

# *The perceived legitimacy of intervention: A key feature for road safety*

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## **Overview**

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It is argued that sufficient is known about the broad causal factors underlying crashes to prompt action. The challenge for society has been and remains whether we are prepared to take action to reduce casualties. There are key philosophical arguments and psychological processes at the heart of this debate. Given that these arguments and these psychological processes operate as the gatekeepers to action, it is argued that they merit more attention than they have received. The paper provides an examination of the “harm principle,” which has been employed to limit paternalistic interventions. More generally, the perceived legitimacy of intervention is examined, and then the specific case of speeding is considered.

## **Introduction**

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Across the world, road crashes are responsible for the deaths of more people below the age of forty than any other factor. It is clear that road safety is a major issue for public health. Unlike some areas of public health, where the major challenge is to identify the underlying causal agents, I will argue that the major causal agents in the case of road crashes are known. The main challenge then is whether society is prepared to intervene. It will be argued here that some of the major factors that have reduced casualties, such as the introduction of speed limits, drunk driving laws, seat belt laws, motorcycle helmet laws, many traffic engineering schemes, and graduated licensing, have all involved a restriction on individual liberty. A question then arises as to whether interventions are perceived as legitimate.

Historically, this issue of perceived legitimacy has proved to be a barrier for many key safety measures and has played an important role in determining whether interventions are implemented, when they are implemented, and, finally, the level of support they receive, even if they are implemented. As an example of the latter, we might consider driving while intoxicated. Waller (2001) noted that in the past, drunk driving was regarded as a “legitimate” practice, even though it was illegal. She noted that defendants would ask for a jury trial because “juries almost invariably acquitted the defendant” (p. 3). Waller argued that it was the intervention of citizen-action groups that changed public policy. In the terms used here, the perceived legitimacy of drunk driving changed so much so that the casual indifference to drunk driving was replaced by the perception that drunk driving is an antisocial act. As the perceived legitimacy of the act

changed, so also did the perceived legitimacy of intervention. It became acceptable for the police to take active steps to detect and deter drunk driving. It became possible to introduce *per se* laws, in which it was no longer necessary to prove that a person was unfit to drive; the sheer presence of sufficient alcohol was grounds for prosecution. A very large shift in the perceived legitimacy of the activity has taken place.

Perceived legitimacy is important across a spectrum of public health policy. Consider the role of tobacco. In the past, smoking cigarettes was regarded not only as legitimate but also a social activity. High-status individuals such as movie stars were frequently portrayed smoking, and the activity itself was social with individuals passing cigarettes around. Over the years, the perceived legitimacy has changed so much so that it now attracts laws banning the activity in public places as well as work places. Two features are worthy of note. The first is that the perceived legitimacy of an activity and the perceived legitimacy of an intervention can have a major role to play in public health. Second, the perceived legitimacy of an activity is not static and can change remarkably over the years. What would have not been perceived as legitimate at one point in time (e.g., banning smoking in work places) can become commonplace some years later. Again, we see that large changes in the perceived legitimacy of an activity are associated with major shifts in intervention. Twenty-five years ago banning smoking on a large scale across pubs, restaurants, and work places would have been regarded as an impractical option.

The point about this analysis is that we need a greater understanding of the processes underlying the perceived legitimacy of activities and intervention. At a philosophical level, we need to understand the arguments for and against state intervention. At a psychological level, we need to understand the factors underlying these perceptions of legitimacy and the processes that result in shifts in perceived legitimacy.

## **Philosophy can seriously damage your health**

There are some important philosophical arguments that have been integral to the acceptance and rejection of major safety campaigns and, hence, their perceived legitimacy. Waller (2001) noted that seat belt legislation in the USA was initially rejected out of hand by legislators on the basis of an infringement of personal liberty. In the UK, seat belt legislation came before parliament many times before it was passed. The argument against seat belt legislation was again that it was an unacceptable infringement of freedom. A similar debate arose when considering the requirement that motorcyclists wear helmets.

