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**Een empirisch onderzoek naar het verband tussen morele waarden en agressief rijgedrag**

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**Samenvatting**

Agressief rijgedrag is een belangrijke oorzaak van verkeersongevallen. Gegeven het risico en consequenties voor anderen heeft agressief rijgedrag een duidelijke morele component. Naar de rol en invloed van moraliteit binnen dit soort rijgedrag is echter nog weinig onderzoek gedaan. Ons onderzoek levert een bijdrage aan deze kennislacune door de vraag in welke mate morele waarden agressief rijgedrag kunnen voorspellen te onderzoeken. Om deze vraag te beantwoorden hebben we bij een sample van 283 respondenten een vragenlijst afgenomen die zowel morele waarden als agressief rijgedrag meet. Hiervoor hebben wij gebruik gemaakt van de binnen het veld van de morele psychologie populaire Moral Foundation Theory en bijbehorende vragenlijst en een agressief rijgedrag schaal. Na uitvoering van een multipele regressie analyse vinden wij slechts enkele en vrij zwakke verbanden tussen morele waarden en agressief rijgedrag. Onze bevindingen suggereren dat de algemene morele waarden van mensen een zeer beperkte invloed hebben op het al dan niet laten zien van agressief rijgedrag. Dit betekent voor beleidsmakers dat het effectiever is om zich te richten op meer directe manieren om gedrag te sturen, bijvoorbeeld door aanpassing van de fysieke ruimte, in plaats van de morele waarden van mensen te beïnvloeden.

1. **Introduction**

Risky and aggressive driving behaviour causes major health and cost problems to society. After a few decades of decline, the number of traffic victims in the Netherlands has gone up again in the last couple of years, counting well above 600 deaths per year ([CBS,](http://www.cbs.nl) 2019). Worldwide 1.35 million people die from road accidents annually. Moreover, it is the number one cause of death for children and young adults (WHO, 2018). Research shows that the behaviour of the driver plays a significant role in the vast majority of car accidents (Evans, 1993). In particular risky driving behaviour, like recklessness and speeding, proves to be a major cause (Brown, et al., 2016). As such, a better understanding of this harmful behaviour is of vital importance for the design of policies and measures to prevent accidents and their harmful consequences.

1. **Background and research problem**

In the last two decades a vast body of literature within psychology and travel behaviour research has taken up the task of better understanding risky and aggressive driver behaviour, by studying individual factors that affect this type of behaviour. Two streams of literature have been dominant within this research. The first focuses on personality traits as predictors of risky and aggressive driving behaviour. This research has revealed weak but stable relations between some personality traits, like sensation seeking, anger and normlessness, and potentially harmful driving behaviour (Yang et al., 2013; Nordfjaern et al., 2010; Iversen & Rundmo,2002). Personality traits are therefore generally considered as distal influencers of this kind of behaviour (Mallia et al., 2015; Ulleberg & Rundmo, 2003).

A second stream of literature has directed its attention towards so-called social cognitive factors, like perceptions, beliefs, and attitudes, which presumably influence risky and aggressive driving behaviour more directly (Ulleberg & Rundmo, 2003). To capture the influences of these factors a frequently used theoretical framework is the theory of planned behaviour which posits that a person’s behaviour is determined by one’s intention to perform the behaviour. In turn, someone’s intention is determined by one’s attitude towards the behaviour, one’s perception of control over the behaviour, and one’s perception of the social norms involved with the behaviour (Ajzen, 1988). Several empirical studies have established significant relationships between these three components of the theory of planned behaviour and the intention to perform risky driving behaviour (Parker and Manstead, 1996).

Inspired by both approaches Ulleberg and Rundmo (2003) integrated personality factors and social cognitive factors into a single model, in which personality influences risky driving behaviour directly as well as indirectly through its effect on attitudes. This integrated model has consequently been adopted to explain the risky driving behaviour of different particular groups of drivers, like young drivers (Machin & Sankey, 2008) and professional bus drivers (Mallia, et al., 2015).

 Though much work has been done in psychology and travel behaviour research to explain individual differences in risky and aggressive driving behaviour, an important area that seems in particularly relevant to get a better understanding of this kind of behaviour has been largely overlooked: *moral* psychology. The field of moral psychology looks into the moral dimension of the human being, like the moral values and beliefs that people have, and their influence on people’s attitudes and behaviour. The fact that moral considerations can play an important role in the constitution of many kinds of behaviour was already suggested by Harsanyi (1982) and has increasingly been recognized by a growing number of disciplines that aim at a better understanding of social behaviour, from economics (Andreoni & Miller, 2002) to consumer behaviour (Arvola et al., 2008) to transport (Matthies et al., 2006).

(Unsafe) driving behaviour seems to be an obvious form of social behaviour in which moral considerations play a role. Traffic violations and risky or aggressive driving behaviour have a clear moral component as it can produce great harm to oneself, others and society as a whole (Parker, Manstead and Stradling, 1995). Considerations of wrong and right thus potentially play a role in people’s decision to (not) perform this kind of risky behaviour. In this light it is surprising to see the earlier mentioned lack of attention from a moral psychological perspective. Next to personality and social cognitive factors, people’s moral values and attitudes seem to be a relevant factor to investigate in order to get a further understanding and explanation of risky driving behaviour. In this study we aim to contribute to addressing this gap.

1. **Earlier work and specification of the knowledge gap**

So far, to the best of our knowledge, only two studies have explicitly focused on the relation between morality and risky and aggressive driving. One study directly measured the relationship between people’s general morality and driving behaviour (Bianchi and Summala, 2002). This study, conducted among Brazilian students, used a measure of moral judgment that reflected Kohlberg’s stages of moral development. In this study no significant relationship was found between the development stage of moral judgment and aggressive driving violations. According to the authors, this result was probably due to the small variance of the moral judgment score in the sample.

