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Psychological characteristics of personality affecting driving behaviour

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Abstract. The study aimed to identify the relationship between psychological traits and driving style in the context of cross-cultural comparison. Within the framework of the empirical study, the Big Five Inventory-2 methodology was used to assess personality characteristics and the Driving Behaviour Questionnaire to analyse driving style. The results of the study revealed differences caused by driving experience, as well as cultural differences in the expression of basic personality traits. It was found that with increasing driving experience in both samples, there was a decrease in the level of neuroticism (in Ukraine from 3.4 to 2.9 points, in EU countries from 3.2 to 2.7), which indicated a stabilisation of the emotional background. A similar trend was observed for extraversion and openness to experience. Cross-cultural analysis revealed that European respondents at all levels of experience had higher average scores for agreeableness and conscientiousness, which correlated with the dominance of a safe driving style. Neuroticism proved to be a significant predictor of aggressive driving style, and extraversion was a risk factor in the Ukrainian sample but was associated with safer behaviour in the European sample. Conscientiousness was the most consistent indicator of a safe driving style, particularly among experienced European drivers ($M = 4.5$). It was found that drivers with an aggressive or deliberately risky driving style cause about 25-30% of all road traffic accidents (RTAs). Among drivers with up to 5 years of experience, the level of involvement in road accidents is 12-15% higher than among those with more than 15 years of experience, regardless of their country of residence. The study demonstrated the feasibility of introducing psychological components into driver training programmes. The results can be used by road safety specialists and insurance companies to improve driver training programmes and promote a culture of safe driving

Keywords: intercultural differences; road traffic accident; safe behaviour; risk; driving style

Introduction

The increase in the number of road traffic accidents (RTA) necessitates an in-depth study of the factors that influence driver behaviour when operating vehicles. In this context, it is necessary to consider the psychological traits of the personality that determine driving style, reactivity and the level of riskiness of driving. The problem lies in the insufficient consideration of individual psychological traits in accident prevention and in the system of professional driver training. There is no systematic concept that combines personality factors with specific driving styles and possible deviant behaviour patterns on the road.

Several studies addressed the influence of individual characteristics of drivers on their driving behaviour and aspects of their conduct. Specifically, L. Bai *et*

al. (2025) investigated the relationship between personality types according to the Myers-Briggs Type Indicator and driving style characteristics. The results showed that extroverts exhibited a more active, sometimes risky driving style, while introverts tended to drive more cautiously. The study also determined that differences between personality types determined reactions to critical traffic situations. X. Luo *et al.* (2023) conducted a systematic review and meta-analysis of studies on the relationship between personality traits according to the Big Five model and driving behaviour. The study concluded that neuroticism and low agreeableness were consistently correlated with aggressive, impulsive, or risky driving styles. The influence of the Big Five personality traits on the driving behaviour of

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young Indian drivers was studied by P. Mittal (2024). The study determined that extraversion and neuroticism were associated with increased emotional reactivity and a tendency to violate rules. At the same time, high conscientiousness was associated with a reduced risk of traffic accidents. A study by Y. Niu & B. Nie (2024) analysed how individual personality traits influenced driving behaviour in heavy traffic conditions. The study demonstrated that emotional stability and openness to experience were positively correlated with maintaining attention and making informed decisions in traffic. The study also noted the influence of driving experience as a moderator of these relationships.

The process of emotional stability formation in learner drivers during the study of traffic rules was analysed by V. Chernyshov (2022). The study determined that the development of emotional regulation skills had a positive effect on the ability to maintain self-control in stressful traffic situations. The results emphasised the significance of psychological training in the process of driver education. The influence of emotional (dis)regulation on the behaviour of young drivers was investigated by A. Pizzo *et al.* (2024). The study determined that emotional regulation disorders led to impulsive decisions, a tendency to violate speed limits, and aggressive responses to stress. The study emphasised the significance of working with emotional strategies in the prevention of risky driving. W. Scherz *et al.* (2024) used a non-invasive wearable device to study the relationship between personality traits and stress behind the wheel. The results demonstrated that drivers with high levels of neuroticism exhibited increased physiological stress indicators during heavy traffic. The study confirmed the relevance of objective bioindicators in studying the psychological determinants of road behaviour. The influence of arousal on the interaction of age, personality, and behavioural factors in the context of emotional driving was investigated by Z. Shangquan *et al.* (2025). The study determined that increased arousal significantly altered responses to road stimuli, especially in individuals with high levels of neuroticism. Within age groups, differences in adaptability to stressful road situations were observed.

