The research also highlighted key differences between the open and representative rider sample. The open sample was more likely to ride more frequently, report being involved in a crash or close call, and blame the other road user for the crash or close call. This group also had a much lower perception of risk, and were more focussed on rider skills and the role of other motorists in crashes.

Based on the insights gained from the research, the campaign was subsequently designed around highlighting everyday hazards that riders face on the road and illustrating the consequences of different choices riders can make in response to each scenario. The campaign aims to challenge riders to better manage their risks by anticipating hazards and preparing early through good lane positioning, buffering and setting up brakes without being too prescriptive and authoritative.

Campaign executions include 30 second and 15 second advertisements featuring metropolitan and rural locations to target the specific crash types and risk management strategies for commuter and recreational riders. There is also a driver execution, which challenges drivers to think about how closely they look for motorcyclists and reminds drivers to check blind spots and look out for motorcyclists at all times.

The television campaign is also supported with a website, which includes online hazard tests based on key crash types, safety tips, and a trip planner of popular recreational riding routes in New South Wales featuring hazard information, recent crashes, weather, traffic and places to stop. The online hub can be found at http://ridetolive.nsw. gov.au.

The results of the crash data analysis and quantitative research were instrumental in the development of the new campaign, and were considered at every stage to ensure the campaign messages were relevant and credible to riders, and effectively addressed their unique road safety challenges. This was achieved through a strong collaborative approach between teams within Transport for New South Wales and key motorcycle stakeholders including the Motorcycle Alliance and Motorcycle Council of New South Wales.

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Driver Behaviour

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This article begins with a bold, and some would say, cynical statement. For years now governments and vehicle manufacturers have spent hundreds of billions of dollars, uncountable hours and very high expertise designing safer roads, safer vehicles, safer road sides, implementing systems and improved regulations, in a bid to continue to reduce the numbers of people killed and injured and damage done on the road. Then they put people in charge of vehicles.

Without people in control of vehicles the number of incidents on the road would be next to zero. The human being is the only part of operating a vehicle, or the roads, roadsides, etc. that cannot be engineered or designed to be next to perfect, and in truth fails at the task of driving so often.

Some would say "what about weather, falling trees, animals and so on?" Well, engineering can provide solutions to these 'external' factors with improved roads, roadsides and vehicle responsiveness. To give you an example, consider

the technology available in newer Volvos. It keeps the car within the lane; ensures there is sufficient space kept in front of the vehicle to be able to stop; scans the road ahead and if it detects anything coming out in front brakes immediately. It has ESC, ABS, EBD etc. And these are only the active safety devices. It then has additional passive devices in case a crash actually occurs - such as airbags.

According to Transport for NSW [1], 295 deaths and 7,111 casualties in New South Wales in 2012 were caused just by the human factors of speeding, alcohol, fatigue and not wearing restraints. The total number of deaths in New South Wales in 2012 was 368 and injuries 22,902. If you add failing to give way, tailgating, dangerous driving, etc., the percentage of deaths, injuries and crashes caused by humans is even higher.

So while ever there are moving vehicles there is a possibility of an incident and evidence suggests that humans are the single biggest cause of incidents on the road. There are many reasons for this, the first being that
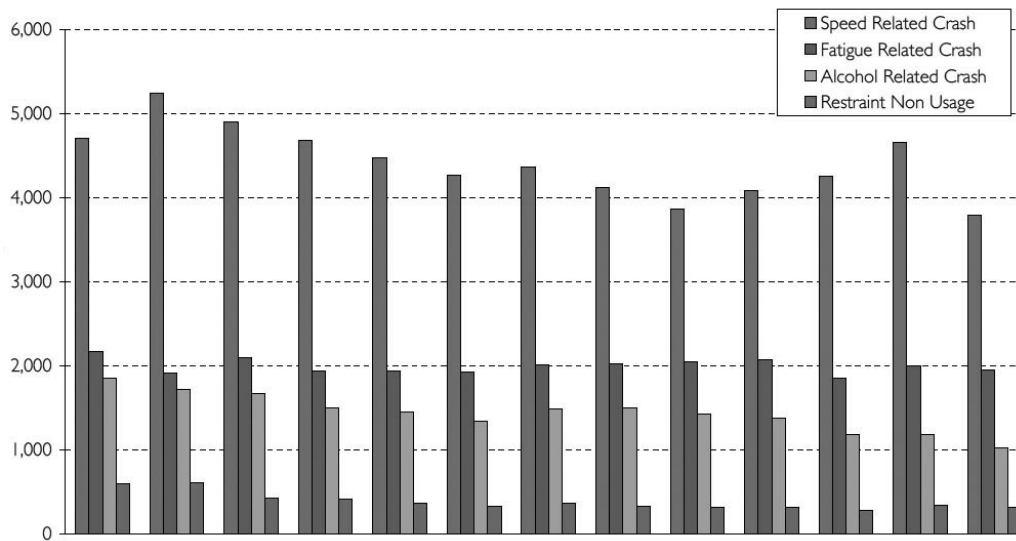
Figure 1. Behavioural factors related to injuries per year (Transport for NSW)

