Global Journal of Health Science; Vol. 15, No. 3; 2023
ISSN 1916-9736 E-ISSN 1916-9744
Published by Canadian Center of Science and Education

The Comparison of Aggressive Driving Behavior between Pakistan and China Based on Driver Behavior Questionnaire

Muhammad Murtaza[1], Jinxi Zhang[1], Mehtab Ur Rehman[2] & Kamran Iqbal[3]

[1] College of Metropolitan Transportation, Beijing University of Technology, Beijing, China

[2] Faculty of Materials and Manufacturing, Beijing University of Technology, Beijing, China

[3] College of Architecture and Civil Engineering, Beijing University of Technology, Beijing, China

Correspondence: Jinxi Zhang, School of Urban Construction, 218, Chengjian Building, N0.100, Pingleyuan, Chaoyang district, Beijing University of Technology, Beijing 100124, China. Tel: 86-135-2172-7735. E-mail: zhangjinxi@bjut.edu.cn

Received: January 23, 2023 Accepted: February 10, 2023 Online Published: February 14, 2023

doi:10.5539/gjhs.v15n3p20 URL: https://doi.org/10.5539/gjhs.v15n3p20

Abstract

Aggressive Driving behavior plays a key role in road safety as it is important in road traffic accident prevention. The aim of this study was to investigate the aggressive driving behavior attitude towards road safety issues in Pakistan and china and the applicability of three-factor structure (aggressive violations, ordinary violations and errors) of both version of driver behavior questionnaire (DBQ). T-test was conducted to evaluate significant differences and it exposed that Chinese sample is more significant. Confirmatory factor analysis was tested and calculated on both samples. Chinese samples fit the CFA statistics models best as compared to Pakistani sample. Additionally, Pakistan drivers especially the younger drivers were mostly engaged in aggression and errors, while Chinese drivers appeared more disciplined and rule followers.

Keywords: Aggressive driving behavior, Driver behavior questionnaire (DBQ), Cross-cultural difference, Statistical analysis

1. Introduction

Road traffic accidents are a major cause of death worldwide and a serious threat to public health. According to the report of the World Health Organization, 1.25 million people die in road accidents annually. The literature generally shows that human factors are important factors in understanding the chain of events that lead to an accident and points to driver failure as a major contributing factor to road accidents (Batool & Carsten, 2017). In case of Pakistan, 70% of the road accidents are due to road user errors because of less knowledge about driving behaviors. Due to lack of research work and experimental signs, much is not known about the different types and frequency of road traffic violations (RTV) fulfilled by the country's drivers on roads. Therefore, it is also difficult to understand the underlying factors that agitate these behaviors (Bener et al., 2017). Driver characteristics are a large body of evidence such as such as age, driver sex, driving experience, and experience has a great influence on errors and violations (Cordellieri et al., 2016). Emotions play a significant role in the automotive environment. Emotional states can affect driving performance, behaviors and safety. Emotional situations can significantly influence the goal generation, decision-making focus, attention and performance (Javadi et al., 2014). About 15-30% of vehicle crashes occur due to driver's sleepiness and is associated with a higher risk of death and severe injuries (Kovácsová, Lajunen, & Rošková, 2016). Aggressive driving is a serious problem and a major concern for many drivers in different countries with 40-65% of respondents. Driver aggression is defined as "a When examining traffic contexts as interactive, the relationship between driving anger, modest driver behavior and positive driver behavior should be considered in the frame of evaluating yourself and other drivers. For example, according to (Lisa, 2017) drivers in southern Europe reported more aggressive violations and faster violations than drivers in northern Europe. Errors further classified into two types. Slips, lapses and mistakes. Examples of mistakes include someone forgetting to turn off the lights when getting out of a car, even though they meant to, and forgetting to turn off their car even though they meant to (Mehdizadeh, Shariat-Mohaymany, & Nordfjaern, 2018). Ordinary and aggressive violations as well as errors were correlated with 93 accident involvement among non-professional drivers, while positive behaviors were only linked 94 to professional drivers' accident (Minhas et al., 2017). The literature argues that road safety is a social issue and that personal factors play a key role in guiding and shaping

driver behavior. Psychological studies have found a strong relationship between driver behavior and socioeconomic and demographic characteristics, with individual variables such as age, gender, and exposure all associated with crashes (Precht, Keinath, & Krems, 2017). Aggression is not always a reaction to despair Endogenous features such as personality behaviors, driver carelessness, and anger while driving have been found to influence driving performance and driving consequences. Driving anger has been shown to be a key predictor of aggressive driving and traffic violations (Routley, Ozanne-Smith, Qin, & Wu, 2009). Depending on the type of accident and vehicle Types, Safety belt is estimated to reduce the possibility of fatality by 45% and 80% possibility of injury. There are numerous factors that affect safety belts Use, such as car type, age, sex, population density, seating position, race, vehicle purpose, types of law, time of day, income and education (Shen et al., 2018). Gender and age have been broadly investigated sociodemographic variables concerning to anger and aggression on the road (Smorti, Andrei, & Trombini, 2018). Although the gender driving behavior is one of the most frequent measured variables in the study, only a few studies have been conducted whose primary interest was sexual differences in traffic behavior (Martinussen et al., 2013). Male drivers have been observed to engage in more speeding behavior and more tailgating behavior than female drivers. However, some researchers believe that women's risky or risky driving behavior is becoming more prevalent than that of male drivers (Ersan et al., 2019). There is a lack of adequate empirical research on road safety in Pakistan, and no work has been identified in the country, particularly in the province of Khyber Pakhtunkhwa (KP), that examines drivers' attitudes and behaviors with the help of a comprehensive theoretical framework. The aim of this study was to investigate driving behavior attitude towards road safety in Pakistan and China and to identify differences in tendency to commit aggressive driving behavior between both countries and examine the relationship between the factors of DBQ and background variables.

3. Material and Methods

The Driver Behavior Questionnaire (DBQ) is one of the most commonly used tools for measuring self-reported driving behavior. The classification of behavioral items in the Driver Behavior Questionnaire (DBQ) is based on Reasons theory. The original DBQ was designed and developed by Reason, Manstead, Stradling, Baxter, and Campbell (1990) to measure aberrant driving behavior with 50 items measuring icluding errors, mistakes, and violations (Reason et al., 1990).