T. Hill *et al.* (2021) examined the frequency of mobile app use while driving in Ukraine and the psychosocial factors that drive this behaviour. The study determined that high impulsivity, low emotional control, and risk tolerance significantly increased the likelihood of using mobile apps while driving. A correlation between digital communication habits and reduced attention while driving was also found. The impact of initial levels of trust in autonomous vehicles and driving style on driver behaviour was studied by J. Cegarra *et al.* (2025). The study showed that individuals with a high level of distrust exhibited more defensive behaviour in mixed traffic conditions. Driving style was significantly

modified depending on expectations regarding the behaviour of autonomous vehicles.

The above-mentioned researchers significantly contributed to the study of this issue, but insufficient attention has been paid to a comprehensive study of the interaction of psychological traits with social contexts of driving, in particular, cultural differences and road infrastructure conditions. The study aimed to investigate the influence of psychological traits on driving style in a cross-cultural context. The objectives of the study were to establish the relationship between psychological traits and driving behaviour; to analyse the influence of emotional regulation, experience of critical situations and risk-taking on driving behaviour; to conduct a cross-cultural comparison of the driving behaviour of participants from Ukraine and EU countries.

Materials and Methods

The study was empirical in nature and aimed to identify the relationship between psychological traits and driving behaviour. The study was conducted between September 2024 and June 2025 in two regions: Ukraine and EU countries (Germany, Poland, and the Czech Republic), which was used for a comparative cross-cultural analysis. The research methodology was based on a mixed design combining quantitative and qualitative methods. The study involved 480 drivers aged 21 to 55, divided equally between Ukraine and EU countries. The sample included 160 participants in each group according to driving experience (up to 5 years, 5-15 years, over 15 years). Participants were selected using a stratified purposive sampling method, which ensured the representation of key socio-demographic groups.

To study personality characteristics, the Big Five Inventory-2 (BFI-2) questionnaire was used, adapted to the linguistic and cultural context of each country using a back translation procedure and preliminary reliability testing (Soto & John, 2017). Average scores were determined for each personality trait (neuroticism, extraversion, openness, agreeableness, conscientiousness). Driving behaviour was assessed using the Driving Behaviour Questionnaire (DBQ), which classified behaviour into four types: aggressive, deliberately risky, unconscious, and safe (Reason *et al.*, 1990). In addition, statistical data on road accidents were analysed according to the type of character and psychological traits of drivers, using reports and open databases of international organisations (International Transport Forum, 2023; European Commission, 2023; World Health Organization, 2023).

To process quantitative data, variance analysis was used to identify intergroup differences in regional affiliation, driving experience, and emotional regulation. All stages of the study complied with the ethical standards set out in the European Charter for the Rights of Participants in Social and Humanitarian Research (European Commission, 2018). Participants provided written

informed consent to participate, and data processing was conducted following confidentiality and anonymity requirements. The combination of quantitative and qualitative analysis not only identified general patterns but also provided insight into individual and cultural characteristics of driving style and was used for the development of practical recommendations for driver training for road safety. To collect data, the online resources such as Google Forms and SurveyMonkey were used which made it possible to involve respondents from different countries. Drivers were recruited through targeted advertising on social networks, including Facebook, Instagram, and LinkedIn, which made it possible to reach different groups of drivers

with relevant characteristics, such as age groups and driving experience. Additionally, recruitment efforts were supplemented by collaboration with local driving clubs and associations in each country, which helped to further disseminate the survey among their members and ensured greater diversity within the sample.

Results

Analysis of the results obtained using the BFI-2 methodology revealed several intercultural and intragroup differences in the psychological traits of drivers (Soto & John, 2017), which are possibly related to their driving experience, sociocultural context, and road behaviour characteristics in different countries (Table 1).

