Instrumental and normative pathways to compliance: results from field research on moped drivers

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4 Instrumental and Normative Motivations for Compliance with Traffic Laws: A Closer Look at Specific Violations

Abstract

Objectives: This study examines how instrumental and normative motivations translate into greater legal compliance by looking at motivations for compliance with regard to six specific traffic violations.

Methods: Analyses are based on survey data collected during police traffic controls of moped drivers in two Dutch cities over a period of six months.

Structural equation modelling with Satorra-Bentler estimates was used (n=302), with six different self-reported violations of traffic laws as dependent variables. Independent variables included instrumental and normative motivations based on recent research and psychometric analyses.

Results: I find evidence for both instrumental and normative motivations to comply with traffic laws. Depending on the violation, personal morality, perceived probability of apprehension and the obligation to obey the law are significant predictors of compliance.

Conclusions: The findings show that more general conclusions on compliance with traffic laws should be treated with some caution. Motivations for compliance differ depending on the traffic violation. Field research based on actual offending behaviour would be an interesting next step to gain additional insight in the motivations for compliance.

4.1 Introduction

Laws regulate the behaviour of citizens. Governments and legal institutions interpret and enforce these laws and, for a society to function properly, citizens must comply with the rules and obey the decisions of legal authorities (Tyler & Darley, 2000). However, because laws and directives of legal authorities restrict the ability of citizens to behave as they wish, people do not always comply with the law. This makes it important for those interested in the rule of law, particularly authorities interested in obtaining compliance with the law, to understand motivations for compliance with the law and to identify which motivations translate into greater legal compliance.

Previous research on motivations for compliance with the law is dominated by two perspectives (Piliavin et al., 1986). The instrumental perspective, or deterrence theory is based on the idea that potential offenders will only engage in non-compliant behaviour when the expected returns, discounted by the expected costs of this behaviour, exceed the expected net returns from law-abiding alternatives such as legitimate employment (Becker, 1968). Through the certainty, severity and immediacy of punishment, the expected costs of non-compliant behaviour can be increased and potential offenders can be deterred to engage in non-compliant behaviour (Nagin, 2013). The normative perspective is concerned with intrinsic factors such as personal morality and perceptions about the legitimacy of authorities. According to this perspective, people view compliance with the law as appropriate, because of their attitudes about how they should behave (Eisner & Nivette, 2013). There are two types of personal normative motivations: legitimacy and morality. Normative commitment through legitimacy means obeying a law because one feels that the authority enforcing the law has the right to dictate behaviour. Normative commitment through personal morality means obeying a law because one feels a law is just (Tyler, 2006, 1990).

Multiple studies have presented empirical evidence for both the instrumental and the normative perspective on compliance. However, the results of these studies are not uniform. For example, motivations for compliance are culturally variable (Lee & Cho, 2019; Tankebe, 2009a; Tankebe et al., 2016) and motivations to comply with everyday traffic laws differ from motivations to comply with other everyday laws and regulations (Gao & Zhao, 2018; Jackson, Bradford, Hough, & Murray, 2012). These results underline the importance of research on the circum-

stances under which instrumental and normative motives translate into greater legal compliance (Beetham, 1991; Nagin & Telep, 2017).

The purpose of the present study is to add to the research on the circumstances under which instrumental and normative motivations translate into greater legal compliance by looking at motivations for compliance of six specific violations. While previous research is based on aggregates of offending behaviour, the present study looks at specific violations. This is interesting because not all traffic law violations are considered equal. For example, driving under the influence of alcohol is generally seen as socially unacceptable, while speeding is deemed much more acceptable (Watling & Leal, 2012). The differing nature of the six violations can contribute to identifying differences in motivations for compliance. This in turn can yield insights for crime control policies, as well as crime control theory.

In the next section I start with a short review of the prior research on instrumental and normative motivations for compliance. I then present the set-up of the study in more detail, followed by a description of the data and the plan of analysis. After the presentation of the results, I conclude with a discussion of their implications and limitations.

4.2 Prior research on motivations for compliance

Motivations for compliance have been studied extensively, both from the instrumental, as from the normative perspective. Reviews of the deterrence literature by Apel & Nagin (2015), Durlauf & Nagin (2010), Kleck & Sever (2018) and Nagin (2013, 2017) show that the strongest deterrent effect comes from the certainty of punishment, or more specifically, the certainty of apprehension. Evidence of the effect of the severity of punishment is much less convincing and consistent. Some studies even indicate that the use of threat of punishment can also produce non-compliant behaviour, in particular when perceived as unreasonable (Bardach & Kagan, 1982; Murphy, 2004; Unnever et al., 2004). These results have stimulated the large body of research based on the work by Tyler (1990) in which he presented empirical evidence for the incorporation of normative, or intrinsic motivations into crime control. Tyler's results show that legitimacy (defined as the perceived obligation to obey the law and support for legal authorities), personal morality, age and

sex significantly influence delinquent behaviour, while deterrence, peer disapproval and evaluation of the effectiveness of the police and courts do not. These results are based on cross-sectional survey-research on low-level crimes amongst 1575 Chicago residents and also hold true using a two-wave panel-survey with 291 respondents interviewed a year apart.

Since Tyler's work, multiple studies have found comparable results (Eisner & Nivette, 2013; Jackson, 2018; Nagin & Telep, 2017). Sunshine & Tyler (2003), for example, reported results of two different studies. Their results, based on survey research amongst 1653 registered voters in New York, show that legitimacy was a significant predictor of compliance, while the perceived probability of apprehension was not. Comparable results were also found in survey research amongst 215 adolescent inhabitants of New York. In this research, Fagan & Tyler (2005) found that legitimacy was significantly related to self-reported delinquent behaviour in the last year, while the perceived probability of apprehension was not.

However, the results on motivations on compliance are not uniform. For example, survey research amongst 586 registered voters in New York by Sunshine & Tyler (2003) shows that both legitimacy and perceptions of the perceived probability of apprehension influence compliance. This was corroborated in a study amongst 1603 American adults by Tyler & Jackson (2014) in which they used a broader definition of legitimacy. In addition to studies that provide evidence for influences of both normative and instrumental motivations on compliance, there are also studies that show no support for the influence of legitimacy on compliance behaviour. In a study on the development of criminal behaviour of 1355 juvenile offenders in Phoenix and Philadelphia for example, Fagan & Piquero (2007) found that the perceived probability of apprehension significantly predicted self-reported crime over time while legitimacy did not. Augustyn (2015) used follow-up data of the same group of juvenile offenders and found comparable results. The perceived probability of apprehension was a significant predictor of the frequency of offending, while legitimacy was not.

The differences in results between studies are an indication that motivations for compliance are not universal, but depend on the context. The varying results underline the importance of research on the circumstances under which instrumental and normative motives translate into greater legal compliance (Beetham, 1991; Nagin & Telep, 2017).

There are indications that motivations for compliance are culturally variable. Tankebe et al. (2016) used survey data from cross-sectional samples of young adults in both the United States and Ghana. They found that, after controlling for other factors, police legitimacy influenced self-reported compliance behaviour in the United States. However, in the Ghana sample, using the same variables, they did not find a relationship between legitimacy and compliance, indicating that motivations for compliance, and specifically legitimacy are culturally variable. Results from research by Tankebe (2009a) and Lee & Cho (2019) support these conclusions.

