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Social value, normative features and gender differences associated with speeding and compliance with speed limits

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Abstract

Introduction: Among risky driving behaviours, speeding is a main causal and aggravating factor of road crashes and is more frequent among men than women. Research suggests that this gender gap could be explained by gender social norms which lead men to assign more social value to speeding than women. However, few studies had proposed to directly investigate gendered prescriptive norms associated with speeding. We proposed to address this gap through two studies based on the socio-cognitive approach to social norms of judgment.

Methods. Study 1 (N = 128, within-subject design) investigated the extent to which speeding is subject to social valuation among men, compared to women, through a self-presentation task. Study 2 (N = 885, between-subject design) aimed to identify the dimension of social value (i.e., social desirability, social utility) that both genders associated with speeding, based on a judgment task.

Results and conclusion: Although results of study 1 indicate that both genders devaluate speeding and valuate speed limits compliance, we found that men do so to a lesser extent than women. Results of study 2 further suggest that men less valuate speed limit compliance than women on the social desirability dimension, while no gender difference were found in valuation of speeding on both dimensions of social value. Regardless of gender, results also indicate that speeding is valued more on the social utility than on the social desirability dimension, while speed limit compliance is valued similarly on both dimensions.

Practical applications: Road safety campaigns toward men could benefit to focus more on enhancing the representations of speed compliant drivers, in terms of social desirability, than devaluing the representation of speeding drivers.

Keywords: speeding, gender differences, social norms, social value, socio-cognitive approach

Introduction

Road crashes represent important human and economic costs with 1.35 million of deaths, 20 to 50 million of injured by years and 3% of gross domestic product for most countries (WHO, 2022). Car occupants represent 29% of dead on road (WHO, 2018) and men are approximately 3 time more involved in fatal injuries than women across age and worldwide (WHO, 2022). Gender gap in serious road accident rate have been found to persist when gender differences in several risk exposure factors (e.g., mileage, type of road frequented) are accounted for (e.g., European Conference of Ministers of Transport, 2006). Several studies show that men commit more violations and take more risks on road than women (e.g., Varet et al., 2018), particularly with speeding (e.g., Cestac et al., 2011).

Among several determinants of gender-gap in risky driving, several research highlight the role of conformity to gender stereotypes (e.g., Krahé, 2018; Özkan & Lajunen, 2005; Pravossoudovitch et al., 2015). Indeed, conformity to masculine stereotypes (i.e., behaviours, traits and beliefs that men are culturally expected to adopt) is associated with a tendency to value risky, impulsive, aggressive and rule-transgressive behaviours, while conformity to feminine stereotypes (i.e., behaviours, traits and beliefs that women are culturally expected to adopt) is associated with a tendency to value safe and rule-compliant behaviours. In this sense, frequency of risky and transgressive behaviours on road was found to be positively associated with conformity to masculine stereotypes and negatively with conformity to feminine stereotypes among car drivers (e.g., Krahé, 2018; Özkan & Lajunen, 2005). Moreover, conformity to stereotype associated to one's own gender group was found to mediate, at least partially, gender differences in risky and transgressive traffic behaviours in several researches (e.g., Granié, 2009). Thus, values and social norms promoted by gender stereotypes can explain gender differences in traffic behaviours. Social norms are explicit or implicit rules that define the beliefs, attitudes and behaviours to be adopted or rejected, within a given group or culture,

and give rise to positive or negative social reinforcement (Schwartz & Howard, 1982; Sherif, 1935).

The existence of specific gender stereotypes about drivers, and their role in explaining driving behaviours, were also highlighted (Degraeve et al., 2015; Granié & Papafava, 2011; Pravossoudovitch et al., 2015). These stereotypes define men as more competent in handling the vehicle, but also as riskier and more transgressive in their driving behaviour than women. However, people tend to justify that men are more able to take risk and violate traffic rules than women because of their supposed higher driving competence. Conversely, risky and transgressive driving behaviours from women are perceived as resulting from their lack of competence (Degraeve et al., 2015; Granié & Papafava, 2011; Pravossoudovitch et al., 2015). Previous research therefore suggests that gender stereotypes define descriptive and prescriptive social norms that shape men and women driving behaviours.

In addition, studies about the effect of the presence of a passenger show that men drivers commit more risky and transgressive behaviours in presence of a man passenger than in presence of a woman passenger or than in absence of passenger (e.g., Baxter et al., 1990; Simons-Morton et al., 2005). These results suggest that the presence of a man passenger, with a man driver, could make salient the prescriptive norms associated with masculinity which value and encourage risky and transgressive behaviours. However, the physical presence of a member of the in-group is not always necessary to make these norms salient (e.g., Cestac et al., 2014). Several studies also show that, compared to women, men report more positive judgments of their peers towards risky and transgressive driving behaviour, such as drinking and driving or speeding (e.g., Cestac et al., 2014; González-Iglesias et al., 2014).

The various studies cited support the existence of gender-specific prescriptive norms that valuate risky driving such as speeding among men and devaluate them among women, and that

could explain gender-gap in road crashes. However, the evidence supporting the existence of such norms remains indirect, being based on the study of the content of stereotypes, on the effect of the presence of peers, or by asking participants about the opinions of their peers of the same age but without considering their gender. Moreover, these studies did not directly investigate the determinants of these social norms, which remain important to identify in order to propose applications for road safety. Thus, in an original way, based on the socio-cognitive approach of social norms (Dubois, 2003), we propose to test the existence of these gender-specific norms more directly and to investigate the social values on which they are based. Identifying underlying values of these gender-specific norms could offer interesting insights for road safety applications. Indeed, deconstruct the values that drivers associated positively with risk-taking and violations or negatively with cautious and rules compliant behaviours can be an effective strategy to inhibit the former or promote the latter (e.g., Lemarié et al., 2018). Although the use of the socio-cognitive approach is often confined to French-speaking cultures, it represents a pertinent and original framework to investigate the normative aspects of social judgments and behaviours as well as the social values that determine and explain these normative aspects (e.g., Bonetto et al., 2019; Guignard et al., 2014, 2015).

The socio-cognitive approach of social norms emphasises the importance of social value that a group or a culture attribute to a behaviour or a belief in shaping their normative aspect (Dubois, 2003). In fact, a behaviour or a belief can be considered as normative if it is associated with positive evaluations (Jellison & Green, 1981) and the ascription of a social value. The social value is considered through two dimensions that are labelled social desirability and social utility (see Dubois & Beauvois, 2005, 2011). This distinction of social values can be related to other dimensions, such as warmth and competence (Fiske et al., 2002) or alpha and beta dimensions of the Big two model (Blackburn et al., 2004). Despite their possible differences in theoretical anchor, these various approaches present a considerable overlap in their descriptive content

(Dubois & Beauvois, 2011; Judd et al., 2005). The social desirability dimension refers to the perceived quality of the person's interpersonal relationships, and refers to traits like perceived sympathy, friendliness, honesty and morality. The social utility dimension refers to the perceived competence and resources investigated by the person in its activities, and refers to traits like perceived competence, ambition, intelligence or assertiveness (Dubois, 2003; Dubois & Beauvois, 2005).