The data used in this study was collected from drivers including Taxi drivers, long vehicle drivers, Old drivers, middle age drivers, young drivers, Students, Teachers through Driver Behavior Questionnaire (DBQ) and physical interview one by one. A paper questionnaire was designed in English, Urdu and conducted in Peshawar city, capital of KP province, Pakistan. Same questionnaire was also designed in Chinese version and conducted in Nanjing City, capital of Jiangsu province. One hundred thirty-three (133) Pakistani drivers and eighty-five (85) Chinese drivers participated in the DBQ successfully. The questionnaire consists of two parts. The first parts contained 12 items which included socio-demographic characteristics such as age, gender, education, driving license and their experience etc. The second part consists of 15 item questionnaire, that as, multiple choices on four-point scale (Never, Hardly, Quit Often, Frequently) which are related to driving behavior. Furthermore, these 15 items Questionnaire are then sub divided into three groups (Aggressive violation, Ordinary violation and errors).

4. Data Analysis

Questionnaire survey data were analysed by using Origin and IBM SPSS v22. After clearing the data, Descriptive analysis was conducted to determine the demographic characteristics of the study sample. In the table 1. of Socio-economic and demographic characteristics of both countries shows that Male (87.2 %) in Pakistan and Male (62.4%) in China, and Pakistani Female (12.8 %) and Chinese Female (37.6%). However, compared to the general statistics, the representation of women in this sample was reduced, which may be associated with a lower number of female drivers in Pakistan. The education of drivers of both countries described in the table-1 which is (15.8%) of participants is below matriculation approximately uneducated and (22.6%) participants passed intermediate, (42.9%) are Bachelors and (2.3%) are Masters. we have identified that (61.7%) of participants hold driving license and (38.3%) participants have no driving license in Pakistan with (58.6%) no driving test, and license of Chinese drivers have (100%) with driving test (100%).

Table 1. Demographic characteristics of Pakistan (n=133), China (85) and total number of participants (N = 218)

Variables	**(Pakistan n & %) (%)**	**(China %) China (%)**
Gender	Male (87.2 %)	Male (62.4%)
	Female (12.8 %)	Female (37.6%)
Age	18-25 (28.6%)	18-25 (36.5%)
	26-35 (29.3%)	26-35 (24.7%)
	36-45 (21.8%)	36-45 (29.4%)
	46-55 (20.3%)	46-55 (9.4%)
Education	Below Matriculation (15.8%)	Junior high school (1.2%)
	Matriculation (16.5%)	High school (12.9%)
	Intermediate (22.6%)	Bachelor (15.3%)
	Bachelor (42.9%)	Master (43.5%)
	Master (2.3%)	PhD (27.1%)
Marital Status	Single (30.1%)	Single (49.4%)
	Married (69.9%)	Married (50.6%)
Driving License	Yes (61.7%)	Yes (100%)
	No (38.3%)	Yes (100%)
Vehicle Type	Car (56.4%)	Car (70.6%)
	Taxi (18.8%)	Taxi (17.6%)
	Heavy vehicles (15.0%)	Heavy vehicle (4.7%)
Driving Test	Yes (41.4%)	Yes (100%)
	No (58.6%)	Yes (100%)

The results revealed the attitudes and behavior of drivers of both countries regarding traffic violations and road aggression. Figure 1, Figure 2, Figure 3 and Figure 4 Provide information on driver behavior questionnaire items with response scales related to road safety. Pakistani drivers showing high aggression in ‘Frequently’, the analysis showed high percentage as compared to Chinese drivers. Most Chinese drivers said they respect driving safety values in the Driver Behavior Questionnaire (DBQ), with drivers only selecting 'never' with the highest percentages, such as Use your horn to indicate your annoyance to another road user (40%), Become angry at another driver and chase them with the intension of showing them how annoyed you are (31%), Get angry at certain types of drivers and express your anger any way you can (40%), Do you overtake a slow driver on the side (40%), Driver so close to the car in front that it would be difficult to stop in emergency (42%), Disregard the speed limit on residential road (34%), Race away from traffic lights with the intension of beating the lorry driver next to you (38%), Do you underestimate the speed of oncoming vehicles (32%), How often do you brake too quickly on a slippery road (25%), Do you attempt to overtake someone turning left (41%), Fail to check your rear view mirror before pulling out, changing lanes etc. (51%), How often do you disobey traffic signals/lights (64%). Comparatively high percentage of Pakistani drivers stated that they respect the driving safety while driving on motorway. The highest percentage of opinion of Pakistani driver’s scales on traffic safety issues is estimated for how often you neglect the speed limit on a motorway (52). Pakistani drivers responded (Hardly) for how often do you use safety belts with high percentage (44%) showing careless driving.

