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The perceived effectiveness of road safety interventions: Regulation of drivers' behavioral intentions and self-consciousness

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ABSTRACT

We consider road safety interventions to be potential sources of social influence, altering the intentions and behaviors of drivers when they are perceived by the latter as effective. We also consider that perceiving their effectiveness depends on drivers' self-consciousness. 852 drivers replied to a questionnaire measuring dispositional self-consciousness, the perception of the effectiveness of 10 road safety interventions, and reported intentions and behaviors related to speeding and drinking and driving. The results revealed several phenomena: (1) interventions were perceived as related to penalty/surveillance or social communication (factor analysis); (2) the former were perceived as more effective than the latter; (3) the perceived effectiveness of road safety interventions was moderately correlated with intentions and behaviors; (4) this link was stronger for interventions of the penalty/surveillance type; (5) age, level of education, frequency of use of a vehicle and gender were moderately associated with the perception of these interventions; (6) self-consciousness (in particular its public dimension) had an additional positive association with this perceived effectiveness. These results are discussed from a practical and methodological point of view.

1. Introduction

With regard to road behaviors, the current frame of reference considers the car driver to be an autonomous and responsible individual, subject of course to constraints (Highway Code) and to coercion (repression), but in the end solely in charge of the choices which they make with regard to taking account of driving regulations (prevention). In this connection, compliance with the regulations is considered as a relative guarantee of safety and their transgression as a source of risk. Considering driving thus in relation to compliance with driving norms, road safety then becomes a problem of public order (creation and application of norms) and a problem of education and communication (transmission and promotion of norms), all of these interventions aiming to guide behaviors in a context conducive to the reduction of risk.

In this study, we consider the interventions implemented by public authorities and road safety organizations to promote respect for the rules (e.g. automated speed controls, prevention campaigns and driver training) as sources of social influence modifying the intentions and behaviors of drivers when they are perceived as effective by the latter. In other words, this

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study deals with the question of the influence and perceived effectiveness of road safety interventions on the intentions and behaviors of drivers. We also consider that perceiving their effectiveness depends on drivers' self-consciousness. We will therefore first of all address the concept of behavioral intention and its major importance with regard to compliance or non-compliance with driving regulations, and then subsequently examine the potential role of the perceived effectiveness of road safety interventions which aim to promote compliance with them.

1.1. Behavioral intentions linked to driving behavior

The theory of planned behavior (TPB) postulates that behavior originates from behavioral intention (Ajzen, 1991). In the field of road behaviors, the TBP has been cited to explain, for example, dangerous speeding excesses, non-observance of safety distances (Parker, Manstead, Stradling, Reason, & Baxter, 1992), use of mobile phones (Zhou, Wu, Rau, & Zhang, 2009), aggressive behaviors (Parker, Lajunen, & Stradling, 1998), the behavior of pedestrians on the public highway (Moyano-Diaz, 2002) and the wearing of safety belts (Brijs, Daniels, Brijs, & Wets, 2011). Behaviors linked to speeding and drinking and driving have been particularly studied (e.g. Castanier, Deroche, & Woodman, 2013; Lheureux, Auzoult, Charlois, Hardy-Massard, & Minary, 2015; Moan & Rise, 2011). All these studies confirmed the central role of behavioral intentions with regard to traffic offences: the higher a driver's intention of complying with a driving regulation, the more likely it is that they will act accordingly. They also confirmed the impact of the theoretical determinants of intention and behavior, namely attitude (i.e. the positive or negative evaluation of the behavior), the subjective norm (i.e. the level to which the individual thinks that adopting the behavior would be compliant with the norm accepted in their immediate circle) and perceived behavioral control (i.e. the level to which the individual considers that it is possible and easy to perform the action). The majority of authors also insist on the necessity of introducing additional variables, which prove to improve predictions (e.g. anticipated regrets, moral norm, habit, personal identity; e.g. Chorlton, Conner, & Jamson, 2012; Conner, Smith, & Mcmillan, 2003; Elliott, Armitage, & Baughan, 2003; Sandberg & Conner, 2008).

Attitudes, subjective norms and perceived controls originate in a belief system, composed of behavioral beliefs (at the origin of attitude), normative beliefs (determining the subjective norm), and control beliefs (influencing perceived behavioral control). The structure of this system is based on the Expectancy*Value principle (Ajzen, 1991). For example, attitude to behavior depends on the level to which the individual thinks that adopting the behavior would incur certain consequences more or less automatically (Expectancy) and the intrinsic evaluative valence (positive/negative) of the latter (Value). In other words, the more an individual believes that the behavior will lead to (Expectancy) negative consequences (Value) the more negative will be their attitude to it and vice versa. In this respect, being involved in an accident is one of the potential negative consequences of road traffic offences and individuals are not at all convinced to the same degree that offending causes accidents (Expectancy). Other consequences are possible, including financial ones (e.g. penalties, prison, and license withdrawal). The main issue in this regard is to succeed in convincing drivers that accidents – with their potentially dramatic consequences – are in fact a completely likely consequence of offending behaviors that they engage in more or less frequently. More precisely, it may be relevant to distinguish social communication actions, which seek to establish a link between non-compliance and accidents, and coercive actions (road controls, radars, etc.), which reinforce the link through sanctions. Here, the penalty is a negative reinforcement alternative to the accident. It leads to establishing an unequivocal link between violation and damage. In other words, the coercive actions may have more impact on attitudes, since they associate the offense with accidents and the penalty, while the communication actions associate the offense only with accidents.

1.2. The perception of preventive and penalizing measures

This link between intention and the perception of negative consequences of offending behaviors, *via* attitude, leads us to view road safety interventions as sources of social influence, in the sense that their aim is to convince drivers that these behaviors have potentially only negative consequences (accident, injuries, fines, etc.) and thus increase their compliance with driving regulations. In other words, in accordance with the TPB, these interventions can be viewed as "background factors" which could alter the behavioral beliefs at the origin of the attitude. Likewise, it may be thought that they would modify the control beliefs related to danger on the road (perceived control of danger) and reinforce the idea that compliance with the rules is socially expected and valued (subjective norm). However, the offense may be perceived as a personal threat, which can lead to psychological reactance. In this case, preventive and enforcement measures can prevent behavior change.

Accordingly, some studies have corroborated the influence of road safety interventions on TPB constructs (e.g. Elliott & Armitage, 2009; Mann & Lansdown, 2009). However, this influence was not systematically observed (e.g. Glendon, McNally, Jarvis, Chalmers, & Salisbury, 2014; Stead, Tagg, Mackintosh, & Eadie, 2005). Exposing drivers frequently and/or over a long period of time to an intervention aiming to prevent their offending behaviors does not constitute a factor sufficient to alter their intentions and behaviors. An additional and ignored explanatory variable probably play a role; a variable that must be identified and empirically investigated.

The *perceived effectiveness* of road safety interventions may be such a variable. Perceived effectiveness refers to the degree with which a driver believes that a given road safety intervention promotes road safety as a whole. As illustrated by several studies road safety interventions are evaluated by drivers (e.g. Cauzard & Quimby, 2000; Ulleberg, 2001; Yagil, 1998) and people comply with the laws and the regulations implemented by legal authorities if they are evaluated as legitimate (Tyler, 2006). In the case of road safety interventions, their legitimacy essentially depends on their ability to effectively