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The Mediating Role of Traffic Safety Awareness on Road Safety Attitude and Behavior of Drivers

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Abstract: ***This research study aimed to determine the mediating role of traffic safety awareness on the relationship between road safety attitude and behavior of drivers. The researcher surveyed 378 licensed drivers selected using a stratified random sampling technique. The study utilized Mean, Pearson Product Moment Correlation, Medgraph using Sobel z-test and Regression. The study found a very high level of Traffic Safety Awareness, a moderate level of Driving behavior, and high Road Safety Attitudes among licensed drivers. A significant correlation was observed between road safety attitude and drivers' behavior. There is also a high significance on the relationship between road safety attitude and traffic safety awareness, as well as between traffic safety awareness and drivers' driving behavior. The mediation analysis examined the role of traffic safety awareness as a mediator in the relationship between road safety attitude and driver behavior. The results point towards partial mediation, where the mediator variable partially explains the relationship between the independent and dependent variables.***

Keywords: ***Criminal Justice, Traffic Safety Awareness, Road Safety Attitude, Driver Behavior, Mediating Role, Licensed Drivers.***

1. INTRODUCTION

The study of drivers' behavior is critical in appreciating and minimizing the numerous annoying acts which go on to undermine at major city intersections, particularly during peak hours requires study of driver's behavior. It is a catalyst for road anger that makes this driver honk his horn, tailgate and threaten with body language. A red light runner barely avoids colliding with a car driving in the opposite direction. In addition to disturbing other drivers, these actions also increase accident risks. This necessitates extensive research on driver behaviors to facilitate strict enforcement of traffic regulations and educate on safe driving habits among others (Koźlak & Wach, 2018). Traffic laws, vehicle design and road safety are

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backed by research into driving behavior. Dangerous habits include drunken-driving; speeding and texting while driving thus calling for targeted interventions such as increasing police presence on roads or other prevention campaigns as well as improved car safety measures. It can also help improve flow of traffic by adjusting signal timings and establishing transportation infrastructure that reduces bottle necks. Eventually, advanced driver aid technologies will achieve a more secure and effective transport system for instance with adaptive cruise control and lane-keeping assistance. These technologies are built on knowledge about what drivers do. This is seen as one way of becoming an authoritative part of your behaviour as a motorist; thus since you began driving there has been no accidents committed against fellow road users (Koloushani et al., 2022).

Hence, the purpose of the research study is to bridge that knowledge gap on traffic safety awareness as a mediator between fostering behaviors and attitudes towards road safety. In spite of numerous findings, several studies have concentrated more on direct correlations at the expense of awareness implications in this connection. The main objective of the study will be to determine the behavior of those drivers as a concern for the road safety attitude of public or private vehicle drivers and the mediating role of traffic safety awareness. Specifically, it aims to provide answers to the following objectives: First, ascertain the level of road safety attitude among Agusan del Sur in terms of General Road Safety Attitudes; Speed Limit Attitudes; Drunk Driving Attitudes; Distracted Driving Attitudes; Seatbelt Attitudes; and Young Drivers. The second is to assess the level of behavior of drivers from Agusan del Sur of public and private vehicles drivers in terms of Violation, errors and lapses. Thirdly, evaluate the level of traffic safety awareness among Agusan del Sur of public and private vehicle drivers. Another objective is to determine the significant relationships between road safety attitude and traffic safety awareness; traffic safety awareness and behavior of drivers; and road safety attitude and behavior of drivers. Lastly, is to determine the mediating effect of traffic safety awareness on the relationship between road safety attitude and behavior of drivers.

2. RELATED WORKS

Recently, drivers demonstrating higher levels of aggression were found to be more prone towards risky manoeuvres and disregard of traffic rules resulting into increased possibilities of being involved in traffic accidents. The study heavily emphasized on the importance of psychological factors such as stress and fatigue that influences driver behaviour. For instance, fatigue was linked with cognitive impairment and reduced reaction time which can increase likelihoods of being involved in accidents (Sullman & Dorn, 2019).

Specifically, however, the nature of any crash depends on several factors related to the driver himself—such as driving record, social status and driving practices and attitudes. Henceforth different data analysis methods were applied to establish the major determinants of drivers' subjective evaluation of accident risks. The subjects participated in an experiment which took into account their stated preferences, and then SP data were analyzed by way of ordered probit model (De Oña et al., 2018). By contrast, among the traffic safety studies, driver behavior is typically considered as the most important but also most ambiguous issue. By incorporating

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uncertainty into it and making it a goal-oriented system for identification and classification of drivers' behaviors, fuzzy AHP can help reduce negative driving actions (Blaschke et al., 2020).

