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A theoretical perspective on road safety communication campaigns

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ABSTRACT

This paper proposes a theoretical perspective on road safety communication campaigns, which may help in identifying the conditions under which such campaigns can be effective. The paper proposes that, from a theoretical point of view, it is reasonable to assume that road user behaviour is, by and large, subjectively rational. This means that road users are assumed to behave the way they think is best. If this assumption is accepted, the best theoretical prediction is that road safety campaigns consisting of persuasive messages only will have no effect on road user behaviour and accordingly no effect on accidents. This theoretical prediction is not supported by meta-analyses of studies that have evaluated the effects of road safety communication campaigns. These analyses conclude that, on the average, such campaigns are associated with an accident reduction. The paper discusses whether this finding can be explained theoretically. The discussion relies on the distinction made by many modern theorists between bounded and perfect rationality. Road user behaviour is characterised by bounded rationality. Hence, if road users can gain insight into the bounds of their rationality, so that they see advantages to themselves of changing behaviour, they are likely to do so. It is, however, largely unknown whether such a mechanism explains why some road safety communication campaigns have been found to be more effective than others.

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1. Introduction

It is rarely the case that studies evaluating the effects of road safety measures are based on well-founded theoretical predictions of those effects (Elvik, 2004). An important reason why theoretical prediction of the effects of road safety measures is difficult, is because of the fact that many road safety measures are associated with behavioural adaptations among road users, the nature and intensity of which cannot usually be predicted very precisely (Rudin-Brown and Jamson, 2013). Indeed, some forms of behavioural adaptation, like changes in alertness, are virtually impossible to observe (Young and Regan, 2013).

How about road safety measures that are intended to influence road user behaviour, in particular communication campaigns designed to motivate or persuade road users to adopt safer behaviour? Can the effects of such campaigns be predicted?

The objective of this paper is to discuss this question by reference to the theory of rational behaviour. As a starting point, it is argued that road user behaviour can be regarded largely as

subjectively rational. This means that road users behave the way they think is best. Road users who behave the way they think is best would normally see no reason for changing their behaviour. The theoretical prediction is therefore that campaigns will have no effect. However, empirical research has found that some road safety campaigns do have effects on behaviour and accidents. The theoretical prediction of no effect would thus appear to be wrong. Can this apparent contradiction be resolved? One possibility is to reject the assumption that road user behaviour is subjectively rational. However, it is difficult to explain road user behaviour without assuming at least some degree of rationality. The paper argues that it remains fruitful to assume that road users are subjectively rational, but only according to a concept of bounded rationality. By making a distinction between bounded and perfect rationality, it may be argued that campaigns can be effective if they make road users aware of the limitations of their rationality and identify more advantageous behaviour. The specific ways in which this may occur are discussed later in the paper.

2. The theory of subjective rationality and road user behaviour

Can road user behaviour be regarded as subjectively rational? Before answering this question, it is necessary to briefly define the concept of rationality and discuss the nature of the theory of

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rationality. Specific actions and behaviour performed by road users will be defined as subjectively rational if road users believe that the behaviour produces more satisfaction than any alternative actions or behaviour (Elster, 2007). Briefly stated, therefore, road users are subjectively rational if they behave the way they think is best (according to their own value systems and preferences).

Elster stresses what he calls the radically subjective nature of the theory of rational action. He states (Elster, 2007, p. 209) that it is “subjective through and through”, i.e. it refers only to what individuals believe and prefer and not to some external standard. Elster adds that: “One might, to be sure, take the word “rational” in an objective sense, implying that a rational agent is one who makes decisions that make his life go better as judged by objective criteria such as health, longevity, or income. Used in this way, however, the idea would not have any explanatory power.” This point of view is obviously correct as far as explaining choices by showing that they were (subjectively) rational is concerned.

Nevertheless, making a distinction between “subjective” and “objective” rationality can be fruitful. Simon (1955, 1976) first made this distinction when formulating his theory of bounded rationality. In more recent contributions (Kahneman, 2003, 2011), a distinction is made between fast and slow thinking and behaviour based on these modes of thinking. While both modes of thinking may shape road user behaviour, in traffic it is likely that only the fast mode of thinking is involved. Fast thinking is intuitive, uses mental shortcuts and minimises the cognitive effort made. It is therefore prone to error and bias. Thus, road users, having to make decisions in few seconds may misjudge gaps in traffic, overlook a vehicle in the blind zone, not brake hard enough, and so on. Table 1 highlights some of the differences between bounded and perfect rationality.

