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Personality, Risk Taking and Road Safety Knowledge as Predictors of Road Safety Behaviour

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Abstract: The study was intended to examine the role of personality, risk taking behaviour, road safety knowledge and in determining the road safety behaviour. A sample of 200 participants (equal number of rural and urban) who drives 2/4wheelers was selected on basis of non-random incidental sampling from Rohtak district of Haryana. There were 120 males and 80 females. All the participants were uniformly administered NEO FFI, risk taking behaviour scale, self-constructed road safety knowledge scale and road safety behaviour scale. The data were analysed using Pearson correlation and stepwise multiple regression. Results revealed that conscientiousness, neuroticism; dimensions of personality, risk taking behaviour and road safety knowledge were the significant predictors of road safety behaviour. Conscientiousness and road safety knowledge were the positive predictors whereas risk taking behaviour and neuroticism were negative predictors, All the four taken together accounted for 39% (R^2=.39) of the variance in road safety behaviour. The implications of the study are discussed for the road users and road safety organizations.

Keywords: Personality, Road Users, Risk Taking Behaviour.

INTRODUCTION

Road safety has become a major challenge over the years as the road accidents and incidents of road rage have been increasing alarmingly. The numbers of deaths and injuries inflicted in road accidents have been increasing drastically.

The available statistics [1] indicate that around 1.3 million people die in road crashes every year, which is on average 3287 deaths per day; In addition to this 20-50 million are severely injured or disabled. Although more important is the fact that more than half of those who die in these accidents are young adults. India is not legging behind and it has been reported that more than 137000 people were killed in road accidents in the year 2013 alone [2]. The number is far more than those who were killed in all of our wars taken together. It is also reported that around 16 children die each day in road accidents. According to a report two wheelers account for 25% of total road crash deaths [3]. Travelling on road provides speed and comfort in both short and long distances. Therefore, it is considered the most preferred medium of transportation. However, it is only one side of coin another side is associated with responsibility and safety.

Road safety is not an individual responsibility rather it is a shared responsibility. Reducing risk on road for the purpose of safety requires knowledge and commitment towards following the road/traffic rules and the level of enforcement of traffic rules and the severity of penalties for infringement also affects the behaviour of road users. Low levels of enforcement often rebut the efforts made to improve road safety through legislation. Simply legislating is rarely effective without enforcement, education, and publicity campaigns to raise public awareness of the purpose of the legislation. When used in support of legislation and law enforcement, education, publicity, and information can create shared social norms for road safety. However, when used in isolation, education, information, and publicity do not generally deliver tangible and sustained reductions in accidental deaths and injuries [4, 5]. Therefore, a systems approach to road injury prevention, that is, using the legislation and law enforcement with the support of education, information, and publicity campaigns, needs to be adopted by the government to influence the behaviour of road users and consequently to reduce the rate of road accidents and related fatalities and injuries.

There are many common causes for road accidents; use of alcohol is one of them. Addiction and drug abuse is the main reason for accidents. Drivers of many vehicles are found driving after having drugs or alcohol etc. They drive in the state of intoxication which leads to errors in perception and judgment and it

becomes the reason for overtaking, reckless driving and finally leads to accidents. Drug abuse stands as one of the main cause of road accidents and hit and run cases. The lack of road safety knowledge to drivers and other road users is another cause of road accident and fatalities. It is also an open secret that some people get driving license without knowing even traffic rules and road safety measures are thrown to winds. Jumping red light is common thing here particularly in early and late hours of the day. Apart from this variety of vehicles i.e. fast and slow also hampers the smoothness of road. Another cause for accidents which can be mentioned here is overloading of passengers and goods. All of us are well aware with the conditions of city buses, three wheelers and auto rickshaws. Use of mobile phone is another challenge to road safety nowadays. Using mobile phone in moving vehicle often results in crashes and accidents because using mobile and driving simultaneously divides attention and may cause loss of concentration which is needed for safe driving.

As many of the causes of accidents are described above but apart from these environmental and social factors there are some personal factors which affect road safety behaviour significantly. Individual's personality makeup, his socio economic status, risk taking behaviour and road safety knowledge predicts his road safety behaviour. A number of researches have been done in this regard and these suggest that a particular factor of personality is associated with safe driving and other with reckless. A significant positive relationship between positive driver behaviour, conscientiousness, agreeableness and positive driver behaviour was found in a study conducted by Mahembe and Samuel [6]. Some other factors like driver's spiritual belief about road accidents and fatalities which affects his behaviour such as road accidents are predestined and not a result of individual's driving behaviour. Apart from personality risk perception of drivers is another important factor that affects road safety behaviour. Risk perception is determined by information of the potential hazards in traffic environment, and on the ability of the driver to perceive potential hazards resulting into actual accidents. Inexperienced drivers overestimate their own driving skills and underestimate the risks in traffic [7]. Sex of the driver also determines risk taking and road safety behaviour on roads. Females are found significantly high on risk perception and low on risky behaviours than males when riding on a two-wheeled vehicle [8].

