Human factors influencing motorcyclists' risk-taking in traffic and the potential impact of being at fault for a crash.

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Background

According to the World Health Organization's estimates, 1.19 million deaths occur in traffic each year (WHO, 2023), with motorcyclists being disproportionately affected (Abdullah et al., 2024). Speeding is a critical risk factor for road traffic injuries and contributes to 54% of fatalities worldwide and 57% in low- and middle-income countries (Fondzenyuy, Turner, Burlacu, & Jurewicz, 2024). The consequences of speeding are particularly severe for vulnerable road users, such as motorcyclists. Despite this, speeding is common in high-, middle-, and low-income countries (Adanu et al., 2023; Salum et al., 2019; Swedish Transport Administration, 2020).

Aim

The aim of the study was twofold, the first to investigate key determinants influencing motorcyclists´ intention to speed using the Theory of Planned Behaviour. The second to assess the difference between riders who were to blame for a crash with a group of riders who were not to blame. Based on this, both a quantitative and a qualitative approach were chosen divided into four different sub-studies: registry study, questionnaire study and two interview studies. In this presentation the focus will be on the first and the second study only.

Method

This study includes a sample of 446 motorcyclists who had been involved in a serious road crash and 415 with no registered crashes.

Participants

Two different groups were included in this study; the first group was drawn from the Swedish Traffic Accident Data Acquisition (STRADA) and a register of ownership of motorcycles. Drivers who had not used the bike for the last five years or only used a three or four-wheeler and reported that they had not been involved in any road crashes were removed. This resulted in 446 motorcyclists. The second group was included as a control group. This group was formed with the help of the registry of owners of a motorcycle who had no recorded injuries in STRADA during the period 2015-2019. The control group was also matched to the injury group

in terms of gender and age group (18–34 years, 35–54 years, 55–years). In total the control group consisted of 415 motorcyclists.

The average age of riders responded to the survey was 54 years old (born in 1966, SD 14.2) in the injury group, which was slightly older than the riders in the control group, with an average age of 50 years (born 1970, SD 14.9). The proportion of women in the injury group was 11 per cent (n=47) and in the control group 6 per cent (n=23).

Procedure

Two identical online surveys were constructed, one for each group. To investigate whether speeding could be regarded as a traffic violation, rather than error or lapses, several variables were included in the survey based on the Theory of Planned Behaviour (TPB). Attitudes were measured by four items (it gives me a sense of freedom, driving in this way gives me a sense of pleasure, the risk of getting involved in a crash is very high and the risk of being stopped by the police and getting fined is very high.). Subjective norm was measured by one item (my friends think it's ok to drive at 90km/h), perceived behavioural control by five items (the road surface is dry, the road surface has a high standard, there is not a lot of traffic, and I am in a hurry. Intention to speed was measured by one item, (In the near future, or the next motorcycle season, will I be driving according to the scenario, i.e., at 90 km/h on a curvy road signposted 70 km/h?).

Attitudes, subjective norms and intention were measured on a scale from 1 to 7 (1 = strongly disagree to 7 = strongly agree). Perceived behavioural beliefs were measured by a scale from 1 to 7 (1 = very unlikely to 7 = very likely). In the scenario presented, the respondents were asked to assume that they are driving on a curvy country road one summer afternoon at 90 km/h where the speed limit is 70 km/h.

Results

The results showed that riders who had been involved in a crash resulting in a serious injury were more positive about speeding in rural areas than others. They were less likely to believe that this behaviour would result in a crash and argued that riding like this would be fun. External conditions also made it more likely for this group to speed compared to the control group.

To explain why riders involved in a crash were more positive about speeding than others, this study analysed the difference between riders who were at fault for the crash and those who were not. The results showed that those who were at fault for the crash were much more positive about speeding and were more likely to ride this way in the future compared to the group who were not at fault. Those who were at fault for the crash also agreed to a greater extent that speeding gave them a sense of freedom and that it was fun.

An important aim of this study was to examine human factors that influence motorcyclists' intentional risk-taking in traffic. In this case, a Hierarchical regression analysis was carried out including the whole sample, i.e., both the injury group and the control group. The results of the regression analysis showed that control beliefs, normative beliefs, and attitudes in step 1 explained 55% of the intention to speed in rural areas.

This meant that they would drive this way if their friends accepted the behaviour, if the weather was pleasant, the road was relatively free of traffic, and they had a positive attitude towards the behaviour. The latter means that they were more likely to believe that it would contribute to a sense of driving pleasure and/or a sense of freedom while being less likely to believe that it would lead to a road crash or that they would be fined by the police. Thus, the positive benefits outweighed the negative ones. In step 2 of the regression analysis, gender, age, and mileage were added. The explanatory value increased by 1 percent, with the variables contributing to this increase being annual mileage and age. This is admittedly a very small increase, but it means that those who had a higher mileage and were younger, to a greater extent than the others, intended to violate the speed rule. The overall model explained 56 percent of their intention.

Conclusions

- Motorcyclists speeding in rural areas are many times deliberate and could therefore be described as a traffic violation, rather than a mistake.

- The attitude towards speeding can remain positive even if the riders have been involved in a road crash. This would indicate that the experience of a crash (even if they were at fault) does not necessarily generalize to a more negative attitude towards speeding.

- The desire to speed appears to overrule everything else, especially when external conditions are perceived as non-hazardous.

- A great deal of work is required to increase compliance with speed limits and reduce road crashes. Education, training, and high-quality campaigns are important elements to achieve this aim.

- Most studies addressing this topic are conducted in upper- to higher-income countries. Hence, more studies need to be conduced in lower- to middle-income countries to address this critical gap.

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