Bounded rationality is a descriptive concept. It was developed to describe actual behaviour. Perfect rationality, on the other hand, is perhaps best viewed as a normative concept: it is ideal to strive for. In nearly all contemporary applications of rationality theory, rationality is subjective, i.e. it refers only to what an individual believes and prefers, not to some external standard for correct beliefs or politically correct preferences. A concept of objective rationality nevertheless makes sense, at least in terms of holding correct beliefs based on scientific evidence. The theory of bounded rationality postulates that individuals do not try to optimise, but settle for choices that are good enough. Herbert Simon coined the term “satisficing” to describe this and contrast it with optimising. Optimising is a characteristic of perfect rationality as a normative ideal. Options for choice are developed informally and intuitively when behaviour is boundedly rational; perfect rationality requires a formal analysis to develop options for choice. Bounded rationality economises on cognitive resources; thinking is therefore fast and

intuitive. Perfect rationality, on the other hand, requires analytically and logically consistent thinking. The influence of social context and frame is seen as strong in descriptive models of bounded rationality, but as something to avoid in prescriptive models of perfect rationality. Finally, learning is informal and unsystematic in boundedly rational behaviour; guided by scientific studies in the ideal world of perfect rationality.

Road user behaviour is characterised by bounded rationality. In principle, therefore, it can be modified to come closer to perfect rationality. However, if road users are satisfied with their behaviour, they will see no reason to change it. This point has been made by several authors. Haight (1986) notes that even for drunk drivers, the most likely outcome of a given trip is that they get safely home. Every time this happens, behaviour is reinforced and messages that emphasise the risk involved in drinking-and-driving are likely to be discounted. At this point, it is important to stress that, within the framework of the theory of subjectively rational behaviour, the only point of view that counts is that of the drinking driver. If we want to explain why people drink and drive, it is completely misguided to adopt the perspective of a moralistic observer who is mainly interested in discouraging drinking and driving. We need to adopt the perspective of the drinking driver and try to imagine how a drinking driver thinks.

In a similar vein, Rumar (1988) points out that the risks faced by each driver are very low. He states that: “Even in developing countries a person would have to drive for a hundred years before killing someone. To the individual driver such risk levels are perceived to be zero, or very close to zero. ... Every individual, in his own opinion, normally drives safely, without any real risk. ... In other words, they perceive that they successfully meet their target risk value of zero.” If this analysis is accepted, it follows that no driver will have any motive to change behaviour in order to improve road safety.

Braybrooke (1991) draws attention to what he refers to as the paradox of safety campaigns. The purpose of such campaigns is often to make people less tolerant of risk and influence them to behave more safely. But if current behaviour already reflects safety margins that people regard as sufficient, why should they change behaviour to increase these safety margins? He adds that: “It is paradoxical to campaign for reduction of risks on grounds already accepted by most people.”

A common criticism of the theory of rational behaviour is that it has a focus on individuals only, and neglects the influence of social norms and interactions between individuals on their behaviour (Etzioni, 1988). This criticism is misplaced. The influence on road user behaviour of social norms and interactions with other road users can be modelled by means of game theory (Elvik, 2014). Game theory is the study of interactions between at least two

Table 1
The dual nature of human rationality.

Concept	Bounded rationality	Perfect rationality
Nature of rationality	Descriptive; what people actually do	Normative or prescriptive; what we ought to do
Definition of rationality	Subjective; to be rational is to do what an individual believes is best	Objective; to be rational is to do what is actually best based on objective criteria
Concept of preference	Satisficing; an action is performed if it is felt to be good enough	Optimising; an action is only rational if it fulfils the total set of objectives to a maximum degree
Developing options for choice	By trial and error; habit; imitation; informal thinking	By analysis, e.g. decision trees or other formal tools
Mode of thinking and evaluation	Fast and intuitive; based on heuristics that may generate bias	Slow and analytical; based on computations
Influence of social context and frame	Strong and persistent; rational interactions may be modelled by means of game theory	Context and frame ought not to influence behaviour; game theory is sometimes applied prescriptively
Mechanism of learning	Trial and error; the immediate outcome of an action; imitation; human memory	Scientific experimentation, research and evaluation performed according to high standards of scientific rigour

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