

## PAPER DETAILS

TITLE: What Causes Drivers to Involve In a Traffic Altercation?

AUTHORS: Ismail Cenk DEMIRKOL

PAGES: 59-67

ORIGINAL PDF URL: <https://dergipark.org.tr/tr/download/article-file/1724729>

## What Causes Drivers to Involve In a Traffic Altercation?

Ismail Cenk DEMIRKOL\*

Hamza TOSUN\*\*

Yusuf YUKSEL\*\*\*

### ABSTRACT

Although many of the previous research examined aggressive driving, driving anger, and road rage, drivers' involvement in traffic altercations has received little attention. It is very likely that drivers may involve in a traffic altercation with other drivers even for meaningless reasons. To date, there has been no study or government report on the frequencies of traffic altercations on the roads and factors related to traffic altercations were reported in Turkey. However, there has been intense media coverage when traffic altercations lead to severe injuries or death of a man. Research conducted in Turkey focused on aggressive driving behaviors and driving anger which may provide clues for understanding factors related to traffic altercations. The result of those research indicated drivers expressed their anger mostly verbally followed by the use of vehicle and physical aggressive expression. The research did not include whether those aggressive behaviors responded by the other side and subsequently lead to an argument or not. Thus, the aim of this study to examine the factors leading drivers to involve in traffic altercations. Three hundred and forty nine drivers working in various public department participated in the study. Fourteen percent of the participants indicated they had a traffic altercation in 2013. Since our dependent variable was dichotomous measure, we used logistic regression analyses to examine our hypothesis. It was hypothesized that participants' risky driving behaviors, sense of time pressure, driving anger, sensation seeking, and risk perception were related to traffic altercation. The findings partly confirm the hypothesis that risky driving behavior and sensation seeking were related to traffic altercation. Further, it was found that drivers are less likely to involve in traffic altercation as they become older. However, the result indicated that daily driving distances, driving anger, time pressure, and perceived risk in the traffic are not related to participants' involvement in traffic altercation.

**Keywords:** Traffic altercation, risky driving, time pressure, driving anger, sensation seeking.

**Type of Study:** Research Paper

## Sürücülerin Trafikte Tartışmalarına Yol Açan Faktörler

### ÖZET

Her ne kadar tehlikeli araba kullanma, öfkeli araba kullanma ve yol öfkesi daha önce yapılan çalışmalarda incelenmiş ise de, trafikte yaşanan tartışmalar üzerinde yapılan çalışmalar azdır. Bir sürücünün diğer bir sürücü ile trafikte iken zamana zaman anlamsız nedenlerden dolayı bile tartışma ihtimali oldukça yüksektir. Bugüne değin Türkiye'de trafikte yaşanan tartışmaların sıklığı ve bunları etkileyen faktörlerle ilgili hiçbir çalışma veya resmi rapor yayınlanmamıştır. Ancak, trafikte yaşanan tartışmaların ciddi bir yaralanmaya veya ölüme yol açtığı durumlarda, medyanın oldukça yoğun bir şekilde trafikte yaşanan tartışmalara ilgi gösterdiği görülmektedir. Türkiye'de yapılan çalışmalar tehlikeli araba kullanma davranışları ve öfkeli araba kullanma üzerine yoğunlaşmıştır. Bu çalışmalar trafikte yaşanan tartışmaların anlaşılması ile ilgili ipucu sağlamaktadır. Bu alanda yapılan çalışmaların sonuçlarına göre sürücülerin kızgınlıklarını daha çok sözlü olarak ifade etmekte, daha sonra ise arabaları ile kendilerini ifade etmekte ve son olarak fiziki saldırganlık yoluna başvurmaktadırlar. Ancak bu çalışmalarda katılımcıların sergilemiş oldukları saldırgan tavırlara karşın diğer sürücülerin veya kişilerin tepkilerinin ne olduğu ve sonuç olarak herhangi bir tartışmaya yol açıp açmadığı ile ilgili bilgi verilmemiştir. Bu nedenle bu çalışmanın amacı sürücülerin trafikte tartışmaya iten nedenleri incelemektir. Değişik kamu kurumlarında çalışan üç yüz kırk dokuz sürücü bu çalışmaya katılmıştır. Katılımcılardan yüzde on dördü 2013 yılı içerisinde trafikte tartışma yaşadıklarını beyan etmişlerdir. Çalışmada kullanılan bağımlı değişken sadece iki kategoriden oluştuğu için, çalışmanın varsayımları test etmek amacıyla logistic regresyon analizi kullanılmıştır. Tehlikeli araba kullanma davranışının, zaman baskısının, öfkeli araba kullanmanın, heyecan arayışının ve trafikteki risk algısının katılımcıların trafikte yaşadıkları tartışmaya neden olduğu varsayılmıştır. Sonuçlar çalışmanın varsayımları kısmen doğrulanmıştır. Sonuçlara göre tehlikeli araba kullanmanın ve heyecan arayışının katılımcıların trafikte yaşamış oldukları tartışmayla ilgili olduğu görülmüştür. Bununla birlikte sürücülerin yaşları ilerledikçe daha az trafikte tartışma yaşadıkları görülmüştür. Ancak yine çalışmanın sonuçlarına göre sürücülerin günlük yapmış