There are also indications that motivations for compliance vary, depending on the types of offending behaviour. Interesting research on these differences comes from Jackson, Bradford, Hough, Myhill, Quinton & Tyler (2012). In their research based on 937 face-to-face interviews with inhabitants of England and Wales, they looked at both normative and instrumental motivations for compliance. The normative motivations included components of legitimacy, as obligation to obey the law and trust in the police, but also incorporated 'moral alignment' and 'personal morality'. Moral alignment with the laws enforced by authorities is a component derived from research by Murphy, Tyler & Curtis (2009) and is based on the belief that authorities share the values of those they govern. This is distinctly different from the perceived obligation to obey the law in general. Personal morality indicates how wrong people believe a given act (proscribed by law) is, a component introduced by Tyler (1990). The instrumental motivations in their research were restricted to a single component: the perceived probability of apprehension. Jackson et al. (2012) found that normative motivations as obligation to obey the law and trust in the police as well as moral alignment with the police and personal morality were predictors of self-reported violations of everyday laws. Perceived probability of apprehension was not. However, when Jackson, Bradford, Hough & Murray (2012) used the same sample to look specifically at traffic violations, the results were different. Then, perceived probability of apprehension and personal morality of traffic violations were predictors of compliance, while both legitimacy of the law and trust in the police were not. The authors concluded that these differences underline how different people feel about traffic laws, compared with other laws. This conclusion however, should be treated with some caution, since studies on compliance with traffic laws by Hertogh (2015) and Yagil (1998) showed

that self-reported offending was not related to instrumental motives as the probability of apprehension. It was however related to normative motives such as obligation to obey the law, support for the police, moral alignment with the police and personal morality of specific traffic laws[1].

Gao & Zhao (2018) also studied the motivations for compliance of different categories of violations. They investigated traffic violations, illegal downloading, distracted driving and public disturbance. In their study amongst 1000 Shanghai residents, they found that, for all four groups of violations, personal morality influenced compliance consistently and more strongly than the perceived legitimacy of the authorities and all other motivations. The influence of perceived legitimacy of authorities was inconsistent across the four categories of laws tested. Second, the study is one of the few studies that investigated the influence of perceived severity of punishment. They found this instrumental motivation to be consistent and significant across all four groups of laws, whereas perceived probability of apprehension had no significant impact on compliance. The results of this study illustrate the necessity to examine different (categories of) violations separately when studying motivations for compliance. They also stress the importance of examining both perceived severity of punishment and perceived probability of apprehension, instead of only including the latter.

Summarizing this short review, I conclude that previous research shows that results on motivations for compliance are not uniform. There are indications that motivations differ from culture to culture, but also across different categories of non-compliant behaviour. This underscores the importance of research on the circumstances under which instrumental and normative motivations translate into greater legal compliance. In addition, previous research also shows that motivations for compliance are not always defined equivalently, making it difficult to interpret differences in results between studies.

1 Interestingly, Hertogh (2015) also performed a regression analysis with the number of traffic tickets as the dependent variable. In this regression based on 461 drivers that were given one or more tickets for traffic violations, none of the motivations were a significant predictor of the number of violations.

4.3 The current study

Previous research has shown that motivations to comply with the law can differ, depending on the type of violation under review. Motivations for compliance with traffic laws for example, differ from compliance with other everyday laws. The research on different types of violations has contributed to a better understanding of how both instrumental and normative motivations influence compliance.

However, possibilities for more differentiated research remain. There are many types of traffic violations, and not all traffic violations are considered equal (Watling & Leal, 2012). Take for example, the difference between driving under the influence of alcohol and speeding.

The purpose of the present study is to add to the research on the circumstances under which instrumental and normative motivations translate into greater legal compliance by looking at motivations for compliance of six specific moped violations. This is the first study to look at motivations for compliance on the level of specific violations.

In addition to the focus on specific violations, the current study makes three other important contributions to the literature on motivations for compliance. First, this is one of the few studies in which motivations for compliance are tested in Continental Europe. Studies from different parts of the world contribute to the understanding of the circumstances under which instrumental and normative motivations translate into greater legal compliance. Second, the current study follows recent insights on motivations for compliance by using motivations for compliance based on the latest research. For the normative motivations, this includes a broader definition of legitimacy and the incorporation of personal morality. For the instrumental motivations, this means that, unlike most previous studies that look at both instrumental and normative motivations for compliance, the current paper includes perceived severity of punishment in the instrumental motivations. Most previous studies on motivations only included certainty of apprehension[2]. Omission of potentially relevant motivations, can lead to wrong conclusions on the influence of instrumental motivations compared to normative motivations. Third, I make a number of methodological improvements. The most important is that, unlike most previous studies, I use confir-

2 The immediacy of punishment is not included in the present study, since it concerns minor traffic violations, for which ordinances are issued within 3 weeks on average from the moment the traffic violation was detected.

matory factor analysis to test for convergent and discriminant validity of the concepts used in the model. A second important methodological improvement is the use of Satorra-Bentler estimates to correct for bias in the estimated intervals due to skewness in the data.

4.4 Methodology

4.4.1 Set-up

The present study uses survey data collected from moped drivers that were stopped during routine traffic control check-points for mopeds. Mopeds are two-wheeled motorized vehicles that can be operated by persons over 16 years of age with a valid driving license. Dutch traffic law distinguishes two kinds of mopeds: mopeds with a top speed of 25 km per hour that can be operated without a helmet and mopeds with a top speed of 45 km per hour for which wearing a helmet is compulsory.

In the Netherlands, the National Police regularly set up traffic control check-points for mopeds where they check for a number of traffic law violations: driving a vehicle with a higher top speed than allowed, driving without a valid driving license or insurance, driving under the influence of alcohol, driving without proper lighting, using a mobile phone while driving, and driving without a helmet when required.

Two different locations were selected for our research: 'Wassenaarseweg' in Leiden and '1ste Stationsstraat' in Zoetermeer. Both these cities are part of the urban agglomeration in the west of the Netherlands, halfway between Amsterdam and Rotterdam. They were selected because of they are comparable in terms of the population of interest (people driving mopeds), the number of moped drivers passing the location, and the average number of traffic violations per driver stopped by the police.

The research was conducted from January 19, 2017 until August 2, 2017. On average 3 or 4 police officers were present at a traffic control check point, and 1 or 2 additional officers driving around the checkpoint in approximately a 2-mile radius. After being stopped or pulled over, drivers were asked for their license and insurance papers. All mopeds were checked for defects. After visual inspection, all mopeds were placed on a roller test bench to determine the top speed. In the case of detection of a traffic law violation, drivers received a sanction.

After the above procedure finished, the drivers were informed by the police that researchers of Leiden University were present at the location, inviting them to participate in a survey.

4.4.2 Survey instrument

Previous research has shown that driving violations can be assessed by self-report surveys (Lajunen & Summala, 2003) and that anonymous surveys can provide more reliable information about motives, that lead to risk driving (Lajunen et al., 2004) since they reduce the likelihood of socially desirable responses (Lindeman & Verkasalo, 1995; Paulhus, 1986).

The survey was conducted by a pool of 8 trained interviewers, student-assistants studying criminology or law at Leiden Law School, three or four interviewers per control. All interviewers received 4 hours of training on how to conduct the survey and how to interpret the questions.

The survey was administered through verbal face-to-face interviews of on average 7 minutes long. This method was chosen to maximize response rates (Lynn, 2011) and minimize self-selection sampling biases (Bethlehem, 2010). Face-to-face interviews do not rely on access to internet or telephone and put less constraints upon the interaction between sample member and interviewer. To ensure that participants were able to disclose all information, the anonymous surveys were conducted approximately 50 meters from the traffic control check.

