Academics describe the motorcycle, in such an incident, as a "low spatial frequency" object (a narrow object that is blurred into the background unless carefully sought). It is harder to see, and requires a longer fixation by the driver to see it.[34]

Familiarity of a route may also lead to drivers perhaps actively looking at other things to keep themselves aroused, and missing hazards for that reason. A study of the brain patterns of police drivers undertaking the same simulated drive twice, found a "significant reduction in attentional areas of the brain" and concluded route familiarity reduces activation in the brain.[35] A similar study tested the attention of a driving instructor undertaking a real road journey 28 times, and found a "decrease in attention to safety-relevant aspects".[36]

As well as this "inattentional blindness" (the tendency not to see unattended things), there is an additional psychological blindness called "change blindness". This is when someone is familiar with a particular situation, and doesn't notice when that situation changes (for example, when a road sign is changed). It has been found that people have a much better chance of noticing change if they focus for longer, and that more familiarity with a road leads to a shorter glance duration and heightened risk.[37]

Academics have found that drivers are, overall, more likely to take notice of vehicles and what they do, than people,[38] suggesting perhaps that the driving task is de-humanised, and not a task that we associate with taking care of each other.

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Physical and mental development, impairment and deterioration factors

Academics argue that while many people use roads while on "automatic pilot", conversely using roads is complex and requires people to have their wits about them. The driving task, for example, requires a person to "engage almost all of their mental faculties", including memory, physical control skills, perceptual and cognitive skills involving anticipation and understanding of others' intentions, attitudes to authority, social understanding, and the ability to inhibit conflicting emotions and motivations.[39]

A range of physical and mental impairments may affect our behaviour on roads. In many cases, people are undertaking tasks that have a demand on them that outstrips their capabilities. How we are feeling mentally and physically may also affect our modal choices.

Children are small and their hearing and eyesight are still developing, so what they can observe is limited by these physical factors. They also may lack basic understanding of what constitutes a hazard, and be unable to judge speed and distance. At some stage, children are given independence and make mistakes that can lead to their death. In the UK, for example, the peak age to die on foot is 12 years.

Young people, from their teens to 20s, have a range of neurobiological disadvantages as all kinds of road users, but posing a danger not only to themselves but to others when driving.

This includes:

• a need for more sleep, but often a later "sleep onset" in the evenings. This means they can be more tired during the day and prone to doziness or falling asleep;

• a greater susceptibility to distraction (for example from devices or passengers);

• a greater susceptibility to impairing effects of small amounts of alcohol;

• an increased tendency to suffer anxiety and depression, or be dealing with challenging developmental issues[40] ; and

• a likely increased tendency to use smart phones at the wheel.[41]

Care should be taken not to stereotype young people as a homogenous group, however, and their habits (for example drinking alcohol) vary widely.

Adults generally may suffer from:

• fatigue and stress, due to life pressures (such as managing a family and work);

• mental health problems, inclusive of depression;

• chronic pain;

• impairment from medicines, and poor ability to judge levels of that impairment[42]; and

• obesity.

People in an older age range may have variable deterioration of:

• vision, which may not be diagnosed and treated;

• mental skills such as reactions and ability to judge speed and distance; and

• mobility, affecting their speed of movement as pedestrians in particular.

Aside from age, it is well known that males of all ages are significantly over-represented in road casualties around the globe compared with females, for reasons including psychological causes such as risk-taking propensity.

I'm great!

Drivers tend to over-estimate their own capabilities[43] (skills and abilities), and, conversely, judge other road users as being less than able in comparison.

They are better at remembering other people's behaviour rather than reflecting on their own behaviour.[44]

This may affect ability to take on board messaging encouraging them to take more care.

Our cultures and languages

Where we live and its culture is an important consideration. There may be significant influencers that are "non-universals" between different cultures, and markedly between low and middle income countries (LMICs) and high income nations. For example, people may have alternate reasoning behaviours; to give a simplistic example, in some nations it may be more common to have a fatalistic or religious belief that a crash cannot be avoided through behaviours (it is "karma" or the "will of god").