An earlier study, conducted by Parker, Manstead and Stradling (1995), did find a relationship between a moral concept and the intention to commit a driving violation. The study tested if an extended model of the theory of planned behaviour, including a fourth predictor variable of ‘personal norm’, would yield better predictions than the original model. Here, a relationship was found between a person’s moral attitude towards a certain driving violation and the intention to commit such a violation. An interesting finding that at least suggests the relevance of moral convictions for explaining driving violations.

However, since the earlier work on this subject, major developments have taken place within the field of moral psychology. This has led to a new leading theory on morality within this field, the Moral Foundation Theory (MFT) (Haidt and Joseph, 2004), which is considered as a reaction to and replacement of Kohlberg’s theory of moral development (Graham et al., 2013; Haidt, 2007). MFT maintains that human morality consists of at least five different universal and irreducible moral values that developed during human evolution and which thus all people have to some extent, depending on social and cultural influences. These values are considered as our moral foundations, producing the moral intuitions by which we judge wrong from right. The five moral foundations that have so far been identified are: harm/ care, fairness/ reciprocity, in-group/ loyalty, authority/ respect and purity/ sanctity (Graham et al., 2013). For empirical analyses, MFT is operationalized in the Moral Foundation Questionnaire (MFQ) (*see* [www.moralfoundation.org](http://www.moralfoundation.org), 2013), which is an extensively validated scale leading to one factor for each of MFT’s foundations (Graham et al., 2011).

MFT and MFQ have become extremely popular in the last decade, also outside its field of origin, like in economics or the political sciences, to measure what people find morally important and to explain different phenomena in terms of people’s moral values and beliefs. It has, for instance, been used to explain political and ideological orientation (Graham, Haidt & Nozek 2009). Also, it was able to predict different kinds of behaviour, like donating to charity (Nilsson, Erlandsson & Västfjäll, 2016) and climate friendliness (Vainio & Makiniemi, 2016). When investigating the influence of moral considerations on risky and aggressive driving behaviour MFT/MFQ therefore seems to be the obvious choice of measure.

The present study aims at getting a better understanding of the role that moral factors play in the constitution of risky and aggressive driving behaviour. Building upon the moral framework of MFT we test to what extent these moral individual differences can predict *committed* risky and aggressive driving behaviour. In order to do so, we proceed to answer the following research question:

‘To what extent is there a relationship between the individual endorsement of the different moral foundations of MFT and committed risky and aggressive driving behaviour?’

1. **Method**

Committed risky and aggressive driving behaviour was operationalized by using the Aggressive Driving Behavior Scale (ADBS) (Houston, Harris and Norman, 2003). This validated scale consists of 11 self-report items related to aggressive and potentially harmful driving behaviour.

For data collection, we conducted a survey making use of a convenience sample (N=269). Only respondents who were in the possession of a driver’s licence were able to fill in the questionnaire. The questionnaire consisted of the ADBS and a shortened version of MFQ (MFQ20). We subsequently analysed the data by conducting a multiple regression analysis and interpreted the results.

1. **Results and discussion**

First, we tested how the five-factor model of MFQ was related to risky and aggressive driving behaviour. A Principal Component Analysis (PCA) reduced the 11 items of the ADBS to three components reflecting three different aspects of risky and aggressive driving: ‘speeding’, ‘thwarting’ and ‘aggressive communication’. It was subsequently tested to what extent the endorsement of the five moral foundations predicted the commission of the three aspects of risky and aggressive driving.

The multivariate regression analysis showed that MFQ is a poor predictor of the different components of aggressive driving with Rsquares between 0.024 and 0.04. After correcting for age, gender, and education, we found that per aspect of aggressive driving only one moral foundation had a weak significant effect: Fairness-speeding, beta of -0.149; Loyalty-thwarting, beta of 0,152; Care-aggressive communication, -0,144) Apart from this, no significant relationships between the five foundations and the three components of the ADBS was found.

These findings suggest that predicting concrete morally significant driving behaviour from deep-seated moral values, like those measured by MFQ, is far from evident. The found absent and weak relationships between people’s general moral attitudes and concretely committed risky and aggressive driving behaviour, is in line with recent findings in travel behaviour research on the attitude-behaviour relationship. These claim that the more general an attitude is, the less predictive power it has on concrete behaviour (Kroesen and Chorus, 2018). In this regard our result is also in line with the two earlier studies on this subject. Bianchi and Summala (2002) measured quite general moral attitudes and found no relationship to the committed behaviour. Parker, Manstead and Stradling (1995) measured very specific moral attitudes, about the specific acts themselves, and did find a significant relationship with the particular intended behaviour. However, as Kroesen and Chorus (2018) argue, whether a relationship really reflects a causal relationship in the real world and what direction this relationship has, becomes more and more unclear when the two variables grow conceptually closer.

Contrary to our expectations, the influence of general moral attitudes of persons on their risky and aggressive driving behaviour then seems limited. While moral attitudes that are more specifically tailored to concrete moral behaviour may increasingly run into the problem suggested above. For policymakers this at least implies that changing risky and aggressive driving behaviour by influencing driver’s general moral attitudes may not be the best route. Rather than putting one’s money on this stretchy and uncertain causal chain, it may be more fruitful to deploy measures that influence behaviour more directly like manipulating situational aspects that directly force persons to decrease their risky and aggressive driving behaviour.

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