The survey covered a wide range of topics on motivations for compliance, using questions derived from previous research (Gau, 2013; Sunshine & Tyler, 2003; Tyler, 1990), related both to the traffic control that had just taken place as well as to previous encounters with the police. Most responses were measured using a 7-point Likert scale (answers ranging from 1 to 7, where 1 is 'totally disagree' and 7 'totally agree'). The survey was tested and slightly modified after two pilot traffic controls in November 2016. The main reasons for the modifications were that two items were not representative of the situation of moped checks, one item was difficult to interpret for drivers, and two items were highly correlated with other items ($r > .95$, $p < .001$) so, due to time restrictions, were omitted.

4.4.3 Participants

In the period between January 19, 2017 and August 2, 2017, 687 moped drivers were stopped at traffic control checks, 302 of whom participated in the survey (44.0% response rate). The details of the observed population who participated in the survey are presented in Table 4.1.

Table 4.1: Descriptive statistics of the sample of drivers that were observed and participated in the survey (N=302)

Variable	% of sample
Sex	
male	58%
Age in years	
16-18	16%
19-27	38%
28-43	16%
44-60	24%
61+	5%
Household income	
0-10000	36%
10000-20000	11%
20000-30000	11%
30000-50000	12%
50000+	8%
unknown	21%
Education	
elementary	6%
vocational	6%
high school 1	26%
high school 2	30%
high school 3	11%
college/university	20%
unknown	1%

Not all respondents who completed the interview answered every question. In the entire dataset used for the current study, .009% of the data was missing. According to Little's multivariate-test, ($\chi^2(795) = 684.178$, $p = .998$), for all missing data, the likelihood of missingness depends neither on the observed data nor on the missing data. Consequently, due to the reduced sample size, ignoring missing data will increases the SE of the sample estimates rather than introducing bias (Dong & Peng, 2013). To respond to this, missing data was substituted using joint multivariate normal imputation (JM-MVN) based on all variables used in the study, with 500 iterations creating 10 imputed datasets (Buuren, 2012; Enders, 2010).

4.4.4 Variables

The dependent variables in this study are self-reported offending behaviour with respect to six different traffic violations. Seven independent variables are included in the analyses. These variables include both instrumental and normative factors which, according to previous literature, may have an important influence on compliance. The variables related to instrumental motivations are perceived probability of apprehension, perceived severity of punishment and peer disapproval. The variables related to normative motivations are based on legitimacy and personal morality. For controlling purposes, covariates are added to all analyses.

Compliance with the law

While there is clear potential for bias with self-report data, comparisons between self-report and other methods have indicated that self-report can be a reliable and valid means to establish frequency of criminal activity (Hindelang et al., 1981; Thornberry & Krohn, 2000). In this case, self-report data is on less serious infractions, making it a) more likely that people engage in the behaviour studied and b) are more likely to honestly report in an interviews situation (Jackson, 2018).

In the survey the participants were asked whether and how often, in past the 12 months, they had committed any of the following six traffic law violations: (1) driving a vehicle with a higher top speed than allowed, (2) operating a mobile phone while driving, (3) driving under the influence of alcohol, (4) driving without proper lighting, (5) driving without a valid license or insurance, and (6) driving without a helmet when required. Higher scores indicate that drivers are less compliant.

No less than 211 out of the 302 respondents, that is 69.9%, admitted to have offended at least once in the previous 12 months against any one of the six traffic rules that were surveyed. Table 4.2 shows the descriptive statistics of the self-reported violations. Most common among the offenses was driving with a higher top speed than allowed (50.0%), followed by driving while making a telephone call (23.7%), driving under the influence (21.7%) and driving without proper lighting (18.4%). Driving without a valid license or insurance (11.0%) and driving without a helmet when required (7.7%) were less common. Furthermore, the descriptives show a broad dispersion in self-reported violations. For example, most people have reported to have committed to have driven with a higher top speed than allowed, but on average, people who speeded, also did this more frequently compared to other violations.

Table 4.2: Descriptives of self-reported violations in the past 12 months (N=302)

Behaviour	Committed offense in past 12 months: % yes	Mean	SD.
Driving with a higher top speed than allowed	50.0	58.24	121.07
Operating a mobile phone while driving	23.7	9.03	45.34
Driving under the influence of alcohol	21.7	1.91	9.47
Driving without proper lighting	18.4	1.77	11.96
Driving without a valid license or insurance	11.0	3.58	30.37
Driving without a helmet when required	7.7	0.31	1.57

Perceived probability of apprehension

Levels of perceived probability of apprehension were measured asking participants to estimate the likelihood of being apprehended in the past 12 months. The perceived probability of apprehension had to be rated on a scale ranging from 1 (very unlikely) to 7 (very likely). The results in table 4.3 show a broad dispersion of scores, in line with previous studies on people's perceptions of the probability of apprehension. With the exception of driving without proper lighting, median scores fall in the category 'somewhat likely' and 'likely'. The perceived probability of apprehension is highest for more visible violations, such as driving without a helmet or proper lighting.

Table 4.3: Distribution of scores of Perceived probability of apprehension for the different violations (N=302)

Behaviour	Perceived Probability of Apprehension							Mean
	Very unlikely	Unlikely	Somewhat unlikely	Not likely or unlikely	Somewhat likely	Likely	Very likely	
Driving with a higher top speed than allowed	9%	20%	15%	21%	16%	14%	4%	3.74
Operating a mobile phone while driving	7%	16%	11%	16%	19%	24%	7%	4.24
Driving under the influence of alcohol	5%	13%	16%	13%	22%	20%	11%	4.39
Driving without proper lighting	5%	13%	9%	11%	17%	31%	13%	4.66
Driving without a valid license or insurance	10%	26%	15%	17%	13%	14%	6%	3.64
Driving without a helmet when required	2%	5%	9%	13%	19%	37%	15%	5.11

Perceived severity of punishment

Levels of perceived severity of punishment were measured asking participants to estimate the severity of the sanction in case of a traffic conjunction. The scores range from 1 (very low) to 7 (very high). The results in table 4.4 show a slightly skewed dispersion of scores with most scores in the category 'high'. The perceived severity of punishment for driving under the influence of alcohol has the highest mean score, while driving without proper lighting has the lowest.

Table 4.4: Distribution of scores of Perceived severity of punishment for the different violations (N=302)

Behaviour	Perceived Severity of Punishment							Mean
	Very low	Low	Somewhat low	Not low / not high	Somewhat high	High	Very high	
Driving with a higher top speed than allowed	0%	2%	5%	16%	22%	43%	12%	5.37
Operating a mobile phone while driving	1%	3%	4%	13%	16%	49%	14%	5.46
Driving under the influence of alcohol	1%	4%	2%	7%	9%	36%	41%	5.92
Driving without proper lighting	1%	7%	15%	22%	21%	24%	8%	4.62
Driving without a valid license or insurance	0%	2%	4%	14%	20%	42%	17%	5.46
Driving without a helmet when required	0%	2%	7%	22%	20%	38%	11%	5.14

Peer disapproval

In addition to perceptions of formal sanctions, the current study also includes perceptions of informal sanctions in the form of peer disapproval that addresses social norms. Grasmick and Bursik (1990) argued that shame emotions imposed by significant others can contribute to the effectiveness of deterrence measures. The negative judgment of significant others matters to offenders (Akers, 1994). Anderson, Chiricos, and Waldo (1977) even found that informal networks (e.g., family or neighbourhood structures) indeed had a stronger impact on deterring wrongdoing than actual or perceived deterrence imparted by authorities.