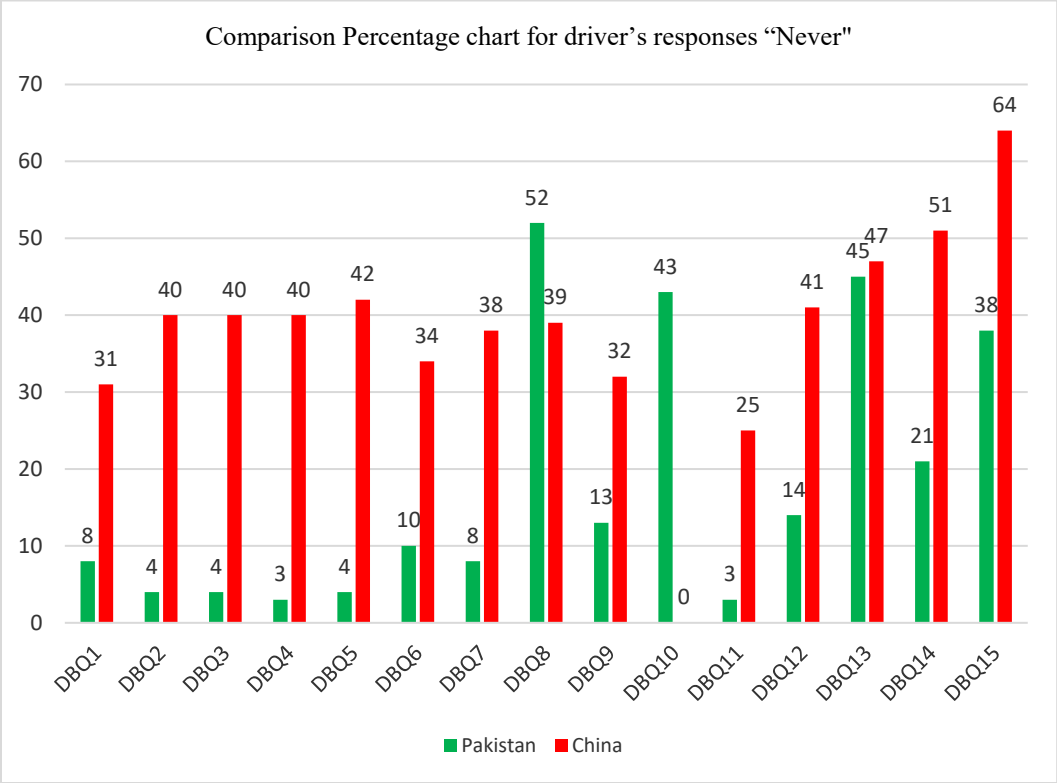

Figure 1. Comparison Percentage chart for driver's responses "Never"

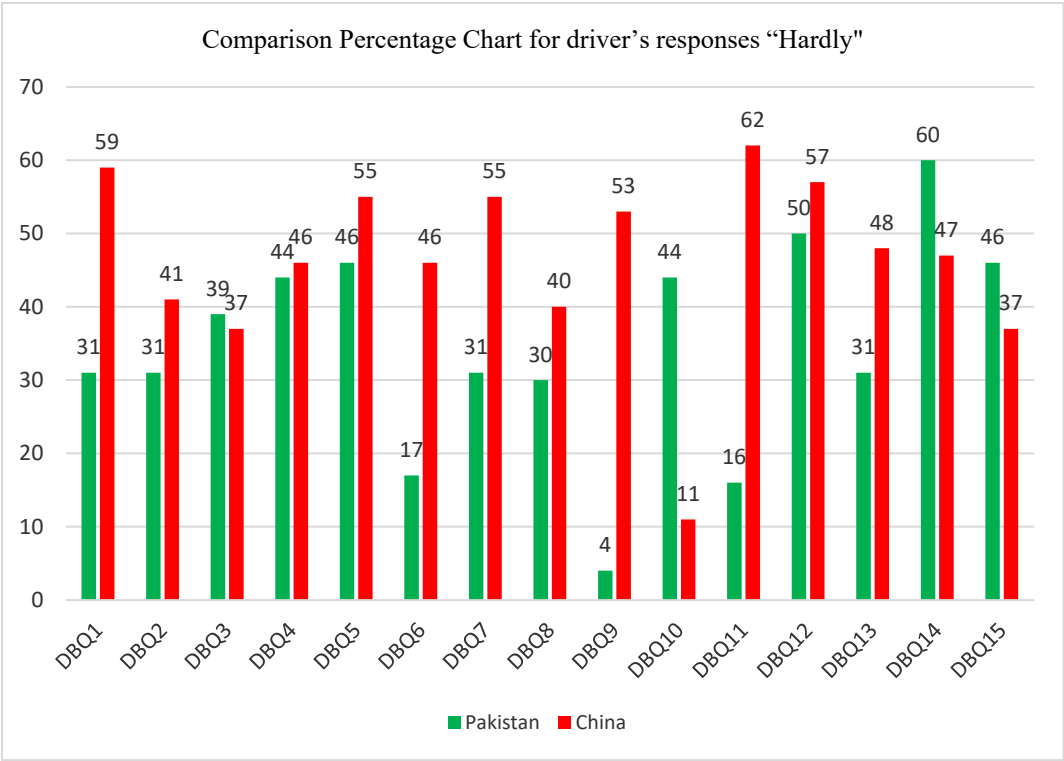

Figure 2. Comparison Percentage Chart for driver's responses "Hardly"

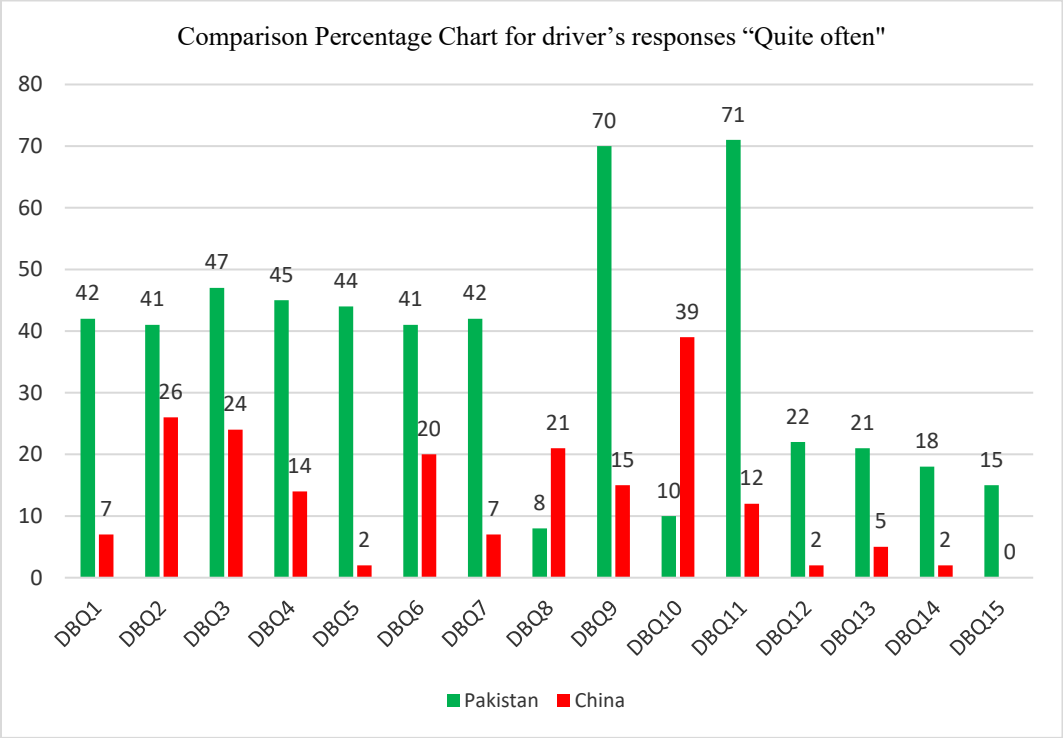

Figure 3. Comparison Percentage Chart for driver's responses "Quite often"