Considering the importance of understanding the dynamics of road safety behavior and planning for preventing the road accidents, the present study is planned to determine the role of personality, risk taking behavior and road safety knowledge in predicting road safety behavior.

Objectives

- To examine the role of personality, risk taking behavior, road safety knowledge in determining road safety behavior of road users.
- Road safety knowledge and road safety behavior of male-female and rural urban users of vehicle would differ significantly.

Hypotheses

- Personality, road safety knowledge and risk taking behavior of male, female and urban, rural road users would have significant role in predicting the road safety behavior.
- There would be difference between urban and rural, between males and females in risk taking behavior.

SAMPLE

Sample of 200 (120 males and 80 females) participants in the age range of 16 to 40 years with means age of 24.71 years (SD=5.02) years was selected. Male and female participants (who drive vehicles) were selected in equal number from rural and urban areas of Rohtak district, Haryana (India). Though the sample was heavily loaded towards college and university students, yet it was attempted to include as many from general population to make it representative of general public. The participants were selected on the basis of non-random incidental sampling.

Tools

For measuring the criterion variables included in the study the following tools were used:
Hindi translation [9] of NEO Five-Factor Inventory (Costa and McCrae, 1992) was used for measuring personality. This inventory assesses five dimensions of personality namely neuroticism (N), extraversion (E), openness to experience (O), agreeableness (A) and conscientiousness (C). This inventory consists of 60 items endorsed on 5-point rating scale ranging from 'strongly disagree' to 'strongly agree'. Reliability coefficient of NEO-FFI Hindi version is reported to be 76 [9].

Road Safety Behaviour Scale for measuring road safety behaviour was constructed for use in this study. Scale consists 20 items endorsed on five-point Likert scale, ranging from 'always' to 'never'. High score indicates safe behaviour on road where as low score indicate poor road safety behaviour. The obtained Cronbach alpha of the scale was. 649, then it was administered to 200 participants in the study and again internal consistency was calculated and the Cronbach alpha was .668.

Road safety knowledge scale was also constructed by the researcher which consists 30 multiple choice questions with one correct alternative and three wrong alternatives. Out of the 30 questions 15

questions were relating to the symbols and signs relating to road and 15 questions were relating to pollution control certificate, licensing age, road lights e.g. green and yellow lights etc. Each item is scored 0 for incorrect and 1 for correct, thus the score of this may range from 0 to 30. Internal consistency (Cronbach alpha) reliability was found to be .603.

Risk taking questionnaire [10], has 40 items related to risky situation. Each has five alternative options. i.e. 'very much', 'much', 'moderate', 'less' and 'very less' and carry the 5,4,3,2 and 1 scores respectively. High score indicates high risk taking behaviour and total score may range 40 to 200. Test retests reliability of risk taking questionnaire (RTQ) range from .66 to .83.

PROCEDURE

The aim of the present investigation was to examine the personality, risk taking behaviour and risk taking knowledge as predictors of road safety behaviour. In the present investigation psychological measures namely, risk taking questionnaire, road safety behaviour scale, NEO-FFI, self-constructed road safety knowledge scale and road safety behaviour scale were used. Analysis of the data was done by descriptive (Mean, SD) and inferential statistics (Pearson correlation and multiple regression).

RESULTS AND DISCUSSIONS

The results revealed that the risk-taking behaviour of male female road users differ significantly (F=12.64, df=1/196, p< .01). The male road users scored higher (mean=127.59, SD=23.28) on risk taking behaviour scale than the female road users (mean=115.60, SD=22.90).Thus, males were found to taking more risk than the females whereas there was no difference on risk taking behaviour of urban and rural road users (Table-1 & 2).

Table-1: Mean and SD as per Gender×Area of Residence on Risk Taking Behaviour

Residence	Gender				Total	
	Male		Female		Mean	SD
	Mean	SD	Mean	SD		
Urban	122.88	20.83	114.86	21.58	119.51	21.41
Rural	132	24.71	116.42	24.55	126.08	25.68
Total	127.59	23.28	115.60	22.90		

Table-2: Summary Table of ANOVA for Risk Taking Behaviour

Sources	Sum of squares	df	Mean square	F	Sig p<
Gender	6671.151	1	6671.15	12.64	.000
Residence	1367.264	1	1367.26	2.59	.109
Gender*Residence	683.92	1	683.92	1.29	.256
Error	103422.56	196	527.66		
Total	3128589.00	200			

The results (Table-3 & 4) revealed that the road users belonging to rural area have had poor knowledge about road safety as compared to those road users who belong to urban areas (Mean= 18.03, SD=4.15) and those belonging to rural areas have had a mean score is 16.03, (SD=4.10) and these mean scores differ significantly (F=16.05, df=1/196, p<.01).

