

Brief Research Communication

Self-Reported Anger: Vulnerability for Risky Behaviors in Two-Wheeler Riding Young Men

Rajesh Kumar, Paulomi M. Sudhir, Rajeev J. Michael, Manoj K. Sharma, Neelima Chakrabarty¹, Seema Mehrotra

ABSTRACT


Objectives: Aggressive driving and road accidents are major concerns in the public health sector. This study aimed to explore risk to aggressive and risky behaviors on the road in two-wheeler riding young men. **Methods:** The study comprised 433 young male two-wheeler riders from an urban city of India. A two-wheeler riding survey that captured subjective perception of difficulty in managing anger in general, easy provocability to anger, and aggressive and risky behaviors on the road, and Negative Mood Regulation (NMR) scale were administered. **Results:** Of the 433 participants, 83 (19%) reported experiencing problematic anger in general, whereas 175 (40.42%) did not endorse experiencing problematic anger. Based on this, two groups were formed, namely, problematic anger-present group and problematic anger-absent group. The problematic anger-present group reported high score on easy provocability to anger, difficulty in controlling anger, specific motives related to riding fast than usual, and severity of aggressive responses to frustrating situations while riding, and low score on NMR scale. Statistical analysis revealed a significant difference between the groups. **Conclusion:** This study highlights the relevance of assessing subjective perception of problematic anger in two-wheeler riding young men. This has implications for designing interventions for enhancing road safety.

Key words: Aggressive driving, anger, negative mood regulation, road rage, two-wheeler riding

Key messages: (a) Assessment of subjective perception of difficulty in managing anger in general could be very useful for understanding the aggressive and risky driving behaviours. (b) The study highlights the potential utility of identification of problematic anger and addressing the same. (c) Difficulty in managing anger in general and negative mood regulation. (d) Findings have implications for designing interventions aimed at minimizing risky driving behaviours and enhancing road safety.

Aggressive driving or driver aggression is one of the contributing factors for road accidents, and it has emerged as one of the major concerns in the public health sector.^[1] Aggressive forms of behavior on the

road can be categorized into (i) aggressive behavior in which the intention is to cause physical and/or

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psychological harm or damage to oneself, other road users, or property and (ii) aggressive behavior in which there is no intention to harm others but the behavior appears to be risky.^[2] Another term which is often used interchangeably in place of aggressive driving is road rage, and it broadly refers to driving-related aggressive behaviors on the road.^[3]

There is an unprecedented growth in the number of two-wheeler riders and bicyclists worldwide and in India, as two wheelers and bicycles offer cost-effective and convenient means of transportation.^[4,5] As a result, riders and pillion riders of two-wheelers and bicyclists are one of the most vulnerable groups with respect to road traffic accidents.^[4,5]

Individual factors such as trait anger or difficulty to manage anger could be one of the important factors for aggressive driving behaviors on the road.^[6,7] Similarly, an individual's coping ability, particularly the ability to regulate one's emotion, may contribute significantly to an aggressive expression on the road. It has been found that drivers who have high anger use less adaptive coping strategies compared with those with low anger.^[7] In this context, one's beliefs about having the ability to overcome or alleviate a negative mood state, also known as negative mood regulation expectancies,^[8] could be an important variable from a research perspective. Literature suggests that difficulty in managing anger may increase the probability of risky or aggressive behaviors, whereas effective emotion regulation is associated with safe driving behaviors.^[9] Research also indicates that age and gender are other important variables in aggressive driving. It is reported that driver violence is more prevalent in male and young drivers.^[1,10]

However, there is a paucity of research exploring driver anger and its contribution to aggressive driving in two-wheeler riding young men. This study was aimed at examining the extent to which self-report of difficulty in managing anger in general (self-perceived problematic anger) is associated with aggressive and risky riding behaviors in two-wheeler riding young men. In addition, the differences in negative mood regulation efficacy between individuals reporting problematic anger versus those not reporting problematic anger were also examined.