Table 1. Results of study participants based on the Big Five Inventory-2 questionnaire

Group/driving experience		Neuroticism	Extroversion	Openness	Friendliness	Conscientiousness
Ukraine	Up to 5 years	3.4	3.6	3.9	3.5	3.3
	5-15 years	3.1	3.4	3.7	3.6	3.5
	More than 15 years	2.9	3.2	3.5	3.7	3.8
EU	Up to 5 years	3.2	3.8	4	3.7	3.4
	5-15 years	3	3.5	3.8	3.8	3.7
	More than 15 years	+2.7	3.3	3.6	3.9	4

Note: average scores are shown in the table

Source: compiled by the author

The results of the study demonstrated a correlation between driving experience and the severity of certain psychological traits, particularly neuroticism, extraversion, and openness to experience, among both Ukrainian and European respondents. A trend towards a decrease in neuroticism with increasing driving experience was observed. Among Ukrainian drivers with up to 5 years of experience, the average neuroticism score was 3.4 points, in the group with 5 to 15 years of experience, it was 3.1, and among those who have been driving for more than 15 years, it was 2.9. A similar trend was observed in the European sample: 3.2, 3 and 2.7, respectively. According to data from the International Transport Forum (2023) and the World Health Organization (2023), drivers with high levels of neuroticism are 18-22% more likely to be involved in a traffic accident than those with low levels, which is particularly noticeable among novice drivers. In EU countries, novice drivers with up to 5 years of experience who are prone to increased neuroticism were involved in approximately 14% of all accidents with casualties in their age group (European Commission, 2023). These data indicate a gradual decrease in emotional tension, anxiety and internal instability with increasing experience, which is possibly related to increased self-confidence, gaining experience in navigating the road environment and improving adaptation to stressful situations.

A similar gradual change was observed in the level of extroversion, which also showed a downward trend over the years, despite slightly higher initial scores among European drivers. Drivers with up to 5 years of

experience had the highest extroversion scores of 3.6 in Ukraine and 3.8 in EU countries. This may indicate the activity, energy and social engagement characteristic of the beginning of a driving career. According to the World Health Organization (2023), young drivers with high extroversion are more likely to engage in risky behaviour on the road, which correlates with a 12-15% higher frequency of accidents in the first years after obtaining a licence. As experience accumulated, these figures fell to 3.2 and 3.3, respectively, among drivers with more than 15 years of experience. This trend may indicate a change in driving style from emotionally expressive to more restrained, pragmatic and rational. Another feature that showed changes depending on experience was openness to experience. The highest values for this characteristic were observed among novice respondents: 3.9 points in the Ukrainian sample and 4 in the European sample. In groups with more driving experience, the level of openness decreased to 3.5 and 3.6, respectively. According to the European Commission (2023), beginners with high openness are more likely to use non-standard manoeuvres, which in 9-11% of cases becomes a contributing factor to road accidents, especially in difficult weather or road conditions. Less experienced drivers show greater flexibility in decision-making and are more open to new technologies, changes in rules or unusual traffic situations, while experienced road users tend to rely more on verified patterns of behaviour developed over many years.

Friendliness indicators demonstrated a positive trend depending on driving experience. In contrast to

traits such as neuroticism or openness to experience, friendliness increased with the number of years behind the wheel. Within the Ukrainian sample, the average level of this trait was 3.5 points among drivers with up to 5 years of experience, gradually increasing to 3.6 in the group with 5 to 15 years of experience and reaching 3.7 among respondents who had been driving for more than 15 years. Even higher values were recorded among European participants in the study: 3.7, 3.8 and 3.9, respectively. According to data from the International Transport Forum (2023), drivers with high friendliness are 10-12% less often involved in accidents, especially in conflictual road conditions. This trend indicates a gradual development of tolerance, restraint, politeness and willingness to cooperate with other road users. A similar dynamic was observed in the indicators of conscientiousness, which, similar to friendliness, demonstrated a gradual increase in both samples. Among Ukrainian respondents, conscientiousness increased from 3.3 points in the group with up to 5 years of experience to 3.6 in the 5-15-year category and reached 3.8 in the oldest group. In the European sample, the indicators were slightly higher, at 3.4, 3.7 and 4 points, respectively. A high level of conscientiousness is associated with a reduction in the frequency of road accidents by approximately 15% compared to drivers with low scores for this trait. With experience, drivers become more disciplined and inclined to control personal behaviour, which may be the result of both accumulated practical experience and awareness of the risks associated with careless or reckless driving.