On the other hand, it is quite clear that this driver's age, gender, ethnicity, driving history, attitude and others are factors that shape their driving behavior. Even with one driver under different situations, the qualities of driving behaviour may change. What differs from each driver's quality is how their subconscious mind functions and responds to situations the transitions from the subconscious to conscious minds also make for various responses as to how the mind works (Li et al., 2018). Moreover, collision accidents are dependent on drivers' behaviors towards warnings and interventions provided by in-vehicle support systems leading to traffic safety issues. Such systems could help drivers avoid or mitigate collision accidents through taking control over visual perception of distracted drivers towards an impending crash or enabling autonomous braking or steering in a vehicle (Markkula et al., 2020).

However, due to a rise in vehicle traffic and road accidents, there are more aggressive drivers on the road, which leads to an increase in the occurrence of road rage. Based on the data analysis, the highest degree of awareness of road signs is seen when driving on hilly roads (89%), wearing a seatbelt when driving (89%), stopping safely in an emergency (40%), parking safely (39%), and signs for roads (27%) (Bhatnagar & Gupta, 2022). In other words, public knowledge of road safety is closely linked to traffic safety education, traffic violation statistics, acceptance of traffic offenses and environmental aspects that constitute the traffic environment. The aim of this study was to find out how important it is for people to know about traffic laws and unsafe driving habits in order to avoid car crashes (Alkaabi, 2023).

3. METHODOLOGY

The study's respondents were professional and non-professional licensed drivers; they were the main focus of the research since it measured traffic safety awareness. The LTO Management Information System reported a total of 23,022 licensed drivers in Regional Office 13. Using the Raosoft calculator, the population was divided into smaller groups considering a 5% margin of error, a 95% confidence level, and a 50% response distribution, making the sample population 378.

The sampling technique used in this study was stratified random sampling whereby only available and willing holders of a motorcycle license are considered as respondents. The researcher took about 378 license-holders from every municipality in Agusan del sur as respondents to the research.

The research in this study was carried out through descriptive-correlation method in quantitative non-experimental research. A correlation design was used to determine the strength and nature of a relationship between two or more variables. This design was appropriate for examining drivers' behavior with respect to road safety attitude and mediating role of traffic safety awareness. The method utilized Mean, Pearson Product Moment Correlation, Medgraph using Sobel z-test and Regressions. In Agusan del Sur license drivers' case the level of road safety attitude was measured by use of mean. Pearson Product Moment Correlation was used to find out if there is any relationship between road safety attitude and

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traffic safety awareness; traffic safety awareness and behavior of drivers; and road safety attitude and behavior of drivers. To test whether traffic safety awareness mediates the relationship between driver's attitudes toward driving safely on roads, road safety attitude on behavior of drivers, medgraph using sobel z- test was applied. Furthermore, Mediation Test Technique is also used in order to investigate the effect of traffic safety awareness as a mediator between road safety attitude and behavior of drivers.

4. RESULTS AND DISCUSSION

Drivers' Behavior

Shown in Table 1 is the degree of drivers' behavior, the mean score for this was 3.19 and a standard deviation of .735 indicating respondents who were grouped together as well as being in a moderate mode. This means that in some cases drivers' behaviors can affect the extent of lapse indicator with the mean score being 3.33 and standard deviation is .806 showing that the explanation given by the respondents was rather concentrated. The error indicator gave an average performance, mean score of 2.93 and a standard deviation of 0.987 meaning that it may affect driver behavior at times. Hence, there are drivers who show considerable levels of unhealthy practices including violations, errors, lapses among others were established from the findings above.

Table 1. Extent of drivers' behavior

Indicators	Mean	SD	Descriptive Level
Violation	3.30	0.809	moderate
Lapses	3.33	0.806	moderate
Errors	2.93	0.987	moderate
Overall	3.19	0.735	moderate

This has been a recent study in the field of driving behavior focusing on psychological aspects of driving as it related personality factors to driving style. Studying how personal traits affect actions taken by drivers is useful for enhancing our comprehension about dynamics of road safety. Their research showed that individuals with high degree of conscientiousness tend to engage into safe acts while those having a greater level of neuroticism are more exposed toward hazardous driving practices. (Mathieu & Ilgen, 2019).