The inclusion of 'peer morality' is derived from previous research by Hertogh (2015) and Tyler (1990) and was measured by asking: 'Think about five adults that you know best. If you got a fine or got arrested for doing each of the following things, how much would they disapprove or feel that you had done something wrong?'. Again, the questions were asked for all six violations.

A higher score on this scale reflects higher perceptions of peer disapproval.

Table 4.5: Distribution of scores of Peer disapproval for the different violations (N=302)

Behaviour	Judgement of peers							Mean
	Completely moral	Very much moral	Slightly moral	Not moral/ not immoral	Slightly immoral	Very much immoral	Completely immoral	
Driving with a higher top speed than allowed	3%	10%	13%	18%	20%	20%	15%	4.61
Operating a mobile phone while driving	1%	4%	6%	8%	10%	30%	40%	5.74
Driving under the influence of alcohol	0%	1%	1%	3%	4%	16%	74%	6.53
Driving without proper lighting	1%	4%	6%	14%	18%	29%	28%	5.42
Driving without a valid license or insurance	1%	4%	2%	7%	11%	32%	42%	5.90
Driving without a helmet when required	2%	2%	4%	9%	13%	28%	42%	5.79

The scores in table 4.5 indicate that people perceive the disapproval of relevant peers highest on driving under the influence of alcohol. The other violations are perceived to be less disapproved of, although very few respondents think that relevant peers approve of violating the law.

Perceived legitimacy

Compliance based on legitimacy refers to the idea that people comply because they view the legal authority as legitimately entitled to influence their behaviour, that is, people feel the obligation to obey because they recognize that they should behave in accordance with the command of legal authority (Friedman, 1975; Gao & Zhao, 2018).

In the original work by Tyler (1990), legitimacy was based on two dimensions, the obligation to obey the law (e.g. 'all laws should strictly be obeyed') and trust in authorities (e.g. 'police are generally honest'). Many studies have followed Tyler's work by viewing legitimacy as a single construct measured by questionnaire-items based on the two dimensions. (Jackson, 2018). Research on the convergent and discriminant validity of the construct of legitimacy however, is scarce. Based on exploratory factor analysis, Reisig, Bratton & Gertz (2007) conclude that these dimensions are two unique constructs and that combining the two can lead to misleading results. Based on confirmatory factor analysis, Gau (2011, 2013) corroborates these results.

Based on work by Murphy et al. (2009), studies by Jackson et al. (2012), Hertogh (2015), Tyler & Jackson (2014) and Tyler, Jackson & Mentovitch (2015) extend the construct of legitimacy by adding moral (or normative) alignment with the law (e.g. 'My own feelings about what is right and wrong usually agree with the laws that are enforced by the police').

In the current study I use the dimensions of this extended concept of legitimacy. Table 4.6 shows the distribution of the scores on the items used to measure the three dimensions of legitimacy.

Table 4.6: Distribution of scores of the items used to measure the three dimensions of legitimacy (N=302)

Dimensions and questionnaire items	Completely disagree	Mostly disagree	Slightly disagree	Don't agree or disagree	Slightly agree	Mostly agree	Completely agree	Mean
Obligation to obey the law								
When the police issue a formal order, you should do what they say even if you disagree with it	0%	0%	0%	5%	8%	47%	40%	6.20
You should accept police officers' decisions even if you think they're wrong	1%	2%	4%	7%	17%	47%	23%	5.67
It would be hard to justify disobeying a police officer	7%	16%	7%	16%	19%	24%	12%	4.41
A person who refuses to obey the law is a menace to society	4%	9%	9%	21%	21%	24%	12%	4.64
Respecting and obeying authorities is one of the most important values that children should learn	1%	2%	3%	2%	10%	36%	46%	6.11
Disobeying the law is seldom justified	1%	8%	3%	14%	17%	45%	13%	5.23
Trust in the police								
I respect the police	1%	2%	1%	8%	11%	46%	31%	5.88
Police are generally honest	2%	4%	1%	14%	18%	44%	17%	5.41
I feel that one should support the police	0%	1%	3%	7%	14%	48%	28%	5.88
I trust the police	2%	3%	4%	7%	21%	43%	20%	5.49
Police protect people's basic rights	1%	1%	1%	3%	7%	53%	33%	6.04
Most police officers do their job well	1%	2%	2%	6%	19%	49%	21%	5.72
Moral alignment with the law								
My own feelings about what is right and wrong usually agree with the laws that are enforced by the police	1%	3%	6%	9%	16%	49%	17%	5.52
The laws police enforce are generally consistent with the views of ordinary Dutch citizens about what is right and wrong	0%	4%	5%	14%	21%	46%	8%	5.23
You should always obey traffic laws	1%	1%	3%	5%	11%	37%	43%	6.08
Traffic laws are generally consistent with my own feelings about what is wright and wrong	0%	2%	2%	5%	12%	53%	26%	5.88

To keep the current results consistent with the strategies generally employed by researchers in this area of study, the dimensionality of legitimacy was initially examined using correlations and Cronbach's alpha. Obligation to obey correlated with trust in the police at .522 ($p<.000$) and with moral alignment with the law at .532 ($p<.000$). Trust in the police correlated with moral alignment with the law at .468 ($p<.000$). These modest correlations indicate that the three dimensions can be treated as separate constructs (Gomez et al., 2005). However, Cronbach's coefficient alpha (.862) was high, indicating high internal consistency (Nunnally & Bernstein, 1994). These results show that using only these techniques can lead to wrong conclusions on the dimensionality of legitimacy. Therefore, factor-analytic techniques were used to further investigate the psychometric properties of the legitimacy dimensions. Following Reisig et al. (2007), exploratory factor analysis was executed. The method used was principal axis factoring because it corrects for measurement error by using more conservative score reliability estimates (Velicer & Jackson, 1990). The Kaiser-Meyer-Olkin measure of sampling adequacy of .876 indicated that the data are appropriate for factor-analytic techniques (Comrey & Lee, 2013). The factor loadings presented in table 4.5 indicate a four-factor solution: four factors with an eigenvalue above the Kaiser-Guttman criterium ($\lambda>1$) and a scree plot supporting this conclusion. In addition, the results in table 4.7 show that the item 'respecting and obeying authorities is one of the most important values that children should learn', had a low factor loading and therefore was omitted.

Table 4.7: Principal axis factor loadings for the items used to measure the dimensions of legitimacy

Dimensions and questionnaire items	Factors			
	1	2	3	4
Obligation to obey the law				
When the police issue a formal order, you should do what they say even if you disagree with it	**.452**	.200	.027	.119
You should accept police officers' decisions even if you think they're wrong	**.573**	.147	.081	.188
It would be hard to justify disobeying a police officer	**.565**	.125	.153	.155
A person who refuses to obey the law is a menace to society	**.503**	.231	.035	.039
Respecting and obeying authorities is one of the most important values that children should learn	.102	.301	.076	.253
Disobeying the law is seldom justified	**.444**	.145	.333	.210
Trust in the police				
I respect the police	.319	**.723**	.083	.079
Police are generally honest	.214	**.712**	.137	.033
I feel that one should support the police	.217	**.556**	.416	.103
I trust the police	.151	**.748**	.046	.136
Police protect people's basic rights	.056	**.474**	.124	.423
Most police officers do their job well	.255	**.694**	.227	.175
Moral alignment with the law				
My own feelings about what is right and wrong usually agree with the laws that are enforced by the police	.338	.245	**.455**	.259
The laws police enforce are generally consistent with the views of ordinary Dutch citizens about what is right and wrong	.038	.090	**.464**	.101
You should always obey traffic laws	.341	.014	.157	**.476**
Traffic laws are generally consistent with my own feelings about what is wright and wrong	.304	.218	.234	**.609**

Note. The data were rotated using Varimax with Kaiser Normalization.

