

Do attitudes and intentions change across a speed awareness workshop?

Frank P. McKenna
Perception and Performance
P.O. Box 2576
Reading RG4 9XZ

Introduction

It is fairly clear that there is a straightforward relationship between speed and crash involvement (Aarts and van Schagen, 2006; Finch *et al.*, 1994; Richter *et al.*, 2006) such that, as the average speed goes up, so also does the crash involvement, and vice versa. It would appear, therefore, that public safety would benefit from measures that reduce speed. Clearly, then, the enforcement of speed limits would naturally be a significant part of the process of reducing speed. In England and Wales the primary method by which this enforcement is achieved is through automated safety cameras. In fact, 91% of speeding offences are detected through cameras (Fiti and Murry, 2006). While cameras are effective in reducing speed and crash involvement (Gains *et al.*, 2005; Hirst *et al.*, 2005), they have received considerable adverse publicity in the media.

For legislation and enforcement to have its full effect, compliance is a key factor. For example, the effectiveness of a speed limit in reducing casualties will be a function of the proportion of the population who obey that limit. It is clear that compliance with speed limits is far from perfect, though it is improving. However, the fact that a substantial proportion of the population break speed limits presents some problems. What mandate do authorities have when a significant proportion of the population break the law? McKenna (2007) has argued that the perceived legitimacy of action and intervention is a key feature in these situations. Several actions of the authorities can be seen in this light. For example, the move to advertise, pre-warn and make the presence of cameras very salient can be seen as a measure designed to improve the perceived legitimacy enforcement. The aim is to avoid the perception that enforcement is a 'speed trap'. Rather, the emphasis is on deterrence, to ensure that drivers are aware that they should slow down because they are driving in an area with a crash history.

The introduction of speed awareness courses as an alternative to the awarding of points can also be seen as a measure designed to improve the perceived legitimacy of enforcement. The aim here is to improve the acceptability of enforcement by replacing punishment with education and persuasion. A question then arises as to whether these speed awareness courses do change attitudes and intentions.

The aim of the present study is to determine whether a speed awareness programme does change attitudes and intentions. It was decided to take a fairly eclectic view of the measures that might change. A number of theories emphasise the role of intentions. Within the Theory of Planned Behaviour (Ajzen, 1991), for example, intentions are a function of three factors:

- **attitude**, which is formed from an overall evaluation of the behaviour;
- **subjective norm**, which reflects perceived social pressure; and
- **perceived behavioural control**, which reflects confidence that the behaviour can be performed.

The role of these measures has been well researched (e.g. Armitage and Conner, 2001). Additional constructs, such as the role of affect, have been emphasised by a number of authors (Manstead and Parker, 1995; French *et al.*, 2005). The affective component refers to the emotions experienced while engaging in the behaviour. In a factor analysis of why drivers break the speed limit, Gabany *et al.* (1997) found that thrill was a key component. As a result, an affective component was included in the present study.

The majority of speed awareness courses are offered to drivers who have broken the speed limit by a limited margin rather than a large margin. Indeed, several government campaigns have been designed to persuade drivers that apparently small differences in speed over the limit can make a large difference to the outcome of a crash. For example, one campaign presented the message that at 35 mph one is twice as likely to kill a pedestrian as at 30 mph. This specific attitude was assessed because it maps quite directly on to most drivers' offence.

A final factor included in the assessment was that of perceived legitimacy. McKenna (2007) has argued that, for many mass action programmes, perceived legitimacy is a key factor. In the case of road safety, McKenna argued that enough is known about the main factors in crash involvement to prompt action. The question, then, is whether the public at large considers that interventions are legitimate and, for authorities, the question is whether they will risk a public backlash. For example, Delaney *et al.* (2005) noted that, following lobbying by interest groups, an automated speed enforcement scheme in British Columbia was terminated.

Although a wide range of measures were assessed, it should be noted that the intervention did not specifically target all of these constructs. The intervention consisted of two parts. The first was a tailored software assessment and delivery of specific safety messages. The second part consisted of a group discussion with a trainer. In this intervention there was no explicit goal to change the subjective norm. That said, the software feedback did not contain any messages that would sanction speeding. Similarly, in the discussion with the trainer, it is likely that drivers who voiced concerns about speeding would have ample opportunity to do so. In other

words, while the subjective norm was not directly targeted, there may be some indirect effects. Likewise, there was no direct targeting of the role of affect, but the consideration of the negative consequences that can arise from speeding could counteract any positive affect associated with speeding.