\* Dr., Turkish National Police

\*\* Asst. Prof. Dr., Turkish National Police

\*\*\* Dr., Turkish National Police

mesafe, öfkeli araba kullanımı, zaman baskısı ve trafikteki risk algılarının katılımcıların trafikte tartışmaya katılmaları ile ilgili olmadığı görülmüştür.

**Anahtar Kelimeler:** Trafikte tartışma, tehlikeli araba kullanma, zaman baskısı, öfkeli araba kullanma, heyecan arayışı.

**Çalışma Türü:** Araştırma

## 1. Introduction

Aggressive driving refers to drivers' deliberate behaviors to harm physically, emotionally, or psychologically other road users in response to a traffic dispute, altercation, or grievance (Lajunen et al., 1998; Mizell, 1997; Hennessy & Wiesenthal, 2005). Among those aggressive driving behaviors, road rage refers to an extreme form of aggressive behaviors in which drivers and passengers intent to injure or kill other drivers and passengers (Garase, 2006). People lose their temper and become frustrated even for very basic reasons such as parking spot, tailgating, and horn honking. Mizell (1997) analyzed cases and listed most common reasons for violent disputes causing death or injury. According to Mizell (1997), argument over a parking space, blocking a lane, keep honking, driving too slowly, crossing the lanes without signaling, and keeping high beams on were some reasons causing disputes.

Although road rage has received increasing attention in traffic behavior research, some researchers argue that road rage is a fear which is "unfounded based on exaggerated notions of their threat and danger" (Goode & Ben-Yehuda, 2009; VIII). According to Glassner (1999), although drunk driving in US causes 85 times as many deaths as road rage, road rage receives more attention than the drunk driving. Glassner (1999; 8) defines those kinds of fears as "pseudo dangers". However, the increasing number of cars and vehicles on the road cause people to become more frustrated and more likely to involve in road rage. Traffic congestion is an unavoidable situation, since it is an "inherent result of the way modern societies operates" (Downs, 2004; 156).

In a study conducted by Smart et al. (2004) in Ontario, Canada, it was found that road rage victimization and perpetration was greater for drivers who were always on busy roads and lower for those who never drive on busy roads. According to Mizell (1997), 10,037 incidents of aggressive driving were reported to in the US from 1990 to 1996. As a result of those incidents, 218 people were killed and 12,610 people were injured. Further, research on aggressive driving and road rages showed that drivers' aggressive driving behaviors are getting worse. Frumkin (2002) showed that being in a rush or being behind schedule and increased traffic were the most cited reasons for drivers' aggressive driving behaviors in the US. Further, in the same study, 30% of the participants stated that they perceived aggressive driving was increasing. Similarly, Joint (1997) showed that 62% of the drivers feel that drivers' behavior were getting worse gradually in the UK. According to Dula & Geller (2003), aggressive driving and road rage has become a danger on international roadways as well.