Table-3: Mean and SD as per Gender × Area of Residence on Road Safety Knowledge

Residence	Gender				Total	
	Male		Female		Mean	SD
	Mean	SD	Mean	SD		
Urban	18.55	4.58	17.95	3.47	18.03	4.15
Rural	16.53	4.21	15.21	3.80	16.03	4.09
Total	17.59	4.81	16.65	3.86		

Table-4: Summary Table of ANOVA for Road Safety Knowledge

Sources	Sum of squares	df	Mean square	F	Sig p<
Gender	44.20	1	44.20	2.61	.10
Residence	271.51	1	271.51	16.05	.00
Gender*Residence	6.25	1	6.25	.370	.54
Error	3314.00	196	16.90		
Total	62549.00	200			

When road safety behaviour was compared it was found that the male and female road users differed significantly at .01 level (F=15.87, df= 1/196) (Table-6), The male road users displayed poor road safety behaviour (Mean=55.50, SD=9.03) than the female road users (mean=60.59, SD=7.23) (Table-5). Similarly, the road users belonging to urban area displayed better road safety behaviour, (mean=59.14, SD=8.38) than those living in rural area (mean=55.77, SD=8.68) and (F=7.46, df =1/196, p<.01).

Table-5: Mean and SD as per Gender × Area of Residence on Road Safety Behaviour.

Residence	Gender				Total	
	Male		Female		Mean	SD
	Mean	SD	Mean	SD		
Urban	56.98	8.70	62.12	6.99	59.14	8.38
Rural	54.11	9.19	58.47	7.08	55.77	8.68
Total	55.50	9.03	60.39	7.23		

Table-6: Summary Table of ANOVA for Road Safety Behaviour

Sources	Sum of squares	df	Mean square	F	Sig p<
Gender	1080.22	1	1080.22	15.87	.00
Residence	508.38	1	508.38	7.46	.00
Gender*Residence	7.20	1	7.20	.10	.74
Error	13341.07	196	68.06		
Total	675215.00	200			

Thus the females and people belonging to urban area displayed more safe behaviour on the road than male and people living in rural area.

One of the main objectives of the study was to examine the role of personality, risk taking behavior and road safety knowledge in road safety behavior. For this purpose, stepwise multiple regressions was done and the results are given in Table 7.

Table-7: Showing stepwise multiple regression analysis on Road safety behavior

Model no.	Variables	Mean	Regression coefficient (b)	SE	R	R^2	F	P
	Road safety behavior	**57.45**						
1	Constant Conscientious		34.05 .73	3.20 .09	.46	.21	55.01	.00
2	Constant Conscientious. RTB		50.28 .70 -.12	4.02 .09 .02	.58	.33	49.91	.00
3	Constant Conscientious. RTB, RSK		43.48 .68 -.12 .43	4.28 .08 .02 .11	.61	.37	40.36	.00
4	Constant Conscientious. RTB, RSK Neuroticism		49.81 .62 -.12 .43 -.19	5.23 .09 .02 .09	.62	.39	31.85	.00

** Significant at .01 level

Road safety behavior was the criterion variable and five dimensions of the personality i.e. (Neuroticism, extraversion, conscientious, openness and agreeableness), road safety knowledge, and risk taking behavior were the predictors variables.

Results (Table-7) revealed that the most significant predictor is conscientious a dimension of personality. The (R= .46, F=55.06) and the model is significant at .01 level. The R^2 is .21 indicates that 21% of the variance in road safety behavior in accounted of by conscientious dimension of personality. The next significant predictor is risk taking behavior when it was taken up it accounted additional 12 % of variance in road safety behavior. Thus, conscientious and risk taking behavior together accounted 33% of variance in road safety behavior. The third significant predictor was road safety knowledge and when it was taken up it accounted and additional 4% of variance in road safety behavior and together with conscientiousness and risk

taking behavior it accounted 37% (R^2= .37) of variance in road safety knowledge. The fourth significant predictor was neuroticism dimension of personality and when it was taken up it accounted and additional 35 of variance in road safety behavior. There for the findings indicate that conscientious, risk taking behavior, road safety knowledge and neuroticism are the significant predictors of road safety behavior (Table-7). Conscientious and road safety knowledge are the significant positive predictors of road safety behavior, whereas risk taking behavior and neuroticism are the significant negative predictors of road safety behavior.

Findings of the study clearly indicate that a person's moral sense of right or wrong acts as a guide to his/her behaviour more than anything else and this has been clearly indicated by the findings where in conscientiousness dimension of personality emerged as the most significant predictor. The knowledge of road rules and safety guidelines are also important for road safety and absence of these may lead to unsafe behavior. As expected and much talked about the risk taking behaviour is also very important factor accounting for safe behaviour on road while driving. In today's scenario most of the roads including the local ones are very good, the vehicles are having powerful engines and once on the road those who have high risk taking tendencies take risk, speeds up and enjoy the driving ignoring the rules and regulations. Combined with lack of road safety knowledge males and ruralites found to be display more unsafe behavior.

The findings of the study despite its small localized sample size have implications for the road users, road safety organizations, and transport department, for understanding the dynamics of unsafe/safe behaviour on road and planning for preventing road accidents.

LIMITATIONS AND SUGGESTIONS

The study was conducted on a limited sample selected on the basis of purposive sampling from Rohtak and adjoining villages and thus it was a localized study and the findings can be generalized only to the local areas. So it is suggested to carry out more large scale investigation across different types of samples.

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