Full Length Research Paper

The influence of motives on risky behavior in traffic: Comparison between motorcyclists and passenger car drivers

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Motorcycle riders represent one of the most endangered groups of traffic participants. It is important to determine which factors influence the increased number of motorcycle deaths in relation to other categories of participants, especially automobile drivers. Motives are often related to risky behaviour in traffic, therefore this paper examines the influence of motives on risky behaviour of motorcyclists and passenger car drivers. The study was based on questionnaire examination that included 144 motorcyclists and 144 passenger car drivers from Serbia. The questionnaires measured their motivation and risky behaviour, while they also collected socio-demographic data. The main objective of the study was to determine the difference between the motivation and risky behaviour of motorcyclists as opposed to passenger car drivers, as well as to determine the motives that are responsible for their risky behaviour. The general research results show that, due to the existence of analyzed motives, riskier driving is more pronounced in motorcyclists than drivers of passenger cars. Based on the analyzed motives, we can explain 35.3% of the variance in risky behaviour of passenger car drivers and 61.6% of the variance in risky behaviour of motorcyclists. The motive Social influence (β = -0.35, p <0.001) proved to be the most significant predictor of risky behaviour among car drivers, while the motive Confidence/familiarity (β = -0.48, p < 0.001) proved to be the most significant predictor of risky behaviour among motorcyclists.

Key words: Traffic safety, motorcyclists, passenger car drivers, behaviour, motives.

INTRODUCTION

The problem of safety in road traffic represents a major challenge at the global level. Despite different approaches to the solution of this problem and the invested funds of certain countries into improvements, the danger and risk are still very much present in traffic. However, not everyone is at equal risk of being killed in

traffic. In recent years, many studies have shown that motorcyclists are one of the most endangered groups of traffic participants. Considering the risk of death in traffic, the World Health Organization (WHO) has estimated that riding a motorcycle is 10 times more dangerous, per kilometre, than driving a passenger car, and nearly 20 times more dangerous, per driven hour, than driving a passenger car (WHO, 2004). It is estimated on the territory of the European Union that the risk of death per driven kilometre of a "powerful" two-wheeler (category that includes mopeds and motorcycles) is 20 times higher

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than it is in the case of driving an automobile (Avenoso and Beckmann, 2005).

These facts have initiated a significant amount of research aimed at determining the factors that affect the increased number of motorcyclist deaths in relation to the other categories of traffic participants, primarily the drivers of automobiles. It was important to determine which factors, and in which way, affect the increased risky behaviour of motorcyclists in relation to automobile drivers. In research, a great number of key driver behaviours describe drivers who participate in traffic accidents and those who do not, including the choice of speed (Wasielewski, 1984), observance of the distance between vehicles (Evans and Wasielewski, 1983), legal overtaking (Wilson and Greensmith, 1983), and the ability to identify hazards on the road (McKenna and Horswill, 1999). Mannering and Grodsky (1995) pointed out that motorcycle riding can attract individuals who are "thrill seekers", since motorcycle riding is considered riskier than other forms of movement.

Evidence coming from the automobile drivers confirms that "thrill seeking" is associated with an unsafe high speed (Jonah, 1997), and this can also apply to the use of motorcycles. Furthermore, the differences between typical car drivers and motorcycle riders are related to the purpose of the journey. The journey relates to the places that people go to complete their errands (Stradling, 2003).

It should be borne in mind that the purpose of using a vehicle in traffic is not only transportation. In addition to the motive of reaching the destination of travel, the motives in traffic may also be of other orientation, for example the pleasure of driving fast, impressing others, self-affirmation, a sense of power and control and others. These motives are in literature often called extra motives. Näätänen and Summala (1976) attributed such a significant role to these motives that they consider them to be the most significant factors of risky behaviour in traffic, which contribute the most to the percentage increase in traffic accidents. Motivational factors can significantly affect decision-making and behaviour while driving, and it is very likely that certain motives that are associated with fast and fun driving, as well as impressing others, may be largely associated with the increased risk of participating in traffic (Jovanović et al., 2011).

As the reason for all of the above, this research is directed precisely at examining the influence of motives on risky behaviour of motorcycle riders and passenger car drivers. The main objectives of the paper are:

1. To examine the differences between motivation and risky behaviour in motorcycle riders and passenger car drivers.
2. To determine which motives and to what extent contribute to risky behaviour, for motorcycle riders and

passenger car drivers separately.