Although traffic altercation is another widespread problem that any driver may experience, it does not receive much attention as road rage or driving anger do. As mentioned earlier, it is very likely that drivers may involve in a traffic altercation with other drivers even for meaningless reasons. However, some traffic altercations can ultimately turn into a violent behavior and may cause death or injury at the end. According to Luckenbill (1977; 176,185) murder "is not a one-sided event with an unwitting victim assuming a passive, non-contributory role" but "the dynamic interchange between an offender and victim". It consists of several steps involving both victim's and offender's responses. The event is developed and shaped by actions and the character of the victim and offender (Luckenbill, 1977). It could be argued that the same approach can be extended to examine traffic altercations. Similar to homicide, traffic altercations involve an offender and a victim taking active role in some degree in the altercation. Further, Hemenway & Solnick (1993) found that drivers who argue with other drivers are more likely to take risks and involve in crashes. Thus, the present study focuses on causes of traffic altercations to make an effective approach to reduce and prevent altercations on the road. A sample of people working as a driver in various public departments was used to examine factors explaining altercations that drivers experienced in traffic.

Obviously, the term traffic altercation needs to be defined in order to avoid confusion and give a clear understanding for readers. The existing research suggests that there is no common understanding about some concepts like aggressive driving and road rage (Best & Furedi, 2001; Dula & Geller, 2003). This

paper proposes that traffic altercation refers to situation in which a driver has an argument with another driver or pedestrian because of alleging infringement of his/her rights. Further, the motivation of the parties during a traffic altercation is not to intent to injure or kill each other. It is the drivers' expression of their feelings in some degree either verbally or non-verbally by making gestures. It is more than making inappropriate gestures one time, since traffic altercations require response of other side. When a driver makes an inappropriate gesture to another person, the other person may not react and just ignore the driver and his/her acts. Thus, those events are not considered as traffic altercations. Traffic altercation, therefore, refers verbal or non-verbal arguments of drivers in which both sides play active roles and involve in an argument as to an incident such as parking spot, improper lane changes, preventing other drivers from passing, honking, flashing and so on.

## 2. Turkey Context

To date, there has been no study or government report on the frequencies of traffic altercations on the roads and factors related to traffic altercations were reported. However, there has been intense media coverage when traffic altercations lead to severe injuries or death of a man. Research conducted in Turkey focused on aggressive driving behaviors and driving anger which may provide clues for understanding factors related to traffic altercations. In a study conducted by Yasak & Esiyok (2009), it was found that driving anger scale developed by Deffenbacher et al. (1994) could be used in Turkey setting and drivers having higher level of self-reported hostility are more likely to affect from hostile gesture committed by other drivers.

In a 2006 study, Sumer et al. found that age and participants' sense of their safety skills including being patient in the traffic, keeping following distances, and giving up legitimate rights were related to their sense of losing patience with other drivers. That is drivers who are older and have a higher sense of safety skills are less likely to lose their patience with other drivers. Further, same factors were found to be negatively related to participants' sense of hostile aggression and revenge and aggressive warning. However, the results indicated no relationship between participants' sense of driving skills and annual mileage they made and losing patience with other drivers. Ozkan & Lajunen (2005) found that drivers' hostile aggression and revenge and aggressive warning compromising several items including threatened verbally and made a hand gesture are related to traffic violations and errors. However, the results suggested that these two variables, hostile aggression and revenge and aggressive warning don't have any significant effect on number of accidents and number of offenses drivers involve. Further, in the same study it was found that age has a negative effect on drivers' hostile aggression and revenge and aggressive warning.