The first two factors (obligation to obey the law and trust in the police) are in line with dimensions used in previous research on legitimacy. The third and fourth factor deviate slightly from dimensions used in previous studies. Instead of a single dimension depicting moral alignment with the law, the results in table 4.5 show that this alignment can be divided into two different dimension that can be labelled as 'moral alignment with laws enforced by the police' and 'moral alignment with traffic laws.'

Following Gau (2011, 2013), confirmatory factor analysis (CFA) was used to compare the fit of the four-factor model to two other models based on previous research; 1) a model with all factors combined into a single legitimacy scale and 2) a model based on three factors, namely the obligation to obey the law, trust in the police and moral alignment with laws. All 7 point-Likert scales in the CFA were treated as continuous.

Although this method relies on the assumption that the intervals between values are presumed equal, it is not likely that it will result in much practical impact on CFA results (Babakus et al., 1987; Dolan, 1994; Hutchinson & Olmos, 1998; Rhemtulla et al., 2012).

Due to skewness of the data, Satorra-Bentler scaling corrections were applied (Satorra & Bentler, 2001).

The fit of the three models was evaluated using the chi-square goodness-of-fit test, comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardized root mean squared residual (SRMR). No fit index is, by itself, fully indicative of model fit; SEM models must be evaluated holistically using a multiple presentation method. The CFI is normed and ranges from 0 to 1.0, with values equal to or greater than .950 being considered quite good and values between .90 and .94 being considered acceptable fit, depending on the values of the other indices (Hu & Bentler, 1999). The RMSEA and SRMR are measures of error and, therefore, will be close to zero when a model provides a good fit to the data. RMSEA values should ideally be less than .06, but values lower than .08 are reasonable and values up to .08 or .10 are acceptable, especially when sample size is small (Byrne, 2013). The SRMR should be no greater than .08 or less (Hu & Bentler, 1999).

Table 4.8: CFA Results for the one- three and four-factor Models

	MLM X2	df	CFI	RMSEA	SRMR	Loading Range	Between-Factor Correlations
Four-Factor	130.561*	84	.954	.043	.050	.375–.894	.364–.478
Three-Factor	181.075*	101	.924	.051	.061	.326–.797	.468–.512
One-Factor	317.228*	104	.782	.083	.081	.256–.787	N/A

* = p<.001

The results in table 4.8 show that the four-factor model has an acceptable absolute fit and that the fit is the best compared to the alternative models tested. The psychometric properties of the dimensions of legitimacy in this study, confirm indications of previous research by Reisig et al. (2007) and Gau (2011, 2013), that legitimacy subscales should be treated as separate concepts. In this paper, I will use the concepts of 1) obligation to obey, 2) trust in the police, 3) moral alignment with laws enforced by the police and 4) moral alignment with traffic laws, when investigating motivations on compliance.

Personal morality

Following Gao & Zhao (2018), Jackson et al. (2012), Murphy, Bradford & Jackson (2016), Reisig, Tankebe & Mesko (2014) and Tyler (1990), 'personal morality' was also included in the current study.

Where legitimacy is based on an internalized motivation to comply with an authority and the laws they govern, personal morality is an obligation to one's own sense of moral appropriateness independent of the law (Jackson, 2018; Schauer, 2015; Tyler & Darley, 2000). The morality of different laws and regulations can differ, and therefore also the inclination to voluntarily comply.

In the current study, personal morality was measured by asking respondents: 'Think about your own feelings about what is right and wrong. How wrong do you think it is to do each of the following things? The questions were asked for all six violations. Higher scores depict higher perceptions of immorality.

Table 4.9: Distribution of scores of Personal morality for the different violations (N=302)

Behaviour	Moral judgement							Mean
	Completely moral	Very much moral	Slightly moral	Not moral/ not immoral	Slightly immoral	Very much immoral	Completely immoral	
Driving with a higher top speed than allowed	6%	8%	25%	14%	21%	20%	6%	4.22
Operating a mobile phone while driving	1%	2%	5%	4%	13%	33%	41%	5.89
Driving under the influence of alcohol	0%	1%	0%	2%	5%	21%	72%	6.60
Driving without proper lighting	0%	3%	7%	9%	18%	35%	29%	5.61
Driving without a valid license or insurance	1%	3%	5%	6%	11%	32%	42%	5.87
Driving without a helmet when required	2%	3%	4%	10%	17%	32%	31%	5.57

The scores in table 4.9 show that citizens view breaking laws as a violation of their personal morality, although there are differences between violations. Driving with a higher top speed than allowed is deemed much less immoral than the other violations, while driving under the influence of alcohol is deemed completely immoral by 72% of the respondents. The other four violations are deemed more immoral than speeding but much less immoral than driving under the influence of alcohol.

Covariates

Because previous research has shown that the tendency to commit traffic violations can differ depending on sex, age, income and education (Ahmed & Alghafli, 2017), these variables were added as covariates. The addition of these covariates does not imply that the model differs for these specific subgroups. Rather, by adjusting for covariates, the possibility is reduced that associations between motivations and traffic violations act as a proxy for socioeconomic and demographic differences.

4.5 Analytical strategy

In order to study the motivations for compliance on specific laws, I use structural equation modeling (SEM) because of its ability to perform multivariate analysis and to reduce measurement errors through the use of latent variables. All violations are tested simultaneously in the model to explore potential relationships among motivations. Figure 4.1 shows the schematic structure of the SEM model.

All variables in the model are based on survey data. Due to skewness of parts of this data, Satorra-Bentler scaling corrections are applied (Lai, 2018; Satorra & Bentler, 2001).

The dependent variables in the model are self-reported offending behaviour for the following six traffic law violations: (1) driving a vehicle with a higher top speed than allowed, (2) operating a mobile phone while driving, (3) driving under the influence of alcohol, (4) driving without proper lighting, (5) driving without a valid license or insurance, and (6) driving without a helmet when required.

The variables related to instrumental motivations are perceived probability of apprehension, perceived severity of punishment and peer disapproval. These three variables are manifest (also named observed) items based on seven-point Likert-scales.

The variables related to normative motivations are obligation to obey, trust in the police, alignment with laws enforced by police, alignment with traffic laws and personal morality. Personal morality is a manifest variable based on a single item measured as a seven-point Likert-Scale. The other four normative motivations are latent variables; variables that are unobserved, but whose influence can be summarized through multiple indicator variables.