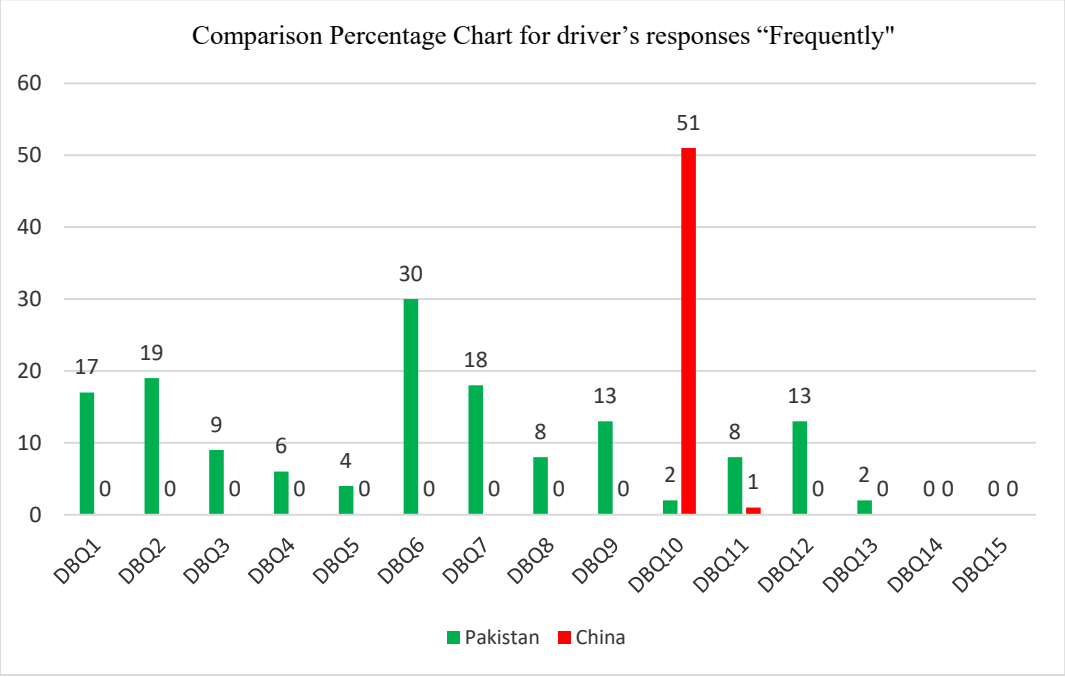

Figure 4. Comparison Percentage Chart for driver's responses "Frequently"

T-test was conducted to evaluate the significant differences between Pakistan and China. The T-test expanded the significant differences between both countries on DBQ item scales. F-value is the statistical test mostly used to determine whether the term is related with the response variable or not. F-value is used to calculate the significance value on aggressive behavior in the sample. F-values have been computed for all the 15 items questionnaire in sample as shown in the Table 2. The p-value is a probability that measures the confirmation against the insignificant hypothesis. To check the significance in the sample p-value should not be greater than 0.05. Chinese sample

showed high significance except DBQ10, DBQ11 and DBQ15 as compared to Pakistani sample. The results of the statistical analysis are shown in the Table 2.

Table 2. Significant differences comparison on DBQ items

DBQ items	Pak (df)	Pak(F)	Pak (P)	China(F)	China(P)
DBQ1	1	1.309	.017***	8.597	.004***
DBQ2	1	1.446	. 061	27.73	.000***
DBQ3	1	4.186	.035**	10.42	.002***
DBQ4	1	4.564	.035**	13.83	.000***
DBQ5	1	1.060	.087	13.30	.000***
DBQ6	1	0.551	.470	11.78	.001***
DBQ7	1	1.377	.081	7.884	.006***
DBQ8	1	0.41	.036**	8.276	.005***
DBQ9	1	2.413	.066	11.95	.001***
DBQ10	1	0.465	.497	0.528	.174
DBQ11	1	0.391	.024***	1.625	.590
DBQ12	1	0.066	.030**	3.765;	.023***
DBQ13	1	1.065	.304	2.963	.015***
DBQ14	1	0.379	.006**	0.031	.024***
DBQ15	1	0.128	.044**	0.594	.305

5. Reliability Analysis

To test the internal consistency of the DBQ scales for both countries, alpha reliability coefficient values, otherwise called Cronbach's alpha, were calculated. Cronbach's alpha values for the DBQ scales for both countries are listed in the table-3. In these two samples the scales of aggressive violations, Ordinary violations and errors is apparently mostly internally consisted (α is greater than 0.7). In case of Pakistan the reliability analysis revealed that the scales of aggressive violation, Ordinary violations and errors is least internally consisted expect DBQ10 (How often do you use safety belts). The value of reliability coefficient of 0.7-0.8 is considered acceptable value for Cronbach's alpha. Generally accepted value of 0.8 is appropriate for cognitive test such as intelligence test, for ability test a cut-off point of 0.7 if more appropriate.

