
Legitimising Risk Taking: Articulating dangerous behaviour on the road

Dr Charles Musselwhite
Senior Lecturer in Traffic & Transport Psychology
Centre for Transport & Society, University of the West of England, Bristol, UK.

Dr Erel Avineri
Associate Professor in Travel Behaviour Change
Centre for Transport & Society, University of the West of England, Bristol, UK.

Abstract

The study used a deliberative approach engaging 228 members of the public across four locations in the UK reflecting a range of backgrounds. Six focus groups met in each area on three occasions. Findings examined how people articulate risks taken on the road. Applying a model based on two interlocking sets of theories (Ajzen's Theory of Planned Behaviour and Bronfenbrenner's Ecological Systems Theory) in the analysis of participants' responses, the paper describes the social and environmental systems that an individual interacts with in the articulation of risky behaviours on the road. Participants discussed how taking risks changed over the lifecourse and how they became safer with age. Social norms influence road user safety behaviour through the exchanging of attitudes where younger drivers were more negatively affected by passengers and peer pressure and more likely to embrace the symbolic role of the car and driving fast. In later life participants were still influenced by peers, but largely in a positive manner. External pressures on life, such as needing to be somewhere on time, can impact on risk taking. Immediate context of the road environment, for example the infrastructure, influences how much risk is taken. Road users wear different hats which influence their attitudes to risk, for example, speeding is seen as negative when talking as a resident but positive when being a driver. How far someone feels they are able to perform the risk or not also influences risk taking. Overall, the research highlights the importance of taking into account road user identity, road culture and risk taking when designing interventions on the ground.

Introduction

This paper takes the stance that the road environment is a social situation, with actors or agents that interact and influence one another (Haglund and Aberg, 2000). As, O'Connell (2002) states the design and construction of the road and traffic system "must not be based on an erroneous model of humans as abstract rational actors, isolated from their social context and operating on purely "objective" criteria" (pg. 201). As such road user safety can be viewed as not just skills-based and rule-governed but also in terms of being an expressive activity (Reason, Manstead, Stradling, Parker, Meadows, Lawton, Baxter, Lajunen, Senior, Adams, Beatty and Wooliscroft, 2001). Hence, for a full understanding of road user safety and for interventions to be successful, the social nature of the road user environment must be taken into account and the attitudes of road users examined. Research investigating the social nature of road user safety has focused on three key areas, attitudes towards road user safety, social norms and perceived behavioural control (for a review see Musselwhite et al., 2010a).

It is clear that the public know that driving error is a major contributory factor in almost all road user accidents involving vehicles (Cauzard, 2003). However, there is the perception amongst drivers themselves that it is "other" drivers and "other pedestrians" not themselves that are the risk (King and Parker, 2008; RAC, 2007). Speeding is seen as a major problem in residential areas and there is strong public support for tougher enforcement of speeds. This was viewed as serious by more people than viewed a problem with cars parking incorrectly or illegally, teenagers hanging around, rubbish and vandalism (DfT, 2008). Hence, it is no surprise that the majority of respondents support tougher enforcement of speed limits and in favour of reducing speed limits in certain residential areas, in particular by schools (Higginson, 2005).

The public also state having a good understanding of the speed and accident link (Higginson, 2005; Quimby, 2005). A total of 87% of the public state speed is a major cause

in most road accidents (Fuller, Bates, et al., 2008). In addition, 90% of the population agree it is important that people drive within the speed limits (DfT, 2008) and 39% state it is dangerous to drive over the speed limit at all (Angle, Buckley, Fearn and Goddard, 2007). However, Fuller, Bates et al. (2008) suggests that 14% of drivers state they are faster than other drivers, yet only 3% state they feel they are more dangerous. The pattern is far more marked for younger male drivers who are more likely they are to believe that their speeding is not related to being more dangerous (Fuller, Bates et al., 2008). Hence, when drivers are conceptualising the dangers of fast driving they are doing so by feeling that they themselves are not necessarily speeding and when they do speed they are still not any more dangerous than others.

Almost all drivers believe other drivers speed (Cauzard, 2003; Fuller, Bates, et al., 2008; Fuller, Hannigan, et al., 2008; Fylan et al., 2006; Silcock et al., 1999; Stradling and Campbell, 2003). The belief that most other drivers are speeding has an influence on individuals own choice of speeding behaviour; the more likely drivers are to perceive others speeding the more likely they themselves are to speed (Fuller, Bates et al., 2008). Younger drivers are more likely than older drivers to perceive other drivers as speeding (Yagil, 1998) and those who drive faster are more likely to perceive that other drivers speed (Aberg et al., 1997; Haglund and Aberg, 2005). Hence, there a norm associated with driving at over the speed-limit, one that the more dangerous individuals hold more strongly.

The presence or absence of other people influences driving behaviour. Thomas et al. (2007) reports a good review of this for younger drivers. Some passengers (e.g. parents) tend to reduce risky driving, whereas others (e.g. peers) might encourage more risky driving. Young men were more likely to take risks than young women stating that there is a social expectation that they would drive riskily made it more likely that they would do so. Some young people felt they 'grew out' of risky driving as they got older with more expensive cars and family responsibilities. In addition Silcock et al. (1999) suggest that the effect is there for all ages of driver but is more pronounced for younger male drivers who tend to drive faster when they were with friends but slower when there are children or their own parents in the car. These findings suggest that immediate peer pressure is an important factor in speeding for some groups, young males in particular. They also suggest that there is an awareness of risk which does modify behaviour, for example to protect a child in the car