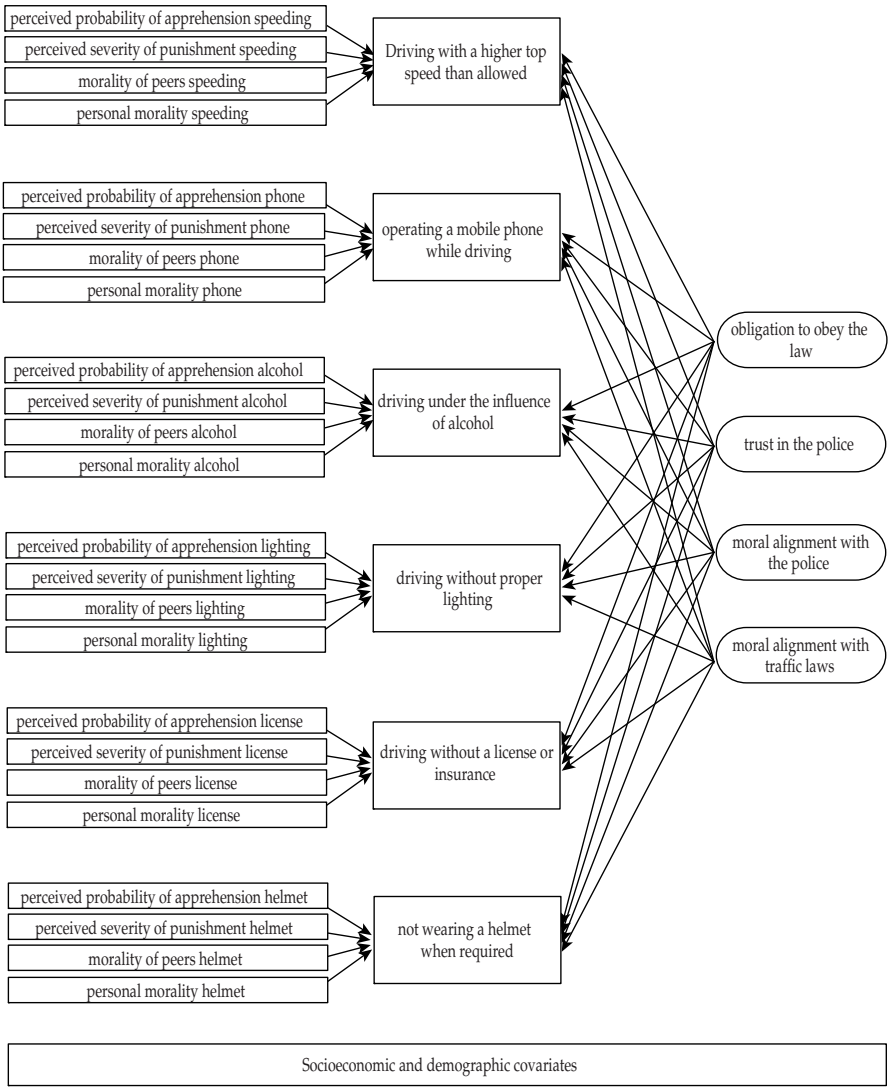

Figure 4.1: Structural equation model of motivations for compliance regarding six traffic violations

Note. Manifest variables are depicted with squares, latent variables are depicted with rounded squares. Measurement variables are included in the model but not shown in the figure to reduce clutter.

For example, the latent variable 'obligation to obey the law' was measured by five Likert-scale items. All variables based on Likert-scale items are treated as continuous since it is not likely to result in much practical impact on structural equation modelling results (Babakus et al., 1987; Dolan, 1994; Hutchinson & Olmos, 1998; Rhemtulla et al., 2012). The sample size is considered sufficient to maintain low type-1 error rates,

obtain good fit and acquire stable model parameters (Sideridis et al., 2014; Wolf et al., 2013).

To reduce the possibility that associations between motivations and compliance do not, to some degree, act as a proxy for gender, age, income and education differences, covariates are added to all models. Age, is a continuous variable. The other covariates are coded as dummies.

Each motivation was allowed to correlate with all other motivations to explore potential relationships among motivations and possible crowding out effects (Bénabou & Tirole, 2006). Negative correlations, especially between instrumental motivations and normative motivations, would be of particular interest, for they could be a signal that law enforcement is crowding out intrinsic motivations to comply. The correlations among motivations for compliance were also reviewed to identify potential multicollinearity, or non-independence of predictor variables.

4.6 Results

4.6.1 Overall model

In this section, the results of the structural equation model are presented. The main findings are presented in table 4.10. The overall model-fit is adequate (CFI = .930, RMSEA = .035, SRMR = .037), indicating that the hypothesized model provides an appropriate characterization of the collective relationships among its variables (Hu & Bentler, 1999). However, it is likely that the fit of the model refers mostly to the measurement of the latent variables, since all motivations were allowed to correlate with each other (McDonald & Ho, 2002; Mulaik et al., 1989).[3]

According to the results in table 4.10, there is evidence for both instrumental and normative motivations to comply with traffic laws. Depending on the violation, personal morality, perceived probability of apprehension and the obligation to obey the law are significant predictors of self-reported traffic violations. The instrumental motivations based on judgements by relevant others (peer disapproval) and

3 Correlations between the error terms of the six different violations in the model were also investigated. All correlations are insignificant ($p > .13$), indicating that the estimated parameters in the model are efficient compared to estimating separate models for the different violations (Kline, 2015).

perceived severity of punishment are not significant predictors of reported traffic violations. Neither are the normative motivations based on trust in the police or alignment with traffic laws and other laws enforced by the police.

4.6.2 Different traffic violations

Looking at the different traffic violations separately shows diversity in motivations for compliance. Moped drivers with a stronger obligation to obey the law, report fewer speeding violations in the past 12 months ($p<.03$). Other normative or instrumental motivations have no significant relationship with speeding violations.

When looking at the covariates, the results show that speeding violations are more often committed by drivers with a vocational education, compared to drivers with only elementary education. The results also indicate that drivers with an annual net household income between € 10,000 and € 20,000 commit more speeding violations compared to the reference group with the lowest annual household income, although at a lower level of significance ($p = .07$). Overall, 26.9% of the variation in speeding violations can be explained by variations in the variables in the model. It is interesting to note, that the descriptives in table 4.9 show that moped drivers find speeding much less immoral compared to other traffic violations and that table 4.2 shows that a relatively high percentage of drivers (50%) has indicated to have committed a speeding violation.

In contrast, the descriptives in table 4.9 show that operating a mobile phone is judged much more immoral compared to speeding and also relative to other traffic violations, although still 23.7% of the drivers indicated to have committed the violation. But the more drivers judge it as wrong, the less likely they are to operate a mobile phone ($p = .02$). In addition, operating a mobile phone while driving is, just as with speeding, influenced by the obligation to obey the law. The more legitimacy drivers invest in the law, the less likely they are to report that they have operated a mobile phone while driving ($p<.04$). In the sample, there are no differences in socio-economic and demographic factors and the variations in motivations between drivers can account for 19.3% of the variation in operating a mobile phone while driving.

Driving under the influence of alcohol is the only violation where instrumental motivations have a significant relationship with compliance. In this case, probability of apprehension is a significant predictor

of self-reported violations in the past 12 months. Moped drivers that think it more likely that one would be caught, report less violations ($p = .01$). They also report significantly less alcohol violations in the past 12 months when they judge it more immoral ($p = .00$). Driving under the influence of alcohol is generally perceived as the most immoral of all violations: 93% of the population judges driving under the influence of alcohol as very much or completely immoral (see table 4.9). Also, the severity of punishment for driving under the influence of alcohol is perceived to be the highest of all violations: 77% of the drivers perceive the severity to be high or very high (see table 4.4). But even still, almost 22 percent of the drivers in the sample indicated they had offended in the past 12 months.

The reported number of alcohol violations differs significantly depending on sex, age, income and education. Female drivers are less likely to drink and drive, and drivers with higher education levels on average report more alcohol violations. Overall, 27.1% of the alcohol violations can be explained by the model.

The results for driving without proper lighting show no significant relationship between self-reported offending and any of the motivations included in the study. Only 7.9% of the variation in driving without proper lighting can be explained by the model. Given these results, it is important to note that the nature of the violation likely differs from other violations in this study. Driving without proper lighting can be the result of a defect, a specific that is not applicable to the other violations. The fact that the drivers in our sample that drove without lighting, on average only violated less than two times corroborates this rationale. It is plausible that people who had a defect light, fixed it rather swiftly after detection. If a defect is indeed the explanation for the (majority of) violations detected in our sample, then it is logical that normative nor instrumental motivations play a role in this specific type of offending behaviour.