Sullman et al. (2013) examined expression of anger among 282 Turkish taxi drivers. It was found that verbal aggressive expressions were the most common way taxi drivers show their anger to other drivers followed by the use of the vehicle for flashing, honking, slowing and physical aggressive expression. The same study indicated that while drivers' age is negatively related to verbal expression, annual mileage and preferred speed are positively related to drivers' verbal aggressive expression. Further, the results suggested that drivers' verbal expression is related to loss of concentration, loss of control, and near miss for accident. However, there was no relationship between verbal aggressive expression and traffic tickets, minor accidents and major accidents. Finally, the authors noted that the mean scores of subscales of driving anger expression inventory are similar to results of previous research. Thus, it could be argued that the way drivers express their anger in Turkey is similar to the way drivers express their anger in different cultures. Similar results were also found in a study conducted by Delice (2013) with 467 drivers. The result of the study indicated drivers expressed their anger mostly verbally followed by the use of vehicle and physical aggressive expression. The results suggested that drivers' age negatively related to verbal expression. However, it was found by the study that there is a positive relationship between verbal aggressive expression and the number of accidents driver experienced.

Some of the scale items used in these studies measure whether participants show verbal aggressive behaviors or make inappropriate gestures to other drivers or subject to those behaviors on the roads. However, none of these research examined whether drivers experienced a traffic altercation with any

other driver or not. The research did not include whether those aggressive behaviors responded by the other side and subsequently lead to an argument or not. This study, however, focused on traffic altercations experienced by participants with other drivers on the roads.

### 3. Method

#### 3.1 Participants

The sampling of this study consists of drivers working as full time driver in various public departments and their sub agencies. Thirteen different public departments showed their willingness to participate in the study. Those public organizations informed their full time drivers about the study. Researchers then contacted with the drivers at their working organizations to conduct study. Participants completed fully structured self-administrated questionnaire developed to assess participants' driving behaviors and driving experiences on different issues. Three hundred forty nine usable surveys were returned from the total of 400 distributed surveys (response rate=87%).

#### 3.2. Measures

Whether drivers experienced a traffic altercation in 2013 or not is the dependent variable of this study and a dichotomous measure was employed to measure it: 0=No and 1= Yes. Five independent variables were included in the study and all measured by using four point likert scale ranging from 1= Strongly disagree and 4= Strongly agree or 1=Newer to 4= Always. Participants' self-reported risky driving behaviors was measured with three items adapted from Reason et al. (1990). Deffenbacher et al.'s (1994) three-item scale was used to assess participants' behaviors of driving anger. An adapted single item from Rundmo & Iversen (2004) was used to measure participants' traffic accident risk perception. This item was recoded as a dummy variable indicating whether the subject perceive that he will involve in a traffic accident or not (0=no and 1=yes). To assess participants' sensation seeking behaviors in traffic, four items adapted from Lajunen & Summala (1995) were used. This study also examines how perceived time pressure is related to traffic altercation, since the participants were asked to deliver people and official documents on time within a strict working hours. To measure participants' perceived sense of time pressure an adapted scale from Meijman & Kompier (1998) was used. Cronbach's alphas for the scales ranged from .54 to .71 (see appendix). The scale consists of two items. Participants' age and their average daily driving distances were also included in the study.

### 4. Results

Descriptive statistics of study measures are represented in Table 1. According to Table 1, participants' age ranged from 21 to 62 with the mean age of 41 years. Most participants were between the age of 31-40 (33%) and 41-50 (33%). The mean score of the participants' years of experience was 19 years. Thirty seven percent of the participants stated they worked for their organizations for 11-20 years. Participants indicated that they made overall 126 km per day on the weekdays. The minimum daily driving distance was 20 km and the maximum was 250 km. Fifty two percent of the participants indicated they worked less than four hours, while 48% of the percent stated they worked more than four hours in their eight hours shift. Fourteen percent of the participants indicated they had a traffic altercation in 2013.