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Some words and concepts may not translate accurately between languages because shades of meaning are different, leading to the risk of complex levels of miscommunication when delivering safety messages. Additionally, transport academics and practitioners trained in one culture but working in another need informed psychological insights into that culture.

For example, a practitioner conducting a questionnaire with a road user will need to consider: "Are we asking what we think we're asking, and are the answers what the person really means? And is the person being swayed by concerns such as the confidentiality of their answers or the social desirability of their answers?" Such issues need to be acknowledged and addressed by researchers and practitioners alike.[45]

What primary mechanisms should be used, if not education and communication?

There is united academic and practitioner opinion that the crises faced on roads needs to be tackled primarily through top-down government action requiring regulation and investment, through a strategic framework. This is reflected in the United Nations' Sustainable Development Goals and its Decade of Action for Road Safety.

A "vision zero" approach and the importance of engineering

"Vision zero"[46] is a strategic approach introduced by the Swedish government in 1997. The long-term goal is that no-one is killed or injured, and consequently the basic design parameters for the road system should be the tolerances of the human body.

This approach centrally acknowledges the complexity of human psychology and the enormity of the challenge of addressing road user behaviour. Instead it aims to, as a priority, engineer a "safe system approach" that allows for this human error and prevents those mistakes leading to harm (i.e. is "human proof").

Centrally, this safe systems approach is about engineering solutions, notably segregation of motorised and non-motorised road users, controlling speeds, autonomised safety features on vehicles (ranging from alco-locks to automated emergency braking (AEB) and intelligent speed assistance (ISA)), and reducing exposure to risk

(through modal shift to public transport rather than cars). In 2008 the OECD released a report calling for governments to implement ambitious targets, based on a safe systems approach.[47]

In the Netherlands, a "sustainable road safety" system has been adopted, which implements a road system with a small, and clearly defined, number of "road" types that have a single, not multiple, function, with few differences in speed or mass (type) of users. This means limiting access if necessary to some routes by some types of road users.[48]

As well as engineering measures, there has been significant research concluding that specific regulatory, management and testing interventions can be perceived to have an impact on driver behaviour and can be included in a safe systems approach.

Management of occupational road risk

Management of occupational road risk in companies and organisations of all kinds can play an important role. Management systems that introduce policies and procedures can be effective at reducing crash risk as they require compliance from employees. Useful overarching tools such as the Haddon Matrix[49] have been adopted to inform such policy and procedure development, directing boards of companies and organisations to consider: management culture, journey type, the road environment, the people (managers as well as drivers), the vehicle, and external factors relating to brand / community / society.

Companies and organisations also need to keep detailed records of the causes of collisions and near misses involving their employees, to inform development of further safety measures.

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Graduated licensing and hazard testing for novice drivers and in the workplace

Graduated licensing schemes that license young people to drive progressively over time, and later, help as they address the neurobiological disadvantage of young people and the exposure to situational risk, as well as their inexperience, through measures such as elevating the minimum age of driving, having a minimum period of learning, restrictions on night driving, a zero alcohol limit, restrictions on high-powered vehicles and carrying passengers, and restrictions on phone use. The crash risk consequently reduces by allowing driving in lower-risk conditions.[50]

Academics agree: "Graduated licensing is effective at reducing collisions in countries where it has been implemented and the quality of the evidence is high."[51] The potential for casualty savings in countries that do not have it is significant.[52]

The ability to perceive and detect hazards, and testing for this as part of graduated licensing or within the workplace is argued, by some psychologists, to be efficacious, particularly academics involved in the development of hazard perception testing as a part of novice driver tests. For example, the school of psychology at Australia's University of Queensland designed the hazard perception test used in the Queensland driving test.[53]

New Zealand academics have found that training in higher-order driving skills can lead to statistically significant improvement of visual search behaviour during on-road driving, accompanied by an improvement in hazard perception, safer attitudes to some risky situations and a decrease in driving-related confidence.[54] However, as with all educational interventions, some academics have argued it can be challenging to evaluate hazard perception training effectiveness.[55]