The fundamental question at stake is what power should a state have to restrict the autonomy of individuals. One principle that is widely advocated is the “harm” principle. John Stuart Mill (1859/1909) elucidates:

*“That principle is, that the sole end for which mankind are warranted, individually or collectively in interfering with the liberty of action of any of their number, is self-protection. That the only purpose for which power can be rightfully exercised over any member of a civilized community, against his will, is to prevent harm to others. His own good, either physical or moral, is not a sufficient warrant. He cannot rightfully be compelled to do or forbear because it will be better for him to do so, because it will make him happier, because, in the opinion of others, to do so would*

*be wise, or even right.”*

This principle has implications for a wide range of safety measures. For example, it has been argued that the case for legislation for both seat belts and motorcyclist helmets fails the “harm” principle test. In both cases, the contention is that no harm is caused to others, that any harm that results does so only to the individual in question. Because the only person adversely affected by the decision is the individual in question, then no intervention is justified. In the face of such a strong argument, one might query why so many governments have failed to apply this principle. The application of this principle can protect a whole range of basic freedoms, such as the freedom to practice one’s religion and freedom of speech. In addition, this principle has a direct impact on whether safety laws are passed or repealed, and that, in turn, has a direct consequence for death and injury. (As Leichter 1991 noted, there was no real question that a seat belt law would save lives; rather, the question was one of restriction of liberty.) Some commentators (e.g., Smith 2002) have noted that this argument can be used to support the legalization of illegal drugs. Again, the defense is that the use of illegal drugs may provide a harm to the self but not to others. The stakes are high.

One might distinguish between those aspects of this principle that provoke little debate from those that are more contentious. For example, there is little controversy over the proposal that doing harm to others provides a legitimate argument for intervention. What is more contentious is the proposal that harm to others is the only justification for restricting freedom. Where a behavior such as drunk driving demonstrably causes harm to others, then the philosophical case for intervention is uncontroversial. (The challenge of persuading the community and politicians that action is not only warranted but should take place may, of course, remain.) A case where the introduction of the harm principle was associated with greater pressure for intervention would be the use of tobacco. The case for smoking restrictions became less controversial when passive smoking became an issue. In other words, if smoking causes harm to others, then restrictions on this liberty become legitimate.

Other aspects of the harm principle provoke more debate. It is clear that freedom is highly valued. For example, in arguing against seat belt legislation, Senator Kent Pullen stated, “There is something more important than life itself, and that’s freedom.”(cited by Leichter 1991, 12) While this statement reflects effective rhetoric, one might take issue with the argument. The state of freedom is reversible while death is not. It is not entirely clear what freedoms can be exercised when dead. If one’s freedom to wear a seat belt has been denied, at least one can exercise a great many other freedoms. Interestingly, one aspect that has provoked little discussion is the distinction between different types of freedom. Would prohibiting the freedom to ignore the seat belt be the same as prohibiting the practice of your religion or freedom of speech. If these are not equivalent, then on what basis are they not equivalent? One difference is whether the activity has direct links to core values. It is easy to see that prohibiting the practice of one’s religion is more likely to strike at a core value than putting on a seat belt. Restricting a freedom that is linked to a core value is liable to have an extensive impact on a person. By contrast, restricting the freedom of choice over wearing a seatbelt does not even have an impact on where or how the vehicle is driven. Too often, freedom is discussed as a binary attribute being present or absent with no indication of the consequences of such a restriction. The proposal made here is that where it is planned to limit freedom, more careful discussion of the type of restriction and consequences of the restriction should be made. For those of us who are concerned to defend our freedoms, we need to take on board that some people will die not in the defense of that freedom but as a

consequence of that freedom. We need to be sure that their lives are worth that very specific type of freedom. All freedoms are not equal. If in an area of high unemployment (and, hence, my choice is restricted) my employer insists that I wear a shirt and tie, should I invoke the harm principle arguing that my freedom is inappropriately being curtailed? Is wearing a shirt and tie more or less restricting than using a seat belt?

The harm principle is designed as a protection against paternalistic intervention. Such interventions undermine autonomy by overriding personal choice. The paternalistic defense is that people do not know what is in their best interest, whereas Mill's harm principle does suppose that people do know what is in their best interest. Thaler and Sunstein (2003) and Kahneman (2003) argue that this is an empirical question and that the answer is that people do not know what is in their best interest. If this is true, then authorities are presented with a dilemma in that there are strong arguments for leaving people to their own devices and that when this happens people do not operate in their own best interest. One important factor may be whether road users are fully informed and properly evaluate the relative costs and benefits of their behavior. Are drivers, for example, fully informed on their relative skills, and do they apply appropriate weight to the potential health threat of crash involvement. McKenna (in press) reports that only 4% of drivers consider themselves less skillful than average, and the majority perceive that they are less likely than others to be involved in a crash (McKenna 1993). In exploring the factors associated with risk taking, McKenna and Horswill (2006) noted that while perceived health threat might be expected to be a major factor, this was not found to be the case. Overall, it is entirely possible that road users are not operating as fully informed decision makers in the way that the harm principle would presuppose.