Gender differences in prescriptive social norms about speeding could be mainly based on the social utility dimensions. Indeed, previous research show that risky and transgressive driving behaviours, including speeding, can be positively associated with motivations to display a high competence and social status (Day et al., 2018; Møller & Gregersen, 2008; Scott-Parker et al., 2015). Moreover, attributes related to social utility such as competence and social status were found to be often positively associated to masculinity and men and negatively with femininity and women (e.g., Berger & Krahé, 2013; Cadinu et al., 2013; Testé & Simon, 2005). Thus, a higher motivation to improve social utility among men compared to women would explain gender differences in risky and transgressive driving, such as speeding. However, before testing the role of the social utility dimension in explaining gender differences in prescriptive norms about speeding, we first propose to verify the existence of such gender differences in prescriptive norms.

Beyond its theoretical aspects, the socio-cognitive approach of social norms also proposes some original methodological perspectives for the study of normative aspects, such as the self-presentation paradigm and the judge paradigm (for detailed presentation of these paradigms see Gilibert & Cambon, 2003). By manipulating the motivations that underlie self-presentation strategies, the self-presentation paradigm aims to highlight the beliefs and behaviours that are most valued and that allow one to obtain the most social approval in a given population and context (Jellison & Green, 1981). This paradigm thus permits to apprehend the instrumental

features of an attitude or a behaviour. Usually, participants are proposed to presented their spontaneous position on a psychological construct without special instruction (standard condition) and thus to presented them again with the instruction to display a positive image (pro-normative condition) and then a negative image (counter-normative condition). It is also common to specify a social group to which participants must imagine presenting themselves positively and negatively. In this situation, participants are asked to consider the effects they may have on a given audience, as well as the possible positive or negative reinforcements they may receive. In the judge paradigm, the participants are invited to adopt the role of an evaluator and to make an evaluative judgment toward a target that conforms to, or violates, the supposed social norm. In this situation, the participants could be implicitly invited to rely on the social norms they know and they are more inclined to adopt an external view about an attitude or a behaviour than in the self-presentation paradigm (Gilibert & Cambon, 2003). Generally, this paradigm allows to distinguish the two dimensions of social value (i.e., social utility, social desirability) while the self-presentation paradigm does not. Thus, the self-presentation paradigm is often mobilized in a first step to apprehend the socially valued or devalued character of an attitude or a behaviour, while the judges paradigm is often used in a second step to identify the dimension of social value that underlies this phenomenon (e.g., Bonetto et al., 2019; Guignard et al., 2014, 2015).

Overview

We proposed two studies based on two complementary paradigms of the socio-cognitive approach. Study 1 aimed to test the hypothesis that presenting oneself as a frequent speeder is more socially valued among men than among women, using the self-presentation paradigm (Jellison & Green, 1981). Study 2 aimed to identify the dimension of social value (social utility vs. social desirability) associated with speeding (and conversely no-speeding) among men and women, using a judge paradigm (Gilibert & Cambon, 2003). The two studies were conducted

in accordance with the 1964 Helsinki declaration (WMO, 1964) and its later amendments, the ethical principles of the French Code of Ethics for Psychologists (CNCDP, 2012), and the 2016 APA Ethical Principles of Psychologists and Code of Conduct (APA, 2017). Before starting the studies, all participants were informed that they could stop their participation at any time without any consequences and next validated an informed consent form. Participants with missing data were removed from the data. All statistical analyses were made using JAMOVI, all parametric tests are bivariate and significance threshold α was set at .05. The datasets for the two study are available in the following Open Science Framework (OSF) repository: https://osf.io/ty5jr/?view_only=0a94602c69ac48c88fbb96abc2da822a.

Study 1

Method and hypotheses

This study was designed to assess the extent to which speeding is subject to social valuation among men, compared to women, through self-presentation strategies. A self-presentation paradigm (Jellison & Green, 1981) was therefore implemented through a within-subject questionnaire experiment. Participants were asked to answer the same questionnaire about their driving style regarding speed (DSRS) three times: first with no explicit instructions (standard condition), then with the instruction to display a positive image of themselves to same gender peers (pro-normative condition), and finally to display a negative image of themselves to same gender peers (counter-normative condition). The presentation order for pro-normative and counter-normative condition was counterbalanced across participants. This within-subject method has been showed to yield no differences with an equivalent between subject design (see Gilibert & Cambon, 2003). If speeding is a behaviour prescribed or prohibited by social norms among men and women, we should expect variations in DSRS score, according to primed self-presentation goals and gender. If men attribute more social value to speeding than women, DSRS score should be higher for men than for women in the pro-normative condition (H1).

Conversely, as speeding might be more damaging to women's image than to men's, the DSRS score should be higher for women than for man in the counter-normative condition (H2). Since speeding is more common among men than women, it is expected that this difference is also be present in the standard condition (H3). Exploratory analyses will also be carried out to test for possible differences between conditions, and the possible interaction between condition and gender on the DSRS score.

Data and participants

Power analyses were conducted to determine sample size based on a medium effect size (d = 0.50; Cohen, 1988). In order to test our hypotheses, we will proceed to planned comparisons with two-tailed independent samples t-test. With 80% power, at least 128 participants (64 women and 64 men) were needed. An online questionnaire was distributed among several social network groups (i.e., trade and sales advertisements groups, local news and events groups, undergraduate student groups). The first sample consisted of 142 women and 64 men. This imbalance could be problematic in order to explore the effect of instruction condition within each gender, as the type II error would be higher among men than women. Therefore, 78 women were randomly excluded from the database. The final sample consisted of 128 French car drivers (50% men) with a mean age of 31.36 (SD = 11.76), 33% are students, 7% unemployed, 23% employees or workers, 12% intermediate occupations, 9% tradespersons, shop or business owners or farmers, 13% executives or intellectual professions, and 3% retired. All participants reported holding a valid driver's licence, for 11.40 years in average (SD = 11.53), 20% reported to usually drive less than 50 km per week, 30% drive 50 to 150 km, 26% drive 150 to 250 km, and 24% more than 250km. Independent sample t-tests revealed no differences across gender for age, number of years of possession of the driving licence and educational level, all ps > .10. However, men declared higher mileage by week than women, $t(126) = 2.14$, $p = .034$, $d = .38$.

Measurements

Given we failed to identify a French scale that specifically addresses speed-related risky and transgressive behaviours among car drivers, we created a driving style regarding speed (DSRS) scale for the purpose of the study. The items were mainly inspired by existing scales considering these behaviours specifically, such as the Speeding Scale (Ulleberg & Rundmo, 2003), or among others risky and transgressive driving behaviours, such as the Driver Behavior Questionnaire (Reason et al., 1990; see Guého et al., 2014 for the French validation) and the Aggressive Driving Scale (Zhang et al., 2016). Among the 16 items, 8 described different driving behaviours involving excessive speed that could represent a danger and/or a rule violation, in different situations (e.g., "Passing the car in front of me when it is already driving at the maximum authorised speed", "On straight roads, disregarding the speed limit and taking advantage of it to drive fast"). The 8 other items were inverted items, describing driving behaviours that involve compliant and safety speed (e.g., "On highways, do not pass the car in front of you in the right lane, even if it forces you to slow down", "Do not exceed the speed limit, even if the road is clear in front of you"). Inverted items were considered because they could encourage participants to be more careful in reading the material and avoid response bias on scales composed of single-valency items (Allen & Seaman, 2007) and were reverse-coded. All items are presented in Appendix. Participants were asked to indicate the extent to which each of the behaviours presented was or was not characteristic of their driving style on a Likert-type scale from (1) "Not at all characteristic of my driving style" to (7) "Very characteristic of my driving style". All items were averaged to create a unique index where a high score indicates frequent speeding. The scale shows a high internal consistency in the three instruction conditions ($\alpha_{\text{pro-normative condition}} = .94$, $\alpha_{\text{standard condition}} = .85$, $\alpha_{\text{counter-normative condition}} = .95$). Finally, participants had to fill mobility and sociodemographic variables.

