sciendo

Assessing the Impact of Driver Experience and Cybersecurity Concerns on Public Trust in Autonomous Vehicles

Ciprian-Sorin VLAD
Politehnica University of Timişoara, Timişoara, Romania

Iulia-Ioana MIRCEA*
National University of Science and Technology Politehnica Bucharest, Bucharest, Romania,
**Corresponding author, iulia.imircea@gmail.com*

Larisa IVASCU*
Politehnica University of Timisoara, Timisoara, Romania
Academy of Romanian Scientists, Bucharest, Romania
**Corresponding author, larisa.ivascu@upt.ro*

Eugen ROȘCA
National University of Science and Technology Politehnica Bucharest, Bucharest, Romania

Abstract. *The rapid advancement of artificial intelligence and automation has led to significant developments in autonomous vehicle technology. However, public trust remains a crucial factor influencing the adoption and widespread acceptance of self-driving cars. This study explores the relationship between driver experience, cybersecurity concerns, and trust in autonomous vehicles, aiming to identify key factors that shape consumer perception.*

Existing research highlights that familiarity with emerging technologies positively impacts trust, while cybersecurity threats are often cited as a major barrier to adoption. However, empirical evidence on how these factors interact remains inconclusive. This paper investigates whether individuals with a driver's license exhibit greater confidence in autonomous vehicles and whether concerns about cyberattacks significantly reduce trust.

A quantitative research methodology was employed, using a structured survey distributed to 530 respondents. Three hypotheses were tested through statistical analysis, including the Spearman's rank correlation test and the Mann-Whitney U test. The results indicate a strong positive correlation between familiarity with autonomous vehicles and trust in their ability to reduce accidents. Furthermore, individuals with a driver's license were found to have significantly higher trust levels than those without. Surprisingly, cybersecurity concerns did not exhibit a meaningful correlation with trust in autonomous vehicles, suggesting that public perception is shaped more by exposure and experience than by theoretical risks.

This research contributes to the field of artificial intelligence applications in business and mobility by providing empirical evidence on the psychological and experiential factors influencing trust in autonomous vehicles. The research findings bring to the forefront the need for educational campaigns and hands-on exposure programs aimed at increasing public confidence, especially among people who do not have a driving license. The information this study reveals can help policy makers and impact automotive companies and technology developers, providing support in increasing public acceptance and integration of autonomous vehicles into modern transportation systems.

Keywords: autonomous vehicles, cybersecurity, driver experience, artificial intelligence, public trust, road safety.

DOI: 10.2478/picbe-2025-0005

Introduction

The advanced development of transportation technology, largely based on artificial intelligence, has redefined the notion of mobility through the significant evolution of autonomous vehicles. The present research analyzes two factors of major significance in the adoption and integration of autonomous vehicles into smart mobility, namely the level of trust and cybersecurity concerns and how they shape public perception.

The literature indicates a positive correlation between familiarity with emerging technologies and trust in autonomous vehicles (Molnar *et al.*, 2018), identifying skepticism on the part of those who raise safety concerns in relation to cybersecurity (Khalid Khan, Shiwakoti and Stasinopoulos, 2022). At the same time, people who have interacted with or consistently use automated vehicle options exhibit high levels of confidence in their ability to prevent road accidents and, by extension, improve traffic safety. Last but not least, research shows that when individuals observe clear safety and convenience benefits, the intention to use autonomous vehicles and the level of trust in them are correlated (Panagiotopoulos and Dimitrakopoulos, 2018).

Autonomous vehicles (AVs) are considered a major innovation in transportation, offering significant advantages in terms of safety, efficiency and user convenience. However, the success of their widespread deployment depends on the ability to address cyber threats that can compromise both the functioning of the systems and user confidence. Vulnerabilities in AVs' software and hardware can be exploited to cause critical errors, such as sudden braking on the highway, erroneous pedestrian detection, or unwarranted reactions to non-existent obstacles (Miller and Valasek, 2015); (Sato *et al.*, 2023). These issues raise significant concerns, as they may not only affect passengers, but may also have implications for overall traffic safety, potentially leading to unpredictable accidents. In addition, the interconnection of AVs through complex networks makes them vulnerable to cyber-attacks that can destabilize critical control systems, affecting their long-term reliability (Pham and Xiong, 2021).

