



Original Article:

Road Rage Menace: A Cross-sectional Study to Assess Driver Anger Level in Public Motor Vehicle Drivers in a City in Central India

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Abstract: Introduction: Road rage and aggressive driving is a prevalent condition in today's society due to motorists' frustrations during heavy traffic volumes. **Objective:** This study was done to assess the level of anger amongst the drivers of public transport vehicles in Indore, using Driving Anger Scale (DAS by Deffenbacher et. al.) and various factors affecting it. **Material and Methods:** A cross-sectional study was conducted among 135 drivers of Public transport vehicle drivers (Star bus, City-van and star cab drivers) in Indore to assess their anger level using Driving Anger Scale. The participants were required to record the amount of anger they would experience in response to each item in the scale (1=not at all angry, 2=a little angry, 3=some anger, 4=much anger, 5=very much angry). **Results:** The mean DAS score in Indore was found to be 3.013 and in the three organizations namely Star bus drivers, City van drivers and Star cab drivers was 2.92, 3.08 and 3.04 respectively. The DAS score of drivers with respect to the 6 sub-scales were: hostile gestures (Star bus -3.42, City van -3.67, Star cab -3.38), slow driving (Star bus -2.73, City van -2.78, Star cab -3.17), traffic obstructions (Star bus -2.85, City van -3.25, Star cab -3.18), discourtesy (Star bus -3.23, City van -3.33, Star cab -3.25) and police presence (Star bus -2.15, City van -1.99, Star cab -2.78), illegal driving (Star bus -3.04, City van -3.14, Star cab -2.89). The DAS scores of the drivers did not vary significantly with age group, experience, and educational qualification. **Conclusion:** Though DAS scores did not vary between the three groups of drivers, however average level anger for various given circumstances commonly found in the Indian traffic scenario was on the higher side.

Key Words: Driving Anger Scale; Road rage; Aggressive driving

Introduction:

Road rage and aggressive driving are prevalent in today's society due to motorists' frustrations during heavy traffic volumes. 'Road rage' is aggressive or angry behavior by a driver of an automobile or other motor vehicle. Such behavior might include rude gestures, verbal insults, deliberately driving in an unsafe or threatening manner, or making threats. Road rage can lead to altercations, assaults, and collisions which result in injuries and even deaths. It can be thought of as an extreme case of aggressive driving.

It has been found that most of the drivers have a feeling of "Road Rage" because it is a cultural norm. Angst and frustration while driving on Indian roads comes naturally, which translates into

"Road Rage". People learn this behavior from childhood when being driven by parents and adults. In day to day life, there are many conditions associated with "Road Rage"; including: traffic congestion, driving habits, weather conditions, noise levels, time constraints. Some times it can be an instinctive response of careless driving by another driver. With reference to the historical records, in 1997, the U.S therapists have worked to claim "Road Rage" a medical disorder.

Many of the myths have been associated with "Road Rage. To list a few:

- Road Safety needs a term like "road rage".
- Everyone understands what is meant by road rage.
- Road rage is ever present.
- We are all capable of road rage.
- Road rage is on the increase.
- Victims are usually entirely innocent.
- The cause of road rage is our own road system.
- We need new laws to cover road rage.
- Road rage can't be avoided.
- Road rage is a major road safety problem requiring more effort and resources. (1)

So, it raises two questions "Should we worry about Road Rage?" And "How can we measure it?"

Research into the phenomenon of aggressive driving and road rage has often utilized a measure of driving anger. These measures are commonly used to assess the factors that may influence a person to act aggressively on the road. In 1994, American researchers, Deffenbacher, Oetting and Lynch devised a 33 item measure of general 'driving anger', called the Driving Anger Scale (DAS) (2). Driving anger was conceptualized as a personality trait related to an individual's underlying predisposition for anger, but specific to road situations (2). The measure consists of a series of statements representing road behaviors displayed by 'others', e.g. 'someone is driving well above the speed limit' and specific driving related situations, e.g. 'someone backs out in front of you without looking'. The items formed six subscales, which were named: hostile gestures, illegal driving, slow driving, traffic obstructions, discourtesy and police presence (2).