There are other reasons for questioning the application of the harm principle that relate to the fact that humans operate as social beings. Opposition to all forms of intervention would be more readily supported, as we shall see, if people led more autonomous self-reliant lives.

## ***Humans as social beings***

The philosophical and political framework for much debate on the harm principle and the legitimacy of intervention assumes that the individual is operating in a social vacuum. It might seem obvious to state that individuals do not live much of their lives as autonomous agents in isolation. From eating breakfast that has not been personally grown, to work that is dependent on others, to our house that has been built by someone else, to family commitments, most of our experience is dependent on others. This vast network of interdependence comes with considerable benefits, but there are consequences for autonomy. If many individuals choose to exercise their autonomy by engaging in the same activity, then negative consequences can occur. At a trivial level, if we all walk on the same bit of grass, then there will be no grass. At a less trivial level, Hardin (1968) in a classic paper "The tragedy of the commons" notes the consequences of freedom. He describes the freedom of each individual to increase the number of cattle grazing on the commons. Although more cattle on the commons means more overgrazing, this is a cost that is shared by all, whereas each additional animal produces a personal benefit. As a result, it is in the best interest of each individual to increase the number of cattle despite the overgrazing. He concludes that "Freedom in a commons brings ruin to all" (p 1244). It is easy to see how the argument can be applied to a wide spectrum of behavior including fishing, pollution, and the population. For example, if we all exercise our freedom to fish in the same pond, then

there will be no fish for anyone. Each individual increment produces no discernible harm, but the accumulated actions can produce devastatingly negative effects for all. Hardin argues that we must restrict our freedoms. Callahan (1996), in a different context, argues that we implement the *ecological principle*, that prior to supporting autonomy, we examine the likely aggregate effect of individual choices. Overall, the argument is that for a complex society unconstrained freedom is unworkable.

It might also be added that in a highly interrelated network of social relationships it is quite difficult to determine a harm that has only consequences for the individual in question. Let us consider a legal objection to the mandatory use of motorcyclist helmets in the US. The objection took the form of the harm principle, arguing that restrictions should not be imposed when the harm occurred only to the self. The court ruling did not support the harm principle with the key point being cited by Leichter (1991, 187), as follows:

*“From the moment of the injury, society picks the person off the highway; delivers him to a municipal hospital and municipal doctors; provides him with unemployment compensation if, after recovery, he cannot replace his job, and, if the injury causes permanent disability, may assume the responsibility for his and his family’s subsistence. We do not understand a state of mind that permits plaintiff to think that only he himself is concerned.”*

A point not generally noted but described by Tauber (2003, 490) is that “Autonomous choices bequeath responsibility for those choices.” If I make a choice, can I support the full consequences of that choice? If I suffer brain damage as a consequence of failing to wear a helmet, I may a) be unable to support myself and b) my condition may have major (harm?) consequences for a family member who feels obliged to look after me. In other words I have been unable to take full responsibility for my choice.

Restrictions on freedom may well be a natural function of our status as social beings. For example, there are no good reasons for driving either on the left or the right. An equally good case could be made for either. What is critically important is that we deny ourselves the freedom to do one. Another example would be compulsory purchase. If I own a house that is on the site of a major development, I may find that my freedom to retain my own house is denied in the interests of the common good. The very complexity of the network of relationships among people means that constraints are placed on our freedoms.

A more subtle, but nonetheless compelling, argument concerning the social nature of decision making was noted by Schelling referring to the fact that historically in hockey it was not required that all players wear a helmet. Schelling (1972, 1) quoted one player who explained why the players themselves did not voluntarily choose to wear them: “It’s foolish not to wear a helmet. But I don’t because the other guys don’t. I know that’s silly, but most players feel the same way. If the league made us do it, though, we’d all wear them and nobody would mind.” From research on conformity, we know how readily judgment is shifted by other people. If a potentially dangerous social context develops (e.g., speeding, smoking), then powerful social constraints will be in place. Ajzen (1991) has noted that what individuals believe to be the norm has an important impact on their intentions.