Recent studies have shown that cyber-attacks on sensors and data processing modules can have severe consequences on the performance of AVs. For example, minor changes to visual signals, such as adding subtle disturbances to STOP signs, can lead to recognition errors that increase the risk of accidents (Akhtar and Mian, 2018) .These attacks target critical components, such as cameras, radar, and LiDAR, which are responsible for interpreting the environment and making real-time decisions(Pham and Xiong, 2021). Although the cybersecurity of AVs is a burgeoning research area, most studies have focused on identifying technical vulnerabilities without analyzing in depth the impact of these attacks on user trust (Khalid Khan, Shiwakoti and Stasinopoulos, 2022; Lim and Rajivan, 2023). This research gap is important, as user perceptions of the security of AVs play a critical role in the adoption and continued use of this innovative technology.

Negative experiences caused by cyber-attacks can lead to a drastic reduction in user trust in AVs, which can affect not only individual driver behavior, but also the market development for these vehicles. For example, previous research has shown that as users interact with an AV, their trust in the system may gradually increase, but may drop sharply in the event of errors, such as lane-keeping problems (Blanco *et al.*, 2015; Dikmen and Burns, 2017). Thus, a successful cyber-attack on an AV can have a strong psychological effect on users, causing them to perceive the system as insecure and unpredictable. This phenomenon is problematic because a high level of trust is essential for users to adopt and use AVs frequently, especially when they have to hand over partial or full control of the automated vehicle. Therefore, securing AVs against cyber-attacks is not only a technological issue, but also one that directly affects the widespread acceptance and use of this technology.

To address these challenges, researchers have explored different strategies for rebuilding user trust in AVs after a cyber-attack or system failure. Studies suggest that providing clear and detailed feedback about the causes of errors can help users regain trust in the system and rely on autonomous technology again (Dzindolet *et al.*, 2003). Intuitive and informative interfaces also play a crucial role in managing user perception of AVs. For example, virtual reality-based research has shown that the display of an interactive dashboard, which explains vehicle decisions and provides an overview of the surrounding environment, can significantly improve user confidence and reduce the stress associated with using Avs. However, more research is needed to determine the extent to which such strategies can help rebuild users' trust after experiencing a cyber-attack, as well as to understand how perceptions of safety change in the long term(Lim and Rajivan, 2023).

This research aims, through a quantitative analysis, to investigate the correlation between driving experience, perceptions of cybersecurity and the level of trust in autonomous vehicles.

Literature review and hypothesis development

With the rapid advancement of artificial intelligence and automation technologies, autonomous vehicles are becoming an increasingly viable solution for the future of mobility. However, the successful implementation of these systems largely depends on the level of trust the public has in them. Factors such as users' prior experience with autonomous driving technologies and perceptions of risks associated with cybersecurity play a crucial role in either the acceptance or reluctance toward these vehicles.

The scientific literature correlates the length of time a person has held a driver's license with their level of trust in autonomous vehicles and indicates that drivers with experience in traditional driving may struggle to relinquish control of the vehicle, as they are accustomed to making quick decisions in critical situations (Yun and Yang, 2022; Abolarin and Jia, 2024). In contrast, users who have already had positive interactions with semi-autonomous vehicles are more likely to accept and perceive them as safe (Mircea, 2023).

Regarding the length of time a driver's license has been held, another important correlation highlighted in scientific literature is the difference in perception between generations. Older individuals, who have accumulated significant experience in manual driving, may exhibit lower trust in autonomous systems, expressing concerns about their reliability (Abolarin and Jia, 2024). On the other hand, younger users, who are more familiar with digital technology and accustomed to automated interfaces, are more receptive to adopting these mobility solutions.