The factors that were directly targeted in the intervention were attitudes to speeding, perceived behavioural control, intentions and perceived legitimacy. According to the elaboration likelihood model, self-relevance is one method of increasing the systematic assessment of relevant information. Messages were made personally relevant by delivering tailored feedback on drivers' attitudes and abilities. Cambell and Quintiliani (2006) argue that tailored messages are more thoroughly processed, better remembered and promote behavioural change. Although the term 'tailored message' is used here, it does not strictly conform to the definition offered by Kreuter and Skinner (2000) who, in a paper devoted to providing a definition, offer the following:

Any combination of information or change strategies **intended to reach one specific person**, based on characteristics that are unique to that person, related to the outcome of interest, and have **been derived from an individual assessment**.

(Kreuter and Skinner, 2000, p. 1; original emphasis retained)

The system used in the present study is designed to be specific to a person and is derived from an individual assessment, but it is not based on the characteristics that are unique to the individual. Indeed, it is not clear that the system that Kreuter and colleagues employ conforms to their own definition. They indicate that one system they used could generate almost 400,000 communications. Of course, that means that all communications greater than 400,000 would necessarily not be unique. This is not intended to be the pedantic point that it might appear. In order to engage the positive aspects of feedback, it is not at all clear that the message needs to be based on characteristics that are unique to the individual. If I receive feedback that indicates that I am vulnerable to a heart attack, would I consider it less self-relevant or less important to find that other people were also vulnerable for the same reason?

Feedback has a number of features over and above stimulating involvement. There is potential value in the information per se. McKenna (in press) has noted that only 4% of drivers attending these courses consider themselves less skilful than average. It has been noted by several authors that this type of perception is hardly conducive to safety. The feedback that many drivers receive will conflict with their, at best, complacent perceptions of themselves.

The fact that drivers have, over the years, formed a fairly positive view of their driving skills and safety may make them resistant to any message that might contradict this comfortable picture. It is often noted that driving is a field in which everyone perceives themselves as an expert. This position offers a potential problem for those attempting to produce attitude change. In other words, it is possible that participants may resist the effects of the message. This resistance could be conceptualised in at least two ways. It is possible, for example, that prior criticism from the proverbial back-seat driver has inoculated the driver against subsequent challenge (see McGuire, 1964, for a discussion of inoculation effects). Tormala and Petty (2002) offer a different conceptualisation in which they contradict the

generally held view that, when resistance has occurred, there is essentially no effect on the original attitude. By contrast, they propose and find that, when resistance occurs, people became more certain of their initial attitude. In essence, those designing persuasive communications, such as speed awareness courses, must open themselves up to the possibility that they may produce the opposite effect to that intended.

One additional factor that might operate against finding an attitude change is that of forewarning. Wood and Quinn (2003) found that being forewarned that a persuasive appeal will be made can enable people to galvanise their defences and resist the influence attempt. It is certainly clear that those attending speed awareness course are well and truly forewarned that an attempt will be made to change their attitudes and, as a result, there may be resistance. It is also of note that the majority of people who are caught speeding are middle-aged, contrary to the popular belief that it is the young driver who gets caught speeding. (It is likely that the middle-aged are more inclined to get caught speeding by virtue of the fact that they drive so much more and are thus more exposed to detection.) The significance of the middle-age group is that this is the age group who are found to be most resistant to attitude change (Visser and Krosnick, 1998). It is also of note that, while men tend to engage more in risk-taking (Byrnes *et al.*, 1999), there is some evidence that men are more resistant to attitude change attempts (Helander, 1984; Rossiter and Thornton, 2004).