METHODS

Participants and procedure

The study used convenient sampling. The sample comprised 433 young male two-wheeler riders, undergraduate and postgraduate students, from Bengaluru city, recruited from nine colleges, including

governmental and private colleges. Ethical approval was obtained from the Institute Ethics Committee. Permission for sample recruitment was obtained from the head of the college. Written informed consent was obtained from all participants.

Measures

Demographic data sheet

A demographic data sheet was prepared for the study to document demographic information and to document variables related to two-wheeler riding (e.g. total years of two-wheeler riding and riding frequency).

Two-wheeler riding survey

A two-wheeler riding survey was developed as per the need of the study and considering the nonavailability of tools in the Indian context. Domains and items were constructed on the basis of three focus group discussions that involved college students and a literature review. The items were reviewed for content validation by three mental health professionals having more than 15 years of clinical service, and their suggestions were taken into account in finalizing the survey items. The survey items captured various aspects related to two-wheeler riding. The items pertaining to the present study objectives are briefly described below.

Participants' perception of managing anger as a problem, in general, was assessed with a discrete response-type item having three options ("yes," "no," and "cannot say"). Provocability to anger on the road and difficulty to control anger while riding were assessed by two items having a 4-point Likert scale, ranging from "Not at all," scored as 1, to "Very much," scored as 4. Response to frustrating situations on the road was assessed by 11 items related to verbal and nonverbal aggressive expressions, with a 4-point Likert scale format. The items were preceded by a general stem, "When I feel irritated or angry on the road I tend to ..." (e.g., sound my horn repeatedly, give an angry look at the other driver who caused me irritation). These items together formed a scale with good internal consistency and reliability (Cronbach's alpha = 0.75). Furthermore, factors associated with riding fast than usual were assessed using a checklist with eight options, while perceived motives for riding fast than usual (in terms of seeking specific emotional states by fast riding) were assessed using five items (e.g., to get relief from anger, to get a sense of joy), 4-point Likert scale, ranging from "Never true for me," scored as 1, to "Nearly always true for me," scored as 4.

Negative Mood Regulation efficacy scale^[8]

The Negative Mood Regulation (NMR) scale has 30 items, with a 5-point Likert rating designed to measure generalized expectancies for alleviating

negative mood.^[8] This scale has been tested for its psychometric properties in an Indian study, and internal consistency and reliability of the scale were found to be 0.87 (Cronbach's alpha).^[11]

Data analysis

Data were analyzed using Statistical Package for Social Sciences, version 15 for Windows (SPSS-15, SPSS Inc., Chicago, USA). Descriptive statistics, independent *t*-test, Chi-square test, and Mann–Whitney rank *U* test were applied to examine demographic variables and to compare the two groups of those with problematic anger and those without problematic anger.

RESULTS

Sample characteristics

The sample size of two-wheeler young men riders was 433. Participant's age ranged between 17 and 26 years with a mean of 20.21 years [standard deviation (SD) = 1.63 years]. Participants were predominantly undergraduate students [344 (79.6%)], and only 89 (20.4%) were postgraduate students. The mean number of years of education was 14.67 years (SD = 1.17 years). On an average, the participants had about 5 years of two-wheeler riding experience (mean = 4.62 years, SD = 2.85 years), and the majority [355 (82%)] reported riding two-wheelers almost daily to a few days in a week.

Subjective perception of problematic anger, in general, was assessed on a single self-reported item, "Do you feel that managing anger is a problem for you in general?" with three options (i.e., yes, no, and cannot say). Of 433 participants, 83 (19.71%) reported "yes," whereas 175 (40.42%) reported "no," and 175 (40.42%) reported "cannot say" to this item. Two groups were formed based on the participants' responses: (i) the problematic anger-present group (i.e., those who reported "yes," *n* = 83) and the problematic anger-absent group (i.e., those who reported "no," *n* = 175). These groups were compared on various factors related to aggressive driving behavior as described below.