Hypothesis 1: *The level of familiarity with autonomous vehicles positively influences the public's trust in their ability to reduce road accidents.*

The scientific literature highlights a positive correlation between familiarity with autonomous vehicles and public trust in them, implicitly in their ability to reduce road accidents. The research conducted by Qiao *et al.* (2022) demonstrated that using a virtual reality simulator for autonomous driving experiences significantly increases users' trust in these technologies and reduces the perceived risk associated with AV usage (Qiao, Sun, *et al.*, 2022). Participants exposed to such experiences showed a greater openness toward adopting autonomous vehicles, suggesting that progressive familiarization can contribute to increasing their acceptance. Another study by the same authors (Qiao *et al.*, 2023) reinforced this conclusion, emphasizing that education and autonomous driving simulations play a crucial role in developing a positive perception of AV safety (Qiao, Loeb, *et al.*, 2022). Integrated simulation platforms have shown that providing controlled experiences with AV technology can reduce user anxiety and strengthen the belief that autonomous

vehicles can help reduce road accidents (Pislaru and A. F. Trandabat, 2012; Pislaru and A. Trandabat, 2012; Pislaru and Avasilcai, 2013).

Numerous studies in the field of transportation highlight the importance of the relationship between experience with autonomous vehicles and both the intention to use them and the trust in their safety. A report published by TOMNET-UTC analyzed the relationship between experience with autonomous vehicles and their acceptance level, indicating that a high level of familiarity is associated with a positive perception of safety, which directly influences the intention to adopt these technologies.(Khoeini *et al.*, 2023).

In a similar approach, Naiseh *et al.* (2024) analyzes how factors such as trust, risk perception, and intention to use autonomous vehicles interact. The findings of the study suggest that through repeated exposure to such technologies, risk perception decreases, improving the level of confidence in the use of autonomous vehicles and their potential to reduce fatal crashes. (Naiseh *et al.*, 2024). This finding highlights the essential role of education and practical experiences in fostering public acceptance of AV technology (Pislaru, Trandabăţ and Avasilcăi, 2011; Alexa, Pîslaru and Avasilcăi, 2022; Shah and Ivascu, 2023).

Hypothesis 2*: Concern about cyberattacks negatively influence the public's trust in autonomous vehicles*

Cybersecurity concerns have a negative impact on the level of trust individuals place in autonomous vehicles, and perceptions of cyber vulnerabilities create uncertainty about the safety of their use.

Studies analyzing these aspects emphasize in their research that cyber incidents that can affect autonomous vehicles are a primary factor correlated with distrust in their use by the public, with survey respondents expressing reluctance regarding the potential of these driving systems to operate safely without human intervention. The findings suggest, following the simulation of a cyber-attack in a controlled environment, a real decrease in people's willingness to use AV technologies(Lim *et al.*, 2024). Similarly, research by Gorine&Khan supports these findings, adding that exposure to a frequency of such attacks contributes to increased reluctance of autonomous vehicle users.(Gorine and Khan, 2024)

While identifying the factors that shape public trust in autonomous vehicles, the scientific literature brings to the fore cybersecurity issues, data privacy concerns and questions about technological reliability(Kim, 2021). Studies highlight the need for robust security measures and improved communication regarding the evolution and potential of autonomous driving systems, so that concerns such as unauthorized access to data or cyber threats can be addressed responsibly. (Gorine and Khan, 2024; Lim *et al.*, 2024).

Hypothesis 3: *Individuals with a driver's license have higher levels of trust in autonomous vehicles*

Recent academic research has explored the relationship between driving experience and trust in autonomous vehicles (AVs), providing insights into how prior exposure to conventional driving influences users' confidence in automation. The hypothesis that individuals with conventional driving experience exhibit lower trust in AVs compared to non-drivers finds partial support in these studies.

Recent studies that have explored the relationship between trust and experience in conventional driving emphasize that the age of a driver's license impacts users' trust in automated systems. Research by Moralez- Alvarez *et al*. (2020) examines driver behavior under autonomous driving conditions, indicating that environmental factors such as road characteristics and attending

to other activities positively influence trust in autonomous vehicles. Drivers with an older driver's license may encounter skepticism in trusting autonomous driving systems, generally due to the habit of making decisions and reacting in complex traffic scenarios. (Morales-Alvarez *et al.*, 2020)

Similarly, another study found that there are three behavioral profiles among autonomous car users: believers, oscillators, and skeptics, which are influenced by personality. Experienced drivers, being used to directly exerting their control while driving the vehicle, are most likely to belong to the category defined as skeptical, demonstrating a lower level of trust in AVs.(Avetisyan *et al.*, 2023)

These results suggest that owning a driver's license for a longer period of time may cause a more cautious attitude when approaching autonomous vehicles.