Reported violations of driving without a valid license or insurance in this sample are only related to personal morality. When drivers judge it as more immoral, they report less violations in the past twelve months ($p = .07$). However, in our sample, most people obey the rule, which is moreover of an administrative nature and of minor relevance. For these reasons it is quite understandable that no other instrumental or normative motivations were found to influence driving without a license or insurance and that only 14.4% of the variations can be explained by the model.

The results for driving without a helmet should be treated with caution. Many of the respondents drove a moped with a top speed of only 25 km per hour that does not necessitate wearing a helmet. Hence, for these respondents it was difficult to relate to the question and only 7.7% of the entire sample reported to have committed this violation. This makes it difficult to interpret the effect between personal morality and driving without a helmet when required ($p = .10$).

A review of the significant correlations between the motivations for compliance in the model shows that most normative motivations are significantly positively correlated (see Appendix A). Correlations between instrumental motivations show a more diversified image. Perceived probability of apprehension is correlated positively with perceived severity of punishment in all violations, but sometimes is also positively correlated with moral alignment with traffic laws. Perceived severity of punishment in turn is sometimes also positively correlated with the obligation to obey the law. In the case of driving without a valid license or insurance, perceived severity of punishment was found to be negatively correlated with moral alignment with laws enforced by the police ($r (302) = -,13$, $p = .025$). This is an indication of possible crowding out of normative motivations to comply.

The correlations presented in Appendix A show no indication for multicollinearity. All significant correlations show r-values below .7 (Dormann et al., 2013).

Table 4.10: Determinants of non-compliance based on full SEM model (N=302)

	Self-reported offending behaviour																	
	Speeding			Phone			Alcohol			Lighting			License			Helmet		
	b	*95% Conf. Interval*		*b*	*95% Conf. Interval*		*b*	*95% Conf. Interval*		*b*	*95% Conf. Interval*		*b*	*95% Conf. Interval*		*b*	*95% Conf. Interval*	
Personal morality	–4.87	–23.06	13.32	–6.66**	–12.08	–1.24	–4.28**	–7.09	–1.47	.01	–1.33	1.36	–6.10*	–12.68	.48	–.10*	–.23	.02
Peer disapproval	5.47	–5.93	16.87	–2.48	–6.57	1.62	.66	–.44	1.75	–.10	–.91	.71	–.48	–6.54	5.59	.05	–.06	.17
Perceived probability of apprehension	–3.03	–11.55	5.48	–1.36	–4.52	1.80	–.67**	–1.16	–.18	–.77	–1.77	.22	–1.44	–3.94	1.05	–.15	–.34	.04
Perceived severity of punishment	–5.53	–19.03	7.98	2.96	–.95	6.87	–1.38	–3.07	.31	–.02	–.90	.85	.30	–1.62	2.21	.09	–.10	.28
Obligation to obey the law	–198.85**	–374.19	–23.52	–40.57**	–79.73	–1.41	–1.01	–7.03	5.02	–6.28	–15.53	2.98	8.01	–5.18	21.19	–.86	–2.13	.42
Trust in the police	16.64	–10.28	43.56	2.44	–2.93	7.80	–.88	–2.09	.33	.81	–.87	2.50	–.10	–3.23	3.02	–.11	–.43	.22
Moral alignment with laws enforced by the police	20.55	–15.65	56.74	4.08	–2.77	10.94	–.23	–1.41	.95	.43	–1.68	2.54	–.71	–6.06	4.65	.20	–.10	.50
Moral alignment with traffic laws	–.78	–31.23	29.66	4.08	–4.79	12.94	1.42	–.76	3.60	1.06	–1.10	3.22	.59	–3.89	5.07	.20	–.06	.46
Sex – female	7.95	–16.32	32.21	–3.61	–13.10	5.89	–2.28**	–4.56	–.01	1.93	–.44	4.30	–3.41	–9.11	2.30	.17	–.18	.52
Age	–.12	–1.18	.93	–.11	–.49	.27	–.06*	–.12	.00	.00	–.05	.05	.21	–.26	.68	.00	–.01	.02
Income – 10000-20000	51.92*	–2.03	105.86	–1.72	–15.17	11.73	–3.25**	–5.92	–.58	–3.20**	–6.23	–.17	6.86	–5.65	19.37	–.29	–.84	.27
Income – 20000-30000	38.36	–17.68	94.40	–2.24	–18.64	14.15	–.51	–3.86	2.85	–4.23*	–8.57	.11	1.41	–6.11	8.92	–.31	–.89	.27
Income – 30000-50000	–2.12	–44.62	40.39	3.94	–12.68	2 .57	–.87	–3.19	1.44	–4.07*	–8.62	.48	–1.14	–9.53	7.24	–.42*	–.87	.04
Income – 50000+	–17.99	–71.30	35.32	–2.42	–21.89	17.05	–2.66	–6.04	.72	–6.84	–15.07	1.40	–.57	–13.31	12.17	–.76**	–1.39	–.13
Income – unknown	–2.60	–35.92	30.71	9.19	–9.47	27.84	–1.11	–3.19	.97	–3.38	–7.46	.70	3.89	–12.86	20.64	–.23	–.80	.33
Education – vocational	73.36**	.80	145.91	31.89	–11.71	75.49	6.44**	1.72	11.17	–2.23	–9.98	5.52	–11.30	–24.85	2.26	–.01	–.57	.56
Education – high school 1	39.76	–11.26	90.79	7.66	–7.83	23.16	4.39**	.29	8.50	–3.86	–11.48	3.75	2.90	–14.20	20.01	.15	–.34	.63
Education – high school 2	30.44	–21.17	82.04	7.24	–9.16	23.63	4.98**	1.03	8.93	–2.69	–11.23	5.86	–2.74	–15.89	10.42	.45	–.16	1.06
Education – high school 3	1.09	–58.22	60.40	11.83	–11.72	35.38	2.40	–1.32	6.11	–3.98	–11.75	3.78	–3.95	–19.84	11.94	–.17	–.65	.32
Education – college / university	27.60	–37.89	93.10	8.39	–13.35	30.13	5.45**	.91	9.99	–2.02	–10.73	6.69	–5.46	–20.26	9.35	–.08	–.63	.47
Education – unknown	46.89	–28.91	122.70	15.31	–16.83	47.44	4.88	–1.07	10.84	–1.46	–9.95	7.02	–22.21**	–42.47	–1.94	1.15	–.28	2.59
Constant	57.34	–70.03	184.71	47.02*	–6.51	100.54	36.81**	12.95	60.68	10.13	–4.09	24.34	41.61**	8.53	74.69	.70	–1.21	2.60
R^2		.269			.193			.271			.079			.144			.091	

Note. Coefficients are unstandardized. Significant coefficients are denoted by two asterisks on a 5% level, and by one asterisk on a 10% level. Reference category for education is elementary education. Reference category for income is € 0-10,000,-.

4.7 Discussion and conclusion

4.7.1 Interpretation of results

Because not all law violations are considered equal, the purpose of the present study was to add to the research on the context under which instrumental and normative motivations translate into greater legal compliance by looking at motivations for compliance regarding six different traffic violations. The current study shows that motivations differ depending on the traffic violation.

