A STUDY OF THE PSYCHOLOGICAL FACTORS THAT INFLUENCE THE RULE VIOLATION BEHAVIOUR OF DRIVERS

Mohammed Najeeb. P. M
Motor Vehicle Department,
Ministry of Transport, Kerala, India.
Mob +91 9447679841
najeeb.blossom@gmail.com

Abstract

An analysis of traffic accidents indicates that human factors are a sole or a contributory factor in approximately 90% of road traffic accidents. The present study examined the extent to which Type A behaviour pattern, Sensation Seeking behaviour, propensity to aggression, Hostility, Attitude to Speeding and demographic variables including Age, Experience And Education have an effect on violation behaviour of drivers. The Data was obtained from 500 drivers on standardized instruments such as Violation of Basic Traffic Rules scale, Hostility scale (MMPI), Propensity to Aggression Scale, Sensation Seeking Scale (Zukerman) Type A behaviour Scale and Attitude to Speeding Scale. The Result presented in this study revealed that there was an effect of age, experience and education and significant influence of personality traits and attitude on violation behaviour of drivers.

Key Words: Violation of Basic Traffic Rules, Type A behavior, Sensation Seeking, propensity to aggression Hostility and attitude

1. Introduction

The National Crime Record Bureau Reported that, in India the number of road accidents, deaths due to road accidents and injuries due to road accidents is very high and increasing every year. During the year 2010; 4, 30,600 road accidents caused death of 1, 33,938 persons and injured 4, 70,600 human beings. It is estimated that the country loses around 750 billion Rupees ($17 billion) per year due to road traffic accidents, which is 2-3 per cent of the gross domestic product (Sikdar & Bhavsar, 2009). Violation of traffic rules is an important factor behind traffic accidents and many lives could be saved if all drivers complied with the rules. This present project is aimed at exploring the extent to which the psychological factors affect violation behaviour of traffic rules among the drivers.

1.1. Personality, Attitude and Violations

Self-reported violations, defined as the deliberate infringement of some regulated or socially accepted code of behaviour, have been shown to predict accident rates (West, French, Kemp, & Elander, 1993). Reason et al. (1990), Parker, Manstead & Stradling (1995) concluded that driving errors originating from insufficient information processing is a relatively unimportant cause of accident involvement. On the other hand, intentional violations are important in this context. Violations appeared to be most strongly related to crashes (Parker, Reason, et al., 1995; Reason et al., 1990). Forward (2009) reported that attitudes made the largest
contribution for driving violations. The Studies of Hatfield and Job (2006) and Tranter and Warnb (2008) indicated a significant relationship between attitudes to speeding and speeding violations.

Dahlen and Ragan (2004) and Leal, Nerida and Pachana, Nancy (2009) indicates an increase in violation behaviour with propensity to aggression. Rebecca Lancaster and Rachel Ward (2002) found that, aggressive drivers, or those with a reduced capacity to manage or control hostility, tended to be involved in more traffic accidents. Sensation-seeking is consistently linked to risky driving behaviour in empirical research (Jonah, 1997). Schwebel et al, (2006) reported sensation seeking also emerged in a multivariate analysis predicting one measure of self-reported driving violations. Richard Tay, Philip Champness and Barry Watson (2003) examined the influence of sensation seeking and Type-A behaviour pattern on speeding behaviour and reported that self-reported speeding behaviours were positively correlated with both personality traits. Drivers with type A behaviour pattern typically have strong need to get from point A to point B quickly and to get ahead of others in the traffic flow (West et al, 1993). Locus of control (LOC) is one of the most crucial psychological factors determining a driver’s behavioural adaptation. Holland, Geraghty and Shah (2010) found that externally oriented persons are more likely to be involved in car accidents, as they would take fewer precautions to prevent road accidents.

1.2. Age, experience and education

Willemsen et. al. (2008) reported that older drivers and female drivers tend to have low levels of DDDI dimension which is consistent with international literature, suggesting that drivers seem to become more law abiding and display a tendency to take lesser risks when they grow older. The risk of involvement in crash seems to depend upon the drivers’ age. The young (18 to 25) and the elderly are (65+) at risk. However, with regards to accident causation, it seems that young drivers are more likely to commit violations, and the elderly to be more prone to slips and lapses (Parker et.al, 1992). Machin and Sankey (2008) have shown that inexperienced drivers underestimate the risks associated with a range of driving situations. The majority of aggressive drivers were poorly educated (Rebecca Lancaster and Rachel Ward, 2002).

Reviews of literature shows factors determining this kind of behaviour include attitudes, personality and demographical variables like age, experience, and education. The aim of this study was to investigate the psychological factors and demographic variables of drivers influencing traffic rule violations. Traffic violations have been described as a common form of law breaking found to predict road accidents.