**Table 1.** Descriptive Statistics of Participants (N=349)

Variable		N	%	Mean	SD	Min	Max
Age	1 = ≤ 30 years	58	17	41.15	9.25	21	62
	2 = 31 - 40 years	114	33				
	3 = 41 - 50 years	115	33				
	4 ≥ 51 and above	62	19				
Years of Experience	1 = ≤ 10 years	84	24	18.81	9.60	1	43
	2 = 11 - 20 years	129	37				
	3 = 21 - 30 years	103	30				
	4 = ≥ 31 years	33	10				
Daily Driving Distance	1 = ≤ 50 km	60	17	125.64	73.44	20	250
	2 = 51 - 100 km	123	35				
	3 = ≥ 101 km	166	48				
Daily Driving Time	0 = ≤ 4 hours	183	52	4.60	2.41	1	10
	1 = ≥ 5 hours	166	48				
Traffic Altercation	0 = No	301	86	.14	.34	0	1
	1 = Yes	48	14				

Table 2 presents means, standard deviations and correlations among study variables. As Table 2 reveals, while age is negatively related to traffic altercation ( $r = -.17$ ,  $p < .01$ ), risky driving behaviors ( $r = .21$ ,  $p < .001$ ), time pressure ( $r = .14$ ,  $p < .05$ ), driving anger ( $r = .13$ ,  $p < .05$ ), and sensation seeking ( $r = .18$ ,  $p < .001$ ) are positively related to traffic altercation. That is, drivers are less likely to involve in a traffic altercation as drivers get older. However, those who commit risky driving behaviors or higher sense of time pressure, driving anger, and sensation seeking are more likely to involve in traffic altercation. However, there is no relationship between daily driving distance and traffic altercation. Further, the percentage of participants who experienced traffic altercation did not differ by participants risk perception about likelihood of involve in traffic accident  $\chi^2(1, N = 349) = 1.03$ ,  $p = .31$ .

**Table 2.** Correlations Between Study Variables (N=349)

Variable	M	SD	1	2	3	4	5	6	7
1. Traffic Altercation	.14	.34	1						
2. Age	41.15	9.25	-.17**	1					
3. Daily Driving Distance	18.81	9.60	-.00	-.17**	1				
4. Risky Driving	6.13	2.50	.21***	-.26***	.09	1			
5. Time Pressure	3.88	1.46	.14*	-.29***	.02	.53***	1		
6. Driving Anger	6.31	2.24	.13*	-.07	.10	.19***	.21***	1	
7. Sensation Seeking	6.13	2.50	.18***	-.21***	.10	.33***	.32***	.12*	1

Traffic altercation= 0=No, 1= Yes  
 \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

The result of logistic regression predicting analyses participants to involve in traffic altercation presented in Table 3. According to Table 3, Hosmer-Lemeshow test yielded a  $\chi^2(7)$  of 28.53 and was significant at  $p < .001$ , suggesting that the model was fit to the data well. The results indicated that while age ( $B = -.04$ ,  $p < .05$ ) had a negative effect on involvement in traffic altercation, risky driving behaviors ( $B = .24$ ,  $p < .05$ ) and sensation seeking ( $B = .12$ ,  $p < .05$ ) affect involvement in traffic altercation positively. That is, for each increase in age, the estimated odds of involvement in traffic altercation decreases by .96 unit.

**Table 3.** The Result of Logistic Regression Analyses Predicting Participants to Involve in Traffic Altercation (N=349)

Variables	Model 1			Model 2		
	B	SE	$\beta$	B	SE	$\beta$
Constant	.57	.80	1.77	-2.17 <sup>a</sup>	1.34	.11
Age	-.06	.02	9.76**	-.04*	.02	.96
Daily Driving Distance	-.00	.00	.99	-.00	.00	.99
Risky Driving				.24*	.12	1.27
Time Pressure				-.06	.13	.94
Driving Anger				.13 <sup>a</sup>	.07	1.14
Sensation Seeking				.12*	.06	1.13
Risk Perception				-.19	.19	.83
Chi-Squared	10.37**			28.53***		
Cox & Snell	.03			.08		
Nagalkerke	.05			.14		