Practitioner recommendations for educational / communication interventions

1 If considering behavioural change as an intended outcome goal for an intervention, NICE (the National Institute of Health and Care Excellence) in the UK recommends that the intervention would "need to be tailored to the needs of the individual (and individuals vary significantly)" and its design carefully considered "dependent on the factors influencing that individual."[56] NICE recommends monitoring of behaviour (for at least a year) and rewarding good behaviour (for example, praising people who cycle or rewarding at-work drivers who have zero incidents). NICE explains that change is a process, not an event, and requires extensive and prolonged input.[57] The intensive and tailored nature of such an effort is less than achievable in the context of many educational and communication interventions aimed at groups of people. This approach therefore helps emphasise the complexity of having behavioural change as an outcome goal for general education or communications interventions aimed at groups of non-homogenous people (which is most groups of people).

2 NICE also recommends that educational programmes should use appropriate **psychological models and theories** that are best proven to be useful in certain types of programmes.[58] Practitioners may benefit from reading the freely available online "Practical Guide: An overview of behaviour change models and their uses"[59] which provides an overview of some different models and makes recommendations of how they may be best applied to different types of education or communication interventions. This includes well-known theories such as: the Theory of Interpersonal Behaviour, Protection Motivation Theory, Prototype Willingness Model, and the Theory of Planned Behaviour. In this guide, its author Andrew Darnton summarises the various aspects of the models as:

   • attitudes (what we think);

   • norms ('descriptive norms' which specify what is done, based on the observation of the majority of others, and 'injunctive norms' which specify what other people think ought to be done);

   • agency (our ability to do something);

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- habit (what we have done until now); and

- emotion (how something makes us feel).

If preparing education or communication interventions it is vital to keep abreast of emerging **academic theories and findings** in the world of transport psychology and health education academia through methodologies such as reading relevant journals, bulletins and attending events.

3 **It is important to be able to monitor and achieve outcome goals set.** The need to monitor and meet outcome goals is the primary reason for considering with care whether it is appropriate to have behavioural change as an outcome goal for a stand-alone educational or communication intervention aimed at a group of people. Unless it is possible to track behaviour objectively (for example, tracking a driver's behaviour through in-vehicle technology) and to relate this behaviour entirely or at least partially to the intervention, it will be very difficult to prove that the outcome has been attained. NICE argues that any health intervention aiming to improve health should not just include educational elements; it should include measures such as government policies and investment that provides people with the opportunity to make a healthy choice.

There are a number of **alternate outcome goals** that Brake has identified in part for its own education and communication work, and that practitioners may want to consider. These are easier outcome variables to monitor than attitudinal or behavioural change. These are listed here:

i. **Awareness-raising through knowledge gain** of issues relating to safe, sustainable, healthy and fair transport, and recognition that these are important causes.

ii. **A deepened understanding of the challenges of changing human behaviour** (either our own, or others), enabling people to be more mindful of their own behaviours and the behaviours of those they love, and a heightened consciousness of the personal choices we make in the way we move (developing "insight" is different to an outcome goal of actually achieving behavioural change).

iii. **A deepened understanding of emotions and their impact on people.** This could be related, for example, to the impact of these things on people's behaviours, but also to the enormity of the effects of being bereaved or suffering a life-changing injury due to a road crash.[60]

The UK government says: "PSHE (personal, social and health education) provides an opportunity to provide or enhance skills such as perseverance, conflict resolution, emotional intelligence, self-management, self-respect, team work, locus of control, time and stress management."[61]

iv. **A deepened understanding of why there are governmental or organisational policies** and procedures relating to road use, particularly for drivers, for example speed control and at-work driver hours' legislation. Increased agreement with "legitimacy of action" (meaning the recipient's perspective is that they agree that a policy or rule is valid, and would vote for it / support it, for example a speed camera enforcement regime).[62]

v. **Engagement in activities that result in wider dissemination of knowledge gain** through education or communication activities undertaken by those recipients to other people.

