

The Impact of the Selected Attitudes of Drivers on Traffic Safety

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Drivers' self image and perception of other drivers comprise the main road traffic factors under analysis in this paper. The impact of these factors on traffic safety was evaluated through a survey among drivers. The outcome of the survey led to interesting conclusions related primarily to the relationship between drivers' behaviours and their self-assessment and assessment of others. A negative correlation was demonstrated for the latter factor. The more highly the respondents rate themselves, the less highly they rate the skills of other drivers. The study included a number of comparative analyses dealing, among others, with drink driving.

Keywords: road traffic safety; self-assessment; alcohol; behaviour on the road.

1. INTRODUCTION

A number of factors affect traffic safety. The literature divides them into three groups: human factors, vehicle factors and road (environmental) factors.

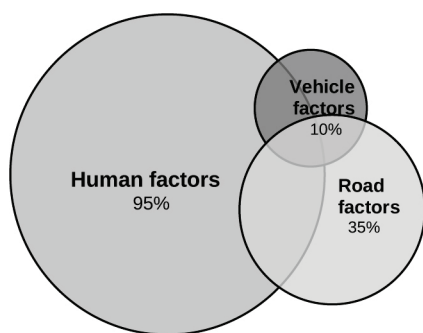


Fig. 1. The influence of main risk factors on road traffic accidents [23].

The human factor has long been considered the main cause of accidents in Poland as it is the only conscious element on the road and as such it has a dominant influence on the occurrence of accidents [22]. The unsafe behaviours of road users include:

- disobeying rules—mostly those related to speed limit, priority, unsafe manoeuvres, etc.,
- road users' condition (fatigue, alcohol-impaired driving, etc.),

- drivers' mistakes (including poorly designed and maintained roads, poor road management) [11].

Also, according to [6], poor driving culture is one of the main causes of the bad traffic situation on Polish roads.

As reported in [18], careless driving accounted for more than 82% of the total number of accidents (29,409.00) in 2014. The violations included the failure to adjust speed to traffic conditions or to comply with the right of way and unsafe (dynamic) lane shifting forcing other drivers to either slow down or brake abruptly. Typical responses to such behaviour on the part of other drivers include headlight flashing, horn-honking, making obscene gestures, tailgating or chasing. Affected by this aggressive behaviour, other drivers, encouraged by their anonymity, engage in aggressive behaviour in response [4]. Research shows that drivers being aware that they will probably never meet the same driver on the road again show a tendency toward aggression, with a car as a barrier behind which they feel safe. Everyday observations confirm that congestion also contributes to frustration and depression, which may in turn lead to aggressive behaviour.

Numerous studies, reported usually in the English-language literature, have been devoted to

the issue of how the driver behaviour and attitude, including aggression or road rage, affect the traffic safety [4, 19, 20, 7, 10, 13, 3]. Road rage is defined as the behaviour which involves intent to harm or even kill another road user, demonstrated under the influence of extreme anger. Aggressive driving is defined as an intention to do physical, emotional or psychological harm to other road users [19].

Considering the fact that the number of drivers on Polish roads is increasing and that accident-related statistics are high, unsafe driving behaviours have also been studied in Poland. In [8, 9, 24], driver aggression is analysed in three aspects: aggressive driving, driving anger and road rage. In addition to presenting a number of factors contributing to aggression levels, the authors discuss possible preventive measures.

The authors of [2] describe drivers'

2. RESEARCH MATERIALS AND METHODS

The research material used in this study was derived from the surveys conducted in November 2015 in Kielce. During the survey, the respondents, randomly selected among driving licence holders, provided anonymous answers in a questionnaire about basic road traffic safety issues. Three groups were created: professional drivers, transportation engineering students of the Kielce University of Technology, and other respondents. A total of 103 participants aged 20 to 70 took part in the survey (30 professional drivers, 53 students and 20 other respondents), including 36 women and 67 men. 61% of the participants declared driving daily, with 22% driving a few times a week, 8% once a week and 9% less than once a week.

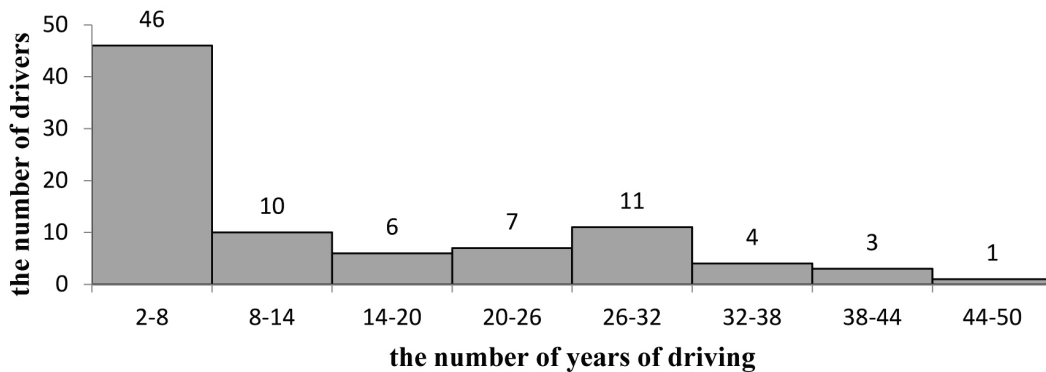


Fig. 2. Period of holding a driving license, in years.

