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► To cite this version:

Carnis Laurent, Varet Florent, Marie-Axelle Granié, Frédéric Martinez, Pelé Marie, et al.. The impact of perceived legitimacy of road safety rules in France. Transportation Research Procedia, 2023, Transport Research Arena (TRA) Conference, 72, pp.1069 - 1073. 10.1016/j.trpro.2023.11.537 . hal-04344416

HAL Id: hal-04344416

<https://hal.science/hal-04344416>

Submitted on 18 Dec 2023

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Transport Research Arena (TRA) Conference

The impact of perceived legitimacy of road safety rules in France

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Abstract

As compared to the deterrence approach, perceived rule legitimacy represents an interesting lever for inducing road user compliance through a process of rule internalization. This contribution assesses the impact of the rule legitimacy concept on internalization and self-reported compliance with three traffic rules: 50 km/h speed limit in urban area, yellow light running and pedestrian crossing priority. The results of an online questionnaire on a representative sample of 833 French drivers indicate that perceived legitimacy is one of the main predictors of rule internalization and self-reported compliance, and is a better predictor than others, known to affect these variables (e.g., social norms, perceived risk of being sanctioned or having an accident). These results stress the potential of the lever regarding the improvement of compliance with traffic rules and road safety policies.

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Peer-review under responsibility of the scientific committee of the Transport Research Arena (TRA) Conference

Keywords: perceived legitimacy; rules internalization; motivations to comply; behaviours and mobility patterns; social inclusion and societal issues in mobility

1. Introduction

Road crashes are the outcome of different factors related with infrastructure characteristics, vehicle dynamics and design, and human behaviour. Among them, traffic violations are an important predictor of the occurrence and severity of serious as well as fatal accidents (Barracough et al., 2016). The enforcement of road safety rules then constitutes one way for authorities to improve the road safety record. The ultimate end is to reach compliance from the road users. In this perspective, one strategy often used by authorities relies on the deterrence approach (Zimring and Hawkins, 1973). This strategy focuses on incentives and punishment associated with rule-breaking in order to regulate road users' behaviours. However, while being effective (Stanojević et al., 2013; Walter et al., 2011), deterrence yields only

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a relatively small and short-lived impact (Pratt et al., 2006). Moreover, it only imposes an external-regulated compliance with rules which implies that individuals could not comply with rules once they do not think that they would be controlled or sanctioned. Thus, other strategies such as perceived legitimacy could be used.

Rule legitimacy then represents a crucial dimension for inducing road user compliance. Perceived legitimacy can be defined as “an attribute that individuals associate with a given traffic rule which promotes acceptance of its implementation, enforcement, and motivates individuals to respect the prescriptions that result from it” (Varet et al., 2021, p. 14). As such, this concept offers a potential powerful lever for increasing traffic rules compliance.

As opposed to the deterrence approach, which supposes individual is motivated to avoid the negative consequences of rule transgressions, perceived legitimacy promotes an internalized adhesion to traffic rules, which can persist even in the absence of formal social control (e.g., police or automatic speed enforcement).

However, while a few contributions explored this issue (e.g., Bautista et al., 2015; Oceja et al., 2001; Watling, 2018) they relied on differing definitions and measurements of rule legitimacy, which limits the ability to fully grasp the impact of this variable. Moreover, to our knowledge, the influence of perceived legitimacy on road rules interiorization and self-reported compliance has never been assessed in the French context, especially outside of the scope of general rules perception. Thus, on the basis of a comprehensive synthesis, which led to a theoretical definition of perceived legitimacy of road safety rules (Varet et al., 2021), this contribution presents the results of a study which aimed to assess the impact of rule legitimacy on internalization and self-reported compliance with three different traffic rules: 50 km/h speed limit in urban area, yellow light running and pedestrian crossing priority rule.

