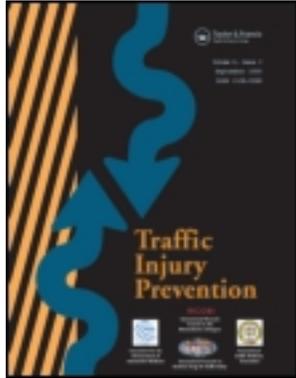


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# Driving Citations and Aggressive Behavior

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**Background:** Anger and driving have been examined in a number of studies of aggressive drivers and in drivers with road rage using various psychological and environmental study variables. However, we are not aware of any study that has examined the number of driving citations (an indication of problematic driving) and various forms of anger not related to driving.

**Method:** Using a cross-sectional approach in a consecutive sample of 331 respondents (68% female), we surveyed participants about the number of past driving citations, not necessarily convictions, and 21 aggressive behaviors using the Aggressive Behavior Questionnaire.

**Results:** The number of driving citations demonstrated a statistically significant correlation with the number of aggressive behaviors in the 21-item Aggressive Behavior Questionnaire. There were no differences between men and women. As for specific aggressive behaviors, the number of driving citations was statistically significantly related to punching a wall when angry, causing and getting into a bar fight, getting into fistfights (not in a bar), causing someone to have an accident, and intentionally running someone off the road.

**Conclusions:** The number of driving citations, an indication of problematic driving, appears to be related to generally aggressive behavior. Findings indicate that if aggression plays a role in problematic driving, it is likely not limited to the road.

**Keywords** Aggression; Anger; Citations; Driving

## INTRODUCTION

The relationships between aggression and driving are complex (Lajunen and Parker 2001). However, the research in this area can be divided into 2 general areas: (1) studies examining aggressive driver behavior and (2) studies examining road rage.

Many studies examining aggressive driving behavior have used a specific scale to assess angry driving behavior and then examined relationships with other variables. A number of associated variables have been confirmed. As examples of associations between aggressive driving and psychological and psychiatric variables, Constantinou et al. (2011) found relationships with high-risk personalities traits; Smart et al. (2003) with general psychiatric distress; Malta et al. (2005) with oppositional defiant disorder, alcohol and substance use disorders, cluster B personality disorders, conduct disorder, attention-deficit/hyperactivity disorder, and intermittent explosive disorder; and Kuhn et al. (2010) with posttraumatic

stress disorder. Aggressive driving has been associated with problematic driving behavior, including driving violations (El Chliaoutakis et al. 2002); risky driving and moving violations (Deffenbacher et al. 2003, 2005); being more likely to drive when intoxicated (Beck et al. 2006); and traffic fatality rates (Sivak 2009). Aggressive driving has also been associated with a number of external conditions, including traffic congestion (Shinar and Compton 2004) and fellow drivers' behaviors (Ozkan et al. 2010). Finally, aggressive driving has been associated with male gender (Lonczak et al. 2007), increased physiological activity (Malta et al. 2001), and a lack of insight as to the degree of aggressive behavior that one exhibits (Smith et al. 2006).

In addition to studies on aggressive driving, a number of investigators have examined one specific form of driving aggression—road rage. Smart et al. (2003) indicate that approximately 5 percent of drivers exhibit serious road rage. Most offenders are male and young (Smart and Mann 2002). Like aggressive driving, road rage has been associated with a number of psychological variables and psychiatric syndromes, including the tendency to displace anger (Lawton and Nutter 2002); attribute blame to others (Britt and Garrity 2006); experience high

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levels of general stress (Garase 2004; Lupton 2002; Sharkin 2004); abuse alcohol (Butters et al. 2005; Mann et al. 2004) and substances (Butters et al. 2005, 2006); and report anxiety, depression, and somatic symptoms (Smart et al. 2003). Road rage has also been associated with personality dysfunction, including cluster B personality disorders (Malta et al. 2005), antisocial personality (Galovski et al. 2002), and borderline personality disorder (Dumais et al. 2005; Galovski et al. 2002; Lex et al. 1994). As with aggressive driving, a number of environmental variables have also been associated with road rage, including greater number of miles driven per day and busy roads (Smart et al. 2004), carrying a firearm (Hemenway et al. 2006; Miller et al. 2002), and traffic density (Lupton 2002; Parker et al. 2002). Other factors empirically related to road rage may include the context of anonymity as well as aggressive environmental stimuli in the form of billboards and signs (Sharkin 2004).