Results

A repeated measures ANOVA was carried out to test our hypotheses and explore the effects of our variables, with DSRS score as dependent variable, the instruction condition (counter-normative condition vs. standard condition vs. pro-normative condition) as within-subject variable and the participant's gender as between-subject variable. All the following results were unchanged when weekly mileage was controlled. Results revealed a significant effect of the instruction condition on DSRS score, $F(2, 252) = 171.01$, $p < .001$, $\eta^2 = .50$. Differences between instruction conditions were explored with post-hoc, based on three paired samples t-test including Bonferroni correction (*p*-value was therefore set at .017). DSRS score was higher in the counter-normative condition than in the pro-normative condition, $M_{\text{counter-normative}} = 5.56$, $SE = 0.12$, $M_{\text{pro-normative}} = 2.35$, $SE = 0.12$, $t(252) = 17.47$, $p < .001$, and in the standard condition, $M_{\text{standard}} = 3.01$, $SE = 0.12$, $t(252) = 13.99$, $p < .001$. DSRS score was also higher in the standard condition than in the pro-normative condition, $t(252) = 3.48$, $p < .001$. No main effect of participant's gender was found, $p > .10$. The results revealed a significant *condition*gender* interaction, $F(2, 252) = 9.98$, $p < .001$, $\eta^2 = .03$, and thus allowed us to test our hypotheses with planned comparisons based on three two-tailed independent samples t-test (see Figure 1). As predicted by H1, in the pro-normative condition, men reported a higher DSRS score than women, $M_{\text{men}} = 2.74$, $SD = 1.78$, $M_{\text{women}} = 1.96$, $SD = 0.90$, $t(126) = 3.12$, $p = .002$, $d = 0.55$. In line with H2, in the counter-normative condition, women reported a higher DSRS score than men, $M_{\text{men}} = 5.22$, $SD = 2.01$, $M_{\text{women}} = 6.09$, $SD = 1.11$, $t(126) = -3.03$, $p = .003$, $d = -0.54$. Contrary to H3, in the standard condition, no gender difference was found on the DSRS score, $M_{\text{men}} = 3.15$, $SD = 1.21$, $M_{\text{women}} = 2.86$, $SD = 1.02$, $t(126) = 1.45$, $p > .10$, $d = 0.26$.

Within-subject effects of the instruction condition on DSRS score according to gender were explored with *post hoc* tests. Six paired sample t-tests were carried out with a Bonferroni correction (significance threshold α was thus set at .0083). Men presented an higher DSRS score

in the counter-normative condition than in the pro-normative condition, $M_{\text{counter-normative}} = 5.22$, $SD = 2.01$, $M_{\text{pro-normative}} = 2.74$, $SD = 1.78$, $t(63) = 5.87$, $p < .001$, $d = 0.73$, and the standard condition, $M_{\text{standard}} = 3.15$, $SD = 1.21$, $t(63) = 7.08$, $p < .001$, $d = 0.89$. No significant difference was found between the standard and the pro-normative condition, $t(63) = 1.75$, $p = .085$, $d = 0.22$. Women presented an higher DSRS score in the counter-normative condition than in the pro-normative condition, $M_{\text{counter-normative}} = 6.09$, $SD = 1.11$, $M_{\text{pro-normative}} = 1.96$, $SD = 0.90$, $t(63) = 18.62$, $p < .001$, $d = 2.33$, and the standard condition, $M_{\text{standard}} = 2.86$, $SD = 1.02$, $t(63) = 15.94$, $p < .001$, $d = 1.99$. Also, their DSRS score in the standard condition was higher than in the pro-normative condition $t(63) = 6.47$, $p < .001$, $d = 0.81$.

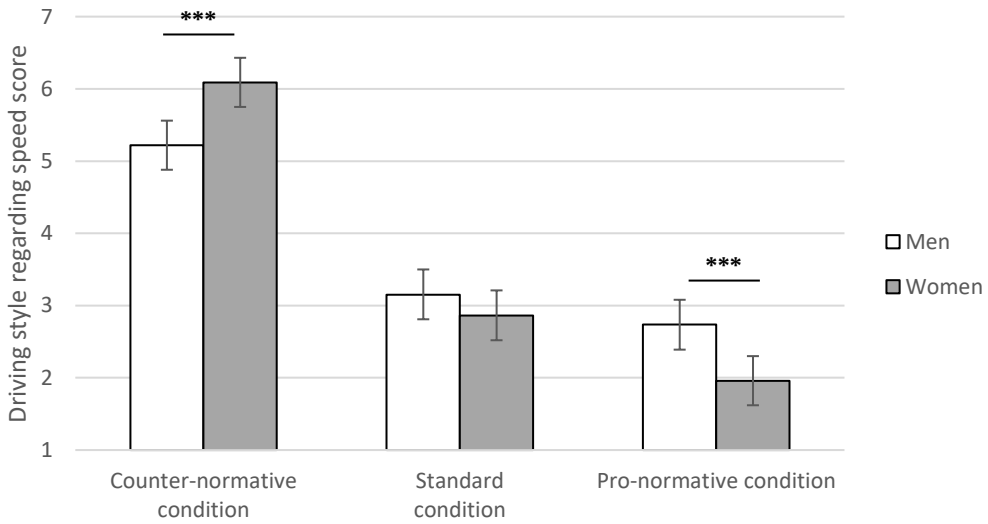

Fig. 1. Driving style regarding speed score displayed by participants according to their gender and the instruction condition.

Note. Error bars represent *95% IC*. *** $p < .001$. Driving style regarding speed ranges from 1 to 7.

Discussion

Results show that both men and women present themselves with more frequent speeding when asked to give a negative image of themselves than when asked to give a positive image to their same-gender peers. This suggests that both men and women drivers share social norms ascribing a higher social value to compliance with speed limits than speeding. In other words,

speeding appears to be socially devalued while compliance with speed limits appear to be valued, by both men and women drivers. However, according to H1, results show that men presented themselves with more frequent speeding than women when asked to give a positive image to their same-gender peers. Conversely, according to H2, women presented themselves with more frequent speeding than men when asked to give a negative image of to their same-gender peers. These results corroborate our assumption that men value speeding to a greater extent than women and that, conversely, women value compliance with speed limits in a greater extent than men. Contrary to our hypothesis H3, men do not present themselves with more frequent speeding than women in the standard condition. This could mean that men's attraction for speed would manifest itself preferentially in social contexts that make gender categorization and identity salient. The second study aimed to identify what dimension of social value underlies the social devaluation of speeding (and conversely the social valuation of compliance with speed limits) among both gender and underlies gender difference in these processes.