In general, the results show that both normative and instrumental motivations play a role in compliance with everyday traffic laws. Obligation to obey the law, personal morality and the perceived probability of apprehension were found to influence multiple types of offending behaviour. This general result is in line with previous research on traffic violations that also showed that personal morality plays a role in compliance, as well as the obligation to obey the law and the probability of apprehension, although results were not uniform (Gao & Zhao, 2018; Hertogh, 2015; Jackson, Bradford, Hough, Myhill, et al., 2012). The results in previous research have led to a number of conclusions on traffic violations. Jackson et al. (2012) conclude that their results show how differently many people think about traffic laws compared to other laws. Gao and Zhao (2018) conclude that the most dominant motivation for compliance with traffic laws is personal morality and Hertogh (2015) concludes that normative motivations (including legitimacy) offer a better explanation for regulatory compliance with traffic laws than instrumental motives.

However, the current study shows that these more general conclusions on compliance with traffic laws should be treated with some caution. Motivations for compliance differ depending on the traffic violation.

The results in table 4.10 show that personal morality is inversely related to self-reported offending behaviour for most violations. Previous studies on both minor offences and traffic violations have also found personal morality to be related to compliance (Gao & Zhao, 2018; Jackson, Bradford, Hough, & Murray, 2012; Murphy et al., 2016; Reisig et al., 2014). However, an interesting result of the current study is that the relationship between morality and compliance is absent for driving

without proper lighting and driving with a higher top speed than allowed. A possible explanation for the absent link with driving without proper lighting is that this violation is likely caused by a defect, rather than a deliberate action. A possible explanation for the result for driving with a higher top speed than allowed could be that on average, it is deemed much less immoral than the other violations. This implies that changes in personal morality only influence compliance when morality is already relatively high.

When looking at the four dimensions of legitimacy, namely obligation to obey the law, trust in the police and moral alignment with laws enforced by the police and traffic laws in particular, only obligation to obey the law is related to self-reported compliance. Previous research has found mixed results on the influence of legitimacy on traffic violations. Jackson et al. (2012) and Gao & Zhao (2018) found no relationship with traffic violations, while Hertogh (2015) did. By looking at different traffic violations, the current study provides an insight into a possible explanation for these differences. The obligation to obey is not related to all traffic violations. It only influences compliance in the case of driving with a higher top speed than allowed and operating a mobile phone while driving. Jackson (2018) argues that the obligation to obey the law steps in when moral values and social norms in some sense 'fail'. This is a plausible explanation for the results found for driving with a higher top speed than allowed. However, the current study also shows that the obligation to obey can also influence compliance behaviour when violations are judged highly immoral. Drivers in the current sample find using a mobile phone when driving highly immoral, but they also report less violations when the obligation to obey is stronger, which shows that it does not only step in when personal morality is relatively low.

When looking at instrumental motivations for compliance, an interesting result is that peer disapproval is not related to compliance in the current study. This is a confirmation of results in previous research on traffic violations by Hertogh (2015). It is possible that shame emotions as argued by Grasmick and Bursik (1990) are not as important in the case of traffic violations.

Severity of punishment is also not found to influence compliance behaviour for the six different types of violations. These results are in line with previous evidence on traffic violations and also with the large body of evidence on other violations in which the effect of the severity of punishment is inconsistent.

Where the current study differs from previous studies, is that the results show that perceived probability of apprehension is related to traffic violations, or more specifically, to driving under the influence of alcohol. It is very plausible that previous research was unable to detect this relationship as a consequence of grouping the different traffic violations into a single category.

With one exception, the results show that different motivations are not significantly negatively correlated. This implies that in the setting of moped traffic laws, police policy based on both instrumental and normative motivations can be executed without the risk of one policy crowding out another. More specifically, it indicates that, in the current setting of moped traffic controls, the use of deterrence measures does not negatively impact driver's normative motivations such as trust in the police or their felt obligation to obey the law. This is an important implication, since it mitigates the proposed contrast between instrumental and normative motivations brought forward in previous research.

Overall, the implication of the current study for police policy is that routine traffic controls can be a successful instrument in obtaining compliance with traffic laws. These controls, that are generally aimed at detecting different types of violations, can be effective when they succeed in influencing the perceived probability of apprehension, but also personal morality and the obligation to obey the law. There is no indication that methods used to influence these perceptions will have an adverse negative effect on other motivations.

4.7.2 Contributions to the field

This study has shown that it is useful to investigate motivations for compliance for different laws. This focus has made it possible to compare the influence of motivations on self-reported offending-behaviour with regard to different laws. And although the results are based on self-report data, it is likely that all six violations are affected equally by this potential weakness, making the differences found relevant and useful. In addition to the acquired insights based on the focus on specific laws, the current study also contributes to research on motivations for compliance tested in Continental Europe. Studies from different parts of the world contribute to the understanding of the circumstances under which instrumental and normative motivations translate into greater legal compliance.

The relevance of the results in the current study is enhanced by the methodological improvements over previous research. Unlike most previous studies, the current results are based on a comprehensive range of instrumental and normative motivations for compliance derived from the latest research, thus reducing omissions of potentially relevant motivations. In addition, the latent components in the model are thoroughly tested for convergent and discriminant validity and the estimates produced by the model were corrected for skewness.

4.7.3 Limitations

The current study also has a number of limitations. The first pertains the setting of moped traffic control checks. This specific setting was selected due to the possibility to investigate multiple violations. And while this setting provided a high response-rate (44%) and a sample including both offenders and non-offenders, the external validity of the results is restricted. Moped traffic controls checks are a specific setting in which the police check for mostly minor violations. It is not possible to extend the conclusions of this research to more serious offences or to other minor violations.

The second limitation of the study concerns the fact that the results are based on self-report frequencies of violations. And although previous research has shown that self-report can be a reliable and valid means to establish frequency of criminal activity, especially concerning minor violations (Hindelang et al., 1981; Thornberry & Krohn, 2000), there still is potential for bias with self-report data.

A third and related limitation regards the correlational nature of the results. In this study, I have not necessarily established causation. The directions of the relationships in the model are based on previous research, but the direction of the relationships between variables could not be confirmed and are therefore not necessarily in the directions as described. This limits the causal claims that can be made based on the results. It is possible to construct alternative explanations for the relationships observed. For example, while it is likely that personal morality influences compliance behaviour, it is also possible that violating the law can cause for changes in personal morality. The solution to this problem is not just to simply add lags to the model, since feedback over time creates a dynamic process whereby motivations and legal compliance mutually affect each other (Hsiao, 2003). Panel data could be a solution to this potential problem, although the variables in the model could still

be affected by the enduring impact of the third common cause (Maguire & Johnson, 2010).

However, notwithstanding the limitations of the current study, the results in this research contribute to a more thorough understanding of the circumstances under which instrumental and normative motivations translate into greater legal compliance. I have shown that motivations for compliance ought to be investigated separately for different violations. The differences found in motivations for compliance between traffic laws show that grouping different violations into 'types of violations' is too coarse which makes interpreting results difficult and can possibly lead to wrong conclusions. The additional benefit of comparing the results of different violations is that all behaviours are likely affected similarly by the limitations of this study. By acquiring results on different violations, I have been able to reliably draw inferences about the differences between violations.

On the other hand, I acknowledge that this type of research needs to be expanded. This is the first research specifically aimed at investigating compliance at the level of specific violations. In a field of research in which motivations and legal compliance can mutually affect each other, properly set-up real life experiments and longitudinal studies with person and time fixed affects may add to a better understanding of the exact nature of the relationships under investigation. This also holds true for the use of actual offending behaviour. Properly set-up field research based on actual offending behaviour would be an interesting next step to gain additional insight in the motivations for compliance.