Previous research has tended to look at these aspects often in isolation – there has been research into passenger effects, research into attitudes towards speed and risk taking, research into deliberate risk taking and violations, but very little research has considered the links between these factors. Research has tended to be largely quantitative with little time for social discussion or deliberation on concepts that link to largely habitual behaviour. In addition, further exploration of how attitudes and behaviours change over time and how they differ between and within contexts and people need further exploration (Musselwhite et al., 2010a). To explain the behaviour and draw together different social elements, this paper attempts to use two models: Bronfenbrenner's ecological theory (Bronfenbrenner 1979, 1989, 2005) and Azjen's Thoery of Planned Behaviour (Fishbein and Azjen, 1975)

Ecological models are increasingly being used to explain the interactional relationship between the external environment and an individual's behaviour. They propose there is a relationship between the psychobiological development of an individual and their immediate physical and social environment and that behaviour is as a direct result of the relationships between these. Bronfenbrenner (1979, 1989, 2005) Ecological Systems Theory (see figure 1) proposes a model (originally of human development) that has subsequently been applied to many different contexts of human behaviour, for example relationship between children's play and the wider environment (Holt et al., 2008), work-life balance in families (Kulik and Rayyan, 2006, higher education (Poch, 2005). It suggests that human's have layers that affect the way an individual develops or behaves. The model proposes five layers described as:-

The *microsystem* – this is the layer closest to the individual, containing structures within which the individual immediately interacts with. Structures in the microsystem include family and neighbourhood. At this level, structures and individuals have a bi-directional relationship. The *mesosystem* – this layer provides the connection between the different structures of the

microsystem (Berk, 2000). The *exosystem* – this layer defines the larger social system within which the individual does not function directly. These structures impact on the microsystem but not directly on the individual. The *macrosystem* – this outermost layer comprises of cultural values, customs, and laws (Berk, 2000). The *chronosystem* – this system this system encompasses the dimension of time and can be either external or internal, such as the physiological changes that occur with the ageing.

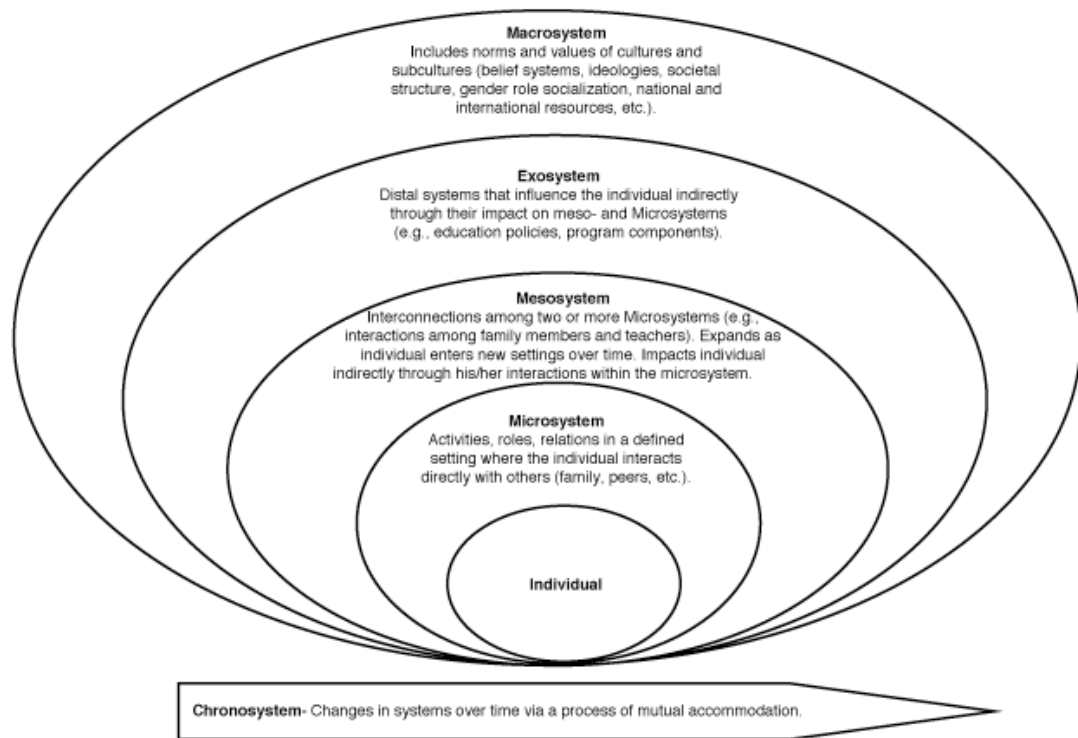
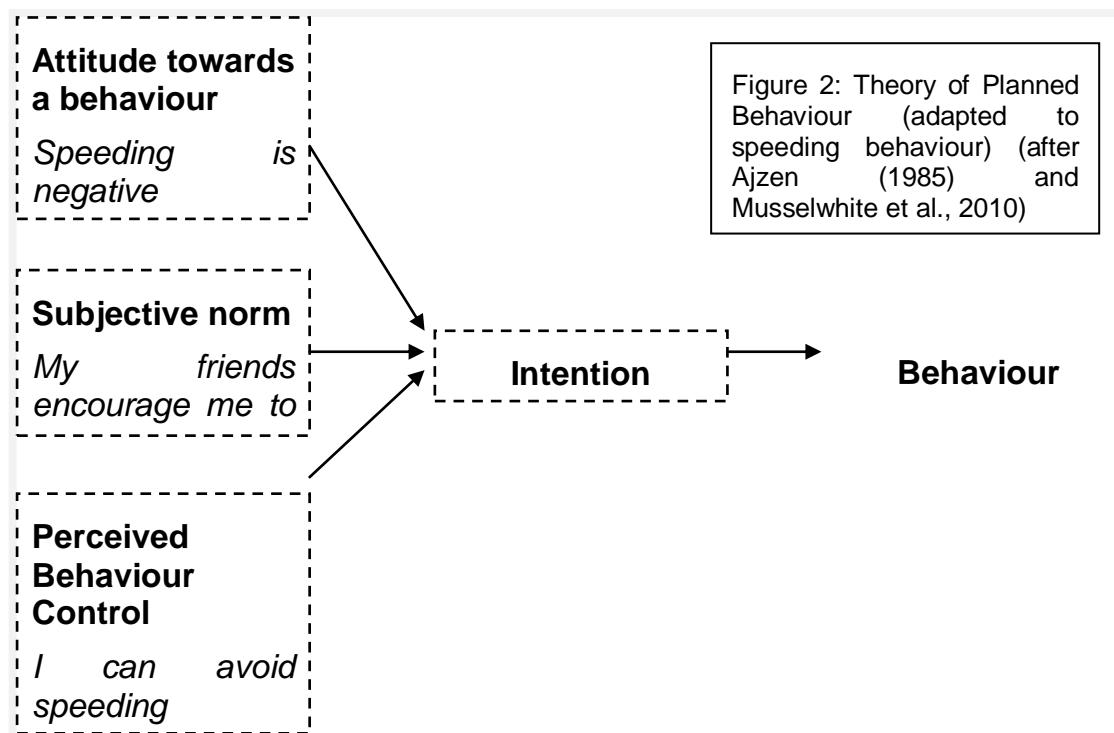