\* p <.05, \*\* p<.01, \*\*\* p<.001

When other variables are held constant and participants' risky driving behaviors differ one unit, participants reporting higher values of self-reported risky driving behaviors have about 1.27 estimated odds of involvement in traffic altercation comparing with/to participants' reporting lower values of risky driving behaviors. Finally, for each increase in sense of sensation seeking, the estimated odds of involvement in traffic altercation increases by 1.13 unit. In other words, the results suggest that participants were less likely to involve in traffic altercation as they became older. However, drivers having higher sense of sensation seeking and committing more risky driving behaviors more likely to involve in traffic altercation. Participants' driving anger behaviors was related to involvement in traffic altercation at B=.14, p<.10 level. However, the results indicated no relationship between daily driving distance, perceived sense of time pressure, and perceived sense of risk perception and involvement in traffic altercation.

### Discussion

The purpose of this study is to examine factors related to traffic altercation in a sample of drivers working for public organizations as full time drivers. The findings are partly consistent with our theoretical model and previous research. Previous research conducted in Turkey (Sumer et al., 2006; Ozkan & Lajunen, 2005) and in other cultural settings (Lajunen & Parker, 2001; Lajunen et al., 1998; Lonczak et al., 2007) showed that age has a negative effect on driver anger and hostile gestures. As suggested by the present study, it was found that drivers are less likely to involve in traffic altercation as they become older. It could be argued that as people getting older they do not want to involve in a problem and they become more tolerant to other drivers' rude and hostile behaviors.

Further, the results indicated that participants' risky driving behaviors and sensation seeking are related to their involvement in the traffic altercation. These findings are also consistent with the previous research conducted in Turkey (Sumer et al., 2006; Ozkan & Lajunen, 2005) and in other cultural settings (Deffenbacher et al., 2001; Deffenbacher et al., 2002; Dahlen et al., 2005). This result suggests that people who do not respect traffic rules and seek sensation in traffic are also not regardful of relations with other people in traffic. They see traffic altercation as a part of urban life that could not be avoidable and may tend to incorporate anger into their life.

However, the result indicated that daily driving distances, driving anger, time pressure, and perceived risk in the traffic are not related to participants' involvement in traffic altercation. Since driving anger was related to participants involvement in traffic altercation in bivariate analysis and related to traffic altercation at p<.10 level in the multivariate analysis, still it could be argued that driving anger contributed to participants involvement in traffic altercation. Additionally, the result suggests that our definition of involvement in traffic altercation is a different concept than the driving anger. Otherwise, there should have been a strong correlation between these two variables. Regarding daily driving distances, driving anger, and risk perception in traffic variables, although there was no relation between them and

involvement in traffic altercation, they could have indirect effect on involvement in traffic altercation through other variables. Thus researchers may examine indirect effect of these variables on involvement in traffic altercation in future research.

Asbridge et al. (2006) argued that driving anger and road rage are some parts of increasing violent in the general society. Thus, any approach or prevention efforts should consider the characteristics and social trends in larger society to lessen and prevent traffic altercations, road rages, driving anger. These programs and approach consider using simple strategies in their prevention methods. According to Joint (1995), drivers can adopt simple strategies to restrict their frustration, anger, and rage. So, we do not need complex prevention programs to prevent those behaviors in traffic. Further, although researchers collect data on behaviors in traffic, officials in Turkey do not collect such data. It is important since such data could allow researchers to make more comprehensive studies to see the real picture across the country.

Similar to any scientific study, this study also has several limitations. One of the limitations is related to measures of the study. In this study, self-reported measures were used to examine factors affecting participants to involve in traffic altercations. Second, since the sample of this study only consists of public drivers, the study did not examine possible differences between driving behaviors of participants and driving behaviors of ordinary drivers, if any. Thus, further research may want to consider make such a comparison. Third, this study has measured only some facets of participants' involvement in traffic altercation. Future research also may want to consider to examine other possible factors related to traffic altercations.

### Acknowledgement

This document has been produced with the help of a grant from The Global Road Safety Partnership a hosted project of the International Federation of Red Cross and Red Crescent Societies. The contents of this document are the sole responsibility of the authors and can under no circumstances be regarded as reflecting the positions of International Federation of Red Cross and Red Crescent Societies (IFRC) nor those of the Donors.