MATERIALS AND METHODS

Sample

The sample consisted of 285 male persons from Serbia, of which 141 are motorcycle riders (mean age = 32.35; SD = 11.13; range = 18–68), while 144 are drivers of passenger cars (mean age = 38.13; SD = 12.79; range = 18-70). Motorcyclists had a lower annual mileage (M = 8657, SD = 6613) than the drivers of passenger automobiles (M = 11.791, SD = 10.963).

Measures

Risk-motivation

The different motivational reasons for participation in speeding were estimated based on the modified Rohrmann scale (Rohrmann's Risk Motivation Questionnaire (RMQ)) (Rohrmann, 2004). The respondents were asked to identify the extent to which the given factors are relevant in their decision to exceed the speed limit. The responses were recorded on a 5-point Likert scale (1 = not at all, to 5 = very much). The items and reliability of the subscales are presented in Table 1.

Risk behavior

Three 15-point behaviour scales were taken into account for measuring self-reported acts of risk in traffic. Rundmo and Ulleberg (2000), Ulleberg and Rundmo (2003) have named these scales as follows: self-assertiveness, speeding, and rule violations. The respondents were asked to indicate how often they participated in various occurring forms of risky driving. The responses were recorded on a 5-point Likert scale (1 = never, to 5 = very often). The items and reliability of the subscales are given in Table 1. The large average on the scale indicates high-risk driving.

The socio-demographic data

The socio-demographic questionnaire consists of 3 items, as follows: age, data on one's driving experience and exposure (for example, the amount of time one has possessed a driving license and the number of kilometres one drives in a year).

Statistical analysis

The statistical analysis was conducted using SPSS version 13.0. To analyse the date, we used descriptive statistics measures (i.e., the mean and standard deviation), regression analyses, and procedures for determining the significance of the differences between the means (that is, t-test). The reliability coefficients were expressed using Cronbach's Alpha.

RESULTS

The results of examination of motivational factors and risky behaviour among motorcycle riders and passenger

Table 1. Cronbach's alpha for RMQ subscales and Risk behaviour scale.

Subscale	Items	Driver	Rider
RMQ			
Experience-seeking	Satisfaction of new experiences	0.881	0.898
	For fun/amusement		
	Curiosity about what the activity is like		
	To increase self-confidence		
	Feeling of having control over something		
	Feeling of freedom		
	Wanting to overcome my inner fears		
	Enhancing my view of myself (for example, as brave, adventurous, skilled)		
	Personal challenge (opportunity to test my limits)		
	Relief from the monotony of everyday life		
Excitement	For excitement and thrill	0.896	0.821
	Enjoyment of the 'adrenalin rush'		
	Tendency to live life 'on the edge'		
	To enjoy being 'at risk'		
Sensation-seeking	For physical pleasure, such as pleasant body feelings	0.706	0.765
	To experience unique sensations		
Prestige seeking	To prove myself to others	0.897	0.838
	To attract admiration		
Social influence	To take part in something with others and to be sociable	0.767	0.753
	Pressure from other drivers to take part		
	To not look like a coward		
	Everyone else was doing this activity so I trusted it's okay		
Confidence/familiarity	Activity is familiar (much experience with it)	0.795	0.747
	Relying on the effectiveness of my equipment/tools		
Underestimation of risk	Don't see the potential risk	0.795	0.761
	Activity not dangerous		
	Severity of consequences not serious		
	Spur of the moment decision		
Irrelevance of risk	Because my safety and health are not that important	0.869	0.812
	Because of addiction to the activity		
	Alcohol consumption beforehand		
	The future is too bleak to worry that much about my life		
Risk behavior scale			
Self-assertiveness	Drive recklessly because others expect me to do it	0.854	0.792
	Drive fast to show others that I am tough enough		
	Drive fast to show others I can handle the car		
	Break traffic rules due to peer pressure		
	Drive fast because the opposite sex enjoys it		

Table 1. Contd.