The overall picture of the results concludes that there are stable changes in personality profile during the process of accumulating driving experience. A decrease in levels of neuroticism, extraversion and openness to experience was found, along with a simultaneous increase in friendliness and conscientiousness. Such a transformation may indicate that driving requires a gradual transition from an emotionally impulsive style to a more balanced, responsible and socially oriented one. At the same time, an analysis of cross-cultural differences indicates that drivers from EU countries on average demonstrate slightly higher levels of agreeableness, conscientiousness, extraversion and openness compared to Ukrainian participants. This may be due to differences in social norms, driving culture, training systems, and the broader influence of the educational and legal environment on the formation of driving behaviour. The data obtained is significant both for further psychological research in the field of road traffic in an intercultural context and for practical activities, in particular in the development of driver training and support programmes. Consideration of personal characteristics in the training process can contribute to increased road safety, improved quality of interaction between road users, and the formation of a responsible attitude towards driving. The results of the analysis showed a variety of driving styles among the study participants, depending on their experience and country of residence. The data obtained indicate significant changes in driving behaviour depending on accumulated experience, as well as differences between Ukrainian and European drivers (Table 2).

Table 2. Results of study participants using the DBQ method

Group/driving experience		Aggressive driving	Deliberate-risk driving	Unconscious driving	Safe driving
Ukraine	Up to 5 years	26	21	32	21
	5-15 years	19	17	28	36
	More than 15 years	12	10	22	56
EU	Up to 5 years	18	16	29	37
	5-15 years	14	13	24	49
	More than 15 years	9	8	20	63

Note: frequency (%) is shown in the table

Source: compiled by the author

The analysis demonstrated a trend: with driving experience, the frequency of aggressive, deliberately risky and unconscious driving styles decreases, while safe driving consistently increases. Thus, among Ukrainian respondents with up to 5 years of experience, aggressive (26%) and unconscious (32%) styles dominated. However, among drivers with more than 15 years of experience, these figures decreased to 12% and 22% respectively, while safe driving became the leading style (56%). Similar trends were observed in the EU sample, but the proportion of safe driving was even higher (63% in the most experienced groups), and aggressive driving was less common in all age groups. According

to data from the International Transport Forum (2023), drivers with an aggressive or deliberately risky style are approximately 25-35% more likely to be involved in a serious accident than drivers with a neutral or safe style. Drivers with an unconscious style (low attention, distraction, impulsive decisions) show an 18-22% increase in the risk of accidents, with this trend being particularly pronounced among novice drivers.

A study by the European Commission (2023) noted that drivers with aggressive and risky behaviour patterns are involved in approximately 27% of all road accidents, while the proportion of safe drivers in these statistics does not exceed 9%. These results confirm

that psychological traits, such as impulsiveness, low emotional stability and high risk-taking, directly influence driving style and the likelihood of causing a traffic accident. Conversely, a safe driving style, which correlates with high conscientiousness, emotional stability and friendliness, is associated with a significantly lower accident rate. In countries with a high proportion of drivers who adhere to a safe driving style, the number of accidents per 100,000 vehicles is 40-45% lower than in countries where aggressive or chaotic driving styles predominate. Interregional differences, in particular lower levels of aggression and risk in EU groups, may be due to cultural regulation of emotions, stricter driver training standards, a better transport environment (infrastructure, road planning, enforcement of traffic rules) and wider experience in the use of digital safety systems in motor vehicles (World Health Organization, 2023).

A combination of the results of the DBQ and BFI-2 questionnaires demonstrated the psychological mechanisms underlying different driving styles. Analysis of the correlations between personality traits and behavioural patterns of drivers revealed a complex interdependence that illustrates how individual psychological characteristics influence driving behaviour. First, neuroticism, which characterises emotional instability, anxiety and susceptibility to stress, was found to be positively associated with manifestations of aggressive and unconscious driving styles. Drivers with high neuroticism scores were more likely to exhibit impulsive behaviour, irritability and loss of self-control in difficult traffic situations, which increases the risk of accidents. This was particularly noticeable in the Ukrainian sample, where the average level of neuroticism was significantly higher ($M = 3.2$) compared to the EU sample ($M = 3$). This difference explains the higher frequency of aggressive driving styles among Ukrainian drivers, which may be related to the general level of stress, socio-economic factors and regional cultural characteristics. Extraversion showed a more complex relationship with driving styles. On the one hand, extroverts, who are energetic, sociable and prone to seeking new experiences by nature, are more likely to exhibit a deliberately risky driving style. This is due to their need to dominate and influence their social environment, which can lead to more risky behaviour on the road. On the other hand, extroverts with high levels of agreeableness tended to have more adaptive and controlled driving styles, accompanied by responsibility and consideration for other road users. In the EU sample, extraversion was often combined with higher levels of self-control and a predominance of safe driving styles, indicating better emotional regulation and social functioning skills.