performance on the road as dependent not only on their physical fitness but also on their psychic condition. The factors affecting or changing driving behaviours and drivers' self-image are taken into account. The key psychological traffic safety factors discussed in the paper include driver attention and response time, as well as the role of psychological evaluations in preventive efforts for road traffic safety. The outcome of the studies devoted to the relationships between behaviours on the road, of aggressive drivers in particular, and their self-image and mood regulation is reported in [14]. It follows from the paper that aggressive drivers have low self-image and exhibit a tendency to mood-enhancing activities.

The literature offers a number of statistical analyses about the causes of road accidents and about the perpetrators in terms of their personality traits. Few of them take into account the effect of self-image and perception of other drivers on road traffic safety problems.

The analysis of the accident data provided by the Polish Police Headquarters and based on the annual reports from the period between 2001 and 2014 indicates that the most common cause of road accidents in Poland was incorrect behaviour of drivers, including failure to adjust speed to traffic conditions, failure to abide the right of way and improper overtaking. Therefore one of the questions asked about the frequency of violations. When answering this question, the respondents had to refer to their own behaviour and that of other drivers. Table 1 shows how often and how many survey participants admitted to the violations mentioned above. Table 2 shows the answers indicating the frequency at which other drivers violated the same rules.

Table. 1. The number of respondents committing specific driving offences, expressed as percentage.

	very often	often	rarely	hardly ever	never
rank	5	4	3	2	1
running red lights	0.00%	0.99%	9.90%	39.60%	49.50%
running a stop sign	1.98%	9.90%	20.79%	32.67%	34.65%
forcing the right of way	0.99%	7.92%	17.82%	41.58%	31.68%
not wearing seat belts	4.95%	8.91%	10.89%	20.79%	54.46%
illegal overtaking	0.00%	3.96%	15.84%	44.55%	35.64%
not using turn signals	0.00%	3.96%	11.88%	35.64%	48.51%
using mobile phones	2.00%	18.00%	18.00%	34.00%	28.00%
speeding	15.69%	21.57%	35.29%	21.57%	5.88%

If follows from the data in Table 1 that most respondents hardly ever or never committed the offences listed. About 54.5% of them reported that they always remembered to wear a seat belt, 21% hardly ever forgot to do so and 11% of respondents rarely forgot, which makes up a total of 86%.The remaining 14% of the participants often or very often failed to wear seat belts. This number is high considering the number of public education campaigns addressing the issue of not wearing the seat belts being one of the key factors that increase the severity of accident-related injuries [15]. For comparison, 98% of car occupants in Sweden, Germany and France always wear seat belts [16].

Nearly half (49.5%) of respondents reported never crossing the intersection on a red light and 40% reported hardly ever violating the rule.

Despite knowing that they must stop the car at the STOP sign, 2% of respondents admitted very often failing to do so, with 10% often and 21% rarely failing to stop.

The survey participants demonstrated more self-criticism when reporting driving at excessive speeds. Only 6% of respondents reported never exceeding the speed limit. More participants, 22%,reported hardly ever speeding and 35% rarely, whereas more than 37% often or very often drove over the speed limit.

None of the subjects reported very often crossing the intersection on a red light, overtaking where prohibited, or not using turn signals. About 54.5% of the respondent reported never forgetting to wear seat belts.

Table. 2. The number of respondents reporting driving offences committed by other drivers, expressed as percentage.

	very often	often	rarely	hardly ever	never
rank	5	4	3	2	1
running red lights	6.93%	50.50%	25.74%	13.86%	2.97%
running a stop sign	12.75%	49.02%	25.49%	12.75%	0.00%
forcing the right of way	26.73%	53.47%	16.83%	2.97%	0.00%
not wearing seat belts	15.15%	32.32%	28.28%	17.17%	7.07%
illegal overtaking	26.00%	54.00%	14.00%	6.00%	0.00%
not using turn signals	27.72%	30.69%	28.71%	12.87%	0.00%
using mobile phones	36.63%	47.52%	9.90%	4.95%	0.99%
speeding	61.39%	31.68%	6.93%	0.00%	0.00%

The drivers were more critical when they assessed the offences committed by other road users, According to most respondents (93%), other drivers very often and often exceeded the speed limit. More than three quarters of the subjects reported having seen other drivers use a mobile phone while driving, force the right of way and overtake where prohibited. Every second respondent was sure that other drivers often ran red lights (50.5%) and a STOP sign (49%), forced the right of way (53.5%) and overtook where overtaking was not allowed (54%).