Table 3. Reliability analysis

Factors	Pakistan	China
Aggressive Violation (Five items)		
DBQ1	.610	.723
DBQ2	.602	.704
DBQ3	.595	.729
DBQ4	.638	.733
DBQ5	.650	.728
Ordinary Violations (Five items)		
DBQ6	.588	.740
DBQ7	.621	.755
DBQ8	.678	.757
DBQ9	.633	.743
DBQ10	.723	.770

Errors (Five Items)		
DBQ11	.617	.725
DBQ12	.638	.727
DBQ13	.625	.720
DBQ14	.621	.764
DBQ15	.625	.748

6. Percentage Distribution of Respondent by Demographic Profile

Many studies have examined the effect of age and gender on various risk driving behavior variables. Most studies have considered only two or three variables in behavioral measures of aggressive driving behavior. It is common facts that socioeconomic status is a risk factor for injury, and road traffic injury is no exemption. Researcher have found from socioeconomic groups or living in poor areas were found to be at higher risk, died or injured in a traffic accident. Frequency and percentage distributions for corresponding demographic profiles are displayed in Figures 5-10. ANOVA test revealed statically significance differences, and attitude of drivers towards driving including age, gender and their education. Analysis showed male driver age 18-25, 26-35 and 36-45 of Pakistani sample show high aggression percentage in the sample. Furthermore, Pakistani sample showing high error percentage in education Figure 9.

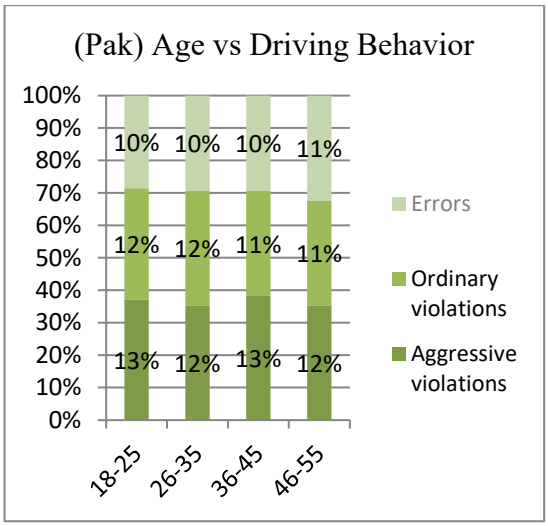

Figure 5.

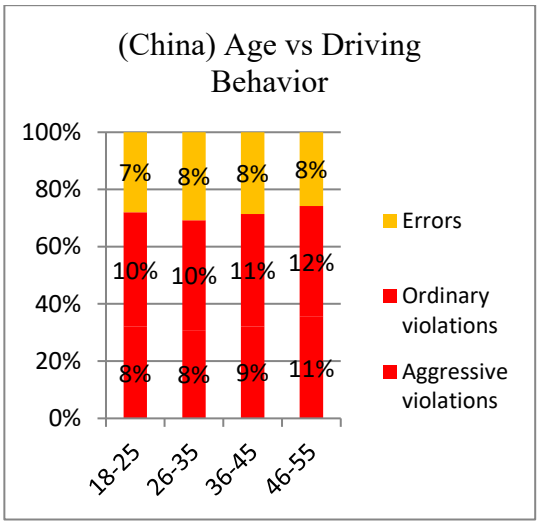

Figure 6.

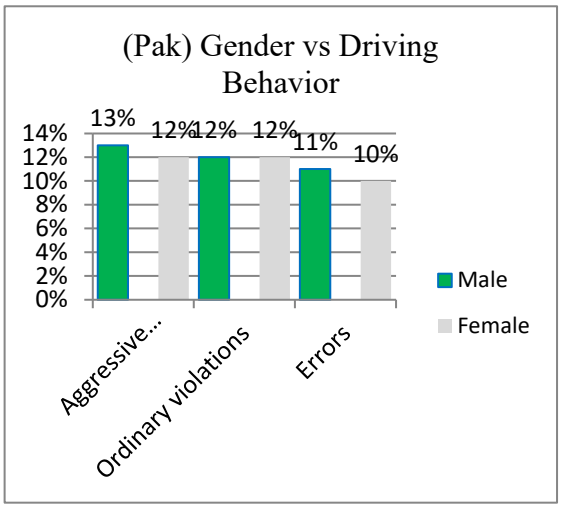

Figure 7.

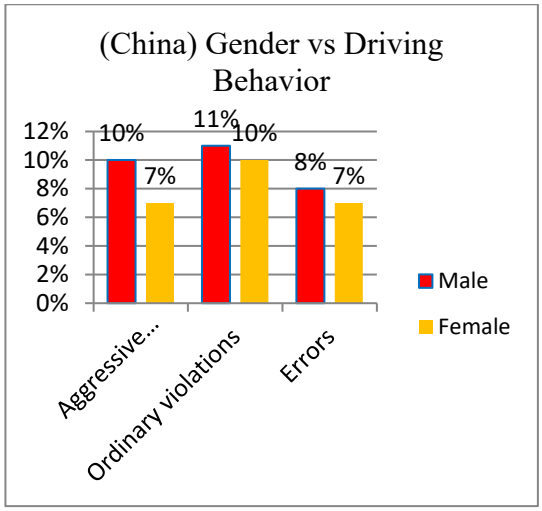

Figure 8.