Study 2

Method and hypothesis

Study 2 aimed to identify the social value dimension associated with speeding (and conversely compliance with speed limits) among men and women. A judge paradigm (see Gilibert & Cambon, 2003) was implemented through a between-subject questionnaire experiment. Participants were asked to evaluate one of the four presented fictive drivers, based on information about his/her gender and his/her driving style regarding speed (DSRS). The target driver was presented as characterized by a driving style implying very frequent speeding (transgressive target) or very infrequent speeding (compliant target) and presented as being a man (male target) or a woman (female target). The questionnaire was presented as a study on drivers' perception. Participants were asked to carefully read the presentation of a driver who participated to a survey about driving habits. DSRS profile of the target was manipulated

through the presentation of his/her fictive answers on 6 items from the DSRS scale (e.g., “Exceed speed limit on highway”, “Disregard the speed limit on the main straights, and take the opportunity to drive fast”, “Overtake the car in front of me while it is already driving at the maximum authorized speed”), ranging from (0) “Not at all characteristic of my driving style” to (10) “Very characteristic of my driving style”. A 10-point scale was preferred to a 7-point scale as it seems to be more common in the evaluations that can be read of individuals in everyday life (e.g., in the academic field) and therefore more familiar to the participants. The fictive answers to those items are presented as high for the transgressive target (ranging from 7 to 8) and as low to moderate for the compliant target (ranging from 2 to 4). Target’s gender was manipulated through his/her fictive first name. The male target was presented as being named “Thomas” while the female target was presented as being named “Laura”, that are well-gendered and common first names in France.

Social value was considered through the distinction between social utility and social desirability. We expect that gender differences in values associated with speeding and compliance with speed limits would be explained by differences in attributed social utility. Precisely, given that study 1 showed that both men and women devalued speeding and valuate compliance with speed limits, we hypothesise that the transgressive target would be associated to lower social desirability (H1) and lower social utility (H2) than the compliant target. Given that study 1 also showed that men more valued speeding than women, we also hypothesise that the transgressive male target would be associated with higher social utility than the transgressive female target (H3). Conversely, we hypothesise that the compliant male target would be associated with lower social utility than the compliant female target (H4).

Although both men and women share similar stereotypes about men and women drivers, some differences were noted in previous studies based on in-group favoritism. Men tend to share a more positive stereotype of men drivers than women, while women tend to share a more

positive of women drivers than men (Degraeve et al., 2015; Pravossoudovitch et al., 2015). Therefore, differences in social value associated with the target driver, according to his/her gender, could be modulated by the participant's gender. This possibility would be investigated by exploratory analyses. Differences in social utility and social desirability associated with the target according to independent variables will be also explored.

Data and participants

Power analyses were conducted to determine sample size based on a medium effect size (*d* = 0.50; Cohen, 1988). To use independent two-tailed t-test with a power of 80%, in order to test the mean difference on the dependent variables, depending on the gender of the participant and the target for each driving style, at least 256 participants were required (64 per cell for the variables 'target's gender' and 'driving style regarding speed' for each participant gender group). In order to be sufficiently powered to conduce exploratory analysis involving second-order interactions, a higher sample size was finally aimed. An online questionnaire was distributed among several social network groups (i.e., trade and sales advertisements groups, local news and events groups, undergraduate student groups) and a paper-and-pencil questionnaire was also proposed to undergraduate students in various disciplines at a French library university. The sample consisted of 885 participants with a mean age of 33.43 (*SD* = 13.76), 34% are students, 9% unemployed, 23% employees or workers, 10% intermediate occupations, 5% tradespersons, shop or business owners or farmers, 14% executives or intellectual professions, and 5% retired. 87% reported holding a valid driver's licence, for 15.16 years in average (SD = 13.62), with 29% reporting to usually drive less than 50 km per week, 33% drive 50 to 150 km, 18% drive 150 to 250 km, and 20% drive more than 250 km. Sample distribution according to target's gender, target's DSRS and participant's gender is presented in Table 1. Contrary to Study 1, this study was not designed to carry out within-gender statistical comparisons, thus participant's gender imbalance across conditions was not judged as being

problematic and no participants were excluded from the sample. Regression analyses revealed significant differences in age and SES[1] distribution across cells, *p*s < .05.

Table 1. Sample distribution across target's driving style regarding speed, target's gender and participant's gender

Target's driving style regarding speed	Target's gender	Participant's gender	
		Men	Women
Transgressive target	Male	77	169
	Female	75	157
Compliant target	Male	70	138
	Female	47	152

Measurements

The questionnaire included a measure of social utility and social desirability attributed to the target. Social utility was measured with 3 positive items (i.e., "ambitious", "dynamic", "intelligent") and 3 negative (inverted) items (i.e., "unstable", "dizzy", "vulnerable"). Social desirability was measured with 3 positive items (i.e., "pleasant", "nice", "honest") and 3 negative (inverted) items (i.e., "pretentious", "annoying", "boastful"). Negative items were reverse-coded. Items were chosen among a list of items pre-tested by Cambon (2006) on French participants (for a similar selection procedure of social desirability and social utility items, see Guignard et al., 2014, 2015). Participants were asked to indicate the extent to which each item describes the target on a Likert-type scale from (1) "Not at all" to (6) "Totally". The social desirability sub-scale showed a high internal consistency (α = .91). Because the social utility

[1] SES was binary coded with low SES (i.e., employees, workers) and high SES (e.g., intermediate occupations, tradespersons, shop or business owners or farmers, executives, intellectual professions). For unemployed and retired the SES was attributed according to the last job occupation. For students the SES was attributed according to the parents's occupations.

sub-scale showed a problematical internal consistency (α = .43) two items were excluded ("dynamic", "ambitious") in order to reach a higher level (α = .64).

Results

In order to test the main effect of target's DSRS profile and conduct exploratory analyses, a repeated measures ANOVA followed by Student *t*-test were carried out (see Figure 2). The dimension of social value (social utility vs. social desirability) was entered as within-subject independent variable. Target's DSRS profile, target's gender and participants' gender were entered as between-subject independent variables. All interaction terms were considered. All following results were unchanged when age, SES and the aforementioned independent variables were controlled for, except for one test where this is explicitly mentioned.

Results show a main effect of target's DSRS profile: the compliant target was associated with an higher social value than the transgressive target, $F(1, 805) = 772.45$, $\eta^2 = .11$, $p < 001$. As predicted by H1 and H2, planned comparison showed that, compared to the compliant target, the transgressive target was associated with a lower social desirability, $M_{\text{compliant}} = 4.63$, $SE = 0.04$, $M_{\text{transgressive}} = 2.77$, $SE = 0.04$, $t(883) = 30.6$, $d = 1.49$, $p < .001$, and with a lower social utility, $M_{\text{transgressive}} = 3.41$, $SE = 0.04$, $M_{\text{compliant}} = 4.59$, $SE = 0.04$, $t(883) = 22.1$, $d = 2.07$, $p < .001$. Difference between social desirability and social utility levels for both targets were explored with two post-hoc comparisons and Bonferroni correction (*p*-value was therefore set at .025). No difference between social desirability and social utility levels associated with the compliant target was found, $p > .10$. However, the transgressive target was associated with more social utility than social desirability, $M_{\text{social utility}} = 3.50$, $SE = 0.04$, $M_{\text{social desirability}} = 2.67$, $SE = 0.04$, $t(477) = 15.1$, $p < .001$, $d = 0.69$.