2. Methodology

Two online questionnaires were completed by 833 participants from a French representative sample. The first questionnaire included the assessment of the perceived legitimacy of traffic rules and socio-demographic variables (socio-professional category, the driving licence seniority, usual driving environment, etc.). The assessment of the perceived legitimacy of traffic rules was conducted through a single item related to each of the traffic rules under study (i.e., 50 km/h speed limit in urban area, yellow light running and pedestrian crossing priority rule). Participants were asked to rate their agreement on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) regarding the perceived legitimacy of each of these rules (e.g., “I think that the rule about the 50 km/h speed limit in urban area is legitimate”).

The second questionnaire, completed 10 days later by the same participants, encompassed the assessment of psychological constructs known to affect internalization and/or self-compliance with rules (e.g., social norms, perceived risk of being sanctioned or having an accident; Harbeck et al., 2017; Harbeck & Glendon, 2013). Social norms associated with traffic rules compliance was assessed through two items. The first item consisted in asking participants to rate how well they think people in general comply with traffic rules on a scale ranging from 1 (*never*) to 7 (*always*). The second item assessed how participant think people perceived breaking traffic rules, on a scale from 1 (*very badly*) to 7 (*very well*). Perceived risk of being sanctioned was also measured through two items. The first one assessed the perceived probability of being punished in case of violation on a scale from 1 (*very low*) to 7 (*very high*). The second one assessed the perceived severity of the penalties on a scale from 1 (*not very severe*) to 7 (*very severe*). In the same way, risk perception of road accidents was measured through two items assessing the perceived probability of a crash following a rule violation and the perceived severity of this crash.

Finally, the second questionnaire included two measures which focused on traffic rule internalization and self-reported compliance with traffic rules. Traffic rule internalization was assessed through a single item for each rule. Participants were asked to rate how they would respect each of these rules if they were not mandatory and not controlled anymore, on a scale ranging from 1 (*I would never respect this rule*) to 7 (*I would always respect this rule*). Then, self-reported compliance consisted in a single item for each rule assessing how participants usually follow the rule, on a scale ranging from 1 (*I never respect this rule*) to 7 (*I always respect this rule*).

3. Results

Multiple linear regression models (including perceived legitimacy, social norms, perceived risk of being sanctioned or having an accident as predictors) indicate that, for the three specific rules, the perceived legitimacy for each traffic

rule is the main predictor of its internalization (see Table 1). We also note that social norms as well as the perceived risk of having an accident predict the internalization of the concerned rules—but to a lesser extent. More precisely, descriptive social norms (i.e., the perception of what is usually done by most of the people) is positively linked to internalization while injunctive norms (i.e., the perception of what is expected to be done; see Cialdini et al., 1991) is characterized by a negative relation. However, one should note that this last item was reversed and thus indicates that, the more participants consider that people have a positive perception of breaking the rule, the less they internalize its compliance. Finally, the perception of a higher risk of having an accident—as well as the gravity of this accident—is associated to a greater internalization of the rules.

Table 1. Results of the multiple linear regression models assessing the predictors of the internalization of each of the three different traffic rules under study.

	50 km/h speed limit in urban area	Yellow light running	Pedestrian crossing priority rule
perceived legitimacy	0.482***	0.450***	0.505***
social norms – item 1	0.098***	0.091**	0.042
social norms – item 2	-0.149***	-0.199***	-0.122***
perceived risk of being sanctioned	-0.034	0.037	0.028
perceived risk of having an accident	0.103***	0.115***	0.094**
R ²	0.353	0.381	0.332
F(5, 827)	90.24	101.83	82.33
p	< .001	< .001	< .001

Note. *** = $p < .001$; ** = $p < .01$; * = $p < .05$

As for the self-reported compliance with rules, internalization was added to the previous predictors (i.e., perceived legitimacy, social norms, perceived risk of being sanctioned or having an accident). The analyses thus reveal that internalization is the main predictor, followed by perceived legitimacy (see Table 2). In those models, the other usual predictors of compliance then lose their significance in comparison to the weight of internalization and perceived legitimacy.