Regarding openness to new experiences, this trait did not show a significant correlation with driving style, but participants with high openness scores were more likely to demonstrate a safe driving style. This can be explained by their greater reflectiveness, ability to

anticipate potential dangers, and willingness to adapt to unpredictable road situations. The EU sample had higher average openness scores ($M = 3.8$) compared to Ukrainian drivers ($M = 3.7$), potentially reflecting a more progressive approach to driving and the acceptance of new technologies and rules. Friendliness demonstrated a clear negative correlation with aggressive driving style. Drivers with high levels of empathy, compassion and social orientation exhibited more tolerant and balanced behaviour on the road and were less likely to resort to aggressive or confrontational actions. High levels of friendliness were particularly prominent among older participants from EU countries, who also demonstrated the highest frequency of safe driving styles, highlighting the role of social norms and moral values in shaping behavioural patterns. The strongest positive correlation with safe driving was found in conscientiousness, which reflects organisation, responsibility, attention to detail and self-discipline. Drivers with high conscientiousness adhered more closely to traffic rules, avoided risky manoeuvres and consciously planned their actions in traffic conditions. This was particularly evident among drivers with more than 15 years of experience in EU countries, demonstrating the highest levels of conscientiousness ($M = 4$), reflecting their conscious and disciplined approach to driving.

The data obtained indicate that driving style is formed not only under the influence of practical experience, but also largely determined by stable personality characteristics. A high level of conscientiousness and friendliness contributes to the formation of safe, controlled and socially responsible behaviour on the road. On the other hand, increased neuroticism and, to a certain extent, extraversion are associated with impulsive, aggressive or risky driving styles. This highlights the significance of a comprehensive approach to accident prevention, which should include not only improvements in technical and legal aspects, but also work on the personal development of drivers, the development of emotional stability, social skills and self-control. This approach is particularly relevant in the Ukrainian context, where the psychological characteristics and behavioural patterns identified require the adaptation of safety improvement programmes to take account of socio-cultural factors. Thus, effective interventions to improve road safety must address not only behavioural aspects but also the psychological profile of drivers. Psychological training and psychoeducational programmes for the development of emotional self-regulation and social responsibility may become a promising area of work in this field. In the context of interregional differences, improving driving culture in Ukraine requires a comprehensive approach: infrastructure development, tighter control, and targeting drivers' personal qualities at the training and retraining level.

Based on the results of the study, which revealed a statistically significant correlation between individual

personality traits of drivers (according to the BFI-2 model) and dominant types of driving behaviour (measured using the DBQ), a set of comprehensive and interdisciplinary practical recommendations can be formulated that have the potential to be implemented in educational, preventive and infrastructural policies in the field of road safety. This involves not only improving the training of future drivers, but also developing psychologically oriented interventions, forming new standards of driving culture and developing systems for assessing psychophysiological readiness to drive a vehicle. The first set of recommendations concerns updating the educational and training component of the system for obtaining a driving licence. Given the tendency identified in the study towards aggressive or risky behaviour among individuals with high levels of neuroticism, low levels of conscientiousness and openness to experience, it can be argued that the traditionally technocratic approach to driver training needs to be radically supplemented with psychologically oriented components. Based on this, the study recommended expanding the existing training programmes of driving schools and driver training centres with modules on the basics of transport psychology, emotional self-regulation, and conscious decision-making in stressful road situations. This may include specialised courses on cognitive-behavioural risk assessment models, anger management training, recognition of cognitive distortions (e.g., the “illusion of control” or “overconfidence effect”), as well as virtual reality training simulations that safely model behavioural responses in critical road scenarios.

The second direction of practical implementation of the research results is related to the development and introduction of a multi-level system of psychoprophylaxis of road traffic violations. Since, according to the research, impulsiveness, a tendency to carelessness, and social non-aggressiveness significantly correlate with unintentional mistakes and violations of traffic rules, it is particularly relevant to develop national programmes for the prevention of risky behaviour, aimed at identifying drivers from risk groups and applying targeted preventive measures to them. Such prevention can be implemented through regular psychological screenings adapted to the conditions of the country in question, including both self-assessment (using scales such as BFI-2) and projective methods of assessing behavioural patterns. The introduction of digital self-diagnostic platforms is relevant, which can be used by drivers to assess personal stress resistance, anxiety level or propensity for aggression using a mobile application, with subsequent recommendations on how to behave in risky situations. These measures should be complemented by information and awareness campaigns that promote a positive social norm of responsible driving behaviour, through influential media, educational videos, social advertising and institutional communication.