### References

- Asbridge, M., Smart, R. G., & Mann, R. E. (2006). "Can We Prevent Road Rage?", *Trauma, Violence, & Abuse*, no: 7, p. 109-121.
- Best, J., & Furedi, F. (2001). "The evaluation of road rage in Britain and the United States", In J. Best (Ed.), *How Claims Spread: Cross-National Diffusion of Social Problems* (pp. 107-127), Hawthorne, NY, Aldine de Gruyter.
- Dahlen, E. R., Martin, R. C., Ragan, K., & Kuhlman, M. M. (2005). "Driving Anger, Sensation Seeking, Impulsiveness, and Boredom Proneness in The Prediction Of Unsafe Driving", *Accident Analysis & Prevention*, no: 37, p. 341-348.
- Deffenbacher, J. L., Getting, E. R., & Lynch, R. S. (1994). "Development of a Driving Anger Scale", *Psychological Reports*, no: 74, p. 83-91.
- Deffenbacher, J. L., Lynch, R. S., Oetting, E. R., & Yingling, D. A. (2001). "Driving Anger: Correlates and a Test of State-Trait Theory", *Personality and Individual Differences*, no: 31, p. 1321-1331.
- Deffenbacher, J. L., Lynch, R. S., Oetting, E. R., & Swaim, R. C. (2002). "The Driving Anger Expression Inventory: A Measure of How People Express Their Anger on the Road", *Behaviour Research and Therapy*, no: 40, p. 717-737.
- Delice, M. (2014). "The Investigation of Factors Causing Anger on Drivers and the Drivers' Response Against These Factors", *Journal of Graduate School of Social Sciences*, no: 17, p. 251-273.
- Downs, A. (2004). *Traffic: Why It's Getting Worse, What Government Can Do?*, Washington, DC, Brookings Institution.
- Dula, C. S., & Geller, E. S. (2003). "Risky, Aggressive, or Emotional Driving: Addressing the Need For Consistent Communication in Research", *Journal of Safety Research*, no: 34, p. 559-566.
- Frumkin, H. (2002). "Urban Sprawl and Public Health", *Public Health Reports*, no: 117, p. 201-217.