Road Safety Attitude of Drivers

Shown in Table 2 is the extent of road safety attitudes among drivers, the respondents' answers were clustered together in such a way that the mean score of attitude towards road safety reached 3.80 and standard deviation was .491, which is quite high. This indicates that drivers' means on road safety attitudes are sometimes affected. In addition, attitude towards seatbelts had a high mean of 4.16 and a standard deviation of .584 too. Therefore, it seems like the participants held comparable sentiments and perspective regarding this topic. Moreover, according to these statistics there is a significant trend among drivers to use seat belts as shown by the mean value of 4.16 with a standard deviation of .584; in these aspects drivers appear concerned about improving road safety.

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Unlike other indicators, general attitudes towards road safety scored with an average value of 3.75 being the lowest one among all others. The resultant high score was influenced by clustering responses having standard deviation OF .502. Thus, it follows that levels of general road safety determines how much more general road safety exist within driver's overall attitude toward driver's attitude toward traffic rules rather than just any particular parameter related to driving.

Table 2. Extent of road safety attitude of drivers

Indicators	Mean	SD	Descriptive Level
General road safety attitudes	3.75	0.502	high
Attitude towards speed limits	3.94	0.479	high
Attitude towards drunk driving	3.78	0.618	high
Attitude towards distracted driving	3.36	1.093	High
Attitude towards seatbelt	4.16	0.584	High
Attitude towards young drivers	3.81	0.579	High
Overall	3.80	0.491	High

Drivers who had negative attitude towards road safety are more likely to confess to violations. It has been shown that there are demographic factors such as age and gender which affect both attitudes and behaviors. Youthful drivers and male drivers were generally found to have risk taking mentality that make them fall into violation of driving rules. It is also important to realize that interventions for improving safety on roads should not be wholly focused on skills, knowledge or what driver's think (Kummeneje & Rundmo, 2020).

Traffic Safety Awareness of Drivers

Shown in Table 3 is the extent of traffic safety awareness of drivers, with an overall mean score of 4.28, described as a very high level and having a standard deviation of.576, indicating clustered responses from the respondents. This shows that the extent of traffic safety awareness among drivers is very high.

Table 3. Extent of traffic safety awareness of drivers

Variable	Mean	SD	Descriptive Level
Overall	4.28	0.576	very high

Traffic safety awareness among drivers is a crucial determinant of road safety, with extensive research indicating its impact on reducing traffic incidents. Research found that drivers with higher levels of traffic safety awareness were significantly less likely to be involved in accidents. This was attributed to their better recognition of potential hazards and adherence to traffic regulations. (Wundersitz, Raftery, 2019).

Correlation Analysis of the Variables

Shown in Table 4 is the correlation analysis of road safety attitude and drivers' behavior. The results indicated that there existed a significant correlation between drivers' attitudes towards road safety and their actual driving behaviors; more specifically, those who had more positive

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attitudes towards road safety measures tended to carry out safer driving behaviors; implying that interventions aimed at changing people's attitudes on safety on roads could be used to improve general driving behavior for purposes of reducing cases of traffic accidents thereby promoting road usage safety.

Table 4. Correlation analysis of the variables

Pair	Variables	Correlation Coefficient	*p*-value	Decision on Ho
IV and DV	road safety attitude and drivers' behaviour	0.264	<0.001	Rejected
IV and MV	road safety attitude and traffic safety awareness	0.266	<0.001	Rejected
MV and DV	traffic safety awareness and drivers' behaviour	0.113	0.028	Rejected

What this study showed about drivers adapting to their environment and being more aware of the presence of potential dangers on the road was that they were more inclined to be cautious in their attitudes towards road safety. Consequently, this increases their consciousness that influences how they drive, thereby reducing chances of engaging in risky driving practices (Charlton & Starkey, 2018).

Mediation Analysis

Shown in Table 5 is the mediation analysis to examine the role of traffic safety awareness as a mediator in the relationship between road safety attitude and driver behavior. The indirect effect, labeled a × b, has an estimate of 0.0185 with a standard error of 0.0207. This effect is not statistically significant, as indicated by the Z-value of 0.891 and a p-value of 0.373, with the 95% confidence interval crossing zero (-0.0222 to 0.0591). This means that road safety attitude does not have a lot of effect on traffic safety awareness and as such, 4.68% of the total influence can be assigned to it. The findings indicate partial mediation where the mediator variable accounts for a portion of the relationship between the independent and dependent variables.

Furthermore, the direct effect of road safety attitude on driver behavior (c) has a significant estimate equal to 0.3758 (SE = 0.0769). A Z-value of 4.886 and $p < .001$ reflect that there are statistically significant direct effects which are not mediators because only 5% is mediated by traffic safety awareness. It covers about 95% of the whole effect size.