This study tries to assess the anger level of Public Motor Vehicle Drivers using Driving anger scale (2) and various factors affecting it, since they are subjected to all the woes of the traffic scenario on a daily basis for longer duration.

Methodology:

This was a cross-sectional study conducted amongst the Public transport drivers to assess their anger level. The public transport in Indore consists of Star bus, Star cab and City van. The Star bus and the Star cab are run by Autonomous bodies as a part of public – private partnership, while City van is privately owned. This study was done in a in the predecided sample of 135 drivers (Star bus-50, Star cab-35, City van-50). The first 50 drivers from each organization who were willing to participate in the study were included in the study. However in the star cab only 35 drivers were willing to participate, hence the sample size was cut down from previously decided sample size of 150 to 135. Prior permission for the study was also sought from the respective Heads of Star bus and Star Cab organizations.

The drivers were administered the two part, predesigned, semi-structured questionnaire (Part1-Demographic data and Part2-DAS) during their Break Hours or during the change of their shifts in their respective premises of the organization. The questionnaire comprised of Demographic data i.e., their age, educational status, salary, working hours per day, duration of experience as drivers, h/o consumption of tobacco, alcohol etc and Driving Anger Scale(DAS). The 33 item, original DAS (Deffenbacher et al, 1994) was translated into Hindi and back translated to English, and then administered to all the participants. The sub-scales of DAS were: hostile gestures, illegal driving, slow driving, traffic obstructions, discourtesy and police presence. The participants were required to record the amount of anger they would experience in response to each item (1=not at all angry, 2=a little angry, 3=some anger, 4=much anger, 5=very much angry).

The collected data was entered into MSEXCEL spreadsheet and analyzed using SPSS (Statistical package for social sciences) version 17. An appropriate statistical test like Kruskal-Wallis was applied wherever necessary.

Results:

This study was done in 135 Public Motor vehicle drivers. About 81% of drivers were below the age of 40 years. Higher age group drivers were found in city van drivers, 52% of which were above the age of 35 years. In Star bus and Star cab, 74% and 64% of drivers were below 35 years of age. About 60% of the drivers were matriculate and above. The star bus drivers were among the most educated drivers, 80% being matriculate and above. Among the City van and Star cab drivers, 38% and 63% were matriculate and above. About 72% of drivers monthly salaries were in the range of 4000-6000 rupees. About 80%, 82% and 50% of Star bus, Star cab and City van drivers earned 4000-6000 rupees a month. 30% of city van drivers earned salary between 2000-4000 a month.

About 63% of drivers worked for more than 10 hours a day. 92% and 97% of City van and Star cab drivers worked for more than 10 hours. About 44% of star bus drivers worked 8-10 hours daily and 10% worked for more than 10 hours a day. About 66% of the drivers interviewed had nightshifts (worked after 8 P.M.). 78%, 74% and 48% of Star bus, Star cab and City van drivers had night shift duties on a regular basis. About 65% of drivers had driving experience of more than 10 years. Among Star bus, Star cab and City van drivers, 66%, 68% and 58% had work experience as a driver for more than 10 years. 77% of drivers consumed either tobacco or alcohol. Among Star bus, Star cab and City van drivers, 68%, 88% and 77% consumed either of the above. Majority of drivers (65%) did not report being involved in any accident till date. Among Star bus, Star cab and City van drivers, 30%, 44%, 25% reported being involved in 1 or more accidents. Maximum number of drivers (62%) reported the condition of their vehicle as good. 42% of drivers of City van reported the condition of their vehicle as ok only.

Driving anger scale

The Mean anger recorded on DAS scale among the drivers in Indore was 3.013, standard deviation-0.7. There was no significant difference (p-value- .497) in the anger levels of drivers of various or-

ganizations i.e. Star bus(2.92,0.75), Star cab (3.03,0.78) and City van (3.08,0.61).

The mean anger level recorded for various subscales of Driving Anger scale for drivers of the three organizations is shown in the table below:

Subscale	No. of Items	Star Bus drivers	City Van Drivers	Star Cab Drivers
Discourtesy	8	3.23	3.33	3.25
Traffic Obstruction	7	2.85	3.25	3.18
Hostile Gestures	3	3.42	3.67	3.38
Slow Driving	6	2.73	2.78	3.17
Police Presence	3	2.15	1.99	2.78
Illegal Driving	4	3.04	3.14	2.89

The mean anger levels in all organizations were less especially in the police presence. The drivers became angrier with items on discourtesy and hostile gestures.