The third vector of practical measures covers the creation of an institutionally established system of psychological support for road users, which is an integral part of the modern transport safety model in many European countries. Given the increased vulnerability of certain groups of drivers, such as those who have survived road accidents, are in constant contact with stressful road situations (e.g., taxi, bus or truck drivers), or show signs of chronic psycho-emotional exhaustion, it is necessary to develop a network of regional psychological assistance centres. These centres could operate based on medical institutions, state rehabilitation programmes or within the framework of social partnerships with non-governmental organisations. Their activities should include group therapy, individual counselling, psycho-educational activities for drivers and their families, as well as crisis intervention in the event of serious road accidents. In the context of a long-term transport strategy for states, it is also necessary to develop a regulatory framework that recognises the importance of psychological factors in shaping safe driving behaviour. Based on research confirming the relationship between personal characteristics and the type of mistakes made by drivers, it is advisable to update national standards for assessing psychophysiological readiness to drive, including psychological tests as a mandatory part of the procedure for obtaining or renewing a driving licence.

In addition, it is necessary to ensure systematic training of driving instructors who possess not only technical but also basic psychological competencies that can be used to recognise the individual psychotypes of students and adapt teaching strategies to them. Lastly, it is worth emphasising the need to integrate the results of psychological research into transport policy at the macro level. The systematic collection of empirical data on the psychological profile of drivers, the dynamics of their behaviour under stress, and their level of awareness of the consequences of risky driving should form the basis for scientifically sound government decisions in the field of road safety. Scientific institutions specialising in transport psychology should be involved in providing expert support for the reform of the driver training system, as well as in developing cross-sectoral measures to improve road safety, incorporating the cultural context, demographic trends and technological developments. Thus, a psychologically oriented approach to traffic management can be the key to significantly reducing accidents, improving the quality of driver training and shaping a culture of responsible driving that meets the challenges of modern society.

Discussion

The results of the study revealed that high levels of neuroticism correlate significantly with aggressive and unconscious driving styles. Drivers with high levels of emotional instability demonstrated greater impulsivity,

irritability, and reduced control during stress. This is consistent with the findings of Z. Totkova (2020), determining a significant positive association between impulsivity and driving styles (e.g., risky and unconscious), while adaptive style had a negative association with impulsivity. Similarly, extraversion in this study had a mixed effect. On the one hand, it was associated with a deliberately risky style, while on the other hand, extraverts with high levels of agreeableness exhibited a more adaptive and controlled style. These results are consistent with the model of F. Wang *et al.* (2020), observing that changes in personality traits (e.g., increased extraversion) led to increased risky behaviour, but drivers with high self-regulation can stabilise their driving style. Despite extroverts' potential for activity and dominance, developed friendliness can compensate for this in the direction of safer behaviour. Regarding openness to experience, there was no clear correlation with driving style in this study, although participants with high openness scores were more likely to demonstrate a controlled, safe style. This is consistent with the findings of C. Pan *et al.* (2021), demonstrating that drivers with higher openness and willingness to innovate were more likely to rate the support of automated systems as comfortable and natural, which may correlate with a more cautious driving style.

This study demonstrates cultural differences, as European drivers had lower neuroticism and higher levels of agreeableness and conscientiousness, which explained their greater focus on safe driving. This is consistent with A. Humpe *et al.* (2022) & H. Horimoto *et al.* (2024), who emphasised that socio-psychological conditions in European countries foster a more responsible attitude towards driving. At the same time, the classification of driving styles based on acceleration showed that driving types do not correlate significantly with driving experience, reflecting the independence of techno-dynamic behavioural patterns from chronological factors. In this sample, driving experience was a factor in reducing aggression and risk, but E. Szumska & T. Stańczyk (2022) highlighted that even experienced professional drivers can exhibit aggressive driving behaviour if they have a pronounced tendency to perform extreme manoeuvres. Lastly, C. Peng *et al.* (2022) noted that the dynamics of personal states (e.g., short-term increases in anxiety or extraversion) can change driving style during a single route or trip. This is consistent with qualitative analysis, as increased stress or emotional arousal in a critical traffic situation can lead to a temporary shift to an aggressive or deliberately risky style, even in drivers with high conscientiousness or control.