even with maximum effort and concentration humans cannot be perfect. On top of that, human beings are programmed to take risks. In order to live their lives humans must take risks. It is present in everything humans do, so they become used to it, even immune and unaware of it, until the consequence or likelihood of a risk reaches a level where the conscious mind steps in and says, "Think about it!" This point where individuals start to think about what they are doing is different for everyone and is expressed in the statement that "some people are more risk averse than others".

A revealing exercise

Dropping the statistics for a moment, the simple exercise below adds weight to the arguments discussed so far. The table below can be filled out with a range of factors that can be considered to contribute to crashes on the road. This may include incidents that drivers or passengers have either experienced or that they know about. Some examples have been provided, but this is just a sample of the many factors which an individual may be aware of.

Human Error	Vehicle	Environment
Speeding	Faulty brakes	Wet weather
Fatigue	Bald tyres	Fog
Alcohol	Lights not working properly	Animals

Human error is often the most common factor. But when the list in the vehicle and environment columns is analysed to identify factors which could also be eliminated or mitigated by a change in driver behaviour (such as car maintenance, slowing down, etc.), these can then be moved into the human factors column. The list of human factors are then by far the most common issues. Looking at the human factors it is essentially a list of risk taking behaviours.

This is not a scientific exercise; there are no quoted research findings or statistics. The result can be defined by an individual based on their own experience.

Addressing human driving behaviour is arguably the most important road safety factor that needs to be addressed. Vehicle manufacturers are close to largely eliminating the human factor with driverless cars but the future of this technology has not been defined at this stage. Will they only be for local use? Will this cover all driving? What about enthusiasts, motorcycles and so on?

Even with the introduction of these new technologies, it is still important that efforts be made to address the human factor in order to improve road safety outcomes.

Risk-taking behaviour

This is a complex area of human behaviour, which is not possible to discuss fully here. This article only considers risk-taking behaviour in the road environment.

Human beings have a psychological condition called 'Optimism Bias'. In layman's terms this means they believe good things happen to them and bad things happen to others. The extension of this belief is that "I can take risks because nothing bad happens to me, and if for some reason it does it will only be minor."

Extending that belief further, it turns into:

- "I'm a good driver, everyone else is the problem."

- "You have to drive like everyone is out to kill you!"

- "I can't believe how many idiots are on the road"

Yet a further extension to this way of thinking is road user responses after an incident occurs:

- "There was nothing I could do, the car in front stopped too quickly!"

- "The car came out of nowhere; there was nothing I could do!"

If you think about these types of statements they also externalise the responsibility. People do this because it is easy, protects their self-esteem and it is more comfortable to feel you were not in control of events. If you reverse those statements to internalising statements such as "I should" or "I could", the person is accepting responsibility for managing their risk. It means people are taking responsibility for their own actions. However, it is not comfortable to feel that you could have done something but didn't. So people tend to avoid this type of thinking.

Externalising leads road users into a lazy, complacent style of driving. After all if there is nothing I can do, then I don't need to take any specific preventative action.