The overall experience of enforcement will have different components that may have different impacts on the individual. For example, the very fact of receiving a formal communication from the police, providing a notification of intended prosecution, may by itself have an impact on drivers' attitudes and intentions. The aim of the present work is to determine the effects of one specific component, namely the attendance at a speed awareness workshop. Attitudes and intentions were sampled either at the beginning of the workshop or at the end of the workshop. In this way we can isolate the effect of the workshop from other components, such as the formal communication from the police. It was decided to employ a design that might minimise demand characteristics. One disadvantage of assessing the same participants at the beginning and end of the workshop is that being presented with a repetition of the questions is likely to signal to the participant that a change is anticipated. By assessing participants only once, either at the beginning or the end of the workshop, the role of demand characteristics should be diminished. The fact that all responses are anonymous should also diminish the role of demand characteristics

Method

Participants

A total of 6,401 drivers attending speed awareness courses at eight different venues across the UK were assessed. The Perception and Performance software randomly assigned drivers to receive the evaluation questions either at the beginning of the workshop or at the end. As a result of the randomisation, a total of 3,279 drivers had their attitudes and intentions assessed at the beginning of the workshop and 3,122 at the end of the workshop. Of those attending, 41.2% were women with a modal age

in the range 41–45. For men the corresponding percentage was, of course, 58.8%, with a modal age in the range 41–45.

Procedure

The first session consisted of the computer-based assessment and tailored feedback. The system was designed to be used by people who had little or no experience of computers. All participants were informed that their responses were anonymous and that no questions would be used to identify an individual. This was reinforced by the fact that drivers could choose their own computer and no unique identification was requested. They were informed that they would receive feedback and that the accuracy of the feedback was dependent on the accuracy of their answers. The Perception and Performance Driver Risk Profile provided assessment on a range of risk factors, including self-report speed, driving violations, fatigue susceptibility, using the vehicle as an emotional outlet and attention/distractibility. Digitised video tests assessed speed choice, close following and hazard perception. The reliability for the video tests was previously assessed by Cronbach's alpha and found to be 0.87 for speed, 0.94 for close following and 0.89 for hazard perception. At the end of the session, drivers received a five-page printout providing:

- feedback on their attitudes and ability; and
- safety messages tailored to their personal responses.

The feedback and tailored safety messages were on key driver risk factors, including speed, close following, fatigue and hazard perception. The overall session took about 40 minutes, with a maximum of one hour permitted.

The next session was with a trainer who involved all participants in the discussion, which was designed to cover both perceived barriers to speeding and how speed is connected with accident involvement. The latter is illustrated through examining the personal speed choices of the participants and the potential consequences of their personal choices. For example, in reconstructing an actual crash, it was shown how their personal speed choices would have involved them in an injury crash. The motives of the authorities when considering enforcement were considered. The allocation of police resources to driving was considered in the light of the number of deaths associated with crime versus road crashes.

Evaluation consisted of a series of questions that were presented to one group at the beginning of the workshop and to the other group at the end of the workshop. The software was programmed to alternate the order of these questions on alternate days. Over time, this meant that factors such as time of day, day of week and weather were either controlled or randomised. Evaluation of the following statements was employed:

1. For me, keeping to the speed limit in the next year would be wise.
2. Most people who are important to me think that I should keep to the speed limit over the next year.
3. I am confident that I can avoid breaking the speed limit in the next year.

4. Speed limits should be more strictly enforced.
5. For me, breaking the speed limit in the next year would be enjoyable.
6. The police should be catching real criminals and not people speeding.
7. Driving at 35 mph in a 30 mph limit is quite safe.
8. For me, keeping to the speed limit in the next year would be boring.
9. I would find it difficult to drive within the speed limit in the next year.
10. Most people whose views I value would want me to keep to the speed limit in the next year.
11. Keeping to the speed limit in the next year would be good for me.

The scale used was a 1–7 scale with the following labels:

- agree very strongly;
- agree strongly;
- agree;
- neither;
- disagree;
- disagree strongly; and
- disagree very strongly.

Results

Table 1 presents the before and after assessment of those measures specifically associated with the theory of planned behaviour. The means for attitude, subjective norm and perceived control were calculated by averaging and, where necessary, reversing the scale of the relevant items.

Table 1 The effect of the workshop on attitude, subjective norm and behavioural control for men and women

		Attitude	Subjective norm	Behavioural control
Men	Before	2.3	2.5	3.2
	After	2.1	2.4	2.7
Women	Before	2.0	2.4	2.7
	After	1.8	2.1	2.3

A 2 (before vs after) \times 2 (men vs women) analysis of variance ANOVA was carried out for each of the measures. Given the large sample size, it is clear that there is adequate power to detect differences where they existed. Cohen's d was employed as a measure of effect size.