## **Perceived legitimacy—the case of speeding**

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Up till now we have considered cases in which the arguments are well rehearsed. It is interesting to apply the arguments to a case that is rather less developed. Speeding represents an important challenge for most societies. The relationship between speed and casualties is well documented and in professional circles is uncontroversial (e.g., Aarts and van Schagen 2006; Finch et al. 1994; Richter et al. 2006). It follows then that speed-control interventions will be effective (e.g., Hirst et al. 2005). While there is a general consensus on the role of speed among the scientific community this, of course, does not imply that the driving public necessarily agree either about the relationship between speed and casualties or in the legitimacy of intervention. Interestingly, it is not likely that the harm principle will be effective in defending speeding. It is implausible to argue that those traveling at inappropriate speeds manage to harm themselves without harming their passengers, pedestrians, or other vehicle users. Hence, the harm principle would support intervention.

One difficulty that might emerge is in the type of causal hypothesis that people have about the relationship between speed and crash involvement. Those who wish to oppose a relationship between speed and crash involvement might reasonably argue that faster speeds do not in each and every case of necessity produce a crash. By contrast, the scientific community have in mind a probabilistic association in which the average crash involvement increases with the average speed. Those who have a discomfort with a probabilistic model might note that the same argument would apply to drinking and driving. The use of alcohol does not in each and every case of necessity produce a crash, but the general reduction in drunk driving will produce a reduction in casualties.

If there are no fundamental philosophical problems in intervening in the case of speeding where then might a problem emerge from? One interesting problem might emerge from the sheer frequency of violations. For example, in one large survey it was found that 69% of cars exceeded the 30 mph speed limit on urban roads (DETR 2000). It is fairly clear that the law is broken on a massive scale. This in itself poses a problem for public policy. What mandate do authorities have for prosecuting the majority of the population that they represent? At this point, it may be easier for some communities to endure the casualties than face the challenge. The costs of doing nothing are, however, very high.

### ***Why do drivers speed?***

Before addressing the issue of how to change the perceived legitimacy of speeding and speeding interventions, it might be worth considering the justifications that people offer in the first place. Gabany et al. (1997) provided an analysis of reasons that people offered for breaking the speed limit. Three coherent factors emerged—these being 1) thrill, 2) time pressure, and 3) inattention. These factors were generated by people making judgments about the reasons why others might break the speed limit. They were not generated by people making judgments about why they themselves broke the speed limit. In an analysis of the latter, McKenna (2005b) asked people who had broken the speed limit what factors were operating at the time they broke the speed limit. It was found that for 96% of drivers, thrill had little impact on their speeding offense. It was also found that for 67% of drivers, time pressure had little impact on their speeding offense. In a more recent analysis, I find that about 50% of drivers admit that they were paying little

attention to the speed limit at the time of the offense. Importantly, there is little instrumental value in breaking speed limits either in terms of thrill or time pressure. Inattention would appear to be a more important factor. It would appear that the default speed that emerges from the combination of the person, the vehicle, and the road is too high. The fact that there is little perceived gain in breaking the speed limit is interesting because it suggests that there may be less instrumental self-interest barriers than might have been supposed.

## **Addressing the perceived legitimacy of speeding**

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From our limited understanding, what policy advice might be offered to those who wish to address the perceived legitimacy of speeding and speeding interventions. One important issue would be where to start? Should one start to challenge beliefs about the legitimacy of speeding where they are most strongly held or where they are least strongly held? Of course, it would be an empirical matter to determine the strength of attitudes in different situations. Given the historically high acceptance of speeding, it might be worth garnering some support from those situations where the perceived legitimacy of speed control might be highest. One might speculate, for example, that speeding in the vicinity of schools is not liable to be met with much approval. In Scotland, a program has been implemented to introduce lower speed limits at the times that children are entering and leaving the school. It would be hypothesized (and easy to test empirically) that this type of speed control intervention might be perceived as legitimate. Providing a series of incremental shifts in the perceived legitimacy of speeding would eventually undermine the subjective norm that speeding was acceptable.

### ***Harm principle***

Given the importance of the harm principle in public policy, it inevitably will play a role in the perceived legitimacy of speeding. (Although we have noted that there are limitations to the harm principle as the *sole* argument for limiting behavior, it remains a powerful argument in favor of the legitimacy of intervention.) It would be hypothesized, therefore, that the application of the harm principle would produce a shift in perceived legitimacy. In other words, providing a voice for those who are victims of crashes involving speeding drivers would produce a shift in the perceived legitimacy of speeding. There is another societal role for those at the unfortunate end of the harm principle. It will be recalled that Waller (2001) judged that citizen action groups played a key role in changing public policy on drunk driving. The hypothesis here is that a change in public policy may require not only a shift in perceived legitimacy but also a shift in the motivation to see policy change.