To our knowledge, relationships between problematic driving and various specific forms of anger have not been explored. In this study, we examine the relationship between the number of driving citations, an indication of problematic driving, and various forms of non-driving-related anger. Our hypothesis was that the number of driving citations would evidence a relationship with the number of different anger behaviors.

## METHOD

### Participants

Participants were males and females, ages 18 years or older, being seen at an internal medicine outpatient clinic in which the majority of the providers are residents. We excluded individuals with compromising medical, intellectual, cognitive, or psychiatric symptoms of a severity that would preclude the candidate's ability to successfully complete a survey ( $n = 62$ ).

At the outset, 480 individuals were approached and 369 agreed to participate, for a participation rate of 76.9 percent. Of these, 331 completed the relevant study measures. Of the 331 respondents included in our analyses, 225 (68.0%) were female, 104 (31.4%) male, and 2 (0.6%) did not indicate their sex. Participants ranged in age from 18 to 87 years ( $M = 49.91$ ,  $SD = 15.53$ ). Most participants were white/caucasian (86.3%), followed by African American (8.8%); 4.9 percent indicated some other ethnicity/race. With regard to educational attainment, all but 7.1 percent had at least graduated high school and 30.4 percent had earned a 4-year college degree or higher.

### Procedure

During clinic hours, one of the authors (JSL) solicited patients in the lobby of the internal medicine outpatient clinic and informally assessed exclusion criteria (i.e., Did the individual appear able to complete a survey?). Candidates were then invited to complete a 6-page survey. Participants were given an accompanying envelope and asked to place completed surveys in the envelope and then into a collection box in the lobby.

The survey began with a query about demographic information. We then asked, "How many driving citations, *not con-*

*victions*, have you had in your lifetime?" Respondents had the option of circling a number ranging from 0 to 10+. The final section of the survey explored externalized aggressive behaviors through a 21-item, yes-no, author-developed questionnaire (i.e., the Aggressive Behavior Questionnaire [ABQ]; see Appendix). Participants were asked, "As an adult (ages 18 and older), have you ever . . ." Individual items included "punched a wall when angry, intentionally broken things when angry, hit your partner when angry," and, "hit a child out of anger, not because of discipline."

This project was reviewed and exempted by the institutional review boards of the study site as well as the local university. Completion of materials was assumed to be implied consent, which was explicitly stated on the cover page of the booklet. Data were collected in October 2011.

## RESULTS

Of the 331 respondents, only 83 (25.1%) reported never having received a driving citation; responses ranged from the minimum (0) to the maximum (10+, which was coded as 11). Scores on the ABQ ranged from 0 to 17 ( $M = 2.62$ ,  $SD = 3.10$ ), with 105 (31.7%) denying having engaged in any of the aggressive behaviors listed. There was a statistically significant correlation between the number of driving citations and the score on the ABQ ( $r = 0.26$ ,  $P < .001$ ; males:  $r = 0.32$ ,  $P < .001$ ; females:  $r = 0.24$ ,  $P < .001$ ). However, examination of the distribution of these 2 variables revealed that only one respondent reported having had 9 driving citations and one respondent reported having 10 driving citations, and the scores on the ABQ for these 2 respondents were unusually high (13 and 8 respectively). After removing these 2 outliers from subsequent analyses, the correlation between the number of driving citations and the score on the ABQ remained statistically significant ( $r = 0.24$ ,  $P < .001$ ; males:  $r = 0.27$ ,  $P < .001$ ; females:  $r = 0.24$ ,  $P < .001$ ). To illustrate the generally linear relationship between the number of driving citations and aggressive behavior, scores on the ABQ are presented as a function of the number of driving citations in Table I.

To investigate whether the relationship between driving citations and aggressive behavior was driven by a particular pattern of such behaviors, we correlated the number of driving citations with endorsement of each of the items in the ABQ. Due to the large number of such correlations (21), we applied the Bonferroni correction to derive an effective probability value for determining statistical significance ( $0.05/21 = 0.002$ ).

