Original Research Article

Relationships between Risky Driving and Psychopathy Traits

ABSTRACT

Background: Despite all efforts to ensure road safety, road deaths rank eighth in the world. More than 3,500 people die on the world's roads every day, almost 1.3 million. avoided deaths and around 50 million injuries annually.

Aim of the Study: The aim of the study was to investigate the links between risky driving and psychopathic traits.

Materials and Methods: 257 drivers participated, ranged from 18 to 66 years. A multivariate linear regression analysis was performed to determine if psychopathy predicts risky driving. Methods used in the study: the Driving Behavior Questionnaire to measure risky driving and the Triarchial Psychopathic Measures Questionnaire to measure psychopathic traits.

Results: Drivers with a higher degree of psychopathic disinhibition trait commit more driving errors, slips and lapses, aggressive and ordinary driving violations; Drivers with a higher degree of psychopathic meanness trait commit more aggressive and ordinary driving violations; Drivers with a higher degree of psychopathic boldness trait make fewer driving mistakes and have a lower overall risk of driving; Psychopathy traits can predict risky driving and the disinhibition trait of psychopathy has the highest prognostic value in predicting risky driving.

Conclusion: Psychopathy traits shows relationship with risky driving and psychopathy trait disinhibition can prognose risky driving.

Keywords: Risky driving, drivers, driving violations, psychopathy.

1. INTRODUCTION

The aspirations of traffic safety specialists to eliminate the negative impact of traffic by means of infrastructure without restricting mobility remain unworkable, still there are human factor - drivers, therefore the impact of psychological factors on drivers' behavior is increasingly being assessed [1, 2, 15]. Studies show that as many as 90-95% of car accidents are caused entirely or at least in part by human action [3, 4, 14]. Recent studies also show that up to 80% of car accidents are driven by human behavioral characteristics [1]. Most car accidents occur through the fault of drivers and not

through technical faults of the car [8, 9]. J. Reason argued that an important task in the science of psychology is to better classify human error through research [13].

The science of psychology in this area focuses on two areas of driving associated with danger and the occurrence of car accidents: risky and aggressive driving [5, 6]. H. Summala argued that driving is not solely related to human mobility, it can have many other motives, such as the pursuit of excitement or pleasure, or emotional outbursts [16].

Studies show that different forms of risky driving are associated with different types of offenders [7, 10]. One of the first studies by P. Ulleberg found that there is a distinct group of people at risk for driving, consisting mainly of men with decreased levels of anxiety, low levels of altruism, and high levels of aggression and sensitivity [17]. Along with the latter traits, associations have been found between aggression, impulsivity, sensory pursuit, and risky driving [4]. All of these factors that increase risky driving are found in traits of psychopathy such as boldness, meanness, and disinhibition. Psychopathy is classified as a psychopathology and is characterized by criminal behavior and specific emotional and interpersonal deficits, such as fearlessness, lack of empathy, and manipulation of others for personal gain [12]. In the past, psychopathy has been described and studied exclusively in samples of offenders, but more and more studies are emerging looking for psychopathy expression levels and links between many factors including risky driving *[2, 3, 7, 10]*. The TriPM instrument, that was used in this study is not intended for the diagnosis of psychopathy. In this section, it should be noted that recent research has observed interactions between the expression of psychopathic traits and other factors as the aim of this study was not to monitor patients with diagnosed psychopathy, but to monitor the effect of pronounced psychopathic traits on risky driving.

Many previous studies [2, 3, 7, 10] have examined the links between risky driving and the composition of the dark triad, which includes psychopathy, narcissism, and makiavelism, or examined the overall assessment of psychopathy separately. The features of psychopathy consist of three parts that differ from each other and measure different factors, namely boldness, meanness, and disinhibition [12]. The aim of this study was to investigate the relationship between risky driving and individual parts of psychopathy to show which part of psychopathy is most associated with risky driving.

2. METHODOLOGY

The study by non-probability convenience sampling interviewed 257 drivers, 89 of them were men and 168 women. Respondents ranged in age from 18 to 66 years (M = 37.64, SD = 10.14). Practical

driving experience of drivers ranged from 1 to 46 years (M = 15.63, SD = 9.38). Subjects by education: the majority 79% (N = 203) indicated having a higher education i.e. bachelor's, master's or doctoral degree. The study was conducted in 2019. in October-November. Methods used in the study. The Driving Behavior Questionnaire [11], which consists of 28 questions that are divided into 2 main scales, are aggressive violations and driving errors. and the Triarchic Psychopathy Personality Trait Model Questionnaire [12] which consists of 58 questions that are divided into 3 main scales: Disinhibition, Meanness and Boldness. The PSPP program and the JASP 0.11.1.0 program were used for statistical analysis of the study data. The rank correlation Spearman coefficient was used to measure the interrelationships of the variables. A multivariate linear regression analysis was performed to determine if psychopathy traits predicts risky driving. The results of the study were considered statistically significant when $p < 0.05$.