Planned comparisons show no differences according to target's gender on the social utility score, neither for the transgressive target, nor for the compliant target, *p*s > .05. Thus, H3 and

H4 were rejected. Differences in social desirability associated with each target according to its gender were explored with two post-hoc comparisons and Bonferroni correction (*p*-value was therefore set at .025). No difference according to target's gender was found on social desirability for the compliant target, $p > .05$. Once participant's gender and age controlled for, no difference according to target's gender was found on social desirability for the transgressive target, $p = .026$.

Finally, in order to explore possible effects of the participant's gender in judgement according to target's characteristics, interaction terms entered in the above-mentioned repeated measures ANOVA were checked. Results revealed a significant *DSRS*social value dimension*participant's gender* interaction, $F(1, 1.73) = 4.53$, $p = .034$, $\eta^2 < 0.01$. The decomposition of this second-order interaction revealed a significant *DSRS*participant's gender* interaction for the social desirability, $F(1, 4.53) = 5.61$, $p = .018$, $\eta^2 = 0.01$, but not for the social utility associated with the target, $p > .10$. Thus, participant's gender differences in social desirability associated to the target according its DSRS were examined with two post-hoc comparisons and Bonferroni correction (*p*-value was therefore set at .025). Results show no participant's gender difference in social utility associated with the transgressive target, $p > .10$. However, men participant associated a lower social desirability than women participants with the compliant target, $M_{\text{men participants}} = 4.44$, $SE = 0.07$, $M_{\text{women participants}} = 4.71$, $SE = 0.05$, $t(405) = 2.77$, $p = .006$, $d = 0.30$.

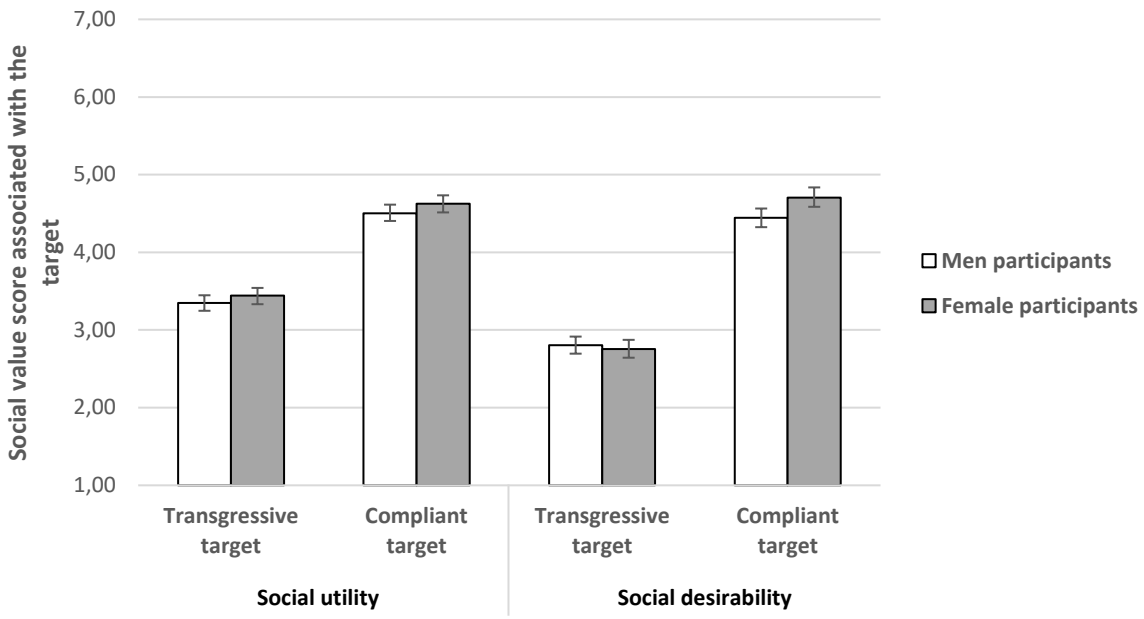

Fig. 2. Social value associated with the target according to participant's gender.

Note. Error bars represent *95% IC*. Social utility and social desirability measures range from 1 to 6.

Discussion

Contrary to our hypotheses, the male transgressive target was not associated with higher social utility than the female transgressive target and the male compliant target was not associated with lower social utility than the female compliant target. No difference was found on the social desirability dimension associated to the transgressive and the compliant targets according to their gender. The results rather indicate that speeding and compliance with speed limits are socially devalued and valued respectively, by both men and women participants, regardless of the gender of the driver who produce this behaviour. The social devaluation of speeding (compared to compliance with speed limits) is explained by the attribution of a low social desirability and more particularly of a low social utility. If the compliant target is associated with comparable levels of social utility and desirability, the transgressive target is associated with lower social desirability than utility. Thus, perceptions and values associated with speeding and compliance do not appear to be exact opposites of each other. This asymmetrical perception of speeding and compliance is also supported by the finding suggesting that men associated

lower social desirability to the compliant target than women, while both genders do not differently evaluate the transgressive target. These last results also suggest that compliance with speed limits is less valued by men, because associated with less socially desirable traits, than women, while speeding is not more valued by men than women. Finally, gender difference in speeding could be explained more by difference in values and perceptions associated with compliance with speed limits than by values and perceptions associated with speeding.

Some main limitations to this study need to be acknowledged. Two items ("dynamic", "ambitious") have been excluded from the social utility scale in order to reach a higher but still questionable internal consistency. These limitations could explain why no gender difference were observed on this variable. The target's DSRS profile was manipulated with two modalities only (transgressive target vs. compliant target). Considering additional and less opposed modalities would be preferable, as speeding could be socially valued when it is perceived as not being too extreme and compliance with speed limits could socially devalued when it is perceived as too rigid.

General Discussion

In order to investigate gender differences in prescriptive norms associated with speeding and no-speeding, we proposed two studies based on complementary paradigms of the socio-cognitive approach to social norms. Study 1 mainly aimed to test the hypothesis that presenting oneself as a frequent speeder is more socially valued among men than among women, while study 2 mainly aimed to identify the dimension of social value (social utility vs. social desirability) associated with speeding (and conversely no-speeding) among men and women.

Results of both studies indicate that a driving style implying frequent speeding is socially devalued and rejected by both men and women drivers. This can be explained by a perception of speeding as a potentially dangerous behaviour and the awareness that this behaviour is

condemned and proscribed by authorities. Results of study 2 show that speeding (compared to compliance with speed limits) is devaluate through both dimensions of social value that are social desirability (i.e., warmth) and social utility (i.e., competence). Interestingly, we also found that this devaluation of speeding is based more on the attribution of a low desirability than on the attribution of a low utility, while there is no difference between the higher levels of desirability and utility attributed to compliance with speed limits. In other word, speeding would be more associated with low qualities in interpersonal relationships and morality (e.g., sympathy, friendliness, honesty) than with low qualities related to social status and competence (e.g., assertiveness, ambition, intelligence). The fact that speeding is relatively poorly devalued on the social utility dimension (compared to the social desirability dimension) is not inconsistent with studies which found a positive associations between speed and motivation to display a high competence social status (Day et al., 2018; Møller & Gregersen, 2008; Scott-Parker et al., 2015). Thus, these results suggest that road safety actions directed toward a varied public should focus on a greater devaluation of social utility traits (rather than social desirability traits) and social status that may be associated with speeding. In this way, perceiving that people in the public sphere associate risky driving with low social status was found to decrease intentions to take risk among young men drivers (see Lemarié et al., 2018).