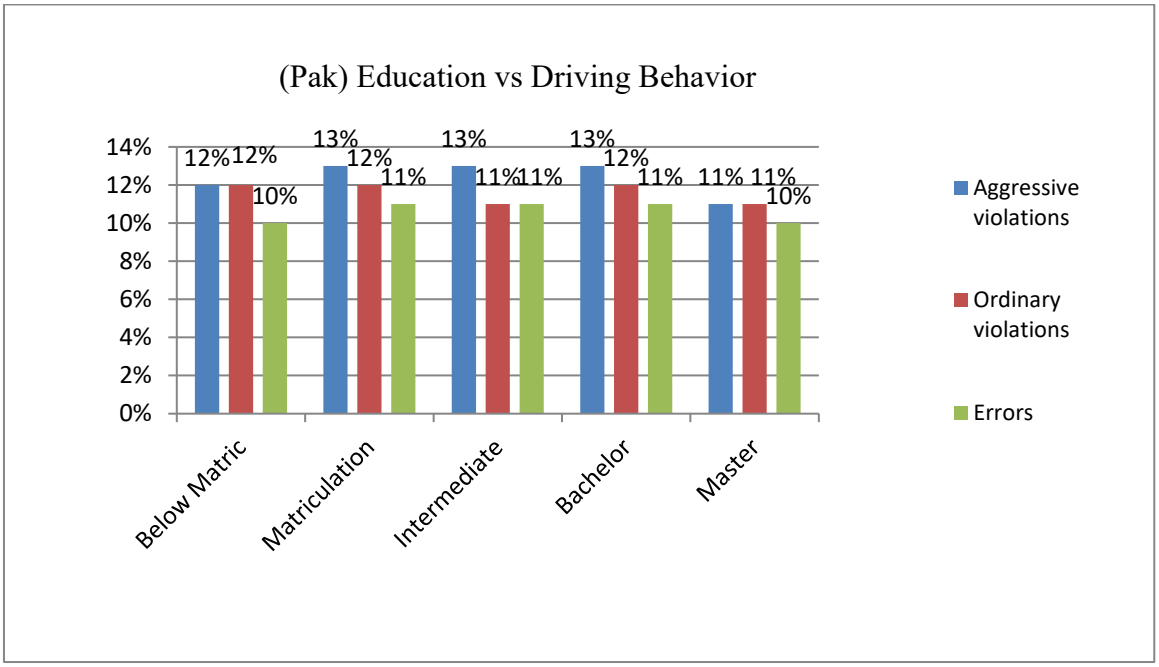

Figure 9. (Pak) Education vs Driving Behavior

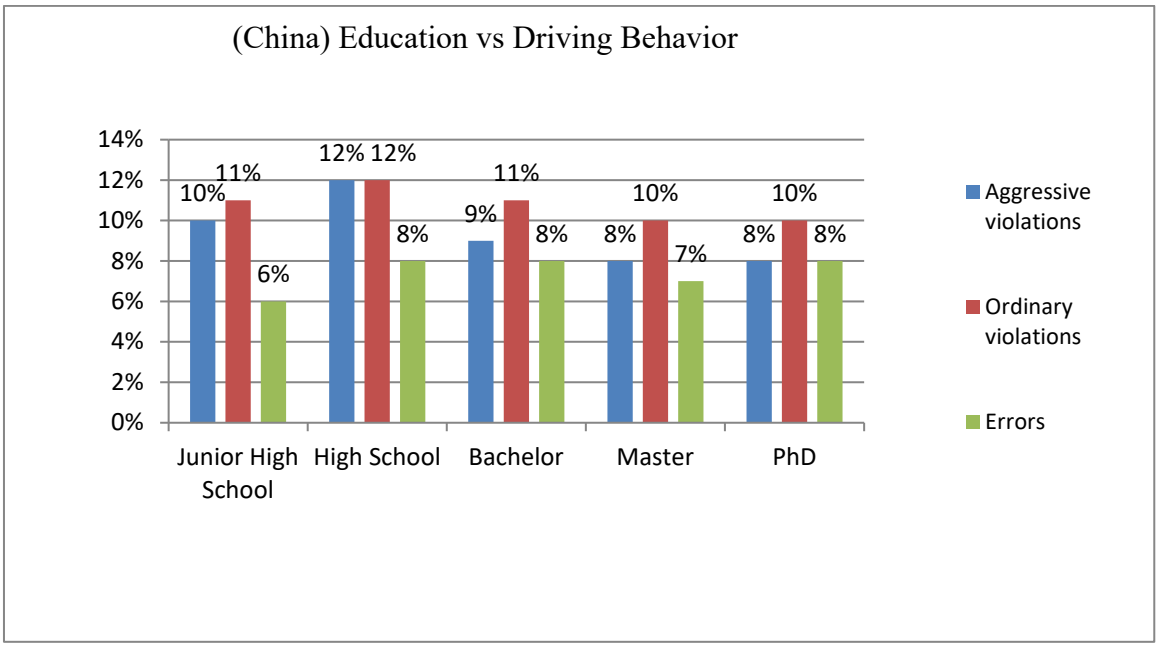

Figure 10. (China) Education vs Driving Behavior

5. Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) is employed to see how well the model fits the hypothesized construct. To apply confirmatory factor analysis (CFA), the maximum likelihood method is usually used. In this study we used IBM SPSS AMOS vs 22 to verify the hypothesized model. Figure 11 shows the correlations of the observed variables and their associated dependent variables. There are total 15 observed variables and five variables are loaded on 1st factor (Aggressive Violation), five variables are loaded with 2nd factor (Ordinary Violations), and five variables are loaded on 3rd factor (Errors). Here is a schematic of the model used for both countries sample. Both the models show that the driving behavior can be explained by the three inter correlated factors consist of 15 observed variables. Each observation is loaded on single factor in the following way such as item number DBQ1,

DBQ2, DBQ3, DBQ4, DBQ5 are loaded on a factor “Aggressive violations”, DBQ6, DBQ7, DBQ8, DBQ9, DBQ10 are loaded on a factor “Ordinary violations” and DBQ11, DBQ12, DBQ13, DBQ14, DBQ15 are loaded on a factor “Errors”. The results of confirmatory factor analysis (CFA) showed that the Chinese sample best fit the defined three-factor model structure (aggressive violations, common violations, and errors).