None of the subjects used “never” when referring to other drivers’ behaviours such as stopping at a STOP sign, overtaking where not allowed, using turn signals or exceeding the speed limit.

Each answer was assigned a rank: 5 –very often, 4 -often, 3 - rarely, 2 – hardly ever, 1- never, and the means in the offences were calculated along with the difference between them for the given offence committed by the driver and by other drivers.

Table. 3. Means and the difference in mean driver offences.

	running red lights at an intersection	running a stop sign	forcing the right of way	not wearing seat belts	illegal overtaking	not using turn signals	using mobile phones	speeding
Mean of the offences committed by the driver (a)	1.62	2.12	2.05	1.89	1.88	1.71	2.32	3.20
Mean of the offences committed by other drivers (b)	3.45	3.62	4.04	3.31	4.00	3.73	4.14	4.54
Difference (a) – (b)	1.82	1.50	1.99	1.42	2.12	2.02	1.82	1.35

The highest discord between drivers’ own offences and those committed by others occurs for “illegal overtaking” (Fig. 3). The mean for this offence when self-reported is 1.88, whereas when observed in other drivers, it is 4.

The highest number of drivers, 45%, admitted hardly ever overtaking where prohibited and as many as 54% of respondents claimed other drivers often committed this offence.

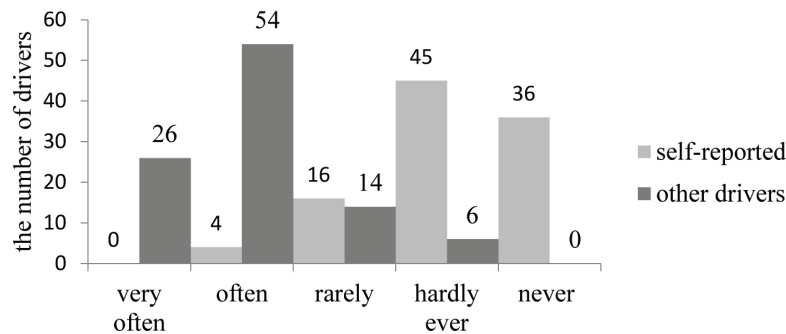


Fig. 3. Illegal overtaking.

Professional drivers exhibited a tendency to be most censorious. The mean from the assessment of their offences is 1.5-2.5, with 3.6-4.5 for other drivers.

Analysis indicates that drivers rate their own skills higher than the skills of other drivers. The analysis of subsequent answers confirms this observation. The respondents were asked to evaluate their own abilities and, in a different part of the questionnaire, to evaluate other drivers. Responses were made on the same 5-point scale: terrible, poor, average, good, brilliant. The correlation coefficient_{xy} [1] revealed a clearly negative correlation between the self-assessment of the survey participants and their assessment of other drivers. Students proved to see themselves as best drivers while rating other drivers much less highly (one student defined his driving abilities as brilliant and perceived other drivers as terrible).

Male drivers appeared to be more critical towards others, showing high confidence in their own skills. For women, the coefficient of correlation was -0.04, which indicates that no correlation occurs.

Table 4 shows how the respondents judge their own driving skills relative to other drivers.

Table. 4. Assessment of own skills compared to those of other drivers, expressed as percentage.

	Number of drivers ranking other drivers’ driving skills more highly than their own	Number of drivers ranking other drivers’ driving skills less highly than their own	Number of drivers ranking other drivers’ driving skills the same highly as their own
overall	5%	69%	26%
professional drivers	0%	90%	10%
students	9.4%	60.4%	30.2%
others	0%	60.0%	40%
men	1.5%	80.6%	17.9%
women	11.1%	47.2%	41.7%

More than half (69%) of the respondents rated their own driving skills more highly than those of other drivers. One of four subjects (26%) told the skills of other drivers were at the same level as theirs and only 5% rated themselves as worse

drivers than others. Most professional drivers(90%) perceived themselves as better drivers than others, which may result from their long driving experience (average period of holding a driving licence in this group was 29 years).

Students, despite a short time of holding a driving licence (average period – 5years) rated their own skills very highly, with 60% of the students feeling their skills were higher and 30%at the same level. Only 9% of the students reported their skills as worse than the abilities of others. The study suggests that the students are very confident about their driving skills, which results in risky or even aggressive driving [17]. Drivers in this age group tend to overestimate their abilities and underestimate the risk involved in reckless driving. According to the report “Road accidents in Poland in 2014”, 18-24 olds caused nearly 21% of all accidents reported,40% of which due to maladjustment of speed.