The two broad types of driving attitude can be described as:

Externalising: Anything that may cause me to crash is not under my control and I can't do anything about it, i.e.: "There was nothing I could do" and;

Internalising: I am able to exert at least some level of control over all factors that may cause me to crash, i.e.: "I can …"

The power of this knowledge is that it allows road users to change from a defeatist/victim style of driving to pro-active driving behaviour that manages risk well. An internalising style of thinking leads to internalising situations prior to incidents happening. Road users naturally move from internalising after incidents occur, to before they occur. They start to think about what they can do as they approach different situations to minimise the risk of being in a crash, even if it wouldn't be their fault.

So Optimism Bias is a normal, and in fact important, part of the human psyche. After all would you even get up in the morning if you thought bad things were going to happen to you? In the driving environment however, it leads to laziness, complacency, risk taking, etc. and is a dangerous way of thinking. In the end it is also based on incorrect assumptions, because every person has had bad things happen to them.

Unintentional vs Intentional risk taking

Risks taken on the road include both unintentional and intentional risks. There are risks that occur without us realising they are about to happen or that we take without realising it, e.g.: becoming fatigued can be very subtle; and there are those that we intentionally take.

We make thousands of decisions while driving. In most cases they are good rational decisions. However, there are times when road users will make a decision to do something that increases their risk, because they feel the reward they hope to get makes it worthwhile. An example of this is overtaking on double unbroken lines. The belief is that the risk of having a head on crash is outweighed by the time that will be saved.

For most drivers, when they are in a position where they are considering their driving behaviour, such as a training course, it is usually easier to address their intentional risk taking, because it is easy for them to identify these risks and do a risk vs consequences analysis. Unintentional risk taking is often harder to identify and conduct an analysis on.

For a safe driver the unintentional risk taking is probably the most important area, whereas for the average driver, addressing intentional risk taking is probably most important to begin with.

Externalising is one factor that leads road users into both intentional and unintentional risk taking. Internalising is how they learn to manage risk and become a safe driver.

What affects road user behaviour?

Again, human beings are complex and flawed. They are in possession of the most powerful problem-solving device in the world - their brains - but the facts are that in their day-to-day lives humans actually make decisions based on how they feel, rather than what they think. How many times have you personally done something that you rationally knew was stupid, dangerous or even illegal? Why did you do it then?

There are both internal and external factors that affect decision-making by road users, including:

- Attitudes to safety

- Attitudes to authority and rules

- Belief systems

- Estimation of one's ability

- State of emotion

- State of impairment

- Medication

- External pressures

- Internal pressures

- Social expectations

- Media

An example of a risk taking decision by a driver is running late. The decision needed is whether to stick to the speed limits and the rules at intersections, or give in

to the pressure of being late and take the risk of speeding, accelerating through an amber light, and so on.

Social impact is another influence on decision making. Many drivers don't believe they can implement safe driving techniques because of the response they will get from peers and other road users. This is commonly expressed in the statement "I speed because everyone else does". Anecdotally from our experience in road safety training it is clear that social acceptance is a major barrier to safer driving.

In modern society another barrier is the perception of many people that they are always in a hurry. Modern society seems to put pressure on people, such as long work hours, needing to drive children to sport and so on. This shows in the driving environment with behaviours such as speeding, tailgating, dangerous overtaking and road rage. The truth is that, despite the fact that these behaviours usually result in very little time saved, generally people are probably not in as much of a hurry as they think. Possibly, people have become conditioned to feeling they're in a hurry and under pressure.

A good question to ask yourself when you feel you need to rush as a driver is "When I get to my destination am I going to run when I get out of the car?" If the answer is no, then you're probably not in that much of a hurry and the very small amount of time you lose by driving safely will make no difference at all.

Males vs Females

A good way to stimulate thinking about the effect of the human being on safe roads is to compare male and female drivers. To do this we do need to generalise but it is valid in such a discussion to demonstrate the point. Below you will see the graph that shows the difference in the number of deaths on the road by gender in 2013 [1].

Figure 2 indicates that in most age brackets male drivers are approximately twice as likely to be killed. There are many reasons for this including factors such as males driving more hours than females, at the most dangerous times of the day and on the most dangerous roads.