Lastly, c + a × b known as total effect is a summation of direct and indirect effects with an estimate equal to 0.3943 (SE = 0.0742). This confidence interval gives us reason to suggest that there is no zero in the total effect at least within its range: .2488 − .5397; $z = 5.312$; $p < .001$ meaning that both combined direct and indirect impacts of road safety attitude on driver behavior are statistically significant.

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Table 5. Mediation Estimates

				95% Confidence Interval				
Effect	**Label**	**Estimate**	**SE**	**Lower**	**Upper**	**Z**	**p**	**% Mediation**
Indirect	a × b	0.0185	0.0207	-0.0222	0.0591	0.891	0.373	4.68
Direct	C	0.3758	0.0769	0.2251	0.5265	4.886	< .001	95.32
Total	c + a × b	0.3943	0.0742	0.2488	0.5397	5.312	< .001	100.00

Path Estimates

Shown in Table 6 is The mediation analysis which provides valuable insights into the relationships between road safety attitude (ROADSAFE), traffic safety awareness (AWARE), and driver behavior (BEHAVE). From the analysis, ROADSAFE has a significant positive impact on AWARE (path coefficient = 0.3114, SE= 0.0581, p<.001). This relationship is further proven by Z-value of 5.358 and confidence interval of 95% (0.1975, 0.425) which indicates its robustness The fact that this way is statistically significant implies that drivers having more positive attitude towards road safety are expected to have higher extent of traffic safety awareness.

In contrast, BEHAVE had no significant path from AWARE (b). However, it was accompanied by a corresponding coefficient of 0.0593 with standard error of 0.0656 (p = 0.366). In particular regarding to this estimate zero falls within the range of confidence interval (-0.0693, 0.188) and Z-value equals to only as little as .904 thus indicating insignificance; hence in this study alone traffic safety awareness does not significantly anticipate driver behavior as well Another thing is that the direct path from ROADSAFE through BEHAVE (c) also shows significance with a coefficient value being equal to 0.3758 (SE=0.0769, p< .001); thus indicating another non-zero confidence interval ranging between (0.2251, 0527)) which justifies its direct influence on driver's behavior as an attitude towards road safety itself. This directly implies that driver attitude towards road safety predicts driving behavior regardless their level of traffic safety awareness.

Table 6. Path Estimates

						95% Confidence Interval			
			Label	**Estimate**	**SE**	**Lower**	**Upper**	**Z**	**p**
ROADSAFE	→	AWARE	A	0.3114	0.0581	0.1975	0.425	5.358	< .001
AWARE	→	BEHAVE	B	0.0593	0.0656	-0.0693	0.188	0.904	0.366
ROADSAFE	→	BEHAVE	C	0.3758	0.0769	0.2251	0.527	4.886	< .001

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5. CONCLUSION

The study gave us new ideas on how to raise awareness of traffic safety, shift people's views about road safety and ways of altering drivers' behavior. It also shows why there are urgent needs for programs that can help people change their behavior in a more appropriate way. This means that through targeting traffic regulation seminars, road signs and safe driving techniques drivers will be able to improve their overall understanding on how to drive safely and responsibly. In addition, this approach also has an additional benefit of making the city safer, cleaner as well as environmentally friendly. This goal is aligned with the target 11 of SDGs which deals with provision of safe, inclusive sustainable cities for all. Such an approach would lead to significant reduction in number of accidents and fatalities.

People know what it takes to keep themselves safe while they are using roads but there is a wide gap when it comes to perceptions on distracted driving. There are still numerous instances where some drivers even during transit either talk over their phone or eat while driving. In response therefore; measures such as educational campaigns, customized training courses and strict adherence to no cell phones use while driving policies should be implemented. So; this message will help them realize how risky being distracted while behind the wheels is, promote responsible driving habits; reduce accident causes; lastly make our roads safer generally speaking. These steps can help close the gap between different individuals' perception towards distracted driving.

For driver's road safety high levels of awareness about traffic safety must be maintained by them. Thus, continuous efforts need to be made by teaching through education systems and various initiatives aimed at creating public awareness about these matters such as; forums, campaigns among others. For instance, these may encompass ongoing training programs, educational communications approaches as well as community-based events among others. Such strategies will remind people why they need follow traffic rules and drive safely. By continuously implementing educational and enlightenment programs like these ones shown here above hence, motorists will remain vigilant and knowledgeable making the road better as well as minimizing chances of accidents.

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