Table 2. Results of the multiple linear regression models assessing the predictors of self-reported compliance regarding each of the three different traffic rules under study.

	50 km/h speed limit in urban area	Yellow light running	Pedestrian crossing priority rule
perceived legitimacy	0.142***	0.205***	0.154***
social norms – item 1	0.035	0.089**	0.050
social norms – item 2	-0.063	-0.014	-0.019
perceived risk of being sanctioned	-0.041	0.044	0.017
perceived risk of having an accident	-0.003	0.010	0.005
Internalization of traffic rules	0.521***	0.432***	0.484***
R ²	0.413	0.377	0.357
F(6, 826)	96.911	83.231	76.278
p	< .001	< .001	< .001

Note. *** = $p < .001$; ** = $p < .01$; * = $p < .05$

In addition, 3 mediation analyses for the three specific rules corroborate that the effect of perceived legitimacy on compliance with the rule is partially mediated by the internalization of the rule (see Table 3).

Table 3. Results of the mediation analyses for each of the three different traffic rules under study.

	50 km/h speed limit in urban area	Yellow light running	Pedestrian crossing priority rule
Indirect effect (% mediation)	$B = .29, z = 12.67,$ $p < .001$ (66.03%)	$B = .22, z = 11.27,$ $p < .001$ (54.71%)	$B = .23, z = 11.68,$ $p < .001$ (63.67%)
Direct effect (% mediation)	$B = .15, z = 4.80,$ $p < .001$ (33.97%)	$B = .18, z = 6.38,$ $p < .001$ (45.29%)	$B = .13, z = 4.65,$ $p < .001$ (36.33%)

4. Discussion

The results obtained with this research highlight the main influence of perceived legitimacy in the internalization and self-reported compliance with traffic rules. Indeed, the analyses revealed that perceive legitimacy outweigh the usual predictors of self-reported compliance with rules. They stress the potential of this lever regarding the improvement of compliance with the traffic rules and road safety policies. Thus, perceived legitimacy is a crucial dimension to be considered by the public authorities to make effective the traffic rule. On the whole, these results also highlight the importance which has to be given to the perception process of rules and regulation. Indeed, this study suggests that more than deterrence, risk perception or social norms, it is the very perception of the rule which impacts its compliance, at least at the level of self-reported behaviors.

These results then constitute a first step and need to be further investigated. Indeed, while the perceived legitimacy of the three evaluated rules was assessed through a single item, the use of the full version of the perceived legitimacy scale currently under validation (Granié et al., 2022) could indicate which dimension plays the most important role in the regulation of rules internalization and respect. As Varet et al. (2021) indicated, perceived legitimacy encompasses four dimensions: (1) effectiveness, which refers to the perceived ability of the rule to fulfil its road safety objective properly; (2) efficiency, which refers to the perception that the injunctions emanating from the rules are neither too low nor too high, to achieve this goal; (3) fairness, which refers to the perception of the ability of the rule to be applied with equity on all the road users, without special treatment or discrimination, and (4) moral alignment, which rely to the perceived congruence between the rule and the individual's values. The ability to assess these four dimensions of perceived legitimacy could then provide a fine-grained understanding of the determinants of the internalization and respect of the three studied rules.

However, these results need to be validated before any application of this concept in the field. In this perspective, two complementary inquiries are to be considered concerning how to operationalize such result. The first one aims at confirming the impact of perceived legitimacy on actual behaviours instead of self-reported ones. It raises the issue of tensions between what is reported and what is done. The second inquiry aims at assessing the effectiveness of persuasive messages based on traffic rule legitimacy to improve behavioural intentions to comply with traffic rules. Indeed, while perceived legitimacy appears to be a main predictor of rules internalization and self-reported respect, it remains necessary to suggest and test possible strategies to use this lever as a way to improve the effective respect of road traffic rules in laboratory as well as field settings.

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