Methodology

The present research builds upon previous research entitled *Driver's acceptance of fully automated vehicle*s (Mircea, I. *et al.*, 2023), continuing the exploration and the analysis of the factors influencing the trust in autonomous vehicles. The authors initially conducted similar research, establishing a series of basic hypotheses in analyzing user perceptions and concerns. Expanding on the earlier research hypotheses, the present study examines the impact of individuals' driving experience and investigates cybersecurity concerns, refining the conceptual framework and providing deeper empirical insights.

The study employs a quantitative methodology, based on a structured questionnaire administered to 530 respondents that was statistically analyzed using SPSS in order to explore the impact of factors such as familiarity, experience and security concerns on trust and acceptance of autonomous vehicles.

Results and discussions

To verify the first hypothesis, we conducted a Spearman's rank correlation test, using data collected from 530 respondents.

In the following section, we present the statistical results and interpret their implications.

Table 1. Correlation between familiarity with AV and trust that AV can reduce accidents

Correlations

			Familiarity with Autonomous Vehicles	Trust that Autonomous Vehicles Reduce Accidents
Spearman's rho	Familiarity with Autonomous Vehicles	Correlation Coefficient	1.000	.751**
		Sig. (2-tailed)	.	.000
		N	530	530
	Trust that Autonomous Vehicles Reduce Accidents	Correlation Coefficient	.751**	1.000
		Sig. (2-tailed)	.000	.
		N	530	530

**. Correlation is significant at the 0.01 level (2-tailed).

The Spearman correlation coefficient is 0.751 thus indicating a strong positive correlation between the variables. The value being positive suggests that as familiarity with autonomous vehicles increases, public trust in their safety and the potential to reduce accidents also increases. The P-value of 0.000 indicates that the correlation is statistically significant, supporting the first hypothesis and validating it.

The results are consistent with the existing literature, emphasizing that increased exposure to autonomous vehicle technology leads to increased user confidence. Previous studies have shown that users who have directly interacted with autonomous driving systems are more likely to perceive autonomous vehicles as safe and efficient. This finding suggests that educational programs, virtual testing, and hands-on experiences can provide a significant contribution in boosting public confidence toward autonomous vehicles.

Furthermore, the results underline the importance of transparency and adequate user information on the functionality and benefits of such technology. In order to evaluate the second hypothesis and to test the relationship between cyberattacks and public trust in AV, a Spearman's rank correlation analysis was conducted.

Table 2. Correlation between concerns in cyber attacks and data protection and trust

Correlations

			Concern_Cyber Attacks and Data Protection	Trust Regarding Cyber Attacks
Spearman's rho	Concern_Cyber Attacks and Data Protection	Correlation Coefficient	1.000	.009
		Sig. (2-tailed)	.	.828
		N	530	530
	Trust Regarding Cyber Attacks	Correlation Coefficient	.009	1.000
		Sig. (2-tailed)	.828	.
		N	530	530

This test results indicate that there is no relationship between concerns about cyberattacks and data protection and trust regarding cyberattacks in AV. The Correlation coefficient of 0.009 is very close to zero, suggesting that there is no meaningful association between the variables. The P-value is 0.828, thus much greater than 0.05, indicating there is no correlation that is statistically significant. Analyzing the data we can conclude that cyberattacks do not significantly influence public trust in autonomous vehicles.

The existing literature suggests that cybersecurity concerns directly influence the openness to the use of autonomous vehicles, which is not supported by the results of the second hypothesis. The results of the present study even disagree with the public perception that fear of cyber-attacks is the main barrier to the development of trust in this type of technology.

In order to validate the third hypothesis, we applied for a Mann-Whitney U test, thus comparing the distribution of the level of trust between two independent groups: those who have a driving license and those who do not.

This test assesses whether a statistically significant difference exists between the trust levels of the two groups. A p-value below the conventional threshold of 0.05 would indicate that holding a driver's license is associated with a higher level of trust in autonomous vehicles, thereby supporting the hypothesis.

The subsequent section provides a detailed presentation of the Mann-Whitney U test results and discusses their implications for understanding the relationship between driving experience and trust in autonomous vehicle technology.