Attitude

For attitudes to speeding it was found that there was a highly significant improvement in attitudes following the intervention of the workshop – $F(1,6389) = 58.46$, $p < 0.001$, $d = 0.19$ (see Table 1). There was a highly significant gender effect indicating that women had a more negative attitude towards speeding – $F(1,6389) = 207.1$, $p < 0.001$, $d = 0.32$. There was no significant interaction between gender and the intervention – $F(1,6389) = 0.48$, ns.

Subjective norm

Following the intervention of the workshop there was a highly significant increase in the perceived social pressure to obey the speed limit – $F(1,6388) = 27.74$, $p < 0.001$, $d = 0.13$ (see Table 1). There was a highly significant gender effect indicating that women felt more social pressure to conform to the speed limit – $F(1,6388) = 69.39$, $p < 0.001$, $d = 0.21$. There was no significant interaction between gender and the intervention – $F(1,6388) = 2.47$, ns.

Perceived behavioural control

Following the intervention of the workshop there was a highly significant increase in drivers' confidence that they could keep to the speed limit – $F(1, 6386) = 268.7$, $p < 0.001$, $d = .41$ (see Table 1). There was a highly significant gender effect indicating that women felt more confident that they could keep to the speed limit in the future – $F(1,6386) = 246.8$, $p < 0.001$, $d = 0.45$. There was no significant interaction between gender and the intervention – $F(1,6386) = 0.11$, ns.

Affect

Following the intervention of the workshop there was a highly significant increase in the tendency for drivers to disagree with the proposal that breaking the speed limit is enjoyable – $F(1,6385) = 73.80$, $p < 0.001$, $d = 0.21$ (see Table 2). There was a highly significant gender effect indicating that women felt a less positive affect associated with breaking the speed limit – $F(1,6385) = 227.4$, $p < 0.001$, $d = 0.38$. There was no significant interaction between gender and the intervention – $F(1,6385) = 1.5$, ns.

Perceived legitimacy

Following the intervention of the workshop there was a highly significant increase in the perceived legitimacy of enforcement – $F(1,6385) = 230.78$, $p < 0.001$, $d = 0.38$ (see Table 2). There was a highly significant gender effect indicating that women felt

that enforcement was more legitimate – $F(1,6385) = 165.75, p < 0.001, d = 0.31$. There was no significant interaction between gender and the intervention – $F(1,6385) = 0.03, ns$.

Table 2 The effect of the workshop on affect and perceived legitimacy for men and women

		Affect	Legitimacy
Men	Before	5.4	3.6
	After	5.6	3.3
Women	Before	5.8	3.2
	After	6.1	2.9

Driving at 35 mph in a 30 mph is safe

The specific attitude ‘Driving at 35 mph in a 30 mph limit is quite safe’ was evaluated. Following the intervention of the workshop there was a highly significant increase in disagreement with this belief – $F(1,6385) = 1124.6, p < 0.001, d = 0.76$. There was a highly significant gender effect indicating that women disagreed more with this statement – $F(1,6385) = 104.1, p < 0.001, d = 0.24$. There was a significant interaction between gender and the intervention – $F(1,6385) = 6.48, p < 0.05$ – indicating that, while the intervention had a large effect for men, it had an even larger effect for women.

An alternative method of analysis is to perform a logistic regression using the workshop intervention to predict whether drivers agree or disagree with this particular attitude. It is found that, following the workshop, drivers are 4.4 times more likely to disagree that driving at 35 mph in a 30 mph limit is safe (CI 3.8–5.0).

Intentions to break the speed limit in the future

In order to analyse drivers’ speed intentions, a series of logistic regressions were carried out to determine if the intervention could predict whether drivers intended to break the speed limit or not. Table 3 presents the results separately for each of the speed limits: 30 mph, 40 mph, 60 mph and 70 mph.

Table 3 The odds of intending to keep to the speed limit at the end of the workshop relative to the beginning of the workshop (with 95% confidence intervals CI)

	30 mph	40 mph	60 mph	70 mph
Intervention	5.6 (CI 3.9–8.0)	4.1 (CI 2.9–5.8)	4.2 (CI 3.3–5.3)	3.1 (CI 2.7–3.5)

It can be seen from Table 3 that, following the workshop intervention, drivers are 5.6 times more likely to intend to keep to the 30 mph speed limit. Similarly,

following the workshop intervention, drivers were 4.1 times more likely to intend to keep to the 40 mph limit, 4.2 times more likely to keep to the 60 mph limit and 3.1 times more likely to intend to keep to the 70 mph limit.