2. Methods

The descriptive survey research design was followed to examine the violation behaviour of traffic rules of drivers and its relationship with various personality traits, attitudes to speeding and demographic variables such as age, experience and education. Comprehensive standardized questionnaires measuring the various dimensions were administered to the targeted respondents to elicit the required data. A set of key psychological variables viz, hostility, propensity to
aggression, sensation seeking, Type A behaviour pattern, locus of control and attitude to speeding were tested as predictors of violation behaviour of traffic rules of motor vehicle drivers. Further, the three personal factors—such as age, experience and education level—were also tested for their influence on driving behaviour.

A sample of 500 drivers was selected from the list of drivers of 10 Licensing Authorities of the state randomly, and requests were sent to them requesting them to participate in this highly relevant research. Sample selected are male drivers of various vehicles, aged above 18 years to 46 and above, education from 7th standard to graduate level. Sample having experience of 1 to 20 years and above has been selected.

A facing sheet with instructions filled in by all participants reveals their range of age, experience in driving and education level. Violation behaviour towards traffic rules was assessed with the scale adapted from Veysel Yılmaz, H. Eray Çelik (2006). Personality was assessed with questionnaires on locus of control (Rotter, 1966), sensation seeking scale (Zuckerman-Kuhlman personality questionnaire; Zuckerman et al, 1993), Type-A behavior by “Bortner’s Short Rating Scale of Pattern A Behaviour”, Hostility scale adapted from Minnesota Multiphasic personality inventory, and Propensity to Aggression scale from Watson (2007) adapted from the driver behaviour questionnaire (Reason et al., 1990). Attitude to speeding was assessed using the scale adapted from standardized speeding behaviour scale of Patrick De Pelsmacker and Wim Janssens (2006). The statistical techniques used for the analysis of the data for the present study are one-way ANOVA; post Hoc (Duncan test), Pearson Correlations, and Multiple linear Regression.

3. **Problem**

In this study, the investigator attempts to explore the effect of various psychological and demographic factors on violation behaviour towards traffic rules. The aim of this study was to verify the effect of demographic variables such as age, experience and education and the relationship and the influence of psychological variables including, sensation seeking, type A behaviour pattern, hostility, external locus of control, propensity to aggression and attitude towards speeding on the violation behaviour towards traffic rules.

4. **Results and discussion**

Results of the present investigation showed, in self-reported violation behaviour of traffic rules, only 1.8% drivers scored low (below 25%), 23.6% scored moderate (25% to 50%), 66.4% scored high (above 50% up to 75%) and 8.2% drivers who responded were found to be very high (above 75% scores) in violation behaviour. Effect of demographic variables, relationship and influence of psychological variables are analysed in following section.

4.1. **Effect of demographic variables:**

*Age:* Results of ANOVA conducted for violation behaviour of traffic rule with age groups showed there were significant differences \(F(3,496) = 4.96; p< 0.01\) in violation behaviour towards traffic rules between age groups. Post hoc comparisons confirmed the youngest age group of drivers (18-25 age groups, \(M=32.74, SD=7.023\)) showed significant
difference in violation behaviour of traffic rules with all other groups. This group was highest in violation behaviour towards traffic rules.

Experience: The result showed there were significant differences in violation behaviour towards traffic rules among drivers with differences in experience \( F (3,496) = 7.21; p<.01 \). Maximum mean score in violation behaviour \( (M=33.63; SD= 8.298) \) found in the group with above 20 years of experience and post hoc analysis revealed there was significant variance with next lower group of 10 to 20 years’ experience \( (M= 28.80, SD=7.362) \). The more experienced group showed high violation behaviour towards traffic rules.

Education: The results showed there were significant differences in displaying violation behaviour towards traffic rules among groups of drivers with differences in education \( F (2,497) = 5.50; p < 0.01 \). Post hoc follow up test indicated the group with 12 years’ schooling \( (M, 33.12; SD, 6.36) \) was showed significant difference (higher) in violation behaviour when compared with the group with 7 to 10 years’ schooling and the graduate group.

4.2. Relationship of Violation Behaviour with Psychological factors

Upon examining the relations of violation behaviour towards traffic rules with psychological variables studied, it was found that attitude towards speeding showed high positive correlation \( (r=.401, p<0.01) \) with violation behaviour. Propensity to aggression \( (r=.358, p<0.01) \) and sensation seeking behaviour \( (r=.344, p<0.01) \) showed moderate positive correlation with violation behaviour. Type A behaviour pattern \( (r=.277, p<0.01) \) and hostility \( (r=.203, p<0.01) \) were also showed significant positive correlation with violation behaviour. External locus of control showed significant negative correlation \( (r= -.151, p<0.01) \) with violation behaviour of traffic rules.