3. RESULTS

The results of the study showed that there is a statistically significant weak association between the subscales of psychopathy and the subscales of risky driving. boldness, has a negative correlation with driving errors (rho = -0.289; p <.001), and has a negative correlation with driving errors (rho = -0.268; p <.001) and general risky driving.

Table 1. Correlation between risky driving and psychopathy traits.

	Boldness	Meanness	Disinhibition
Driving mistakes	-0.289***	0.063	0.339***
Slips and Lapses	-0.268***	0.044	0.265***
Ordinary violations	0.003	0.303***	0.286***
Aggressive violations	-0.005	0.294***	0.322***
Risky driving	-0.164*	0.255***	0.371***

**p<.05, **p<.01, ***p<001.*

These results suggest that the more a person has the trait of boldness, the less he makes driving errors and mistakes, and the less risky driving is less common. The correlation analysis shows that there are positive, moderate associations between meanness and ordinary violations (rho = 0.303; p <.001) and weak associations with aggressive violations (rho = -0.294; p <.001). There is also a positive statistically significant association between meanness and overall risky driving. These results suggest that the more meanness is expressed, the more common ordinary and aggressive driving violations, as well as the higher scores of overall risky driving. Positive associations with

all risky driving subscales were found if psychopathy trait disinhibition. Moderate correlations between disinhibition and driving errors (rho = 0.339; p <.001), weak correlations between disinhibition and slips and lapses (rho = 0.265; p <.001), moderate correlation between disinhibition and aggressive violations (rho = 0.322; p <.001) as well as moderate correlations between disinhibition and overall risky driving (rho = 0.371; p <.001). These results suggest that an increase in the disinhibition rating is accompanied by an increase in driving errors, Slips and lapses, as well as ordinary and aggressive driving violences and an increase in the overall risky driving.

A linear regression analysis was performed to verify whether traits of psychopathy predict risky driving. The dependent variable was general risky driving and the independent variables trait of psychopathy. The results showed that the multiplication factor VIF is less than 4 on all scales and the tolerance values are greater than 0.25 (see Table 3), therefore no multicollinearity is observed in these models. From the results presented in Table 2, we see that all variables are statistically significant (p <0.05).

Table 2. Characteristics of the risky driving prognostic model.

Model	R	R2	Change statistics	
			F value change	Significance of change in F value
1	0.396	0.156	12.554	< 0.001

p<.05, p<.01, p<001.

Analysis of the first model (see Table 2) showed that a model whose independent variables are features of psychopathy (boldness, meanness, and disinhibition) explains 16% scatter of risky driving data, F = 12.554, and the change in F value is statistically significant (p <.001). The above data suggest that this linear regression model is appropriate. We can predict a dependent variable from independent variables, so we can predict risky driving from psychopathic traits.

Table 3. Prognostic factors for risky driving

	Risky driving						
	Non-standard koef.	Standard koef.				Collinearity statistics	
	Beta koef.	Standard error	Beta koef.	t	p	Toler. koef.	VIF
Boldness	-0.066	0.088	-0.050	-0.744	0.458	0.905	1.105
Meanness	0.171	0.095	0.139	1.808	0.072	0.701	1.426

Disinhibition	0.393	0.104	0.296	3.786	< 0.001	0.678	1.476

p<.05, p<.01, p<001.

Analyzing the first model, it can be seen that risky driving is statistically significantly predicted by disinhibition (beta = 0.296; p <0.001). Observing these data, we see that increasing the trait disinhibition of psychopathy increases risky driving. Also, we can see that psychopathy trait meanness is although marginally statistically significant (p = 0.072) and the beta coefficient indicates a weak effect (beta = 0.139), we can understand that increasing the sample size would increase statistical significance, but we will not discuss these results further.