Table 3. Hypothesis Test Summary – Mann-Whitney U Test for Trust Levels Based on Driver's License Possession

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Trust Based on Having a Driver's License is the same across categories of Driver's License.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .050.

Table 4. Summary of Independent-Samples Mann-Whitney U Test for Trust Levels Based on Driver's License Possession

Independent-Samples Mann-Whitney U Test Summary

Total N	530
Mann-Whitney U	70125.000
Wilcoxon W	108075.000
Test Statistic	70125.000
Standard Error	1622.027
Standardized Test Statistic	21.616
Asymptotic Sig.(2-sided test)	.000

The Independent-Samples Mann-Whitney U Test results indicate a significant difference in trust levels toward autonomous vehicles between individuals with and without a driver's license, based on data from 530 respondents. The Mann-Whitney U value of 70,125.000 and the Wilcoxon W value of 108,075.000 suggest a notable disparity in rank distributions, with a standardized test statistic of 21.616 confirming the strength of this difference. The standard error of 1622.027 ensures the precision of the estimate, while the asymptotic significance ($p = 0.000$) provides robust statistical evidence that trust levels are significantly higher among licensed drivers. Given the extremely low p-value ($p < 0.001$), the null hypothesis—stating that trust levels are equal between groups—is rejected, reinforcing the idea that driving experience contributes to greater confidence in autonomous vehicle technology and suggesting that familiarity with vehicle operation may facilitate a more positive perception of AV capabilities.

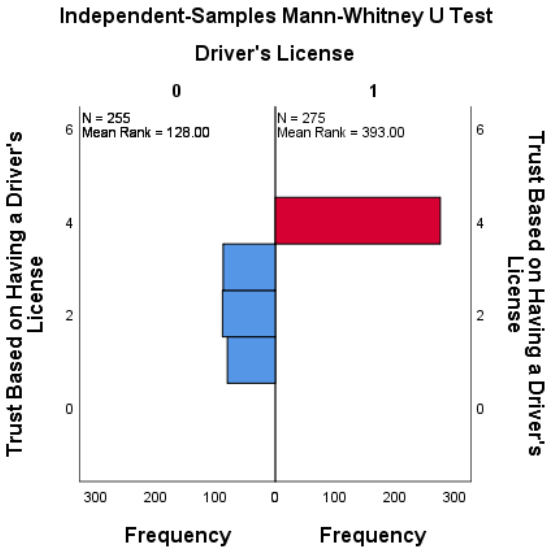

Figure 1. Distribution of Trust in Autonomous Vehicles Based on Driver's License Possession – Mann-Whitney U Test Results

The Independent-Samples Mann-Whitney U Test results depicted in Figure 1 illustrate the distribution of trust in autonomous vehicles based on whether respondents possess a driver's license. The horizontal bar chart compares the mean rank of trust levels between the two groups: Respondents without a driver's license (N = 255) exhibit a mean rank of 128.00, indicating a lower level of trust in autonomous vehicles. Respondents with a driver's license (N = 275) have a mean rank of 393.00, suggesting a significantly higher level of trust in autonomous vehicle technology.

The results of testing the third hypothesis show that people who have a driver's license show a significantly higher level of trust in autonomous vehicles than those without. The mean rank of 393.00 for individuals with a driver's license versus 128.00 for those without a driver's license suggests that prior experience contributes to increased confidence in the reliability and safety of AVs. The statistically significant difference supports the idea that familiarity with driving a vehicle favors a positive perception of autonomous driving systems.

These results come in contrast to the research findings in the literature review which suggest that conventional drivers may have less trust in autonomous vehicles due to their reliance on manual control and decision making in traffic. However, the current study indicates that people with a driver's license tend to have more trust in AVs compared to people who do not drive vehicles, and this can be correlated with their experiential understanding of safety mechanisms and vehicle operation.

Statistical testing of the three hypotheses generated mixed results. The correlation test for the first hypothesis revealed a strong positive correlation, confirming that a familiarity with autonomous vehicles is associated with a higher level of confidence in their ability to reduce crashes. In contrast, testing the second hypothesis yielded a negative result, indicating that cybersecurity fears do not influence the level of trust in autonomous driving systems. For the third hypothesis, the testing provided strong evidence confirming that people who have a driver's license show significantly higher levels of trust in autonomous cars compared to people who do not have a driver's license.