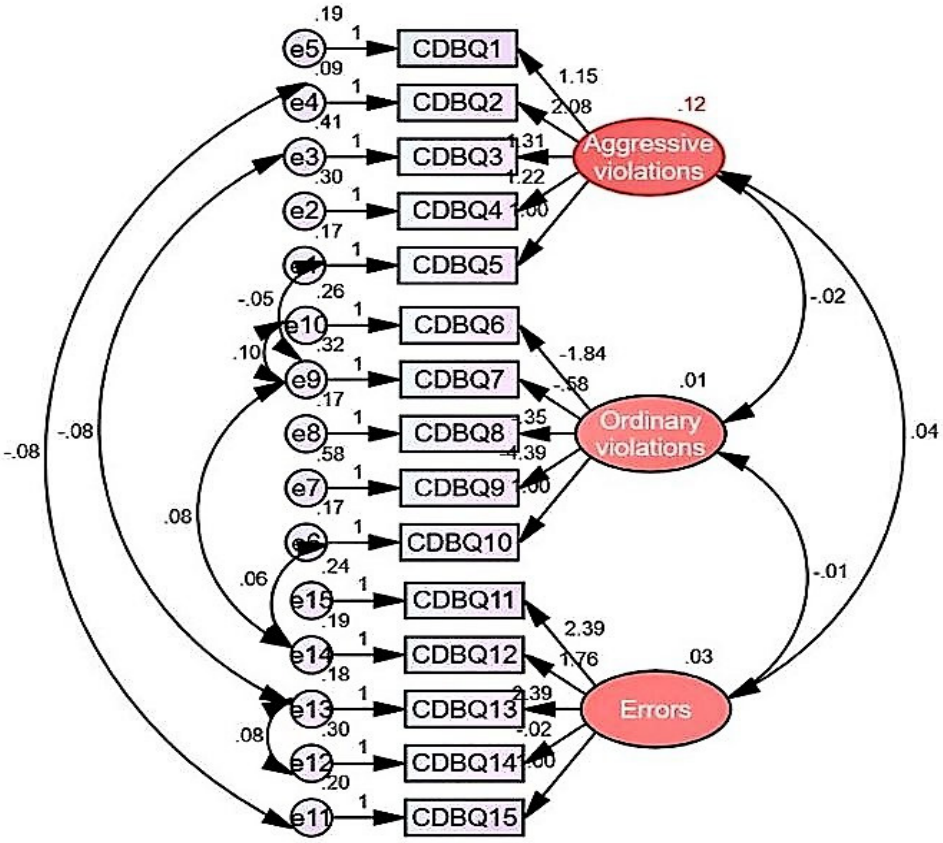

Figure 11. Schematic diagram of the three-factor model for Chinese drivers.

Item loads and fit indices for the two countries are listed in the table-4. The results of the confirmatory factor analysis showed that the Chinese data set fit the three-factor model (aggressive violation, general violation and errors). The results of the confirmatory factor analysis showed that the Chinese dataset best fit the predefined structure of the three-factor model (aggressive violations, common violations, and errors. The fit index for the Chinese dataset meets the desired for “good fit of model”, except for AGFI which is slightly below 0.90. Therefore, the Chinese dataset confirms the predefined structure. In case of Pakistan data set, GFI and AGFI values are below 0.90, which should not be the case. Therefore, the Pakistan dataset partially fits the predefined three-factor model.

Table 4. Factor Loadings for the Three-factor Models Applied to DBQ of Both Countries

Factors	Items	Pakistan	China
Aggressive Violations	DBQ1. Use your horn to indicate your annoyance to another road user.	0.79	0.67
	DBQ2. Become angry at another driver and chase them with the intension of showing them how annoyed you are.	0.88	0.92
	DBQ3. Get angry at a certain type of driver and express your anger any way you can.	0.67	0.57
	DBQ4. Do you overtake a slow driver on the side?	0.23	0.60
	DBQ5. Drive so close to the car in front that it would be difficult to stop in emergency.	0.91	0.64
Ordinary Violations	DBQ6. Disregard the speed limit on a residential road.	0.88	-0.30
	DBQ7. Race away from traffic lights with the intension of beating the lorry driver next to you.	-0.51	-0.91
	DBQ8. How often do you neglect the speed limit on a motorway?	0.19	-0.73
	DBQ9. Do you underestimate the speed of oncoming vehicles?	-0.60	-0.45
	DBQ10. How often do you use safety belts?	0.50	0.21
Errors	DBQ11. How often do you brake too quickly on a slippery road?	0.66	0.63
	DBQ12. Do you attempt to overtake someone turning left?	0.42	0.56
	DBQ13. Attempt to drive away from traffic lights in wrong gear.	0.54	0.69
	DBQ14. Fail to check your rear view mirror before pulling out, changing lanes etc.	0.37	-0.05
	DBQ15. How often do you disobey traffic signals/lights?	0.416	0.35

Table 5. Model Fit Applied to DBQ of Both Countries

Model fit statistics for CFA (Confirmatory factor analysis)	Model fit indications	Pakistan	China
RMSEA (Root Mean Square Error of Approximation)	<0.10	0.06	0.03
GFI (goodness of fit index)	>0.90	0.86	0.89
AGFI (Adjusted Goodness of Fit)	>0.90	0.79	0.89
CFI (Comparative Fit Index)	>0.90	0.90	0.97
RMR (Root Mean Square Residual)	<0.08	0.03	0.02

The results of the confirmatory factor analysis showed that the Chinese dataset best fit the predefined structure of the three-factor model (aggressive violations, common violations, and errors. The fit index for the Chinese dataset meets the desired for “good fit of model”, except for AGFI which is slightly below 0.90. Therefore, the Chinese dataset confirms the predefined structure. In case of Pakistan data set, GFI and AGFI values are below 0.90, which should not be the case. Therefore, the Pakistan dataset partially fits the predefined three-factor model.

5. Discussion and Conclusion

This article investigates aggressive driving behaviors and attitudes with the help of the Driver Behavior Questionnaire (DBQ) to identify factors that most influence drivers' perceptions of road safety issues. The objective of this study was to investigate the relationship among certain aggressive driving behaviors. For this purpose, three different (English, Urdu and Chinese) questionnaires were conducted. Of the respondents' results, several significant differences were measured in most aggressive driving behaviors such as Use your horn to indicate your annoyance to another road user, get angry at certain types of drivers and express your anger any way you can, Disregard the speed limit on residential road, Race away from traffic lights with the intension of beating the lorry driver next to you, how often do you brake too quickly on a slippery road. However, the results obtained