However, it can also be argued that for such a large difference there must be some other factors, including driving behaviour. It is generally acknowledged that males take more risks on the road, including speeding, overtaking, tailgating and engaging in hoon driving.

Another point of interest is that this graph has changed dramatically. Since 2005 until 2013 males were always three times more likely than females to be killed in a crash [1]. So what has changed? Possibly the driving behaviour of females is changing and increased risk taking is starting to impact on the numbers? Perhaps males are changing their behaviour?

Of course this graph doesn't include injuries or crashes with no injuries. It is possible that female drivers could be involved in more crashes. However, whether females are involved in more crashes than males or not, both results would indicate that male driver behaviour is more dangerous.
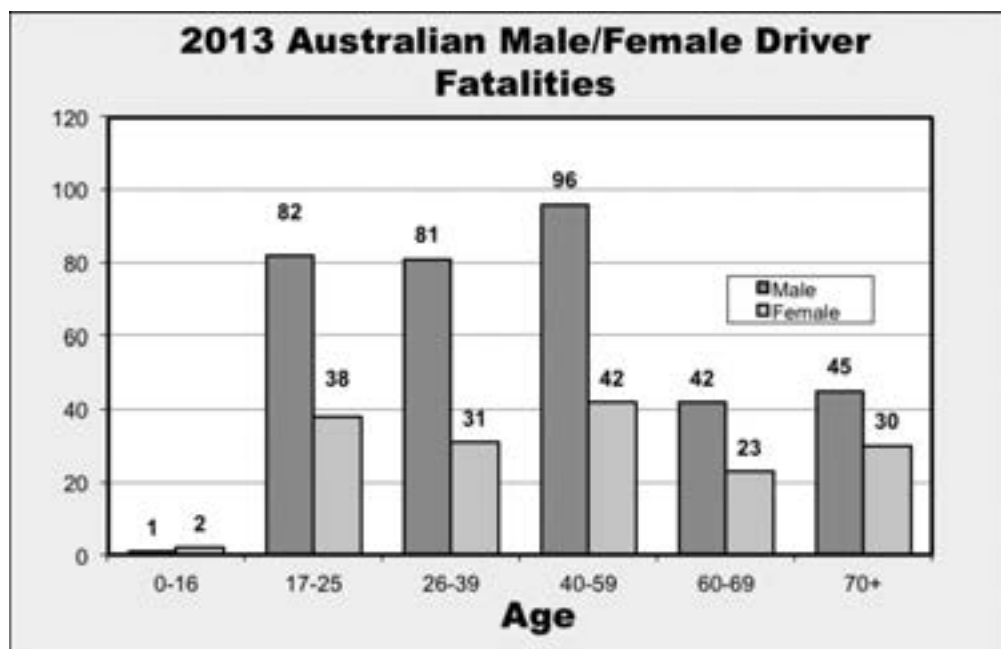

Figure 2. Comparison of Australian male and female driver fatalities.
Source: (Department of Infrastructure and Regional Development)

The ambivalent driver

Human beings will not change their behaviour without a significant reason to do so. That reason needs to be personally meaningful for them and have a strong perceived benefit. Unfortunately, this means there are many road users that will not improve their driving behaviour without being convinced of a significant reason to do so.

Drivers will often change their risk taking behaviour for one of the following reasons:

1. They decide they no longer want to pay fines,

2. They are incurring too many demerit points,

3. They lose their licence,

4. Their lifestyle changes, such as having children in the car,

5. In response to education (advertising or training) increasing their awareness,

6. They are sent to court, or;

7. They receive a prison sentence.

Even then some people will not change their risk taking behaviour at all.

Changing risk taking behaviour

From the list above the most significant motivating factor for a road user to change their behaviour is based on negative outcomes. This is where our police force and the justice system comes into play.

Without doubt, enforcement has a major impact on improving road user behaviour. Part of the risk vs reward decision-making discussed above is the question "Will I get caught?" If drivers were 100% certain they would get caught when they broke the road rules then probably no one would take the risk. When faced with a fixed speed camera, road users generally do not intentionally speed through the speed camera zone simply because the outcome is 100% certain. (There are exceptions such as removing their number plate beforehand).