- Garase, M. L. (2006). *Road Rage*, New York, NY, LFB Scholarly Publishing.
- Glassner, B. (1999). *The Culture of Fear: Why Americans are Afraid of The Wrong Things*, New York, NY, Basic Books.
- Goode, E., & Ben-Yehuda, N. (2009). *Moral Panics: The Social Construction of Deviance*, Malden, MA, Wiley-Blackwell.
- Hemenway, D., & Solnick, S. J. (1993). "Fuzzy Dice, Dream Cars, and Indecent Gestures: Correlates of Driver Behavior?", *Accident Analysis & Prevention*, no: 25, p. 161-170.
- Hennessy, D. A., & Wiesenthal, D. L. (2005). "Driving Vengeance and Willful Violations: Clustering Of Problem Driving Attitudes", *Journal of Applied Social Psychology*, no: 35, p. 61-79.
- Joint, M. (1997). "Road Rage". In *Agressive Driving: Three Studies*, Washington, D.C, AAA Foundation for Traffic Safety.
- Lajunen, T., & Parker, D. (2001). Are Aggressive People Aggressive Drivers? A Study of the Relationship between Self-Reported General Aggressiveness, Driver Anger and Aggressive Driving", *Accident Analysis & Prevention*, no: 33, p. 243-255.
- Lajunen, T., & Summala, H. (1995). "Driving Experience, Personality, and Skill and Safety-Motive Dimensions in Drivers' Self-Assessments", *Personality and Individual Differences*, no: 19, p. 307-318.
- Lajunen, T., Parker, D., & Stradling, S. G. (1998). "Dimensions of Driver Anger, Aggressive and Highway Code Violations and Their Mediation by Safety Orientation in UK Drivers", *Transportation Research Part F: Traffic Psychology and Behaviour*, no: 1, p. 107-121.
- Lonczak, H. S., Neighbors, C., & Donovan, D. M. (2007). "Predicting Risky and Angry Driving as a Function of Gender", *Accident Analysis & Prevention*, no: 39, p. 536-545.
- Luckenbill, D. F. (1977). "Criminal Homicide as a Situated Transaction", *Social Problems*, no: 25, p. 176-186.
- Meijman, T. F., & Kompier, M. A. (1998). "Bussy Business: How Urban Bus Drivers Cope with Time Pressure, Passengers, and Traffic Safety", *Journal of Occupational Health Psychology*, no: 3, p. 109-121.
- Mizell, L. (1997). "Aggressive Driving". In *Agressive Driving: Three Studies*, Washington, D.C, AAA Foundation for Traffic Safety.
- Ozkan, T., & Lajunen, T. (2005). "A New Addition to DBQ: Positive Driver Behaviours Scale", *Transportation Research Part F: Traffic Psychology and Behaviour*, no: 8, p. 355-368.
- Reason, J., Manstead, A., Stradling, S., Baxter, J., & Campbell, K. (1990). "Errors and Violations on the Roads: A Real Distinction?", *Ergonomics*, no: 33, p. 1315-1332.
- Rundmo, T., & Iversen, H. (2004). "Risk Perception and Driving Behaviour among Adolescents in Two Norwegian Counties Before and After a Traffic Safety Campaign", *Safety Science*, no: 42, p. 1-21.
- Smart, R. G., Stoduto, G., Mann, R. E., & Adlaf, E. M. (2004). "Road Rage Experience and Behavior: Vehicle, Exposure, and Driver Factors", *Traffic Injury Prevention*, no: 5, p. 343-348.
- Sullman, M. J., Stephens, A. N., & Kuzu, D. (2013). "The Expression of Anger amongst Turkish Taxi Drivers", *Accident Analysis & Prevention*, no: 56, p. 42-50.
- Sumer, N., Ozkan, T., & Lajunen, T. (2006). "Asymmetric Relationship between Driving and Safety Skills", *Accident Analysis & Prevention*, no: 38, p. 703-711.
- Yasak, Y., & Esyok, B. (2009). "Anger amongst Turkish Drivers: Driving Anger Scale and Its Adapted, Long and Short Version", *Safety Science*, no: 47, p. 138-144.

## Appendix

Variables	A/SA / %	M / SD	Factor Loading
<b><i>Risky Driving</i></b>			
Deliberately speeding on a not-busy road	56 / 16	1.93 / .72	.75
Crossing an intersection knowing the traffic light has just turned red	25 / 7	1.43 / .65	.71
Deliberately following a car at close distance in order to make it move to	32 / 9	1.46 / .73	.71
<b><i>Cronbach's Alpha</i></b>			.54
<b><i>Driving Anger</i></b>			
I get angry when someone makes an obscene gesture toward about my driving	88 / 25	2.06 / .92	.77
I get angry when someone honks at me about my driving	76 / 22	2.07 / .89	.85
I get angry when someone yells at me about my driving	104 / 30	2.18 / .96	.82
<b><i>Cronbach's Alpha</i></b>			.74
<b><i>Sensation Seeking</i></b>			
I do avoid the competition in traffic (R)	61 / 18	1.62 / .98	.70
I keep sufficient following distance (R)	34 / 10	1.44 / .74	.80
I do avoid unnecessary risks (R)	35 / 10	1.41 / .75	.86
I conform to the speed limits (R)	55 / 16	1.65 / .83	.70
<b><i>Cronbach's Alpha</i></b>			.75
<b><i>Time Pressure</i></b>			
If I am too late, I start pacing up	66 / 19	1.99 / .77	.88
I feel strongly compelled to run on time	72 / 21	1.89 / .88	.88
<b><i>Cronbach's Alpha</i></b>			.71
<b><i>Risk Perception</i></b>			
It is very likely that I involve traffic accident in the future	146 / 42	2.38 / .91	
R= Reverse			