The results of these tests provide important insights into the factors shaping public trust in autonomous vehicles. Analyzing the results of the first hypothesis, i.e. the strong positive correlation between familiarity and trust in the ability of autonomous vehicles to support road safety, we conclude that exposure to autonomous technology can significantly improve the public's trust. This highlights the tools compatible with generating a boost in confidence, namely educational programs, real-world testing and very importantly transparent communication about the benefits of autonomous systems.

At the same time, the lack of a significant relationship between concerns about cyber-attacks and trust in autonomous vehicles, as the second hypothesis has been exposed, contradicts the general opinion that cybersecurity concerns significantly discourage the adoption of autonomous driving technologies. Although cybersecurity is indeed a key concern, the results of the sample surveyed do not directly correlate these concerns with their general level of confidence in technology. This may indicate that the public narrative on autonomous vehicles is predominantly focused on safety and operational efficiency, rather than cyber threats and dangers.

Last but not least, when considering the third hypothesis, the significant difference in the level of trust between individuals with and without a driver's license highlights the impact of driving experience on the acceptance of autonomous vehicles at the general level. Individuals who understand and interact with traditional driving mechanisms seem more likely to trust automation solutions. This finding suggests that people who do not have a driver's license might need additional outreach measures or would be interested in this technology when autonomous driving without driver intervention becomes possible for the general public.

Conclusion, limitation and future research

This study contributes to the analysis of public trust in autonomous vehicles, focusing specifically on familiarity with AV technology, cybersecurity concerns, and driving license age. The results, as derived from testing the three hypotheses confirm that a familiarity with autonomous vehicle technology is strongly associated with increased confidence in their ability to be beneficial to road safety. In contrast, concerns about cyber risks did not show a significant impact among respondents, contradicting the hypothesis that cyber threats are a major barrier to adoption. A significant variable to be observed as a result of the present study is driver's license, which is relevant in relation to trust and acceptance of autonomous vehicles. The study results provide relevant recommendations for policy makers, autonomous vehicle manufacturers and cybersecurity experts. Governments could facilitate AV technology exposure programs, such as VR simulators and awareness campaigns, to build public confidence. Manufacturers would benefit from organizing test drives and public demonstrations, giving users first-hand experience with autonomous vehicles, which could accelerate adoption of the technology. In parallel, cybersecurity experts could optimize risk communication strategies by using accessible explanations and concrete examples to make threats easier for the public to understand and assess.

Despite these contributions, the research has several limitations. The reliance on self-reported survey data may introduce biases related to subjective perceptions and prior experiences, while the sample of 530 respondents, though statistically robust, may not fully capture demographic and cultural diversity in attitudes toward AVs. The statistical power analysis confirms that the sample of 530 respondents is more than adequate for the tests applied, providing robust and significant results for Hypothesis 1 (familiarity with autonomous vehicles influences trust), where the Spearman correlation of 0.751 indicates a strong positive relationship, and for

Hypothesis 3 (holding a driver's license increases trust), where the Mann-Whitney U test ($p < 0.001$, $d = 0.72$) confirms a significant difference between groups. In contrast, Hypothesis 2 (cybersecurity concerns affect trust in AVs) is not supported by the data, as the Spearman correlation of 0.009 ($p = 0.828$) indicates a virtually non-existent relationship, and a sample of almost 97,000 respondents would be required to detect a real effect. These results demonstrate that trust in autonomous vehicles is significantly influenced by experience and familiarity, and that cybersecurity fears do not play a decisive role in the adoption of technology.

One of the most surprising results of the study is that cybersecurity concerns did not have a significant impact on public confidence in autonomous vehicles. This finding contradicts previous research indicating that cybersecurity uncertainty may be a key deterrent to the adoption of autonomous technologies.

One possible explanation for this result is that cybersecurity concerns are perceived by the public as abstract or difficult to assess in the absence of sound technical knowledge. In contrast to road safety, where the benefits of autonomous technology can be directly observed (e.g. through reduced accidents), cyber threats may seem less tangible to ordinary users.

Another possibility is that trust in autonomous vehicles is driven by personal experience rather than perceived external risks. For example, people who have directly interacted with automated driver assistance systems or autonomous vehicles are more likely to develop trust based on their own observations, which may mitigate the impact of concerns about cyberattacks.