Figure 1: Bronfenbrenner's ecological systems theory (after Bronfenbrenner, 2006 and University of Minnesota via <http://ici.umn.edu/products/prb/211/default.html>)

The model has not previously been used to describe road user safety or transport and travel behaviour, though the model has addressed the development of risk-taking behaviour in general. Research suggests that the wider context interacts with individuals to influence risky behaviour, for example parenting styles (representing the microsystem layer) influence risk taking in adolescents, where authoritative and authoritarian parenting reduces the amount of risk taking compared to indulgent or neglectful parenting styles (see Steinberg, et al., 1994). For a wider review on environmental factors interacting with individual perspectives resulting in risk taking behaviour in general see Boyer (2006).

The Theory of Planned Behaviour (TPB) model (Ajzen, 1985), presented in Figure 2 with its determinants of behaviour (attitudes, norms, Perceived Behavioural Control (PBC) and intentions) is a powerful model for explaining and predicting human behaviour. Thousands of studies have tested TPB in various behaviour domains. There is compelling evidence that TPB (applied in general non-transport contexts) accounts for about 40–50% of the variance in intentions and about 25–30% of the variance in behaviour (see, for example, Armitage and Conner, 2001). TPB implies that changes in attitude, subjective norm and PBC can lead to changes in intentions and behaviours in the context of road safety. Subjective norms is one of the factors that predicted intentions to speed (Conner et al., 2010). The relation between subjective norms and behavioural intentions to commit driving violations was consistently stronger than between attitudes towards behaviour and behavioural intentions (Parker et al., 1992). The perceived speed of others influences one's own speed (e.g. Aberg, 1997). Social pressure and more normative pressure for young males to speed was even stronger when a male passenger is present (Conner et al., 2010). However, in some of the empirical studies that tested the hypothesis about attitudes as a main determinant of behaviour, it was found

that attitudes provide only a partial and limited explanation of intentions or behaviour. For example, Whissell and Bigelow (2003) found no link between attitudes toward speed driving and actual reported crashes. By studying drivers' compliance with speed limits, Elliott et al. (2003) found very little relationship between attitude and intention. Studying the intention to commit driving violations, Parker et al. (1992) found that the relation between attitudes towards behaviour and behavioural intentions was consistently weaker than other determinants of behavioural intentions. Tolmie (2006), who studied pedestrian decision-making of young adolescents, found that attitudes have an influence on behaviour, but not as strong as other determinants of behaviour.



Methodology

Research Design

A deliberative approach was taken, with individuals in group situations meeting over three waves of data collection. As a result, discussion on the social nature of road user safety took part in social situations and in-depth understanding of issues could be explored and discussed, dissonances revealed and motivations captured to further elaborate on the patterns found in surveys and largely quantitative research outlined above. Deliberative public engagement techniques overcome some of the limitations of top down consultative styles, providing a forum for reflective, considered and informed discussion between people with a range of views and values. They provide the opportunity to open up debates beyond narrow, often polarised interests. Importantly, deliberation does not necessarily aim at consensus, but rather to promote a better understanding competing views and concerns. Deliberative techniques can both inform policy interventions and provide insight into how such interventions impact on the views of participants.

Participants

The research engaged 240 members of the public across the four locations in the UK (London, Bradford, Glasgow and North-West Wales). The areas were chosen to reflect a range of socio-economic variables and well as a mix of urban (London, Glasgow and Bradford) and rural (North-West Wales) environments. Within each area 60 participants were recruited into one of six groups, with ten participants in each group, selected in response to gaps identified in the literature review (see Musselwhite et al., 2010b for full review) and including different road user groups, life-stages and attitudes to risk. Specifically, in each area, the groups were comprised as follows: Group 1: Young male drivers ; Group 2: Those who drive for work aged 21-54; Group 3: Those with children under the age of 16 (aged

between 21 and 54); Group 4: Older people (both drivers and non-drivers aged 55+); Group 5: Younger working people with no children yet (aged 21-34); Group 6: Individuals with different attitudes to risk. These were: People who predominantly take risks (Bradford); People who predominately do not take risks (North-West Wales); People who take risks when under stress (late for work etc) (London); People who take risks when they think it is safe to do so (driving fast late at night etc) (Glasgow) as identified using the Driver Risk Survey (Musselwhite, 2006).