As an explanation of gender differences in speeding, we expected gender differences in social values ascribed to speeding, based on a higher attribution of social utility by men compared to women. Results of study 1 showed that although men devalued speeding and valuate compliance with speed limits, they do so to a lesser extent than women. In other words, these results suggest that men have more favourable perceptions of speeding and also less favourable perceptions of compliance with speed limits than women. However, results of study 2 found any difference in judgment of the transgressive target and the compliant target according to its gender, and difference according to the gender of the perceiver was only found for the compliant

target, where men associated a lower social desirability than women. Thus, study 2 suggests that gender difference in speeding could be explained more by difference in values associated to compliance with speed limits, and more precisely in terms of social desirability, than values associated with speeding itself. Among men, speeding would not be explained by social benefits that would be linked to it, but by the low social benefits linked to compliance with speed limits. We can speculate that strict adherence to traffic rules might be perceived by men as a potentially threatening trait to the self because it is often associated with femininity (Degraeve et al., 2015; Granié & Papafava, 2011; Pravossoudovitch et al., 2015). Although this result needs to be confirmed by further study, they corroborate again that speed and compliance with speed limits are not perceived as the opposite of each other. Moreover, it suggests that road safety actions directed toward men drivers should focus mainly on the representations and values they associate with speed limits compliance (rather than with speeding) and address the low social desirability (rather than the low social utility) they associated to. Such actions could, for example, present male role models who are both respectful of speed limits and characterized by high social desirability traits that would be socially validated by their peers. Designing intervention to modify prescriptive norms that regulate values that men associate with speed limit compliance could be promising to the extent that previous study showed that changing perception of prescriptive norms efficiently change driving behaviours (Geber et al., 2019; Perkins et al., 2010).

Several expected gender differences in the two studies were not found to be significant. This observation is not necessarily surprising given that expected gender differences in risky and offending driving behaviours were not systematically observed in previous studies and were suggested to decrease across generations (e.g., Forward et al., 1998; Sârbescu et al., 2014). This trend could be explained by the convergence between men and women in endorsing masculine traits across generations (Donnelly & Twenge, 2017). Nevertheless, this possible decrease in

risky driving gender-gap should be confirmed by a cross-temporal meta-analysis. In study 1, no expected gender difference in self-presentation in standard condition was found, while differences appeared in both pro-normative and counter-normative conditions where participants had to manage their presentation about hypothetical same-gender peers. This could be explained by the fact that gender differences in speeding were found to be most likely to occur when gender categorization and identity are well salient (Ronay & Kim, 2006). Thus, failure to considering gender identity saliency may also explain why expected gender differences in risky and offending behaviours were not observed in the present and several previous studies. This encourage to pay more interest to social identity and self-categorization theories (Tajfel & Turner, 1979; Turner et al., 1987) in further study of driving behaviours, as claimed by recent research (e.g., Hoekstra et al., 2018; Tekeş et al., 2019).

As limitation for both studies we can note that participants were probably aware that they were dealing with road safety issues. In this context, they might have been motivated to provide desirable responses by valuing compliance with speed limits and devaluing speeding more than they would have in a more ecological context of driving. This could explain while no direct valuation of speeding, notably among men, was observed while previous studies suggest that this can be observed in other context, such as for men drivers in the presence of another man passenger (e.g., Baxter et al., 1990). To address the possible limitation raised, it would be interesting to conduct another study based on the self-presentation paradigm with a driving task, for example on driving simulator, while ensuring a weak context of desirability related to road safety issues or to the experimenter.

Conclusion

Both studies indicate that both men and women drivers share social norms that associate a positive value to compliance with speed limits and a negative value to speeding. Road safety actions could benefit from considering that speeding is more valued on social utility than social

desirability. Contrary to our expectations, no evidence for a direct social valuation of speeding was found among men. Nevertheless, the results of both studies show some gender differences in the social value associated. Although men value compliance with speed limits, they appear do so to a lesser extent than women, notably because of a lower perceived social desirability. Thus, road safety campaigns toward men could benefit to focus more on enhancing the representations of speed compliant drivers, in terms of social desirability, than devaluing the representation of speeding drivers.

Practical Applications

The results highlighted by these two studies can have several practical implications for designing road safety messages in order to prevent speeding. Firstly, regardless of the gender of the driver, messages associating speeding drivers with a low social status and a low social utility (i.e., low competence and resources) would be more effective than those associating them with a low social desirability (i.e., low qualities in interpersonal relationship and morality), although using both associations in the same message could be even more effective. Secondly, the results suggest that the most effective road safety messages, for targeting men driver audience (who are more often concerned by speeding), would be those that associate the speed limit compliant drivers with a high level of social desirability. However, the effectiveness of such messages should be verified directly by experimental studies. More broadly, repeated exposure to different types of messages that act on the associations between driver representation and social values, during and after initial driver training, could help change prescriptive norms, and therefore behaviours, with regard to compliance with speed limits.

References

Allen, I. E., & Seaman, C. A. (2007). Likert scales and data analyses. *Quality Progress*, *40*(7), 64-65.

American Psychological Association (APA). (2017). *Ethical principles of psychologists and code of conduct*. Retrieved from http://www.apa.org/ethics/code/index.aspx

Baxter, J. S., Manstead, A. S. R., Stradling, S. G., Campbell, K. A., Reason, J. T., & Parker, D. (1990). Social facilitation and driver behaviour. *British Journal of Psychology*, *81*(3), 351-360. https://doi.org/10.1111/j.2044-8295.1990.tb02366.x

Berger, A., & Krahé, B. (2013). Negative attributes are gendered too : Conceptualizing and measuring positive and negative facets of sex-role identity: Positive and negative facets of sex-role identity. *European Journal of Social Psychology*, n/a-n/a. https://doi.org/10.1002/ejsp.1970

Blackburn, R., Renwick, S. J. D., Donnelly, J. P., & Logan, C. (2004). Big Five or Big Two? Superordinate factors in the NEO Five Factor Inventory and the Antisocial Personality Questionnaire. *Personality and Individual Differences*, *37*(5), 957-970. https://doi.org/10.1016/j.paid.2003.10.017

Bonetto, E., Varet, F., & Troïan, J. (2019). To resist or not to resist? Investigating the normative features of resistance to persuasion. *Journal of Theoretical Social Psychology*, *3*(3), 167-175. https://doi.org/10.1002/jts5.44

Cadinu, M., Latrofa, M., & Carnaghi, A. (2013). Comparing Self-stereotyping with In-group-stereotyping and Out-group-stereotyping in Unequal-status Groups : The Case of Gender. *Self and Identity*, *12*(6), 582-596. https://doi.org/10.1080/15298868.2012.712753

Cambon, L. (2006). La fonction évaluative de la personnologie, vers la mise en évidence de deux dimensions de la valeur : La désirabilité sociale et l'utilité sociale [The evaluative function of personology, towards the identification of two dimensions of value: social desirability and social utility] . *Psychologie Française*, *51*(3), 285-305. https://doi.org/10.1016/j.psfr.2006.01.003

Cestac, J., Paran, F., & Delhomme, P. (2011). Young drivers' sensation seeking, subjective norms, and perceived behavioral control and their roles in predicting speeding intention : How risk-taking motivations evolve with gender and driving experience. *Safety Science*, *49*(3), 424-432. https://doi.org/10.1016/j.ssci.2010.10.007

Cestac, J., Paran, F., & Delhomme, P. (2014). Drive as I say, not as I drive : Influence of injunctive and descriptive norms on speeding intentions among young drivers. *Transportation Research Part F: Traffic Psychology and Behaviour*, *23*, 44-56. https://doi.org/10.1016/j.trf.2013.12.006

Code de déontologie des psychologues (CNCDP) [Code of Ethics of Psychologists]. (1996, Amended February, 2012). Retrieved from http://www.cncdp.fr/index.php/code-de-deontologie/code-de-deontologie-2012

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale.