Speeding	Exceed the speed limit in build-up areas (more than 10 km/h)	0.834	0.896
	Exceed the speed limit on country roads (more than 10 km/h)		
	Overtake the car in front when it is driving at the speed limit		
	Drive too close to the car in front		
	Bend the traffic rules in order to get ahead in traffic		
	Ignore traffic rules to in order to get ahead in traffic		
Rule violations	Drive on a yellow light when it is about to turn red	0.604	0.632
	Disregard red light on an empty road		
	Drive the wrong way down a one-way street		
	Break traffic rules because they are too complicated to follow		

Table 2. Independent t-test – the differences between passenger car drivers and motorcyclists.

Variable	Mean		Std. deviation		t	df	p
	Driver	Rider	Driver	Rider			
Experience-seeking	12.95	23.00	5.53	8.73	-11.63	283	0.000
Excitement	5.54	9.39	3.06	4.02	-9.11	283	0.000
Sensation-seeking	3.11	5.79	1.69	2.29	-11.28	283	0.000
Prestige seeking	2.49	3.02	1.45	1.64	-2.92	283	0.004
Social influence	5.26	6.18	2.44	2.72	-3.03	283	0.003
Confidence/familiarity	4.06	5.99	2.01	2.42	-7.33	283	0.000
Underestimation of risk	7.09	7.91	3.82	3.26	-1.94	283	0.053
Irrelevance of risk	5.47	6.12	3.32	2.28	-1.88	283	0.061
Self-assertiveness	5.94	7.18	2.29	3.21	-3.74	283	0.000
Speeding	11.99	18.53	4.34	6.05	-10.50	283	0.000
Rule violations	5.97	7.73	1.64	2.66	-6.76	283	0.000

t - value of t; df - degree of freedom; p – probability.

car drivers were compared using an independent t-test. Only in the motives of Underestimation of risk and Irrelevance of Risk were there no significant differences, while all of the other examined variables showed significant differences (Table 2). The motivation for speeding was significantly greater in motorcyclists, while the results also show that motorcyclists are more prone to risky behaviour than passenger car drivers.

When we asked the questions about driver motivation, it was specified to answer the question of how much each of the given motives affects their speeding. Using the Pearson correlation coefficient, we examined the connection between motivation for speeding and the actual risky behaviour that includes speeding. Table 3 presents the obtained correlations, separately for motorcyclists and passenger car drivers.

As can be seen from Table 3, almost all of the motives had a high correlation with risky behaviour in both examined groups. In order to more precisely examine the

relationship between these sets of variables, or the extent to which we can predict risky driving based on the examined motives, a standard multiple regression was performed, for passenger car drivers and motorcyclists separately.

The dependent variable in the regression analysis was the risky behaviour - speeding, while the independent variables were motives evaluated using RMQ. Results of the regression analysis are shown in Table 4.

Based on the examined motives, we can explain 35.3% of the variance in risky behaviour of passenger car drivers. The motives that proved to be significant for predicting risky behaviour were: Social influence (β = -0.35, $p < 0.001$), Underestimation of risk (β = -0.29, $p < 0.01$), Confidence/familiarity (β = -0.26, $p < 0.01$) and Irrelevance of risk (β = -0.21, $p < 0.05$). The Social influence motive proved to be the most significant predictor of risky behaviour among drivers of passenger cars.

Table 3. Correlation between motives and risky behaviour that includes speeding.

Variable	Speeding	
	Driver	Rider
Experience-seeking	0.414**	0.588**
Excitement	0.342**	0.474**
Sensation-seeking	0.433**	0.624**
Prestige seeking	0.306**	0.339**
Social influence	0.073	0.285**
Confidence/familiarity	0.394**	0.620**
Underestimation of risk	0.357**	0.272**
Irrelevance of risk	0.104	0.308**

*$p < 0.05$; ** $p < 0.01$.

Table 4. Standard regression analysis - Motives as an element of predicting risky behaviour.

Predictor	Driver		Rider	
	R2	β	R2	β
Motivational factors	0.353***		0.616***	
Experience-seeking		0.146		0.273**
Excitement		0.026		0.162
Sensation-seeking		0.191		0.183*
Prestige seeking		0.136		0.081
Social influence		0.345***		0.102
Confidence/familiarity		0.263**		0.477***
Underestimation of risk		0.288**		0.160*
Irrelevance of risk		0.208*		0.044

*$p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

An unusual specificity can be identified in the results of this regression analysis. The correlations between the motives Social influence and Irrelevance of risk and risky behaviour ($r = 0.07$, $r = 0.10$) were not significant, however, these two motives proved to be significant for predicting risky behaviour in the regression analysis. This can be explained by the fact that these two motives are probably suppressor variables in the tested model of the regression analysis.