In terms of gender, only 1.5% males and 11.1% females assessed themselves as worse drivers than others.

Another question important for road traffic safety was the one about drinking and driving. Table 5 summarizes the data by group and gender.

Table. 5. The number of respondents who drove a vehicle under the influence of alcohol.

	once	few times	often	total	Percent in group
all	15	9	0	24	23.3%
professional drivers	5	4	0	9	30.0%
students	7	4	0	11	20.8%
others	3	1	0	4	20.0%
males	13	8	0	21	31.3%
females	2	1	0	3	8.3%

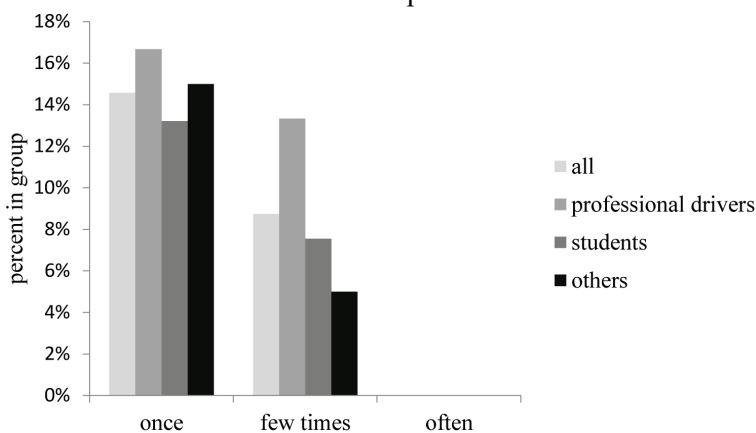


Fig. 5. Driving under the influence of alcohol according to respondent groups.

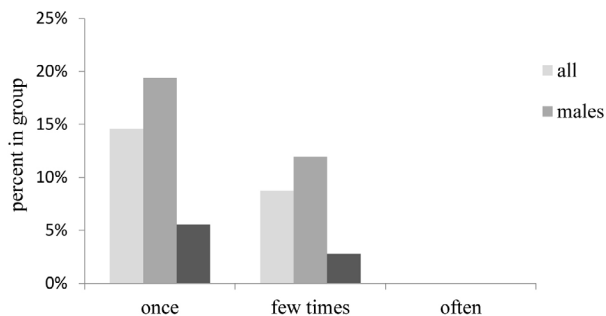


Fig. 4. Driving under the influence of alcohol according to gender.

Twenty-four out of 103 respondents admitted to at least one incident of driving under the influence. Considering that not all of the participants in the survey could admit to drunk driving, the results indicate this is a serious issue. Although even drastic public campaigns are organised to inform about the consequences of drinking and driving, drivers take the risk. The fact that Poland is the country in which drinking and driving is tolerated – connivance – only adds to the scale of this phenomenon [21]. In terms of gender, more male drivers drink and drive. A fifth of male drivers (20%) admitted to driving under the influence of alcohol.

3. CONCLUSIONS

The outcome of the study indicates that drivers from all sample groups (professional drivers, students and other drivers) are very confident about their driving skills. Most of them, 69%, perceive themselves as better drivers than other people. The highest self-assessment and the worst opinion about other drivers were reported by most of professional drivers (90%). None of the professional drivers described themselves as being

worse than others.

Students provided interesting data about their driving skills assessed relative to others. According to the report on the UE road traffic safety published in March 2015, the number of accident-related fatalities per a million of Poland's 18-24 year olds is more than three times the value recorded in other EU countries. This ranking gives Poland the top position (after Croatia) with the highest death rate [5]. At the same time 90% of the students defined their driving skills as better or at the same level as the skills of other drivers. Only 5% of all the respondents evaluated themselves as being worse than other drivers.

When asked about the frequency of their violations, drivers reported rare incidents or hardly ever or never engaging in this behaviour. When asked about the violations of other drivers "often" and "very often" were the prevalent answers. More than half (55%) of the respondents declared they never forgot to wear a seat belt and 48.5% never crossed a junction at red lights. With regard to other drivers, 47% of the respondents observed failure to wear seat belts occurring often or very often, and 51% reported often and very often running a red light at a junction.

With respect to gender, more than half female participants (52.8%) assessed their skills as at most as good as those of other drivers, whereas only one-fifth (19.4%) of male drivers rated themselves in this way.

This inflated self-esteem of drivers, considering how low they tend to rate the abilities of other drivers may be an important cause of MAD MAX or EDUCATOR type of driving behaviour. According to [12], drivers' overconfidence about their competence co-occurs in two out of three road crashes and collisions.

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