Procedure and tools

Participants were engaged in three reconvened workshops across the four areas. Workshops were held approximately three weeks apart. The first workshops were held during the evening and lasted for two and a half hours. The final workshop was held over the course of a Saturday and lasted 7 hours. The group discussions were largely shaped by an prior in-depth literature review (Musselwhite et al., 2010a). The first workshop explored the relationship between identity and driver behaviour, within the context of wider risk taking. Specifically, it examined how these factors mediated attitudes to road safety – for instance views on whether and under what circumstances it is acceptable to break rules on the road. In this regard, the role of norms influencing road safety behaviour was also explored – both in terms of promoting good and poor driving. Between workshops 1 and 2 participants were asked to undertake a pre task to map local roads that they perceived to have significant road safety issues. This mapping exercise was used to inform the debate in the second workshop. The second workshop built on the previous discussion by exploring the relationship between place, identity and road safety. Specifically, it explored how location and driver familiarity influenced perceived risks, attitudes and ultimately behaviours on roads. The role of wider norms in influencing behaviours was also highlighted. Finally, participants considered issues on the road from different road user perspectives - this different hats session looked at the differences in perceived risks on the road between car drivers, motorcyclists, cyclists and pedestrians. Finally responsibilities for safety on the road were also explored. The final workshop sought to test various specific policy options and began with a discussion on potential interventions and debated the effectiveness and fairness of each in depth.

Analysis

The workshop sessions were tape-recorded using digital recording equipment. Electronic recordings were transcribed verbatim. A thematic analysis is conducted on the data, using a technique known as matrix mapping. Through the researchers' experiences of conducting the fieldwork and their preliminary review of the data, a thematic matrix is constructed. The transcript material was then summarised into this framework. The researchers reviewed the material and identified features within the data: defining concepts, mapping the range and nature of phenomenon, creating typologies, finding associations, and providing explanations. This framework identifies themes that emerge from the interviews as well as looking at similarities and differences between different groups. Key issues and underpinning features were then used to construct the reports and verbatim quotes to illustrate and illuminate the findings. Frameworks of Bronfenbrenner's ecological theory (Bronfenbrenner 1979, 1989, 2005) and Ajzen's Theory of Planned Behaviour (Ajzen, 1985) were used to frame the data.

Findings

The findings are discussed in terms of risks individuals performed on the road and the motivations for these risks. Particular emphasis is given to the social influences in the road environment that influence risk and a series of models are given that explain how risk was conceptualised by the individuals in the study.

Bronfenbrenner's model (Bronfenbrenner 1979, 1989, 2005) allows a pathway to be followed to help understand variation in risky driving/road user behaviour. At the chronological layer, it is clear that acceptance of risk varies over the lifetime of an individual. The majority of respondents felt their own driving had become safer with increasing maturity, largely because of increased driving experience, including: having, seeing or knowing people in accidents and learning from these; a reduction in negative peer pressure; having responsibilities such as children and a job that requires driving; a growing sense of mortality; increased tolerance for others' behaviour; and a realisation that driving faster does not actually match a reduction in time taken to travel. As people move through different life stages, especially when becoming a parent, there are pressures to conform to safer driving behaviours. Older people stated they often felt they were being judged by others and so had

to drive extra especially safely, although the pressure on the driving resulted in them often driving with increased risk. Younger drivers themselves also noted a change in their behaviour – stating that their driving behaviour generally became less risky as they got older. This was both as they mature, but also as the novelty and excitement wear off.

'I think I am better. I have calmed down a lot. I'm more aware. I used to have a moped when I was sixteen. I was hyperactive when I first started. I was here, there and everywhere, driving all day long every day. It is a new thing. But once you get used to it, it is nothing. You always feel it when you first pass, forty seems fast on a moped when you go round corners, but after you have been on the motorway and country roads, it is boring.' (London, young male)

At the outer most layer, the *macrosystem* layer, cultural norms, rules and laws, along with interpretation of these for individuals has an effect on the amount of risk accepted.

The symbolic role that cars played in the lives of young men in particular was also noted. This was not only in terms of the freedom and the status it conferred, but also in terms of thrill seeking and driving fast for the 'adrenaline rush'. Certain young male participants highlighted that they were 'programmed' to drive at high speeds and were generally fearless of consequences. The glamour of driving fast, captured in films and programmes such as *Top Gear* and *Men and Motors*, was also highlighted. It was noted by some respondents there was a need to behave in a manner as would be expected of them. The idea of 'playing up to stereotypes' was also used to legitimise risk:

"I've got a white van, so it's like that's the rule, isn't it?" (Male, Bradford, Working, no children in household)

The *exosystem* level shows the wider importance of structures associated with the outcome of driving. Not least the importance of reducing travel time and arriving at destinations for appointments on time, most notable work and school (for those with children). The importance of being on time for appointments and the stresses of modern day life were cited as reasons for taking risks on the road. There was more to be lost from missing appointments and wasting time travelling than there was from being a safe road user,

"I couldn't be bothered at all about crashing. So I cut into the tightest spaces, far too tight spaces, just get in it...There's the pressure of getting to jobs, getting jobs done, making your time, making money" (Male, Glasgow, children in household)

At the *mesosystem* layer the interaction of the effect of the *exosystem* layer on behaviour is noticeable. The wider social context affects the amount of risk shown when driving. The direct effect of concerns about being late cause anxiety which in turn effects many people's driving behaviour. Participants articulated that wider concerns linked to the consequences of being late might influence them to drive faster and with increased risk

"To be honest if I was thinking that I was going to be late, I would generally drive a wee bit quicker, which would be creating the risks, you know, but I wouldn't do anything out of control." (Female, Glasgow, Drive to Work)

"I'm an amber gambler, if I'm in a rush, mostly if I'm in a rush. I won't do it, if I'm not in a rush, I'll just sit at the lights" (Female, London, Children in household)

Driving while tired was not uncommon and a few individuals noted that they drove when they were dangerously tired, almost exclusively linked to work. One individual stated he had crashed three times after falling asleep at the wheel. In all cases being tired was legitimised through extenuating circumstances, including unusual long hours of work or having to drive a long distance for work purposes. There was widespread admission to driving after drinking alcohol and there was surprisingly high admission from many drivers who admitted they had driven while they thought they were probably over the legal limit. The admission was most common from those in the rural and London groups. Reasons for having drunk too much alcohol but continuing to drive often centred on the an unusual social context, for example being at a wedding or funeral and it was usually noted that it was not the original intention of the driver to drink-drive.