The following table shows the item wise distribution of the mean anger recorded on the driving anger scale:

DAS and Various demographic variables

The mean anger recorded on DAS did not vary significantly in the different age groups (p-value-0.78), 20-24 years-3.12, 25-29 years -2.9, 30-34 years-2.87, 35-39 years-3.07, above 40 years-2.96. The mean anger recorded on DAS did not vary significantly with educational qualification (p-value-0.609), <8th pass-3.08, 8th pass-3.1, 10th pass-2.94, 12th pass-2.86, bachelor degree-2.86, master degree-2.5. Drivers with lower educational status recorded a higher anger level on the DAS scale.

There was a significant difference observed between anger levels with mean hours of working (p-value-.029), 4-6 hours-4.03, 6-8 hours-3.28, 8-10 hours-2.74, above 10 hours-2.94. There was only a single driver who worked for 4-6 hours and so higher mean is seen. The mean anger levels in drivers with different experience levels (number of years since started driving) did not vary much (p-value -0.507), 0-4 years-3.001, 5-9 years-3.05, 10-14 years-3.107, 15-19 years-2.86, above 20 years-3.08. The mean anger level did not vary significantly between the drivers who had night shift duties as compared to the ones having regular night shifts (p-value-.099), though the mean anger levels were recorded higher in drivers with night shifts (no nightshifts-2.87, regular night shifts-3.08).

The mean anger level did not vary significantly with consumption of tobacco or alcohol among the drivers (p-value-0.747), (no habits-3.03, only tobacco-3.007, only alcohol-3.282, and both 2.96).

The mean anger levels were lower in drivers with no previous history of accident during duty hours; however it was statistically insignificant (p-value-0.387), (no accident-2.94, 1 episode-3.06, 2 episodes-3.22, 3 and more-3.41).

The mean anger levels did not vary significantly with what drivers felt with respect to the condition of the vehicle (p-value-0.366), (average-2.95, good-3.08, very good-2.82.)

Table 2: Mean and standard deviation of DAS (31 items) in order of presentation to study participants			
S. No.	Questions	Mean DAS	Standard Deviation
1	Someone in front of you does not move off straight away when the light turns green	2.4296296	1.1365091
2	Someone is driving too fast for the road conditions	2.851852	1.313072
3	A pedestrian walks slowly across the middle of the street, slowing you down	2.155556	1.202402
4	Someone is driving too slowly in the outside lane, and holding up traffic	3.207407	1.178769
5	Someone is driving very close to your rear bumper	2.525926	1.309151
6	Someone cuts in and comes right in front of your motorway.	3.955556	1.30365
7	Someone cuts in and takes the parking spot you have been waiting for	3.533333	1.24469
8	Someone is driving more slowly than is reasonable for the traffic flow	2.177778	1.286362
9	A slow vehicle on a winding road will not pull over and let people pass	3.437037	1.32489
10	You see a police car watching traffic from a hidden position.	2.059259	1.274099
11	Someone backs out right in front of you without looking	3.533333	1.308982
12	Someone coming towards you does not dim their headlights at night	3.377778	1.465354
13	At night someone is driving behind you with bright lights on	2.562963	1.363749
14	Someone speeds up when you try to pass them	3.57037	1.385106
15	Someone is slow in parking and holds up traffic	3.162963	1.173128
16	You are stuck in a traffic jam	3.037037	1.289495
17	Someone makes an obscene gesture towards you about your driving	3.525926	1.413314
18	You hit a deep pothole that was not marked	3.037037	1.301018
19	A police car is driving in traffic close to you	2.103704	1.323011
20	Someone beeps at you about your driving	3.607407	1.252438
21	Someone is driving well above the speed limit	3.222222	1.438628
22	You are driving behind a truck which has material flapping around in the back	3.037037	1.248327
23	Someone shouts at you about your driving	3.355556	1.442772
24	A cyclist is riding in the middle of the lane and slowing traffic	3.111111	1.20116
25	A police officer pulls you over	2.333333	1.354925
26	You are driving behind a vehicle that is smoking badly or giving off diesel fumes	3.288889	1.251069
27	A truck kicks up sand or gravel on the car you are driving	3.666667	1.221694
28	You are driving behind a large truck and cannot see around it	2.888889	1.358592
29	You encounter road construction and detours	2.62963	1.464713
30	Someone runs a red light or a stop sign	2.5433	1.6453
31	Someone is weaving in and out of traffic	3.333	1.7888
*2 items on the scale were excluded as it was not found applicable to Indore			