People with high levels of empathy and social orientation exhibited more tolerant, balanced behaviour on the road. These results echo the findings of X. Liu *et al.* (2022), determining that in an East Chinese sample, friendlier drivers were less likely to engage in aggressive manoeuvres and speeding. The most significant

association in this analysis was observed for conscientiousness, which correlated more strongly than other traits with safe driving style: responsibility, attention to rules, and self-discipline ensured a reduction in riskiness. Similar results were presented by X. Liao *et al.* (2022), determining that a driver profile characterised by high conscientiousness and stable mood resulted in more predictable and safer driving behaviour. In contrast, X. Fan *et al.* (2019) demonstrated that personality traits such as impulsivity and emotional excitability can occur in different ways in complex driving manoeuvres, particularly when turning left, which requires increased attention and quick decision-making. J. Faílde-Garrido *et al.* (2021) created the prospect to analyse aggressive driver behaviour not only as a consequence of individual traits, but also as a mediation between personality and situational factors. In particular, "driver anger" was identified as a mediator between neuroticism and traffic rule violations. This conclusion corresponds with the findings of this study. Drivers with high levels of neuroticism demonstrated a marked tendency toward emotionally charged reactions in traffic situations, accompanied by an increased frequency of aggressive or deliberately risky manoeuvres.

In addition, there is a correlation between driving style and biological reactivity in states of negative affect. These conclusions were made by N. Habibifar & H. Salmazadeh (2022), determining those physiological indicators (e.g., heart rate) correlated with aggressive driving styles in respondents with low emotional stability. This approach creates new opportunities for interdisciplinary analysis, including biobehavioural markers in the study of psychological characteristics of drivers. In correlation, the results of a study by N. Habibifar *et al.* (2020) conducted among taxi drivers in Tehran showed a strong relationship between openness to experience, conscientiousness, and driving style characteristics. Taxi drivers with low scores on the openness scale were more likely to demonstrate a conservative or rigid style, which was also manifested in a reduced ability to adapt to new traffic situations. A. Aluja *et al.* (2023) complemented the analysis by examining the interaction between age, gender, personality variables, and decision-making style in the context of risky driving. Their data show that young men with a predominantly spontaneous decision-making style and a high novelty-seeking score are more likely to violate traffic rules. This is confirmed in the present study, where respondents with little driving experience (up to 5 years) in both countries showed pronounced signs of indiscipline and overestimation of their own skills.

The results of the study highlighted not only individual psychological aspects but also culturally determined aspects of aggressive behaviour on the road. This correlates with the study by F. Haidu *et al.* (2024), determining that aggressive driving is closely related to increased dominance, emotional reactivity, and low

self-control. This improves analysis of the manifestations of aggression found in both samples, although their frequency and form differed. The results of the study showed that neuroticism was strongly associated with aggressive and risky driving behaviour. These data corresponded with the conclusions of J. Djordjević (2023), proving that increased levels of neuroticism among Slovenian drivers were significantly correlated with the frequency of traffic violations and manifestations of road aggression. Similar trends were also found by M. Chrisnatalia *et al.* (2023), noting that drivers with high levels of neuroticism are more vulnerable to emotional burnout and prone to risky behaviour on the road. At the same time, this study showed that high levels of conscientiousness correlated with safe driving behaviour. Participants with high conscientiousness scores demonstrated prudence, responsibility, and a low propensity for violations. This result is consistent with the findings of R. Kimura *et al.* (2023), determining, based on an analysis of road data, that individuals with high conscientiousness have a more predictable and controlled driving pattern. They are less prone to speeding and demonstrate a high level of distance maintenance. These results correlate with the findings of C. Karageorghis *et al.* (2021), determining that emotional stability and the ability to regulate one's emotional state (particularly through music) significantly influence driving style, reducing aggression and improving concentration.

Thus, the results of the study confirm that personality traits have a significant impact on driving behaviour, both within a single culture and in an intercultural context. High levels of neuroticism, low conscientiousness, and emotional instability are associated with risky and aggressive driving styles, while friendliness, conscientiousness, and effective emotional regulation contribute to a safe driving style. Comparison with other studies confirmed the validity of the results and emphasised the importance of personality psychology in modelling road behaviour.