It is proposed then that any campaign to change the perceived legitimacy of speeding would rely heavily on the consequence for innocent parties. In addition, the greatest motivation for change and the greatest understanding for the need for change is most likely to come from those who have suffered. (It might also be noted that while citizen action groups may provide the motivation for change, they may not be best suited to direct policy unless they are well informed.) Interestingly, on the specific issue of the harm principle, speeding is less challenging than either seat belts or motorcycle helmets. The challenge in addressing speeding is the sheer

numbers of people who break the law and the culture of indifference associated with the behavior. (Here one might see an analogy with smoking and a how perceptions of that behavior changed over time.)

## ***Education***

The role that education can play in perceived legitimacy can be pivotal and rather different from the traditional educational role. Educational programs are often assessed against a criterion of whether they directly change crash involvement and often can be considered a failure because no direct change is forthcoming. Supporters of evidence-based policy who use crash involvement as their criterion would then wish these programs to be ended. That conclusion does not follow from the present analysis. The approach advocated here is that many education programs should be seen in a different light, with the aim of changing the perceived legitimacy of action. The proposal is that some interventions for example, safety legislation, enforcement programs, and even engineering measures could not occur in the absence of shifts in the perceived legitimacy of action. In other words many educational programs should be seen in the context of perceived legitimacy and assessed accordingly. (It might be added that many educational programs would best be designed with this goal in mind.) In principle, the proposal is that it would be possible for an educational program simultaneously to have no direct effect on public health but to have a fundamental indirect effect. For example, an educational program could enable the implementation of enforcement programs, legislation, etc. that would otherwise have no chance of implementation. In the UK, it was only following extensive educational campaigns on seat belts that legislation was passed. Without successful educational campaigns to support the legitimacy of intervention, it is entirely possible that interventions will fail to be implemented or withdrawn. Speeding interventions may be a case in point. For example, Delaney et al (2005) note that following lobbying by interest groups an automated speed enforcement program in British Columbia was terminated.

An important role of education is, of course, that it facilitates informed decision making. Education on speeding provides an interesting range of challenges including the requirement that people understand that energy does not increase linearly with an increase in speed. This point underlines a number of campaigns in the UK and in Australia. For example, in one campaign the message is that at 35 mph you are twice as likely to kill a pedestrian than at 30 mph. The message presented is that what appears to be a trivial breach of the speed limit can quite literally be the difference between life and death. These messages may or may not have an impact on driving behavior, but their primary aim (in my view) is to change the perceived legitimacy of speed control. If perceived legitimacy is shifted, then speed control by enforcement, engineering, etc. becomes possible.

## ***Perceived fairness of enforcement***

If the starting point of an enforcement campaign is that the majority of people break the law, then there is extra pressure on the procedures used for enforcement. The very fact that an informal term “speed trap” is used presupposes that at least some members of the public consider the enforcement to be unfair. One would hardly refer to other police action as a “burglary trap” or a “vandalism trap”. One method of addressing this issue is to emphasize deterrence rather than

detection. If speed-related casualty sites are identified, then a) enforcement can be applied to those sites where casualties are highest and b) drivers can explicitly be warned that enforcement may take place. Two aims can then be realized. First, to be transparent that the goal is to reduce casualties, not increase revenue (see the later section on trust). Second, there is transparency that the aim is to produce a reduction in speed without necessarily prosecuting large numbers of speeding drivers.

In criminology, deterrence theory proposes that increased deterrence will follow from increases in punishment severity, celerity (imminence), and certainty. However, as Nagin and Pogarsky (2001) note, there is sound empirical support only for certainty. For example, when the effect of severity has been examined, the conclusion has been that there is no association between the severity of punishment and level of crime in society (Doob and Webster 2003). These results have important implications for police enforcement which historically has been characterized by levels of detection certainty that are probably too low to deter. By focusing enforcement efforts on casualty sites, the certainty of detection can be increased to levels that will deter. By warning drivers of the presence of enforcement, the aim is to provide the driver with every opportunity to change behavior. If the enforcement is transparent and warnings have been presented, then it is hard for the offending driver to claim that the procedure is unfair. In many countries, an increasing proportion of speed enforcement takes place through automated safety cameras. The economic costs of safety cameras are considerably less than traditional enforcement and 24-hour enforcement is readily achieved. By making the cameras highly visible and preceding the camera with warning signs, the above principles are readily implemented. One potential limitation of the approach outlined is that the public may interpret the program as one in which their law breaking is limited within specific locations and outside of these they may break the law with impunity. The alternative possibility is that drivers may slowly generalize their reduced speeds to other roads. The issue is an empirical matter. In tracking free-flowing speeds at unenforced sites, it has been observed that the percentage breaking the speed limit has shifted from 70% in 1998 to 50% in 2005 (Department for Transport 2006). It would appear, therefore, that the overall program is achieving some success.