However, education and training can play a major part in changing driver behaviour. To achieve behaviour change is not easy though and requires a structured training environment and the application of behaviour change theory, which encourages participants to reflect on their own personal motivations and lifestyle.

There are a range of behaviour change theories; this article will consider two of those:

1. Transtheoretical behaviour change theory [5] and

2. The Theory of Reasoned Action (formulated by Icek Ajzen) [5]

The Transtheoretical/Stages of Change Model

This theory states that there are five stages of behaviour change:

1. Pre-contemplation: The individual may or may not be aware that a change is needed.

2. Contemplation: The individual develops motivation to change.

3. Preparation: The individual prepares to make the change in the immediate future.

4. Action:The individual begins to make the change.

5. Maintenance:The individual begins to maintain the change. This stage is reached after approximately six months of demonstrating the new behaviour.

Theory of Reasoned Action

This theory is based on the presumption that people will consider the consequences of a change in behaviour before changing, including the social consequences. They make a decision whether that change in behaviour will have positive or negative consequences.

They will only make the change if they see that the new behaviour will have positive consequences or as a minimum, will not negatively impact upon them socially.

This means that a person's attitude and the social pressure they experience will influence their decision to change.

Self-Efficacy

Self-efficacy is not a behaviour change theory, but is critical for a change to be effective. It describes a person's belief in their ability to perform a task, which is affected by factors such as their prior success at the task or similar tasks; outside factors that affect motivation; and their physiological state.

It is believed that self-efficacy is a good predictor of a person's willingness to make and maintain a change in behaviour.

Self-efficacy is essential for change to happen. Therefore, training developers need to consider how they can empower the learners to feel they have the ability to perform the change.

When developing a training or education program using a behaviour change process, the first step is to increase the feeling of vulnerability - the "it can happen to me if I behave like this" feeling. This is addressing the pre-contemplation stage, making participants think that possibly they need to change their behaviour.

From this point it is important to build the motivation in participants to support the thought that possibly a change is needed.

The next step is to encourage participants to develop a plan to make the change they are considering.

Now is the difficult phase that many programs cannot address, unless it is extensive and conducted over a significant period of time. That is the action and maintenance phases. During a program participants are able to develop their plans and the intention to act but the action and the maintenance of that change is conducted post program. It requires participants to return and undergo further engagement in the process. Therein lies the major challenge to behaviour change programs.

Throughout the process the participant must be encouraged to believe they can make the change (self-efficacy).

Summary

So in summary, the human being is by far the greatest cause of incidents on the road. Changing road user behaviour is often achieved through enforcement and punishment processes, but education and training is an important part of achieving change. Changing behaviour through education and training is not simple but if done well can be effective.

Therefore, education and training in relation to road user behaviour is an important component in the efforts to reduce road incidents. Based on this, there is a strong argument that education and training needs to be implemented on a wider scale as part of the various licence schemes in Australia.

The Author

Stephen Lake (Dip. Training Design and Development) is the CEO of Freebott Pty Limited. Stephen began his career in road safety as a motorcycle instructor for nine years where he taught safe riding techniques. From there Stephen began to work for Freebott Pty Limited where he learnt more about the psychology of road users and the development of behaviour change based programs.

Freebott Pty Limited has been the contracted provider of the Road Ready suite of road safety training programs in the ACT, outside the school and community based environment, for 14 years. The company also delivers programs for road users convicted of drink or drunk driving in both the ACT and New South Wales and is a provider of the Safer Driver Course for learner drivers in New South Wales.

The company developed the current testing tool for Car, Motorcycle and Heavy Vehicle instructors under contract to the ATSB, contributed to the development and trial of the Novice Driver Program and the Sober Driver Program.

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Creating a driver safety culture in the not for profit sector: the UnitingCare Queensland Road Safety Program

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The motivation - vehicle crash and infringement history

Since 2008 UnitingCare Queensland (UCQ) has been providing a coordinated driver education program in road safety. The catalyst for embarking on this program, which was about influencing driver behaviours, was the increasing number of at fault crashes and traffic violations. In fairness to our drivers the environment they operate in and the increased exposure of traffic monitoring equipment are key factors in the increased risks. UCQ has a long history as a