At the *microsystem* level, discussion of road safety risk is linked to the immediate environment (infrastructure and vehicle) and to people linked with the vehicle, such as passengers. This is the layer most clearly articulated by individuals. Much of the immediate

environment is cited by participants as to why driving over the speed-limit is OK. The vehicle's perceived capabilities, such as ABS or the sporty nature of the car, were cited as a reason for speeding. In addition, it was common for people to take a judgement of risk based on the road environment, such as speeding when roads were empty or on certain types of road like motorways or dual carriageways when they have little traffic on them,

"Do you think 90 miles per hour is dangerous if there's no vehicles on the road? No, I don't. I really don't" (Male, Bradford, Drive to Work)

"I break the speed limit. I'll will do, certainly on the motorway" (Male, Wales, Drive to Work)

An important stimulus for speeding and increased risk taking was the frustration caused by congestion,

"Congestion is a major reason why they speed. You're caught in congestion, you get a clear road and you speed to try and make up time." (Male, London, Drive to Work)

The majority of respondents admitted their driving style and the amount of risk accepted depended upon type of passenger in the vehicle. It is clear that respondents felt that people are judged based on their driving and will change and adapt their style according to what passengers may think of them – a process known as 'impression management':

"Well when you first get a boyfriend you're like trying to drive dead like quite sensibly, and then as you get to know each other you like show off a bit.....Like drive like a boy as well.....Yes, with my best friend I just drive like I normally would and I'd sort of know where to drive fast and where to drive slow and things. Friends I'm not so close with I just drive like, I don't know, a bit more carefully really, because I don't know them that well, sort of like judge me for my driving. Because people do judge you from your driving, because it's like responsibility isn't it?" (Female, Wales, Drive to work)

Overall, the concept of peer pressure was thought to be something that younger road users, especially male drivers, faced. Most people recognised the "peer pressure" element when they were younger, especially the males in the groups, describing the need to impress friends with a more aggressive, fast, risk-taking driving style. Younger people also admitted to this being deliberate by stating that they change their driving behaviour depending who is in the car. Finally, while there were examples of children causing driver stress and distraction, on the whole parents were able to habituate against 'squabbles on the back seat' and continue to drive safely. It was also noted in two of the groups how children can influence their parents' behaviour, for example children saying slow-down or be careful means the parent drives more cautiously.

Mapping the findings to Ajzen's Theory of Planned Behaviour also reveals interesting statements about risk and road user behaviour in terms of attitude, norms and perceived behaviour control.

Attitude towards a behaviour

Speeding is negative when a resident and positive yet safe when a driver. People's attitudes towards driving with high risk are not always consistent. Participants generally felt speeding was wrong, this was especially true when discussing road safety issues in their own neighbourhood and locality. However, this attitude shifted when discussing their own driver behaviour, when speeding was felt to be justified in many situations. It was common for respondents to state they drove at a speed of their own choice (often over the speed-limit) that they still felt was safe with reasons for this including: feeling speed limits were too stringent or were out of date with modern technology of cars and their ability to brake more quickly; speeding when roads were empty; and speeding on motorways, which was often perceived to be of very little risk.

I didn't crash so I'm OK. There is also the idea that road user's do not learn from their mistakes, especially where there is no negative feedback,

"The more you don't have an accident, the more you're invincible I think you feel as well" (Male, Wales, Children in Household)

It's my risk so it's OK to be risky. People often do not view the wider implications of their actions on other road users, feeling they themselves are the most likely to have negative outcomes. When other individuals were affected - particularly innocent parties - this was felt to make the risk unacceptable: with respondents giving the example of passive smoking in this regard. However, dangers resulting from risky road user behaviour, including speeding and driving too close to the vehicle in front, did not inherently get put into this category, with the exceptions being drink-driving and drug-driving. Hence, the risk displayed through driving is not inherently viewed as affecting innocent parties and does not affect people's social responsibility framework in the same way smoking does,

"Some people have the opinion of, you know, it's their own safety that's at risk"
(Wales, Young Males)

Subjective norm

I take risks as others do. Norms of behaviour within certain contexts was said to fuel risk taking behaviour. This most cited norm is keeping up with the traffic flow.

The influence of others often pressured drivers to take risks, particularly cars driving close behind:

"You know, I find those sorts of situations, you know, when you're being pressured from behind to make an erratic move which could end up causing something else, you know" (Male, Wales, Drive to Work)

The influence of others was very much seen in pedestrian behaviour, where individuals stated that seeing other people take risks makes them do so. For instance, several groups noted that seeing individuals cross the road on a red-man or where it is dangerous influenced them to make the same choice.