Conclusions

Analysis of the results obtained using the BFI-2 methodology revealed both intercultural and age-related (based on experience) differences in the severity of psychological traits among drivers. The study established that as driving experience increases, the level of neuroticism decreases: from 3.4 to 2.9 points among Ukrainian drivers and from 3.2 to 2.7 points among European drivers, indicating a gradual decrease in emotional instability. Extroversion showed a similar trend: from 3.6 to 3.2 points in Ukraine and from 3.8 to 3.3 in

EU countries, which may indicate a shift in behaviour from more expressive to more restrained. At the same time, openness to experience decreased from 3.9 to 3.5 points in the Ukrainian sample and from 4 to 3.6 in the European sample, which may indicate a lower propensity of experienced drivers to experiment with their driving behaviour. The results of the study showed a clear link between psychological traits and driving style.

It was found that driving behaviour depends significantly on both the respondent's experience and the cultural context of their country of residence. With increasing driving experience, there is a clear trend towards a decrease in aggressive behaviour (from 26% to 12% in Ukraine; from 18% to 9% in EU countries). The analysis showed that neuroticism is associated with aggressive and unconscious driving styles, which is confirmed by higher average scores for this trait among Ukrainian drivers ($M = 3.2$) compared to European drivers ($M = 3$). This partly explained the higher frequency of aggressive behaviour among drivers in Ukraine. Friendliness and conscientiousness showed the most consistent link with safe driving styles. Respondents with high levels of friendliness showed a reduced tendency towards aggression, conflict and impulsiveness, especially among experienced drivers from the EU, also demonstrating the highest average scores for this trait. Conscientiousness proved to be the best predictor of safe behaviour: drivers with high levels of this trait ($M = 4$ among experienced EU respondents) demonstrated conscious compliance with rules, attentiveness and self-discipline.

The results of the study demonstrated the feasibility of introducing psychological components into the driver training system. Training programmes should be supplemented with training in emotional self-regulation, stress management and risk behaviour recognition. It is also advisable to introduce psychological screening to identify drivers with high levels of anxiety or aggression. All this will contribute to the formation of a safer driving style and a reduction in the number of accidents on the roads. Prospects for further research lie in expanding cross-cultural comparisons and a deeper analysis of the neuropsychological factors that influence driving behaviour.

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Conflict of Interest

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Психологічні особливості особистості, які впливають на манеру водіння транспортного засобу

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Анотація. Метою було виявити взаємозв'язок між психологічними рисами особистості та стилем водіння в контексті міжкультурного порівняння. У межах емпіричного дослідження було застосовано методіку Big Five Inventory-2 для оцінки особистісних характеристик та Driving Behavior Questionnaire для аналізу стилю водіння. Результати дослідження засвідчили наявність відмінностей, зумовлених досвідом керування транспортними засобами, а також культурних відмінностей у вираженості базових особистісних рис. Виявлено, що зі зростанням досвіду водіння в обох вибірках фіксувалося зниження рівня нейротизму (в Україні – з 3,4 до 2,9 бала, у країнах ЄС – з 3,2 до 2,7), що вказувало на стабілізацію емоційного фону. Аналогічна динаміка простежувалась щодо екстраверсії та відкритості до досвіду. Міжкультурний аналіз виявив, що європейські респонденти на всіх рівнях досвіду мали вищі середні показники доброзичливості та сумлінності, що корелювало з домінуванням безпечного стилю водіння. Нейротизм виявився значущим предиктором агресивного стилю водіння, а екстраверсія – фактором ризику в українській вибірці, проте асоціювалася з безпечнішою поведінкою в європейській. Найбільш стійким показником безпечного стилю стала сумлінність, зокрема серед досвідчених європейських водіїв ($M = 4,5$). Виявлено, що водії з агресивним або навмисно-ризикованим стилем керування спричиняють близько 25-30 % усіх дорожньо-транспортних пригод (ДТП). Серед водіїв із досвідом до 5 років рівень причетності до ДТП на 12-15 % вищий, ніж серед тих, хто має стаж понад 15 років, незалежно від країни проживання. Дослідження засвідчило доцільність упровадження психологічних компонентів у систему підготовки водіїв. Отримані результати можуть бути використані фахівцями підрозділів безпеки дорожнього руху та страховими компаніями для удосконалення програм підготовки водіїв і підвищення культури безпечного водіння

Ключові слова: міжкультурні відмінності; дорожньо-транспортна пригода; безпечна поведінка; ризик; стиль керування