Discussion

It is clear that, despite the potential problems of resistance to attitude change and the problem of assessing an age group who are most resistant to attitude change, it was found that a number of key attitudes did change. That said, on the global dimension of attitude to speeding, the effect size was small. This should be understood in the context of where people are on the scale. By the time they get to the workshop, they already agree strongly that speeding is not a good idea. Whether this has been a function of the formal communication from the police or was pre-existing is not clear.

Drivers do report social pressure to conform to the speed limit and, following the workshop, this social pressure increases. Again the effect size is small and, again, drivers come into the workshop with some agreement that there is some social pressure to obey the speed limit.

For perceived behavioural control, the effect of the workshop is to increase drivers' confidence that they can keep to the speed limit. From an examination of the means, it is clear that there may be further room for improvement.

While it is possible that breaking the speed limit is perceived as enjoyable, there was not much evidence that people agreed with this either before or after the workshop. In other words drivers, on average, disagreed that breaking the speed limit was enjoyable, and this was even more true after the workshop. While thrill-seeking and pleasure are often cited as a reason for speeding (Gabany *et al.*, 1997), there is not much evidence to support this view from people who have actually been speeding. McKenna (2005) reported that 96% of those who had been caught speeding reported that enjoying speed was of little importance in their offence. Of course, it is possible that, for most people who attend speed awareness course, they are not breaking the speed limit by a large enough margin to generate positive affect. In a separate analysis carried out for the purposes of the present paper, the author examined the responses of 578 drivers who had broken the speed limit by a large margin. It was found that 73% indicated that enjoying speed had little influence on their speeding offence. Only 4% reported that enjoying speed was a very important factor in their speeding offence.

There are a number of media reports that question the legitimacy of speed enforcement, particularly via cameras. As noted in the introduction, one speed enforcement campaign was terminated following lobbying by interest groups. It is interesting, therefore, to consider the perception of the legitimacy of those groups who are most affected by cameras, namely those who are caught speeding. Those responding at the start of the workshop are close to the centre of the scale – that is, they tend neither to agree nor disagree with the legitimacy of speed control. Following the workshop, they are considerably more likely to agree that speed control is legitimate. However, it would appear that there is more work to be done to

convince people of the legitimacy of speed control. Given that the technology is available to control the speed of the car, a key issue for the future will be the perceived legitimacy of doing so.

The workshop did attempt to address one very specific attitude that was linked to the offence committed by most of the drivers. This attitude considered whether driving at 35 mph in a 30 mph limit was safe. This particular attitude has been the subject of government campaigns. The significance of this particular attitude may well go beyond this particular limit. In urban areas many authorities are attempting to protect vulnerable road users by changing 30 mph limits to 20 mph limits. If it turns out that it is difficult to persuade drivers of the significance of the 30 mph limit, then clearly a major challenge lies ahead for attitudes to breaking the 20 mph limit. Completing the workshop was associated with a large positive shift in attitudes to the safety of driving at 35 mph in a 30 mph limit.

The speed awareness workshop was associated with a clear shift in intentions to break speed limits. At the end of the workshop, drivers were approximately four times less likely to intend to break speed limits.

Sex differences were observed such that women had more negative attitudes to speeding – they felt more social pressure to avoid speeding and felt more confident that they could keep to the speed limit. In addition, they experienced less positive affect from speeding and regarded speed control as more legitimate. On the issue of perceived legitimacy, there was some evidence that the workshop produced more improvements for women than men, which was consistent with other work (Helander, 1984; Rossiter and Thornton, 2004). It is possible that the present work diminished the sex difference because a tailored intervention was employed in which men, given their more dangerous attitudes, would receive corresponding feedback with stronger signals for the need for change.

Conclusion

The speed awareness workshop was shown to produce small to medium differences in drivers' attitudes to speeding, their perceived social pressure against speeding and their perceptions that they could control their speeding in the future. The workshop diminished the belief that speeding is enjoyable and increased the perceived legitimacy of speed control. At the end of the workshop, drivers were more than four times more likely to disagree that driving at 35 mph in a 30 mph limit is safe. There were also clear differences in speeding intentions. For example, drivers at the end of the workshop were more than five times more likely to intend to keep to the 30 mph limit.

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