My friends encourage me to take risks. Overall, the concept of peer pressure was thought to be something that younger road users, especially male drivers, faced. Most people recognised the "peer pressure" element when they were younger, especially the males in the groups, describing the need to impress friends with a more aggressive, fast, risk-taking driving style. Younger people also admitted to this being deliberate by stating that they change their driving behaviour depending who is in the car:

"It depends on what type of passenger it is, right, if it's your mum, I'm driving like a granddad, when it's my mum or if it's a child in the back or whatever, you drive safely, no matter what. Whereas, if it's your friend, I'm trying to say, you might try and show off, you might just drive how you normally drive which is you might be crazy, you might be cool, but it depends on the passenger, that's what I think". (London, Young Males)

This situation is magnified if a passenger is drunk and the atmosphere inside the vehicle can become rowdy and distract the driver:

"If you've got, like, two friends in the back or something, yeah, you're turning over talking to them, your friend touching your music, turning it up louder and changing the track and stuff and it annoys you or whatever ... I realise that every time I stop, I just turn around and talk, even when I'm driving, I look at the road ahead and there's nothing there, I'll just quickly turn around and say, blah blah and then turn, do you know what I'm saying?" (London, Young males)

In addition, this group discussed how peer pressure to perform risky behaviours is actually worse when in separate cars as there is a direct comparison between peers as to who can take the most risk.

Participants were inclined to take great risks when driving also noted they felt 'passive pressure' from friends – a need to impress by showing a certain level of skill associated with taking a certain level of risk.

"Friends, your peer groups sometimes would push you... you could even do it unconsciously, like nobody is saying anything to you but you just want to impress them! (Male, Glasgow, Risk takers)

Perceived Behaviour Control

I have the control over my risk. It was frequently stated that the risky behaviour was only displayed when the individual believed they could manage the risk - for example if the road was empty, it was early in the morning or on roads that it was felt were designed for speed, in particular motorways. Such behaviour was argued as a calculated decision,

"I suppose in excess of the speed limit but take into consideration the amount of traffic on the road as well. I break the speed limit. I'll do, certainly on the motorway, but I think I would be less likely to do that if it was rush hour "(Male, Wales, Children in Household)

I can't tell others to avoid speeding. It was noted that participants found it difficult to tell someone else to drive safely. While dependent upon the relationship, on the whole it was extremely difficult for friends to tell one another directly that they believed their driving was poor or dangerous. It was also noted that it was difficult to tell people who are higher up in authority or status at work when driving for business.

Discussion

Both Brofenbrenner's Ecological model (Brofenbrenner, 1979, 1989, 2005) and The Theory of Planned Behaviour (Ajzen, 1985) help to frame conceptualisations of risk taken on the road by participants. Both models have their merits, Brofenbrenner's helps to show multidirectional relationships between the variables, highlighting for example interactions between risk displayed and a variety of contextual factors. Because of the chronological layer the model appears more fluid than The Theory of Planned Behaviour. However, the Theory of Planned Behaviour in particular highlights how important the concept of perceived behavioural control is to individuals, the need to be able to do display the desired behaviour. In order to reduce the amount of risky behaviour displayed road users need to be able to feel they can make the change and this highlights that individuals can feel unable to do this in light of other contextual factors and how the ability to take risks on the road are often seen as easier to make. Both models highlight the strong importance of social norms and in particular peer pressure and how that affects road user behaviour, both with a positive and negative effect on behaviour. Hence, in order to improve risk taking behaviour on the roads, social norms area key element to concentrate on. Brofenbrenner's model highlights the importance of immediate contextual behaviour in terms of both the external and internal environments, showing how different times of the day and different types of road affect risk taking and how stressors such as being late or stressed can affect risks taken. These elements are less revealed by The Theory of Planned Behaviour. Neither of the models particularly deals very well with irrational elements of behaviour, especially those associated with doing something for it's own intrinsic value. Certain respondents noted how risky behaviour was sometime cathartic, helping them to get rid of frustrations. Driving in a risky manner was also said to be an ego-boost making people feel better about themselves, particularly from those in younger age groups. In addition, the risk-taking group discussed how driving fast is fun, and one younger male group in Glasgow also described crossing the road and dodging the traffic as fun. The models also do not cover how risky behaviour can result from being distracted, for example use of mobile phones or merely daydreaming.

There was widespread admittance of 'speeding' amongst the participants, although, in line with previous research, definitions of 'speeding' varied from 'going over the speed limit' to 'excessive speed for the conditions' (which could be as much as 10 mph or more over the speed limit before speeding was defined). Previous research shows speeding behaviour is highly prevalent (e.g. Silcock et al., 1999; Stradling and Campbell, 2003). It was common for participants to state that they drove at a speed of their own choice that they still felt was safe and Brofenbrenner's model highlighted many contextual reasons for this including feeling speed limits were too stringent or were out of date with modern technology of cars and their ability to brake more quickly; speeding when roads were empty; and speeding on motorways, which was often perceived to be of very little risk. The speed limit being too stringent or low as a reason for speeding has been found in previous research (see Fuller, Bates, et al., 2008). The notion that speeding is OK when individuals have calculated it as being OK, such as when roads are empty, concurs with a 'calculated risk taker' (Fuller, Hanigan, et al., 2008; Musselwhite, 2006). Emotive issues, such as being late, lost or stressed, were seen to impact negatively on individuals' driving behaviour. This was a category of driver, a reactive risk taker, identified by Musselwhite (2006), and was further

explored by Fuller, Bates et al. (2008). Further investigation is needed into how either of these might be mitigated. For example, the growing use of satellite navigation systems may reduce the stress of getting lost, and the use of mobile phones (hands-free) means individuals can phone ahead to reduce the stress of being late. Calculated risk taking is linked to a level of individual rational logic, and further investigation is needed into how such logic is formed amongst individuals.