Day, M. R., Thompson, A. R., Poulter, D. R., Stride, C. B., & Rowe, R. (2018). Why do drivers become safer over the first three months of driving? A longitudinal qualitative study. *Accident Analysis & Prevention*, *117*, 225-231. https://doi.org/10.1016/j.aap.2018.04.007

Degraeve, B., Granié, M.-A., Pravossoudovitch, K., & Lo Monaco, G. (2015). Social representations associated with men and women drivers among French adolescents and adults. Effects of the perceiver's age, sex, and socioeconomic status. *Transportation Research Part F: Traffic Psychology and Behaviour*, *34*, 1-17. https://doi.org/10.1016/j.trf.2015.07.019

Donnelly, K., & Twenge, J. M. (2017). Masculine and Feminine Traits on the Bem Sex-Role Inventory, 1993–2012 : A Cross-Temporal Meta-Analysis. *Sex Roles*, *76*(9-10), 556-565. https://doi.org/10.1007/s11199-016-0625-y

Dubois, N. (2003). *A sociocognitive approach to social norms*. Routledge.

Dubois, N., & Beauvois, J.-L. (2005). Normativeness and individualism. *European Journal of Social Psychology*, *35*(1), 123-146. https://doi.org/10.1002/ejsp.236

Dubois, N., & Beauvois, J.-L. (2011). Are Some Rabbits More Competent and Warm Than Others? : The Lay Epistemologist Is Interested in Object Value, Not in Descriptive Parameters. *Swiss Journal of Psychology*, *70*(2), 63-73. https://doi.org/10.1024/1421-0185/a000040

European Conference of Ministers of Transport. (2006). *Young Drivers : The Road to Safety*. OECD. https://doi.org/10.1787/9789282113356-en

Fiske, S. T., Cuddy, A. J. C., Glick, P., & Xu, J. (2002). A model of (often mixed) stereotype content : Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology*, *82*(6), 878-902. https://doi.org/10.1037/0022-3514.82.6.878

Forward, S., Linderholm, I., & Jarmark, S. (1998). *Women and traffic accidents, causes, consequences and considerations.* 24th International Congress of Applied Psychology, San Francisco, CA.

Geber, S., Baumann, E., Czerwinski, F., & Klimmt, C. (2019). The Effects of Social Norms Among Peer Groups on Risk Behavior: A Multilevel Approach to Differentiate Perceived and Collective Norms. *Communication Research*, 009365021882421. https://doi.org/10.1177/0093650218824213

Gilibert, D., & Cambon, L. (2003). Paradigms of the sociocognitive approach. In N. Dubois (Ed.), *A sociocognitive approach to social norms* (p. 38-69). Routledge.

González-Iglesias, B., Gómez-Fraguela, J. A., & Luengo, M. Á. (2014). Sensation seeking and drunk driving: The mediational role of social norms and self-efficacy. *Accident Analysis & Prevention*, *71*, 22-28. https://doi.org/10.1016/j.aap.2014.05.006

Granié, M.-A. (2009). Effects of gender, sex-stereotype conformity, age and internalization on risk-taking among adolescent pedestrians. *Safety Science*, *47*(9), 1277-1283. https://doi.org/10.1016/j.ssci.2009.03.010

Granié, M.-A., & Papafava, E. (2011). Gender stereotypes associated with vehicle driving among French preadolescents and adolescents. Transportation Research Part F: Traffic Psychology and Behaviour, 14(5), 341-353. https://doi.org/10.1016/j.trf.2011.04.002

Guého, L., Granié, M.-A., & Abric, J.-C. (2014). French validation of a new version of the Driver Behavior Questionnaire (DBQ) for drivers of all ages and level of experiences. *Accident Analysis & Prevention*, *63*, 41-48. https://doi.org/10.1016/j.aap.2013.10.024

Guignard, S., Apostolidis, T., & Demarque, C. (2014). Discussing normative features of Future Time Perspective construct : Renewing with the Lewinian approach from a sociocognitive perspective. *New Ideas in Psychology*, *35*, 1-10. https://doi.org/10.1016/j.newideapsych.2014.04.001

Guignard, S., Bertoldo, R., Goula, K., & Apostolidis, T. (2015). Looking to the future for being well-seen : Further evidences about the normative feature of the Future Time Perspective. *International Review of Social Psychology*, *28*(2), 7-23.

Hoekstra, A. T. G., Twisk, D. A. M., & Hagenzieker, M. P. (2018). Do road user roles serve as social identities? Differences between self-described cyclists and car drivers. *Transportation Research Part F: Traffic Psychology and Behaviour*, *59*, 365-377. https://doi.org/10.1016/j.trf.2018.09.006

Jellison, J. M., & Green, J. (1981). A self-presentation approach to the fundamental attribution error: The norm of internality. *Journal of Personality and Social Psychology*, *40*(4), 643-649. https://doi.org/10.1037/0022-3514.40.4.643

Judd, C. M., James-Hawkins, L., Yzerbyt, V., & Kashima, Y. (2005). Fundamental dimensions of social judgment: Understanding the relations between judgments of competence and

warmth. *Journal of Personality and Social Psychology*, *89*(6), 899-913. https://doi.org/10.1037/0022-3514.89.6.899

Krahé, B. (2018). Gendered Self-Concept and the Aggressive Expression of Driving Anger : Positive Femininity Buffers Negative Masculinity. *Sex Roles*, *79*(1-2), 98-108. https://doi.org/10.1007/s11199-017-0853-9

Lemarié, L., Chebat, J.-C., & Bellavance, F. (2018). Reckless driving promotion and prevention: Priming effects. *Journal of Social Marketing*, *8*(2), 220-236. https://doi.org/10.1108/JSOCM-02-2017-0012

Møller, M., & Gregersen, N. P. (2008). Psychosocial function of driving as predictor of risk-taking behaviour. *Accident Analysis & Prevention*, *40*(1), 209-215. https://doi.org/10.1016/j.aap.2007.05.007

Özkan, T., & Lajunen, T. (2005). Why are there sex differences in risky driving? The relationship between sex and gender-role on aggressive driving, traffic offences, and accident involvement among young turkish drivers. *Aggressive Behavior*, *31*(6), 547-558. https://doi.org/10.1002/ab.20062

Perkins, H. W., Linkenbach, J. W., Lewis, M. A., & Neighbors, C. (2010). Effectiveness of social norms media marketing in reducing drinking and driving: A statewide campaign. *Addictive Behaviors*, *35*(10), 866-874. https://doi.org/10.1016/j.addbeh.2010.05.004