Based on the examined motives, we can explain 61.6% of the variance in risky behaviour of motorcyclists. This data suggests that motives are crucial for the risky behaviour of motorcyclists, and that motivation has a significantly greater role in the risk-taking of motorcyclists than drivers of passenger cars. The motives that proved to be significant in predicting risky driving of motorcyclists were: Confidence/familiarity ($β = -0.48$, $p < 0.001$), Experience-seeking ($β = -0.275$, $p < 0.01$), Sensation-seeking ($β = -0.18$, $p < 0.05$), and Underestimation of risk ($β = -0.16$, $p < 0.05$). The motive Confidence/familiarity

proved to be the most significant predictor of risky behaviour among motorcyclists.

DISCUSSION

The overall results of research show that due to the existence of the analyzed motives, riskier driving is more pronounced among motorcyclists than drivers of passenger cars. This contributes significantly to the increased risk of participation in traffic, but above all deaths in traffic accidents.

Motivation of motorcyclists towards speeding has proved to be an important element in predicting risky behaviour. Horswill and Helman (2003) made a comparison of motorcycle riders with a corresponding group of automobile drivers who are not motorcycle riders, and discovered that motorcyclists preferred faster driving, and that they overtake other cars more often. For most motorcyclists, motorcycle riding is associated with

positive emotions such as pleasure, fun, happiness. The joy of risk-taking and speeding, in particular, is greater in motorcyclists than in automobile drivers, who display a greater risk aversion while driving (Watson et al., 2007). Riding a motorcycle offers opportunities for expressive use of the vehicle, and it can be said that motorcyclists gain much more pleasure from driving fast. Hobbs et al. (1986) found that the majority of riders in their sample stated that their main motivation for riding was the enjoyment they obtained from the activity. Compared to the use of automobiles, riding a motorcycle is much more expressive, with riders who ride purely for the fun that it provides (Broughton et al., 2009). Seeing as how speed is associated with this pleasure, we should not be surprised by the fact that more motorcyclists than automobile drivers really enjoy speeding.

In automobile drivers, the motive Confidence/familiarity proved to be significant for predicting risky behaviour. This can be interpreted as the fact that because people believe they have enough experience, that they are in strong command of the vehicle and that they rely on the quality of their vehicle, they allow themselves to drive fast and take risks. This claim is closely related to the following motive, Underestimation of risk, which also proved to be significant in predicting risky behaviour. Underestimation of risk is most likely the outcome of the previous motive, which means that its influence is significant for taking risks. In addition, automobile drivers, considerably more in comparison to the other groups of traffic participants, possess an unconscious need to believe that the process of traffic flow will not be distorted, meaning that its continuity and reliability are expected at all moments.

In motorcyclists, the motives associated with risky behaviour (Experience-seeking, Sensation-seeking, Confidence/familiarity, and Underestimation of risk) also in some way describe those motorcyclists that are behaving risky, that is, show the real reasons for their risky behaviour. Hobbs et al. (1986) found that 81% of riders in their sample believed that there is a thrill in motorcycle riding and 66% believed that motorcycling could sometimes be frightening. This can be explained by the fact that social motives are not determined by transportation needs, but to a large extent have a social connotation. Wong et al. (2010) have, within their research based on cluster analysis of personality traits, identified four types of young motorcycle riders. In comparison with other personality traits, sensation-seeking has had the greatest impact on risky behavior of motorcyclists in all of the clusters. They are based on psychological needs, which can only be satisfied with direct or indirect participation of the other traffic participants. This primarily concerns motives that are related to self-actualization, reputation, recognition and respect from society. The desire to have fun while driving, experience excitement, physical pleasure, at the same time relying on their skills, experience and confidence in their vehicle, are the main reasons for riskier driving of motorcyclists.

Motorcycle riders choose a motorcycle as a means of transportation, not for the ease of transportation, but for the pleasure that the ride gives them. They are generally focused on sensationalism and sensation seeking in riding. For the purpose of further development of determining the effects of motives on the differences in risky behaviour between motorcyclists and automobile drivers, it is necessary to examine their connection to the influence of other significant characteristics (socio-demographic characteristics, lifestyle, etc.).

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