Previous research suggests that risky behaviour, along with their attitudes change over time as highlighted in the chronological layer of Brofenbreen's model. Similar to previous research, on the whole, older drivers have less risky attitudes to road user safety (Angle et al., 2007) and are more supportive of interventions aimed at improving road user safety (Stradling and Campbell, 2003). This translates into behaviour with older drivers (age 50 years and over) displaying fewer violations with regard to driver behaviour, especially aggressive violations, suggesting that deliberate risky behaviour is far less prevalent amongst this age group (Parker et al., 2000). This research found similar results, the majority of respondents felt their own driving had become safer with increasing maturity, largely because of increased driving experience, responsibility, a reduction in negative influence from others and a realisation that driving faster does not actually match a reduction in time taken to travel. Hence, it seems that differences in road user safety attitude and behaviour between younger and older drivers are linked to changes within people over time, not to a cohort difference, although further longitudinal research would be required to confirm this.

The importance of the type of road in shaping risk taken by road users highlights the importance of re-shaping the road environment to reduce risk. An emerging theory examining the relationship between familiarity, certainty and road safety suggests that an increase in familiarity and certainty only benefits drivers at the expense of other road users. Hamilton-Baillie (2008) suggests that the dominance of the motor vehicle and the associated problems are part of a negatively perpetual system. He proposes that streets have been planned and developed in such a way that levels of uncertainty and intrigue have been reduced. This has been done to increase road user safety through enhancing predictability of the road environment, which largely benefits motorists. Hence, the predictable nature of a street, with its minimum stopping distances, standardised road signs and marking, means that vehicles are able to drive at a faster speed. Hence, the concept of disrupting this standardisation through concepts such as shared space could have positive effects on road user safety, tentative conclusions from the UK suggest this could be the case (Hamilton-Baillie, 2008, Hammond and Musselwhite, forthcoming; MVA Consultancy, 2010; Kent County Council, 2010; Swinburne, 2006).

Both models helped highlight a key theme where participants admitted their driving style and the amount of risk accepted depended upon the type of passenger in the vehicle. Current research suggests, younger people in particular are susceptible to especially negative influence on their risk taking behaviour on the road from peers (Silcock et al., 1999; Thomas et al., 2007) However, this research builds on previous research by showing that peer pressure is prevalent in two additional settings. First, it is in place when the environment in the car is akin to a party atmosphere, with drunken passengers who not only distract the driver but create a party atmosphere, which negatively influences driver behaviour. Second, this research suggests that individuals who have a strong desire to impression-manage continue to feel peer pressure even when it is not physically present in terms of a passenger actually being there. This research also suggests that driving behaviour is also modified for older drivers depending upon the passengers present. Individuals continue to drive more recklessly alone, which concurs with previous research (Fuller Bates et al., 2008; Fuller, Hannigan et al., 2008). This has implications for the way people view road user safety – they feel a sense of direct responsibility to passengers, but not for themselves. However, the consideration of potential collision with other people, or the consequence of their accident on their family and friends, is not typically considered. Effects of peers on driver behaviour is so strong perhaps would be erroneous to try and disrupt that relationship and instead to introduce interventions that work with the peer context within which driver behaviour is enveloped.

Using deliberative research methods allows individuals time to reflect on their driving behaviour. There is a growing body of research suggesting that the most positive effect on attitudes and behaviour seems to come from group discussions on driver behaviour that emphasise interaction between road users, reflection on habitual and subconscious behaviour, which reduces habitual behaviour by raising into the conscious habitual behaviours (McKenna and Poulter, 2008; Dorn and Brown, 2003; Fylan et al., 2006). In addition, such group discussion should highlight internal inconsistencies (including cognitive dissonance), emphasise norms, introduce emotive content and a reflection on attitudes, values and beliefs. Hence, it would be expected that individuals taking part in deliberative research should become more conscious of the driving behaviour.

References

- Aberg, L., (1997) The role of perceived risk of detection. In Rothengatter, T. and Carbonell Vaya, E. (eds) *Traffic and Transport Psychology: Theory and Application*. Oxford: Elsevier Science. pp. 395–401.
- Angle, H., Buckley, K., Fearn, A. and Goddard, E. (2007) *Think! Road Safety Campaign. Annual Survey 2007*. London: Department for Transport.
- Armitage, C. J. and Conner, M. (2001) Efficacy of the Theory of Planned Behaviour: a meta-analytic review. *British Journal of Social Psychology*, 40, 471–499.
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckman (Eds.), *Action-control: From cognition to behavior* (pp. 11- 39). Heidelberg, Germany: Springer
- Berk, L.E. 2000. *Child Development* (5th ed.) Boston: Allyn and Bacon, 23-38.
- Boyer, T.W. (2006). The development of risk-taking: A multi-perspective review. *Developmental Review*, 26, 291–345
- Bronfenbrenner, U. (1979). *Ecology of human development*. Cambridge, MA: Harvard University Press.
- Bronfenbrenner, U. (1989). Ecological systems theory. *Annals of Child Development*, 6, 185–246.
- Bronfenbrenner, U. (2005). *Making human beings human: Bioecological Perspectives on human development*. Thousand Oaks, CA: Sage.
- Cauzard, J.-P. (ed.) (2003) *European Drivers and Road Risk: Report on Principle Analyses SARTRE III*. Institut National de Recherche sur les Transports et leur Sécurité INRETS.
- Conner, M., Lawton, R., Parker, D., Chorlton, K., Manstead, A. S. R. and Stradling, S. (2007) Application of the Theory of Planned Behaviour to the prediction of objectively assessed breaking of posted speed limits. *British Journal of Psychology*, 98(3), 429–453.
- DfT (Department for Transport) (2008) Public attitudes towards road safety issues. Report taken from the *British Attitudes Survey 2007*.
- Dorn, L. and Brown, B. (2003) Making sense of invulnerability at work: a qualitative study of police drivers. *Safety Science*, 41(10), 837–859.
- Elliott M. A, Armitage, C. J. and Baughanc, C. J. (2003) Drivers' compliance with speed limits: an application of the Theory of Planned Behavior. *Journal of Applied Psychology*, 88, 964–972
- Fuller, R., Bates, H., Gormley, M., Hannigan, B., Stradling, S., Broughton, P., Kinnear, N. and O'Dolan, C. (2008) *The Conditions for Inappropriate High Speed: A Review of the Research Literature from 1995 to 2006*. Road Safety Research Report No. 92. London: Department for Transport.
- Fuller, R., Hannigan, B., Bates, H., Gormley, M., Stradling, S., Broughton, P., Kinnear, N. and O'Dolan, C. (2008) *Understanding Inappropriate High Speed: A Qualitative Analysis*. Road Safety Research Report No. 94. London: Department for Transport.
- Fylan, F., Hempel, S., Grunfeld, B., Conner, M. and Lawton, R. (2006) *Effective Interventions for Speeding Motorists*. Road Safety Research Report No. 66. London: Department for Transport.
- Haglund, M. & Åberg, L. (2000). Speed choice in relation to speed limit and influences from other drivers. *Transportation Research Part F*, 3, 39-51
- Hamilton-Baillie, B (2008) Towards Shared Space *Urban Design International* (13) p130-138.
- Hammond, V. and Musselwhite, C. (forthcoming). The attitudes, perceptions and concerns of pedestrians and vulnerable road users to shared space: a case study from the UK. *Journal Of Urban Design*

