Phone manipulation at intersections with traffic lights: An observational study

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In 2013, road side observations by the Belgian Road Safety Institute (BRSI) showed that 3.2% of the observed drivers were manipulating their phones while driving; 2% were driving while talking on the phone and 1.2% were manipulating the buttons/screen. Since then, the penetration of mobile phones and smartphones in particular, has only grown across the entire population. A recent study by DEKRA in six major European cities, for instance, showed that almost 17% of the observed pedestrians are using smartphones (DEKRA Automobil GmbH, 2016). Distraction by mobile phone use has also become an increasingly important topic for road safety research (WHO, 2011).

We present an observational study on the manipulation of phones by car drivers, van drivers, pedestrians as well as cyclists. The observations will be made in July-August 2016 at intersections, controlled by traffic lights, in three major Belgian cities; Brussels, Liège and Antwerp.

Road users that are approaching the intersection are sampled visually and their behaviour is monitored until they leave the intersection. For drivers, this is operationalised as the moment when they pass the traffic lights. Pedestrians and cyclists are observed until they pass the lights at the exit of the pedestrian/cyclist crossing.

A basic distinction is made between two forms of phone manipulation: holding a phone against the ear and manipulating the buttons/screen (texting etc.), which requires visual attention. A second important distinction concerns whether the road user is arriving at the intersection on red or green lights. Irrespective of these distinctions, the main observations are whether the road user is manipulating his/her phone (a) when approaching the intersection, (b) when he/she is waiting for the lights to turn green, (c) when lights turn green and (d) when crossing the intersection.

Observers will classify road users with respect to gender and (broad) age categories. In order to study the relationships with traffic situations, it will be observed whether drivers, pedestrians and cyclists are respecting traffic lights. When phone manipulation is observed for road users that are waiting at red lights, it will be registered whether or not this results in an increased reaction time when lights turn green. Simultaneous car, van, pedestrian and cyclist traffic counts will allow to study relationships with traffic densities.

Multivariate analyses will provide an answer to two main research questions: (1) What is the prevalence of manual phone use across the different conditions? and (2) What are the observed effects with respect to red light violations and the interference with the traffic flow?

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