Discussion:

This study used driving anger scale by Deffenbacher et al (2) to assess the level of driver anger in professional drivers. Some of studies using driving anger scale have been done in Australia (study population was students), UK and the USA (study population was general population). As seen in Table 3, the drivers in India responded most to hostile gestures and discourtesy. Irrespective of nationality, everybody responded most to discourtesy and hostile gestures. The mean anger levels were least in police presence, though it was higher than Australian and UK drivers. The mean level of anger recorded were higher than Australian and UK drivers. However, this comparison is not altogether appropriate as the traffic scenario in India is very different from the any of above mentioned countries. Even though the traffic scenario is different, the authors feel that it should be similar to other countries because they were professional drivers, moreover the items mentioned on the scale are very common on the Indian roads, so they should have got conditioned to it and experience less anger. It should also be remembered that the Driving Anger Scale is a measure of anger experienced but not that of anger expressed.

Table 3: Subscale Means of Indian public vehicle drivers compared to Australian Drivers, UK and US Drivers (2-4)				
Subscale	Public vehicle Drivers, India	Australia	US	UK
Discourtesy	3.27	3.1	3.9	2.7
Traffic Obstruction	3.09	2.3	3.3	2.0
Hostile Gestures	3.49	2.8	3.2	2.3
Slow Driving	2.89	2.3	3.2	2.0
Police Presence	2.3	1.9	3.0	1.4
Illegal Driving	3.02	2.6	2.7	2.3

The authors expected that mean anger level would be less with increasing age, educational qualification and more in drivers of private organization. However in this study, the driving anger level did not vary significantly with age (p-value-0.78), educational qualification (p-value-0.609), experience (p-value -0.507), the type of organization the drivers belonged to (p-value-.497), personal habits

like tobacco consumption (p-value-0.747) and condition of the vehicles (p-value-0.366). It was observed in the study that more than 50% of drivers worked for more than 10 hours a day. Surprisingly, the driver anger was significantly different with the number of working hours (p-value-.029), and the mean anger level was recorded higher for the drivers who had lesser working hours (4-6 hours-4.03, 6-8 hours-3.28, 8-10 hours-2.74, above 10 hours-2.94). This may be because there was only a single driver with working hours of about 4-6 hours. The other reason may be that workers with longer duration of working hours become conditioned to unfavorable traffic conditions, hence experienced less anger.

One of the very important reasons the drivers on the whole registered higher levels of anger compared to other countries was their longer working hours without appropriate break between the driving periods.

Some of the measures which could help drivers in coping up with their anger would be increasing their awareness about originators of aggressive driving, the driver's own behaviour and how to deal with aggressive behaviour of other drivers. They should also have some regular sessions where they are taught some relaxation exercise which could help them cope up with the adverse situations. This may not be possible with the private vehicle drivers but is certainly possible in the government undertakings.

Everybody who has applied for public vehicle driver's license should undergo training on factors leading to aggressive driving, dealing with their own aggressive behaviour and others aggressive behaviour on road before issue of the license.

The existing legislative measures with respect to traffic like higher fines, loss of license, warning letters, mandatory jail time etc. should be enforced. This will act as an effective barrier towards aggressive driving.

Development of intelligent transportation system like having intersection cameras, which can capture the "Red light runners" and "speeders" and these photographs can be used to counter the offenders. This method makes it possible to detect the offenders without the physical presence of the officers on the spot.

Some of the limitations of this study might be reporting less anger by the drivers as they had already been informed about the purpose of the study. This study only correlated some of the demographic variables like age, education etc. with the driving anger level of the drivers. One of the very important variables like the personality of the drivers was not assessed in this study. Hence a further such study that correlates personality and driver anger is recommended by the authors.

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