Pravossoudovitch, K., Martha, C., Cury, F., & Granié, M.-A. (2015). Sex and Age Differences in the Endorsement of Sex Stereotypes Associated with Driving. *The Spanish Journal of Psychology*, *18*. https://doi.org/10.1017/sjp.2015.94

Reason, J., Manstead, A., Stradling, S., Baxter, J., & Campbell, K. (1990). Errors and violations on the roads: A real distinction? *Ergonomics*, *33*(10-11), 1315-1332. https://doi.org/10.1080/00140139008925335

Ronay, R., & Kim, D.-Y. (2006). Gender differences in explicit and implicit risk attitudes: A socially facilitated phenomenon. *British Journal of Social Psychology*, *45*(2), 397-419. https://doi.org/10.1348/014466605X66420

Sârbescu, P., Stanojević, P., & Jovanović, D. (2014). A cross-cultural analysis of aggressive driving : Evidence from Serbia and Romania. *Transportation Research Part F: Traffic Psychology and Behaviour*, *24*, 210-217. https://doi.org/10.1016/j.trf.2014.04.002

Schwartz, S. H., & Howard, J. A. (1982). Helping and cooperation: A selfbased motivational model. In V. J. Derlega & J. Grzelak (Eds.), *Cooperation and helping behavior: Theories and research* (p. 327-353). Academic press.

Scott-Parker, B., King, M. J., & Watson, B. (2015). The psychosocial purpose of driving and its relationship with the risky driving behaviour of young novice drivers. *Transportation Research Part F: Traffic Psychology and Behaviour*, *33*, 16-26. https://doi.org/10.1016/j.trf.2015.06.004

Sherif, M. (1935). A study of some social factors in perception. *Archives of Psychology*, *27*(187).

Simons-Morton, B., Lerner, N., & Singer, J. (2005). The observed effects of teenage passengers on the risky driving behavior of teenage drivers. *Accident Analysis & Prevention*, *37*(6), 973-982. https://doi.org/10.1016/j.aap.2005.04.014

Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In S. Worchel & W. Austin (Eds.), *The social psychology of intergroup relations* (p. 33-48). Brooks/Cole.

Tekeş, B., Erkuş, U., & Lajunen, T. (2019). Does the group membership shape evaluations on other drivers? The role of symbolic cues in traffic. *Transportation Research Part F: Traffic Psychology and Behaviour*, *63*, 216-225. https://doi.org/10.1016/j.trf.2019.04.016

Testé, B., & Simon, K. (2005). Valeur affective et utilité sociale des traits dans les stéréotypes de genre, le soi féminin et le soi masculin [Affective value and social utility of traits in gender stereotypes, the feminine self and the masculine self]. *International Review of Social Psychology*, *3*, 81-94.

Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., & Wetherell, M. (1987). *Rediscovering the Social Group: A self-categorization Theory*. Basil Blackwell.

Ulleberg, P., & Rundmo, T. (2003). Personality, attitudes and risk perception as predictors of risky driving behaviour among young drivers. *Safety Science*, *41*(5), 427-443. https://doi.org/10.1016/S0925-7535(01)00077-7

Varet, F., Granié, M.-A., & Apostolidis, T. (2018). The role of individualism, gender and situational factors on probabilities of committing offences in a French drivers sample. *Transportation Research Part F: Traffic Psychology and Behaviour*, *56*, 293-305. https://doi.org/10.1016/j.trf.2018.04.020

World Health Organisation (WHO). (2022, June 20). *Road traffic injuries*. https://www.who.int/news-room/fact-sheets/detail/road-traffic-injuries

World Health Organisation (WHO). (2018). *Global status report on road safety 2018*. https://www.who.int/publications/i/item/9789241565684

World Medical Organization (WMO). (1964). *Recommendations guiding physicians in biomedical research involving human subjects*. Helsinki, Finland.

Zhang, Y., Houston, R., & Wu, C. (2016). Psychometric examination and validation of the aggressive driving scale (ADS): Psychometric Examination and Validation of the ADS. *Aggressive Behavior*, *42*(4), 313-323. https://doi.org/10.1002/ab.21627

Appendix

French version of the items of the Driving style regarding speed scale

*Items marked with * have been reverse coded.*

Item 1 : Dépasser la voiture devant moi alors qu'elle roule déjà à la vitesse maximale autorisée.

Item 2 : Accélérer lorsqu'un conducteur essaye de me dépasser.

Item 3 : Sur autoroute, coller la voiture devant moi sur la voie de gauche jusqu'à ce qu'elle se rabatte pour me laisser passer.

Item 4 : Démarrer en trombe au feu pour laisser les autres conducteurs sur place.

Item 5 : Faire des entorses aux règles routières lorsque je suis pressé(e).

Item 6 : Prendre plaisir à dépasser les limitations de vitesse sur autoroute.

Item 7 : Sur les grandes lignes droites, ne pas tenir compte de la limitation de vitesse et en profiter pour rouler vite.

Item 8 : Rouler plus vite que d'habitude lorsque je suis de mauvaise humeur.

Item 9* : Ne pas coller la voiture devant moi, même si cela me contraint à rouler en dessous de la vitesse maximale autorisée.

Item 10* : Ralentir lorsqu'un autre conducteur essaye de me dépasser, pour qu'il puisse me doubler plus facilement.

Item 11* : Sur autoroute, ne pas doubler la voiture de devant par la voie de droite, même si cela m'oblige à ralentir mon allure.

Item 12* : Sur l'autoroute, éviter d'utiliser la voie de gauche pour faciliter la circulation, même si cela m'oblige à ralentir un peu.

Item 13* : Ne pas dépasser la limitation de vitesse sur autoroute.

Item 14* : Toujours surveiller mon compteur, pour ne pas dépasser la limitation de vitesse.

Item 15* : Respecter les règles routières, même lorsque je suis pressé(e).

Item 16* : Ne pas dépasser la limitation de vitesse, même si la route est dégagée devant moi.

English translation of the items of the Driving style regarding speed scale

*Items marked with * have been reverse coded.*

Item 1: Overtaking the car in front of me when it's already going the speed limit.

Item 2: Accelerating when a driver tries to overtake me.

Item 3: On the highway, sticking the car in front of me in the left lane until it pulls over to let me pass.

Item 4: Speeding off at the light to leave other drivers behind.

Item 5: Bending the rules of the road when I am in a hurry.

Item 6: Enjoying exceeding the speed limit on the highway.

Item 7: On long straights, ignoring the speed limit and driving faster.

Item 8: Driving faster than usual when I am in a bad mood.

Item 9*: Not to sticking the car in front of me, even if it forces me to drive below the speed limit.

Item 10*: Slowing down when another driver tries to pass me, so it can pass me more easily.

Item 11*: On the highway, do not overtaking the car in front in the right lane, even if it forces me to slowing down.

Item 12*: On the highway, avoiding using the left lane to ease traffic, even if it forces me to slowing down a bit.

Item 13*: Do not exceeding the speed limit on the highway.

Item 14*: Always watching my speedometer, so as not to exceed the speed limit.

Item 15*: Respecting the road traffic rules, even when I am in a hurry.

Item 16*: Do not exceeding the speed limit, even if the road ahead is clear.