from Pakistani samples also show some similarities in aggressive driving such as Do you overtake a slow driver on the side, how often you neglect the speed limit on a motorway, Attempt to drive away from traffic lights in wrong gear. From age onwards, significant differences have been noted in DBQ scale such as the aggressive drivers (18-25, 26-35) emerged as the dangerous and unsafe. It is important to note that due to the poor licensing system, it is possible to obtain a license in the country without passing the driving test. It has been concluded that the behavior of drivers is influenced by their social and demographic characteristics. Aging has a negative effect on this and makes drivers more dangerous on the roads. In contrast, less affluent, older and married drivers have a positive effect on their behavior and make them safer on the road. Overall, the comparison shows that aggressive driving behavior of drivers in China is more consistent with safe driving behavior than Pakistani drivers. This study is deeply motivated towards the analyses of the driver's behavior attitude related to road safety issues, identifying the differences in tendency to commit aggressive driving behavior between both countries drivers also examine relationship between the factors of DBQ and background variables. The conclusions of this study will provide engineers, policy makers, and companies with various intrusions and applications. For example, implementation of cameras, traffic tickets, driving test and valid driving license which reduces speeding and RLR violations, will have a shielding influence on traffic safety especially in Pakistan. Regarding the need for future research, it is recommended to compare driver behavior using driving simulators or other advanced naturalistic tools. Moreover, the traffic enforcement agencies of Pakistan should take strict measures to address the road safety issues of young drivers.

Acknowledgments

I am thankful to Dr. Mehtab Ur Rehman Sahir for technical writing and design. Special thanks to Dr. Zhang Jinxi for valuable suggestions and funding the manuscript.

Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

References

Batool, Z., & Carsten, O. (2017). Self-reported dimensions of aberrant behaviours among drivers in Pakistan. *Transportation research part F: traffic psychology and behaviour*, *47*, 176-186. https://doi.org/10.1016/j.trf.2017.04.017

Bener, A., Yildirim, E., Özkan, T., & Lajunen, T. (2017). Driver sleepiness, fatigue, careless behavior and risk of motor vehicle crash and injury: Population based case and control study. *Journal of Traffic and Transportation engineering (English edition)*, *4*(5), 496-502. https://doi.org/10.1016/j.jtte.2017.07.005

Cordellieri, P., Baralla, F., Ferlazzo, F., Sgalla, R., Piccardi, L., & Giannini, A. M. (2016). Gender effects in young road users on road safety attitudes, behaviors and risk perception. *Frontiers in psychology*, *7*, 1412. https://doi.org/10.3389/fpsyg.2016.01412

Ersan, Ö., Üzümcüoğlu, Y., Azık, D., Fındık, G., Kaçan, B., Solmazer, G., ... & Xheladini, G. (2019). The relationship between self and other in aggressive driving and driver behaviors across countries. *Transportation research part F: traffic psychology and behaviour*, *66*, 122-138. https://doi.org/10.1016/j.trf.2019.08.020

Javadi, S. M. H., Azad, H. F., Tahmasebi, S., Rafiei, H., Rahgozar, M., & Tajlili, A. (2015). Study of psycho-social factors affecting traffic accidents among young boys in Tehran. *Iranian red crescent medical journal*, *17*(7). https://doi.org/10.5812/ircmj.22080v2

Kovácsová, N., Lajunen, T., & Rošková, E. (2016). Aggression on the road: Relationships between dysfunctional impulsivity, forgiveness, negative emotions, and aggressive driving. *Transportation Research Part F: Traffic Psychology and Behaviour*, *42*, 286-298. https://doi.org/10.1016/j.trf.2016.02.010

Martinussen, L. M., Hakamies-Blomqvist, L., Møller, M., Özkan, T., & Lajunen, T. (2013). Age, gender, mileage and the DBQ: The validity of the Driver Behavior Questionnaire in different driver groups. *Accident Analysis & Prevention*, *52*, 228-236. https://doi.org/10.1016/j.aap.2012.12.036

Mehdizadeh, M., Shariat-Mohaymany, A., & Nordfjaern, T. (2018). Accident involvement among Iranian lorry drivers: Direct and indirect effects of background variables and aberrant driving behaviour. *Transportation research part F: traffic psychology and behaviour*, *58*, 39-55. https://doi.org/10.1016/j.trf.2018.05.029

Minhas, K. S., Batool, Z., Malik, B. Z., Sanaullah, I., & Akbar, T. A. (2017). Pedestrian environment and behavior in Lahore, Pakistan. *Journal of Transport & Health*, *7*, 181-189. https://doi.org/10.1016/j.jth.2017.08.013

Precht, L., Keinath, A., & Krems, J. F. (2017). Identifying the main factors contributing to driving errors and traffic violations–Results from naturalistic driving data. *Transportation research part F: traffic psychology and behaviour*, *49*, 49-92. https://doi.org/10.1016/j.trf.2017.06.002

Reason, J., Manstead, A., Stradling, S., Baxter, J., & Campbell, K. (1990). Errors and violations on the roads: a real distinction?. *Ergonomics*, *33*(10-11), 1315-1332. https://doi.org/10.1080/00140139008925335

Routley, V., Ozanne-Smith, J., Qin, Y., & Wu, M. (2009). Taxi driver seat belt wearing in Nanjing, China. *Journal of safety research*, *40*(6), 449-454. https://doi.org/10.1016/j.jsr.2009.10.004

Shen, B., Ge, Y., Qu, W., Sun, X., & Zhang, K. (2018). The different effects of personality on prosocial and aggressive driving behaviour in a Chinese sample. *Transportation research part F: traffic psychology and behaviour*, *56*, 268-279. https://doi.org/10.1016/j.trf.2018.04.019

Smorti, M., Andrei, F., & Trombini, E. (2018). Trait emotional intelligence, personality traits and social desirability in dangerous driving. *Transportation research part F: traffic psychology and behaviour*, *58*, 115-122. https://doi.org/10.1016/j.trf.2018.06.012

Weber, M., Giacomin, J., Malizia, A., Skrypchuk, L., Gkatzidou, V., & Mouzakitis, A. (2019). Investigation of the dependency of the drivers' emotional experience on different road types and driving conditions. *Transportation research part F: traffic psychology and behaviour*, *65*, 107-120. https://doi.org/10.1016/j.trf.2019.06.001