**Table I** Scores on the ABQ as a function of the number of driving citations

Number of driving citations	<i>n</i>	Mean	<i>SD</i>
0	83	1.94	2.36
1	62	2.02	2.21
2	56	2.36	3.23
3	43	2.72	2.86
4	25	3.32	3.47
5-6	31	3.87	3.96
7 or more	29	3.72	3.96

Subsequently, the number of driving citations was correlated with endorsing ever having “punched a wall when angry” ( $r = 0.21$ ,  $P < .001$ ), “caused and gotten into a bar fight” ( $r = 0.31$ ,  $P < .001$ ), “gotten into fistfights (not in a bar)” ( $r = 0.21$ ,  $P < .001$ ), “caused anyone to have an accident” ( $r = 0.27$ ,  $P < .001$ ), and “intentionally ran someone off the road” ( $r = 0.28$ ,  $P < .001$ ).

## DISCUSSION

The findings indicate that driving citations demonstrate a statistically significant correlation with various aggressive behaviors, with no differences between men and women. This suggests that individuals with multiple driving citations are likely to evidence other aggressive behaviors in their lives not necessarily related to driving. We cannot determine from these data whether this relationship is mediated by psychiatric variables such as Axis I disorders (chronic depression, generalized anxiety disorder) or Axis II disorders (cluster B personality disorders). However, the findings support the notion that aggression may be generalized in individuals who exhibit problematic driving. For police officers, the findings suggest a need for extreme caution in dealing with habitual offenders of traffic laws as well as the importance of checking into offenders' backgrounds for other offenses related to anger.

The most common aggressive behaviors reported included punched a wall when angry, caused and gotten into a bar fight, gotten into fistfights (not in a bar), caused someone to have an accident, and intentionally ran someone off the road. These are genuinely concerning behaviors and provide some indication of the lack of behavioral restraint among some participants in this study. Two of these behaviors could be related to potential driving citations (caused someone to have an accident, intentionally ran someone off the road) but, importantly, reporting these behaviors does not mean that the individual was actually cited for this behavior.

Men are traditionally more likely to engage in road rage compared with women, indicating a gender difference. One of the more surprising findings in this study was that there were no differences in the number of aggressive behaviors reported by men and women. In other words, in this study, women with increasing numbers of driving citations reported similar numbers of aggressive behaviors as men.

This study has a number of potential limitations. First, all data were self-report in nature, and a number of participants may have been too embarrassed to admit to either multiple driving citations or the behaviors listed in the ABQ. Second, this sample was solicited from a clinic in which the residents are the primary-care providers. This clinic serves a fairly indigent population, and socioeconomic factors may be a partial mediating factor for some of these findings. Third, the ABQ is an unvalidated measure that was developed specifically for this study. Despite these potential limitations, this is the first study, to our knowledge, to examine the number of driving citations in relationship to various externalized anger behaviors. The sample

was consecutive and reasonable in size, and the response rate was acceptable. The findings appear to indicate that anger, for many, is a global phenomenon that expresses itself in a number of venues—including problematic driving.

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**APPENDIX**

**Aggressive Behavior Questionnaire**

As an adult (ages 18 and older), have you ever:

Yes	No	
—	—	1. Punched a wall when angry?
—	—	2. Intentionally broken things when angry?
—	—	3. Hit your partner when angry?
—	—	4. Hit a child out of anger, not because of discipline?
—	—	5. Caused and gotten into a bar fight?
—	—	6. Gotten into fistfights (not in a bar)?
—	—	7. Mistreated an animal when angry?
—	—	8. Killed an animal when angry?
—	—	9. Been charged with assault (not necessarily convicted of it)?
—	—	10. Damaged anyone else’s car on purpose?
—	—	11. Damaged the property of others to “get back” at them?
—	—	12. Stolen from anyone because of anger, not need?
—	—	13. Defaced public property (e.g., walls, buildings, parks)?
—	—	14. Intentionally ran anyone off the road?
—	—	15. Beat up anyone such that they required medical attention?
—	—	16. Pushed or shoved a partner when angry?
—	—	17. Caused anyone to have an “accident”?
—	—	18. Bullied a partner into sex?
—	—	19. Spit at or on anyone?
—	—	20. Bitten anyone?
—	—	21. Threatened anyone with a weapon?