Self-report of provocability to anger and difficulty in managing anger on the road

The problematic anger-present and problematic anger-absent groups were compared on 4-point, self-reported item about easy provocability to anger on roads ("I'm easily provoked to anger while riding two-wheeler") and difficulty in managing anger while riding ("I find it difficult to control my anger while riding"). Forty percent (*n* = 33) of the participants in the problematic anger-present group, whereas only 9% (*n* = 16) participants in the problematic anger-absent group, reported considerable

to high provocability to anger, and statistical analysis revealed a significant difference between the groups [$\chi^{2df-3} = 63.94$; $P < 0.001$ (two-tailed)].

Similarly, 39.6% (*n* = 33) participants in the problematic anger-present group and 11% (*n* = 20) in the problematic anger-absent group reported considerable to high difficulty in managing anger while riding, and there was a significant difference between the groups [$\chi^{2df-3} = 45.41$; $P < 0.001$ (two-tailed)].

Expression of anger to frustrations on the road while riding

We compared the mean score of problematic anger-present group and problematic anger-absent group on the scale capturing aggressive responses to frustration when riding. The results showed a significant difference between the two groups [$P < 0.001$ (two-tailed)]; problematic anger-present group = 21.19 ± 5.89 and problematic anger-absent group = 18.48 ± 5.01 (mean \pm SD)]. Figure 1a shows the significant differences between the groups on the items of this scale such as (i) give an angry look at the other driver, (ii) speed up to frustrate the other driver, and (iii) thoughts of taking revenge.

Perceived factors associated with riding fast than usual

There was a significant difference between the problematic anger-present and problematic anger-absent groups on topmost reasons which they perceived as factors for riding fast than usual. Figure 1b shows that the problematic anger-present group reported riding fast than usual due to being in a negative mood state such as anger or feeling sad. Similarly, the problematic anger-present group reported riding fast to seek relief from anger or feeling upset [Figure 1c].

Negative mood regulation efficacy

The group reporting problematic anger, in general, had lower scores (mean rank = 90.56) compared with problematic anger-absent group (mean rank = 125.12) on NMR scale. Shapiro–Wilk test was applied to check the normal distribution and it was found to be not normally distributed. Mann–Whitney *U* test revealed that there was a significant difference between the two groups ($P = 0.01$) indicating a lower efficacy in negative mood regulation in the problematic anger-present group.

DISCUSSION

The results indicate that participants who reported experiencing problematic anger in general also reported having easy provocability to anger, difficulty in controlling anger, and a lower efficacy in negative mood regulation. These findings have implications for behaviors such as aggressive driving and road rage which

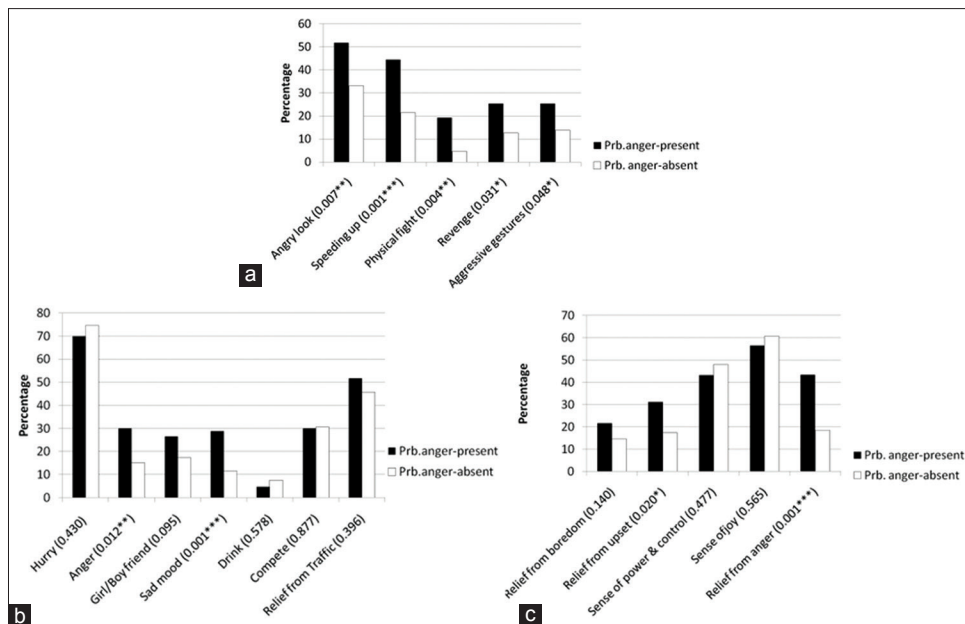


Figure 1: (a) Responses to frustrating situations on road. (b) Factors for riding fast than usual. (c) Motives for riding fast than usual. *** $P < 0.001$, ** $P < 0.01$, * $P < 0.05$ (Two tailed); Prb.anger-present – Problematic anger-present group, Prb.anger-absent – Problematic anger-absent group