vi. **Engagement in campaigns for change** (through local campaigning for safer streets or public transport for example, or support for national campaigns). Such engagement has been shown to ease politicians' efforts to implement change, for example during the introduction of graduated licensing in Queensland, Australia.[63]

vii. **Engagement in supporting the cause of safe and sustainable roads** in other ways, for example by fundraising for a charity working for the cause, such as Brake.

viii. **Developing life skills relevant to campaigning or communication**, for example, how to set up a campaigning Facebook page, how to run a media campaign, how to give a speech.

ix. **Meeting unrelated curriculum or learning goals** in a wide range of subject areas inclusive of mathematics and English.[64] Studying safety and health could even result in higher academic attainment levels.[65]

x. **Supporting wider initiatives**, for example, if working in a school, efforts to be a Health Promoting School in line with United Nations recommendations,[66] although the difficulties of monitoring outcomes of such initiatives is also noted.[67]

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4 If engaged in delivery of an education initiative, or giving advice to educators, follow best practice advice on delivery of health education. This is developing all the time, but it is generally accepted that working in small groups of three or four people, and giving those people opportunities to develop their own thinking and produce their own results, is an effective environment for education.[68] It is also argued that work in schools should:

a) take a whole-school approach, engaging pupils across the curriculum while creating an environment, through the school ethos, that fosters good relationships and well-being for pupils and teachers alike;

b) include lessons that are interactive, participative and engaging; pupils' views should be sought and older children can be involved in the development of curriculum programmes;

c) have lessons with clear objectives, taught by someone who is trained and comfortable in their role;

d) be inclusive of difference, including other cultures, ethnicity, disability, faith, age, sexual orientation and gender identity;

e) be relevant to pupils depending on their age and maturity;

f) ensure coherence and teamwork – including involvement from other agencies (where appropriate), parents, governors and members of the wider community; and have support from the head teacher and senior management team, which reflects a respect for PSHE education and PSHE coordinators within their school; and

g) include evaluation and monitoring of both pupil and teachers' perceptions of what **leads to increased knowledge and engagement** and, where possible, attempt to assess longer term outcomes.[69]

While these recommendations apply specifically to schools, aspects of these recommendations can also be related to practitioners working in other environments, such as companies.

5 Use an **assessment instrument to "process evaluate" any tools you develop**, both during development and at identified stages during use. There are assessment instruments that have been developed by academics, for example:

- CARRS Q has developed SatMDT (a Step Approach to Message Design and Testing).[70]

- A "10 step" road safety education check list has been developed by academics in the Netherlands.[71]

- The Department for Transport in the UK developed steps involved in the evaluation process, from defining the objectives of the evaluation to writing an evaluation report.[72]

- Practitioners can also use the Road Safety Evaluation website.[73]

For companies, and others engaging with external suppliers, this should include checking what testing and evaluation has been conducted of any training, technology or other tools you are considering purchasing, the validity of such testing, and the quantified outcomes.

6 Consider the **continuous and appropriate messaging**[74] of your education and communications. Doing it often, in a high profile way that indicates it is valued, and featuring important messages deepening knowledge as well as reminding, may help keep the causes "in mind" and prevent switch-off due to familiarity with the cause and message.

7 Consider messaging using "persuaders" that **relate "to me"**, that people can believe they have control over (for example, if I control my speed consistently I won't lose my licence through repeat infringements).[75]

8 Consider **messaging that is positive**, encouraging people to side with individual actions or policies that are about "doing the right thing" and that elicits people to consider supporting something that enables them to have feelings of pride and happiness[76], resulting from a position of kindness and goodness. This may be much more effective than using consequence as a means to induce fear responses.

9 Consider giving **ownership** of the development of messaging to the people you are trying to reach. Developing campaigns themselves can help increase their engagement. In school health education it has been found that "involving pupils in the design of safety education interventions was key to achieving successful outcomes."[77] This could include teaching pupils about psychology theories and models, to help them design better education and communication campaigns.

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