Future research should expand on these findings by incorporating longitudinal studies to track how public trust evolves over time and by exploring the role of direct AV interactions, such as test-driving experiences, in shaping perception.

Highly relevant for the direction of research exploring the degree of trust in autonomous vehicles could be the analysis of psychological variables, namely the degree of openness to new technologies or the level of anxiety related to the control of the vehicle. By testing the respondents with a Big 5 test one can observe correlations between the psychological portrait and the openness and acceptance of autonomous vehicle technology.

The study has certain limitations that could influence the interpretation of the results and their validity. A possible selection bias stems from the fact that the sample may include predominantly technology-savvy individuals, which limits the representativeness of the results to the general population. Also, based on self-reported data, there is a risk of social desirability bias, in which respondents may provide answers perceived as favorable, affecting the objectivity of the measures. Another significant limitation is the cross-sectional nature of the study, which does not allow for analyzing the evolution of trust in autonomous vehicles over time. Also, the lack of experimental exposure, such as test-drives or VR simulations, restricts the evaluation of the direct impact of user interaction with this technology. In this context, future research should include longitudinal methods and experimental components for a deeper understanding of the factors influencing the acceptance of autonomous vehicles.

This study represents a continuation of the authors' previous research on the acceptance of autonomous vehicles, further refining the analysis of key factors influencing public trust. Future research will build upon these findings to examine additional psychological and behavioral factors that shape AV acceptance, integrating more diverse methodologies, including experimental approaches and in-depth qualitative studies. Given the ongoing advancements in AV technology, understanding the long-term evolution of public trust remains crucial for facilitating widespread adoption and integration into modern transportation systems.

References

Abolarin, E. and Jia, B. (2024) 'Effect of conventional driving experience on trust in autonomous vehicles (L2 and 3): A review', *Modern Transportation*, 12(1). Available at: https://doi.org/10.18686/mt.v12i1.9293.

Akhtar, N. and Mian, A. (2018) 'Threat of Adversarial Attacks on Deep Learning in Computer Vision: A Survey', *IEEE Access*, 6, pp. 14410–14430. Available at: https://doi.org/10.1109/ACCESS.2018.2807385.

Alexa, L., Pîslaru, M. and Avasilcăi, S. (2022) 'From Industry 4.0 to Industry 5.0—An Overview of European Union Enterprises', in. Available at: https://doi.org/10.1007/978-981-16-7365-8_8.

Avetisyan, L. *et al.* (2023) *Building Trust Profiles in Conditionally Automated Driving*. Available at: https://doi.org/10.48550/arXiv.2306.16567.

Blanco, M. *et al.* (2015) *Human factors evaluation of level 2 and level 3 automated driving concepts*.

Dikmen, M. and Burns, C. (2017) 'Trust in autonomous vehicles: The case of Tesla Autopilot and Summon', in *2017 IEEE International conference on systems, man, and cybernetics (SMC)*. IEEE, pp. 1093–1098.

Dzindolet, M.T. *et al.* (2003) 'The role of trust in automation reliance', *International Journal of Human-Computer Studies*, 58(6), pp. 697–718. Available at: https://doi.org/10.1016/S1071-5819(03)00038-7.

Gorine, A. and Khan, S. (2024) 'Perception and Trust in Autonomous Vehicles Post Cyber Security Incidents', *American Journal of Computer Science and Technology*, 7(4), pp. 122–138. Available at: https://doi.org/10.11648/j.ajcst.20240704.11.

Khalid Khan, S., Shiwakoti, N. and Stasinopoulos, P. (2022) 'A conceptual system dynamics model for cybersecurity assessment of connected and autonomous vehicles', *Accident Analysis & Prevention*, 165, p. 106515. Available at: https://doi.org/10.1016/j.aap.2021.106515.

Khoeini, S. *et al.* (2023) 'Interaction of Familiarity, Safety Perceptions, and Willingness to Use Autonomous Vehicles in A Structural Equation Modeling Framework', in. Available at: https://api.semanticscholar.org/CorpusID:259978020.

Kim, W.& K.-B.T. (2021) 'Users' Trust in and Concerns about Automated Driving Systems (Research Brief)'.