may place the riders as well as others at risk. Road rage is a rising problem that is seen in the context of traffic density,^[11] and such tendencies may likely place such individuals at higher risk than those who are able to regulate negative emotions and are not easily provoked. Studies have reported a significant difference between drivers who are high or low in anger.^[7,12] Individuals with low-trait anger are generally calmer when encountering provocative and annoying situations, whereas high-trait anger individuals tend to get easily provoked and lose control in the face of such situations.^[13]

According to trait-state anger theory,^[14] individuals with high anger trait when compared with low anger trait differ in several dimensions, for example, becoming angered by a wide spectrum of situations/events, experiencing anger more frequently and intensely, expressing anger in less adaptive ways, and experiencing more negative consequences. Furthermore, low NMR expectancies in the problematic anger-present group could suggest a higher level of anger and distress as well as difficulty in mood regulation compared with problematic anger-absent group. One study has reported that having difficulty in emotion regulation was associated with risky driving and vice versa.^[9] This is particularly more important in the case of a young driver who may experience intense emotion and may have a relatively high probability of accidents.^[15] Hence, it is necessary that one should have the ability to regulate negative mood.

This is further supported by the findings that participants in the problematic anger-present group

reported greater use of aggressive and less constructive forms of expressing their anger in response to commonly occurring and their personally most provocative situations on the road, for example, angry look to the other driver and thinking about taking revenge. These findings are in line with several other studies that demonstrate a relationship between driver anger and risky behaviors.^[7,12,16] Similarly, difficulty in negative emotion regulation may result in expressing negative emotion toward others and at times, more maladaptive behaviors on the road. Studies have shown that drivers with higher levels of anger use less adaptive coping methods.^[7,14,16] Hence, difficulties in emotion regulation may increase the likelihood of aggressive or risky driving behaviors on the road.^[9]

This study revealed that problematic anger-present group reported to speed up or ride fast than usual to get relief from anger and sadness. It is reported that negative emotions such as anger and sadness may lead to risky riding/driving behaviors such as stronger acceleration and speeding.^[17] Several factors may cause the driver to accelerate speed in a state of anger. For example, drivers with high trait anger were found to be riding fast when they face an impediment.^[18,19] Anger may also influence risk perception.^[19] Negative emotions may produce more errors related to vehicle control and slower braking reaction time, and impairment in attention and concentration.^[9,17] Furthermore, personal characteristics play an important role in experiencing emotions and influencing driving/riding behaviors. For example, younger drivers tend to experience more anger than older ones.^[6,20]

CONCLUSION

Findings from this study have preventive implications for road safety. Individuals with high anger are prone to risky riding and accidents. These individuals may benefit from education about vulnerability to risky behaviors and negative consequences, and from addressing anger through interventions that target emotion regulation and adaptive coping skills. This may help them in dealing with provocative situations and in reducing risky riding behaviors on the road, and that, in turn, has implications for reducing incidents of clashes and accidents.

This study has a few limitations. A single item was used for dividing the sample into problematic anger-present group and problematic anger-absent group. The study excluded 40% of the sample who reported “cannot say” on this item. The instrument used has not been validated except for face validation, and the psychometric properties are not known. Objective data (e.g., accident/injury records) and pillion-riders’ report to supplement self-report could enhance the robustness of the findings. The study was limited to college-going youth in an urban context. Further studies can help in examining the generalizability of the findings to youth in other settings and age groups. Its limitations notwithstanding, the study has several implications for future research and practice.

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Conflicts of interest

There are no conflicts of interest.

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