- Higginson, G. (2005) *Lancashire Partnership for Road Safety: Public Opinion Survey*. Manchester: ORC
- Holt, N.L., Spence, J.C., Sehn, Z.L., Cutumisu, N., 2008. Neighborhood and developmental differences in children's perceptions of opportunities for play and physical activity. *Health & Place* 14, 2–14.
- King, Y. and Parker, D. (2008) Driving violations, aggression and perceived consensus. *Revue européenne de psychologie appliquée*, 58, 43–49.
- Kent County Council (2010) *Ashford Shared Space Monitoring*. Joint Transport Board. June 2010
- Kulik, L. and Rayyan, F. (2006). Relationships between dual-earner spouses, strategies for coping with home-work demands and emotional well-being: Jewish and Arab-Muslim women in Israel. *Community, Work & Family*, 9, 457-477.
- McKenna, F. P. and Poulter, D. (2008) *Speed Awareness: The Effect of Education Versus Punishment on Driver Attitudes*. Reading: The University of Reading.
- Musselwhite, C. B. A. (2006) Attitudes to vehicle driving behaviour: contextualising and categorising risk. *Accident Analysis and Prevention*, 38, 324–334.
- Musselwhite, C., Avineri, E., Fulcher, E., Goodwin, P. and Susilo, Y. (2010a) [Understanding public attitudes to road-user safety – literature review: final report road safety research report no. 112](#). Project Report. Department for Transport.
- Musselwhite, C., Avineri, E., Susilo, Y., Fulcher, E., Bhattachary, D. and Hunter, A. (2010b) [Understanding public attitudes to road user safety: final report. Road safety research report no. 111](#). Project Report. Department for Transport.
- MVA Consultancy, (2010) *Designing the Future: Shared Space: Operational Research*. MVA: London
- O'Connell, M. (2002) Social psychological principles: 'The group inside the person'. In Fuller, R. and Santos, J. A. (eds) *Human Factors for Highway Engineers*. Amsterdam: Pergamon. pp. 201–215
- Parker, D., Manstead A. S. R., Stradling, S. G., Reason J. T. and Baxter, J. S. (1992) Intention to commit driving violations: an application of the theory of planned behaviour. *Journal of Applied Psychology*, 77(1), 94–101
- Parker, D., McDonald, L., Rabbitt, P. and Sutcliffe, P. (2000) Elderly drivers and their accidents: the Aging Driver Questionnaire. *Accident Analysis and Prevention*, 32(6), 751–759
- Poch, S. (2005). Higher education in a box. *International Journal of Educational Management*, 19(3), 246-258.
- Quimby, A. (2005) Comparing UK and European drivers on speed and speeding issues: some results from the SATRE 3 survey. *Proceedings of the 15th Behavioural Research in Road Safety Conference*, November
- RAC (2007) *RAC Report on Motoring 2007. Driving safely?* Norwich: RAC
- Reason, J., Manstead, T., Stradling, S., Parker, D., Meadows, M., Lawton, R., Baxter, J., Lajunen, T., Senior, V., Adams, J., Beatty, S. and Wooliscroft, J. (2001) *Influencing Driver Attitudes and Behaviour*. London: Department for Transport.
- Silcock, D., Smith, K., Knox, D. and Beuret, K. (1999) *What Limits Speed? Factors that Affect How Fast we Drive*. Basingstoke: AA Foundation for Road Research.
- Steinberg, L., Lamborn, S. D., Darling, N., Mounts, N. S., & Dornbusch, S. M. (1994). Over-time changes in adjustment and competence among adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Development*, 65, 754–770.
- Stradling, S. G. and Campbell, M. (2003) *The Speeding Driver: Who, How and When*. Edinburgh: Scottish Executive Social Research.
- Swinburne, G. (2006). Report of Road Safety on Kensington High Street. Report
- Thomas, J., Kavanagh, J., Tucker, H., Burchett, H., Tripney, J. and Oakley, A. (2007) *Accidental Injury, Risk-taking Behaviour and the Social Circumstances in which Young People (Aged 12–24) Live: A Systematic Review*. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.
- Tolmie, A. (2006) *The Role of Skills, Attitudes and Perceived Norms in the Pedestrian Decision-making of Young Adolescents*. A Paper presented at the Road Safety Congress 2006.
- Whissell, R. W., & Bigelow, B. J. (2003). The speeding attitude scale and the role of sensation seeking in profiling young drivers at risk. *Risk Analysis*, 23, 811-820.