Lim, C. *et al.* (2024) 'The Impact of Cybersecurity Attacks on Human Trust in Autonomous Vehicle Operations', *Human Factors: The Journal of the Human Factors and Ergonomics Society* [Preprint]. Available at: https://doi.org/10.1177/00187208241283321.

Lim, C. and Rajivan, P. (2023) 'Who hacked my car? Designing autonomous vehicles to support driver response to security threats', in *Proceedings of the human factors and ergonomics society annual meeting*. SAGE Publications Sage CA: Los Angeles, CA, pp. 247–252.

Miller, C. and Valasek, C. (2015) 'Remote exploitation of an unaltered passenger vehicle', *Black Hat USA*, 2015(S 91), pp. 1–91.

Mircea, I.I., V.C.Rosca.E. (2023) 'Drivers acceptance of fully automated vehicles', *annals of the academy of romanian scientist* , 1(15).

Morales-Alvarez, W. *et al.* (2020) 'Vehicle Automation Field Test: Impact on Driver Behavior and Trust', in *2020 IEEE 23rd International Conference on Intelligent Transportation Systems (ITSC)*, pp. 1–6. Available at: https://doi.org/10.1109/ITSC45102.2020.9294751.

Naiseh, M. *et al.* (2024) 'Trust, risk perception, and intention to use autonomous vehicles: an interdisciplinary bibliometric review', *AI & SOCIETY* [Preprint]. Available at: https://doi.org/10.1007/s00146-024-01895-2.

Panagiotopoulos, I. and Dimitrakopoulos, G. (2018) 'An empirical investigation on consumers' intentions towards autonomous driving', *Transportation Research Part C: Emerging Technologies*, 95, pp. 773–784. Available at: https://doi.org/10.1016/j.trc.2018.08.013.

Pham, M. and Xiong, K. (2021) 'A survey on security attacks and defense techniques for connected and autonomous vehicles', *Computers & Security*, 109, art. No. 102269. Available at: https://doi.org/10.1016/j.cose.2021.102269.

Pislaru, M. and Avasilcai, S. (2013) 'Neuro-fuzzy model related to job assignation', in *Lecture Notes in Electrical Engineering*. Available at: https://doi.org/10.1007/978-1-4614-3558-7_79.

Pislaru, M. and Trandabat, A. (2012) 'Assessment of company environmental impact using fuzzy logic', in *International Proceedings of Chemical, Biological and Environmental Engineering*.

Pislaru, M., Trandabăţ, A. and Avasilcăi, S. (2011) 'Neuro-fuzzy model for environmental impact assessment', *Environmental Engineering and Management Journal*, 10(3), pp. 381–386. Available at: https://doi.org/10.30638/eemj.2011.055.

Pislaru, M. and Trandabat, A.F. (2012) 'Fuzzy Based Environmental System Approach for Impact Assessment - Case Studies', *International Journal of Environmental and Ecological Engineering*, 6(7).

Qiao, Z., Loeb, H., *et al.* (2022) 'Drive Right: Autonomous Vehicle Education through an Integrated Simulation Platform', *SAE International Journal of Connected and Automated Vehicles*, 5. Available at: https://doi.org/10.4271/12-05-04-0028.

Qiao, Z., Sun, X., *et al.* (2022) *Drive Right: Shaping Public's Trust, Understanding, and Preference Towards Autonomous Vehicles Using a Virtual Reality Driving Simulator*. Available at: https://doi.org/10.48550/arXiv.2208.02939.

Sato, T. *et al.* (2023) 'Lidar spoofing meets the new-gen: Capability improvements, broken assumptions, and new attack strategies', *arXiv preprint arXiv:2303.10555* [Preprint].

Shah, S.G.M. and Ivascu, L. (2023) 'Accentuating the moderating influence of green innovation, environmental disclosure, environmental performance, and innovation output between vigorous board and Romanian manufacturing firms' performance', *Environment, Development and Sustainability* [Preprint]. Available at: https://doi.org/10.1007/s10668-023-03164-6.

Yun, H. and Yang, J.H. (2022) 'Configuring user information by considering trust threatening factors associated with automated vehicles', *European Transport Research Review*, 14(1), p. 9. Available at: https://doi.org/10.1186/s12544-022-00534-5.