While some sections of the media have considered the above procedures controversial, there is little evidence that the public do so (Gains et al. 2005). While policy makers often monitor the media for indications of public concern, they would be well advised to monitor public opinion directly. Poulter and McKenna (2007) examined public concern for a whole range of antisocial behaviors. They found that concern over speeding was now significantly greater than any other antisocial behavior.

A general difficulty in changing the perceived legitimacy of speeding is the sheer frequency of the offense. As Nagin (1998) has noted, it is difficult for an offense to be socially isolating if it is commonplace. One additional tool that can be employed is the use of speed awareness courses. Drivers are offered the opportunity to pay for their speed awareness course as an alternative to punishment. There are a number of characteristics of these courses. As noted, they are self funding and, as such, do not place a burden on the public purse. Unlike the delivery of most safety messages, they are targeted at people who, by definition, most need to attend to the message. It was noted earlier that the majority of drivers have an overly optimistic view of their driving. Some courses provide a personal driver risk profile to each driver so that they can evaluate their own personal risk (McKenna 2004). It has been found that the course is effective in changing the perceived legitimacy of speed control (McKenna 2005a). It might also be added

that speed awareness courses are a method by which speed control can be implemented at speeds rather closer to the speed limit. It is not uncommon for police forces to enforce at levels that are considerably higher than the speed limit. The dilemma that police forces face is that if they enforce at speeds way above the limit, they provide a reinforcement schedule that may inadvertently support and maintain high speeds. If they enforce at speeds closer to the limit, they risk strain on public acceptability. Speed awareness courses provide a compromise.

## **Trust**

A key feature in the perceived legitimacy of interventions is trust in the motivation of authorities. If the public suspect the motives of authorities, then trust is sacrificed. In the realms of speed enforcement, the major challenge that authorities must face is the accusation that enforcement is there for revenue generation rather than to reduce casualties. As Delaney et al. (2005) have noted, if there is concern that enforcement is taking place that is designed purely to make money rather than as a safety measure, then trust will inevitably be undermined. Speed awareness courses can play a part because the finance paid goes to their own training course. The issue of trust has implications for where and how enforcement takes place. It also has implications for ensuring that appropriate, transparent, and readily understood speed limits are in place.

## **Summary and recommendations**

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Sufficient is known about the magnitude of the injury problem and the broad underlying causal factors to prompt action. However, there are powerful constraints on societal intervention. Here we have examined one powerful philosophical constraint, the “harm principle,” and noted the limitations of this argument as the sole determinant of societal intervention. More generally, it is argued that the perceived legitimacy of action and intervention has played an important role historically in public health and can be expected to play an important role in the future. This role has been played with insufficient explicit attention being drawn to the psychological processes involved. It is proposed that the issue of perceived legitimacy be addressed directly. By way of illustration, the question of speed control is examined. It is known that speed is associated with casualties and a range of countermeasures are available. Their implementation, however, is significantly influenced by the perceived legitimacy of intervention. Indeed, technological developments are so well advanced that they can provide the driver with not only feedback on whether the vehicle is breaking the speed limit but also can provide complete control of the vehicle. The major challenges are not technical. We need to understand the factors that promote and undermine perceived legitimacy. This approach casts new light on the examination of potential safety proposals and the role of many education programs. For example, while education measures are often assessed in terms of their direct effects on behavior and crash involvement, the proposal made here is that they may also be interpreted in terms of their indirect effects via the perceived legitimacy of action and intervention. It is noted that the perceived legitimacy of action can change considerably over time and interventions that would not be perceived as legitimate at one point in time may be considered uncontroversial at a later point in time.

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## Biographical statement

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**Dr. Frank McKenna** obtained a B.Sc. from the University of Glasgow, a Ph.D. from University College London after which he spent six years at the Cambridge Medical Research Council Applied Psychology Unit. He is also a Professor of Psychology and has spent the last 25 years carrying out research on driver behaviour and crash involvement and has published extensively on the topic. He is on the editorial board of the international journal *Accident Analysis and Prevention*. He is a member of the Parliamentary Advisory Council for Transport Safety and sits on the advisory board for both ROSPA and the AA Foundation for Road Safety (now the AA Motoring Trust). He is a director of the company Perception and Performance. He has provided safety advice to the UK government and other countries on a number of topics.