4. DISCUSSION

4.1. Boldness

The boldness trait of psychopathy is characterized by high confidence, dominance, risk tolerance, and rapid recovery from stressful and threatening situations, as well as emotional stability and propensity to take risks [5, 12]. The results showed that high-risky driving is associated with the traits of psychopathy, such as meanness and disinhibition. This is confirmed by the research of other authors [2, 3, 7, 10]. Boldness is associated with risk tolerance and rapid recovery from stressful situations [12]. Thus, it is likely that such individuals experience less stress and make fewer mistakes and do not engage in aggressive actions along the way without impulsivity and intentions to behave inappropriately. However, the results of our study showed that the psychopathy trait boldness has a negative association with risky driving, suggesting that drivers with a more pronounced boldness trait are less risky to drive. Considering that the traits inherent in boldness lead to a better adaptation to society, it becomes clear why drivers with a higher degree of this trait do not drive aggressively and make fewer driving mistakes.

4.2. Disinhibition

The trait disinhibition is characterized by impulsiveness, hostility, distrust of self and irresponsibility, poor regulation of emotions. These factors can explain driving errors and mistakes, as a driver who behaves impulsively and irresponsibly makes more driving mistakes more often. The results of the study show that disinhibition is mainly related to driving errors, these results are in agreement with the results of previous studies [4, 10]. In our study, driving errors and slips and lapses had weaker associations with disinhibition compared with ordinary and aggressive driving violations, in contrast to the work of other authors [10]. This can be explained by the fact that G. Panayiotou's study combined driving errors and slips and lapses into a single subscale and provided

an overall estimate, which is likely to show higher correlations compared to other scales. This is confirmed by other authors who interpret such results at a higher level of fear and sensitivity to punishment in individuals who score higher on errors and lower on aggressive violations, which influences the choice not to drive aggressively [8].

4.3. Meanness

The results of our study are consistent with the theoretical definition of psychopathy trait meanness, which is described as a low level of empathy, problematic interpersonal relationships, a tendency to engage in exploitative relationships, instrumental aggression, manipulability, and cruelty [5, 12]. The results obtained show that the associations between meanness and ordinary and aggressive driving violations are positive and this conclusion is consistent with the results of studies by other authors [2, 3, 10]. Although in a study by G. Panayiotou, instead of the links between meanness and aggressive driving, he proved the links to boldness [10]. In our study, the links between boldness and ordinary and aggressive driving violations are insignificant. It is probable that the results of this study are due to the fact that in our study the psychopathy construct consists of three subscales, and in G. Panayiotou's study [10] the psychopathy construct consists of two subscales in which the traits of meanness and boldness overlap because both traits are fearless and lower enxiety. Although G. Panayiotou found the associations between aggressive driving and boldness to be insignificant, regression analysis showed that aggressive driving is predicted by the first type of psychopathy according to the PPI-R questionnaire [10]. The first type of psychopathy is characterized by lower levels of anxiety, depression, and empathy, higher levels of narcissism, perseverance, and sensitivity. All of these factors in our study are associated with the subscales of the boldness and meanness of psychopathy.

4.4. Regression model

We also reviewed for psychopathy traits in a regression model in this study. This showed that the only significant prognostic indicator was disinhibition and had a positive effect (beta = 0.296). This indicator reveals that risky driving is best predicted from the psychopathic construct by traits such as impulse and emotion control difficulties associated with negative consequences of behavior and affect, as well as irresponsibility and hostility [5, 12]. These results confirm previous research findings [2, 10]. The results of our study show that risky driving is also marginally significantly predicted by meanness ($p = 0.072$; beta = 0.139). We see that this subscale has a weak positive direction effect and confirms previous studies [10], that also yielded only marginal statistical significance. Increasing the sample is likely to increase statistical significance, so we can

hypothesize that risk-taking individuals may also have characteristics such as lack of empathy, instrumental aggression, and cruelty [5].

5. CONCLUSION

Findings of the present study shows that psychopathic traits, especially disinhibition play role ir risky driving behavior. Drivers with a higher degree of psychopathic disinhibition are more prone to driving errors, slips and lapses, ordinary and aggressive driving violations. Drivers with a higher degree of psychopathy trait meanness commit more ordinary and aggressive driving violations. Drivers with a higher incidence of psychopathic trait boldness make fewer driving errors, slips and lapses and reduce the overall risky driving. The disinhibition trait of psychopathy has the highest prognostic value in predicting risky driving. Psychopathy consists of several parts that show different patterns of manifesting behavior. From the results of this study, we can see that different features of psychopathy are associated with different types of risky driving and this can suggest that specific risky driver can be profiled but we need more researches and empirical evidence.

CONSENT. As per international standard or university standard, Participants' written consent has been collected and preserved by the author(s).

DISCLAIMER. The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

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