4.3. Influence of psychological variables

Regression analysis found attitude towards speeding \( (\beta = 0. 277, t = 6.548, p<0.01) \), sensation seeking behaviour \( (\beta = 0.150, t = 3.174, p<0.01) \), propensity to aggression \( (\beta = 0.138, t = 2.891, p< 0.01) \) and type A behaviour pattern \( (\beta = 0.096, t = 2.223, p<0.05) \), were better predictors of variance in violation behaviour of traffic rules. External LOC \( (\beta =0.023, t = .544, P>0.05) \) and hostility \( (\beta = 0.059, t = 1.415, p>0.05) \) were found not contributing to significant variance in violation behaviour towards traffic rules. The present investigation revealed that among the psychological dimensions studied, attitude towards speeding emerged as the strongest single predictor of violation behaviour towards traffic rules followed by sensation seeking behaviour, propensity to aggression and Type A behaviour pattern and explained total 24.5 % variance in violation behaviour of traffic rules.

5. Discussion

5.1. Demographic variables

The present investigation showed that the youngest age group of drivers (18-25 age groups) was higher in violation behaviour of traffic rules. Most of the similar previous studies are also in line with this finding. Findings shows the drivers with more experience in driving was high on violation behaviour of traffic rule. Possessing more driving experience can lead to optimization of driving behaviour, ensure more consistent, more accurate, more rapidly
performed, more effortless, and more automatic driving. Drivers from every successful trip acquire confidence to bend rules without expecting any negative outcomes. The result shows that the moderately educated were higher in violation behaviour. International literature reported education level does not ensure positive change in driving behaviour and in some reported more educated were higher in traffic violations.

5.2. Hostility and Locus of Control

The results of the present study found positive correlation with hostility and violation behaviour of traffic rules. However, hostility did not emerge as a significant predictor of violation behaviour in this study. Previous study suggests that drivers who believe outcomes are controlled by external forces (external LOC, e.g., events controlled by fate, not self), may be less likely to change behaviour in response to outcomes than those with internal LOC, who perceive outcomes to be dependent on their own skill, efforts or behaviour (Walker, Stanton & Young, 2008). The weak but significantly negative correlation of externality in the present study also suggests low reduction in violation behaviour with increase in externality and this is in line with previous findings. Multiple regression of the present study revealed that external locus of control was not a statistically significant predictor of violation behaviour of traffic rules.

5.3. Attitude towards Speeding

In the present study the positive attitude towards speeding emerged as a strong and significant predictor of violation behaviour towards traffic rules. Several studies have illustrated the importance of investigating driver attitudes and beliefs in relation to risky driving. Forward (2009) reported that attitudes made the largest contribution for driving violations. The result of the multiple regression analysis of the present study also found that a positive attitude towards speeding significantly predicts the violation behaviour towards traffic rules. These results indicate the significant influence of attitude towards speeding in violation of traffic rules. Hence, any attempt to improve obedience to traffic rule has to address the specific attitudes. Road safety campaigns and trainings should consider change in attitude for sustainable change in violation behaviour.

5.4. Sensation seeking

Sensation seeking propensity has also been found in the literature to relate positively with accident involvement and traffic violations. The result of the present study also indicates increase in violation behaviour with sensation seeking behaviour. Schwebel et al., (2006) reported sensation seeking also emerged in a multivariate analysis predicting one measure of self-reported driving violations. The regression analysis of the present study also confirmed, that sensation-seeking behaviour is a significant predictor of the violation behaviour of traffic rules. Counter measures against violations behaviour towards traffic rules should consider the influence of sensation seeking behaviour and the methods to change this dangerous behavioural trait for effectiveness.

5.5. Propensity to Aggression

In line with previous research results, the result of the present study found a positive correlation indicates an increase in violation behaviour with propensity to aggression. The result
of the regression analysis of the present study revealed that, propensity to aggression while driving was a significant predictor of the violation behavior towards traffic rules. Similar studies also reported the influence of propensity to aggression in violation behaviour of drivers. This information has important implications in effective and sustainable counter measures against violation behaviour towards traffic rule.

5.6. Type A personality

Result of the regression analysis of the present study found, Type A personality predicts the violation behaviour towards traffic rules. Drivers with type-A personality were found to have higher rates of traffic violations, take more risks, drive more erratically and reported higher incidents of aggressive driving. Results in similar research reported that, drivers with Type-A personality were found to have higher rates of traffic violations crashes, they were found to take more risks, drive more erratically and report higher incidents of aggressive driving and speeding. The result of the regression analysis of the present study also confirmed the findings of similar research results. Type A personality has significant influence on the violation behaviour towards traffic rules and this knowledge has significant implication in road safety countermeasures.

6. Conclusion

The result of this study concluded, that there were significant effects of age, experience and education on violation behaviour of traffic rules. There were significant relationships of psychological variables on violation behaviour. The result confirms, out of the six psychological factors tested as predictor variables, attitude towards speeding, sensation seeking behaviour, propensity to aggression and type A behaviour pattern were proved to be predicting the violation behaviour towards traffic rules significantly and overall explained 24.5 % variance in violation behaviour towards traffic rules. This finding has high relevance and significant implications in future road safety and driver behaviour interventions.

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