Does the law affect whether bicyclists perceive phone use in traffic as a safety risk? - A survey study in Denmark and the Netherlands

The Netherlands and Denmark are the two countries in the Europe with the highest share of trips made by bike (Haustein et al., 2019; Nielsen et al., 2016). The “safety in numbers” effect (Jacobsen, 2003) possibly increases the overall safety of cyclists in high-cycling countries, but cyclists still face a higher risk of injury than car drivers, when involved in a crash (Reynolds et al., 2009). In 2017, the number of cyclist fatalities outnumbered the amount of fatalities among car drivers in the Netherlands for the first time (Statistics Netherlands, 2018). In 2018, cyclists accounted for 27% of all traffic fatalities and injuries in Denmark, an increase of 3 percentage points from 2017 (Danish Road Directory, 2019). Gaudet et al. (2015) estimates inattention to be the main factor behind 34% of motor vehicle-cyclist collisions, and road users’ engagement in secondary tasks is recognized as a key risk factor for traffic safety (e.g. Dingus et al., 2016, Stelling & Hagenzieker, 2012).

Regulation of behaviour in traffic

A widespread approach to regulate behaviour in traffic is to prohibit specific actions by law, and sanction violations with fines. Studies have found that changes to the law improve traffic safety and have an effect in changing behaviours, especially those visible to others and therefore easy to control (e.g. Wegman, 1992). This is in line with Åberg’s (1998) behaviouristic explanation: that laws inhibit specific behaviours by adding a new risk (the fine) with higher probability. The understanding that compliance with laws is a product of utility maximization, is however challenged by theorists within legal research and psychology who suggest the law (also) works by changing individual attitudes and socially situated accounts (e.g. Nadler, 2017, Bilz & Nadler,
2009, Sunstein, 1997). Because enforcement of traffic rules is a challenge, it is highly relevant to investigate whether regulation alters psychological parameters, and if so, whether this affects behaviour.

**Method**

At the time of the data collection, no law directly prevented cyclists in the Netherlands from using their phone (Minister van Verkeer en Waterstaat, 1990, 2010). In Denmark, it has been illegal to use a handheld phone while riding a bike since 1998, and the offence is potentially fined 1000 Dkk (approx. 130 euro) (The Danish Attorney General, 1998). Because the two countries share relevant characteristics, for example flat topography and similar fatality risk (International Transport Forum, 2018) for bicyclists (measured by exposure), we chose them for comparison. Using survey data we examine the role of psychological variables (e.g. attitudes, perceived risk and social norms (Ajzen, 1991, 2006)) as predictors of different types of phone use among bicyclists and look at national differences. We will estimate the effect of psychological variables on the use of different types of phone use while cycling (e.g. perceived risk, social norm, and attitudes) by linear regression analyses, while controlling for demographic variables. We will estimate separate models for Denmark and the Netherland, to see whether specific psychological factors are more or less relevant in a country where handheld phone use is allowed (NL) or forbidden (DK).

**Data collection and sample**

We developed the online survey based on theory of planned behavior (Ajzen, 1991, 2006). Beforehand, we conducted qualitative interviews with bicyclists in Denmark (n=9) and the Netherlands (n=10) to qualify questions and response options. The survey covered the topics: transport behaviour, phone use in traffic and related attitudes and norms, perceived risk, social demographics, compensatory strategies, knowledge of the law and more. In addition to the questions we developed, we added the standardized personality assessment tool, The 24-item Brief HEXACO Inventory (BHI) (De Vries, 2013), plus two extra questions from the 60-item version (Ashton & Lee, 2009). The language of the survey was Danish in Denmark and Dutch in the
Netherlands. There were two differences between the Danish and the Dutch versions of the survey: we phrased the questions about legislation in accordance with the law in the country, and in the Dutch version, we explained the wording “handheld phone” and “hands free phone” as these terms are not used with regard to cyclists’ phone use in Dutch. Respondents were excluded if they did not own a mobile phone or if they chose “never” as a response to how often they bike.

We distributed the survey online through EPINION’s online panel in both countries, to collect a sample that is representative in regards to gender, age, and regional distribution. From May 13 to June 11 2019, we received 572 completed responses in Denmark and 507 in the Netherlands.

**Results**

We expect to find national differences in behaviours, attitudes and perceived risk of different types of phone use. Initial crosstab analysis have shown national differences in the distribution of bike types as well as the amount of helmet use. Beside the descriptive statistics, results of the regression analysis will show whether the different psychological factors influence phone use differently in Denmark and the Netherlands. We discuss the results based on both countries’ differences and similarities in law, infrastructure, and culture. The full results will be available at the conference.

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