



4. GENDER DIFFERENCES ON PERSONALITY TRAITS AT DRIVERS, AGGRESSIVE DRIVING BEHAVIOR AND CAR BRAND

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Abstract

The objective of this research is to investigate the gender differences on personality traits of drivers, driving aggression and car brands. The first objective of the study is to investigate gender differences on personality traits and driving aggression, the second objective being to investigate driving aggression and car brands. Instruments: Aggressive Driving Behavior (AVIS) for to measures driving aggression; IVPE (Inventory Driving related Personality traits) for to measures personality traits. Results: It has been confirmed that there are gender differences on driving aggression, but no exist significant differences on driving aggression regarding car brands. Conclusion: There are gender differences on personality traits and the hypothesis has been confirmed.

Cuvinte cheie: *trafic, personalitate, agresivitate, diferențe de gen.*

Keywords: *trafic, personality, aggression, gender differences.*

1. INTRODUCTION

Driving plays an important role in our society. For most of us, driving represents freedom, control and independence. Leads us to places where we want or where we need to go, and for many of us, driving is either part of our work or the necessary means to get to work.

Unfortunately, the time we spend driving became a stressful part of the daily routine since we became increasingly worried about aggressive drivers. Indeed, 78% of respondents in AAA Foundation Traffic Safety Culture Index 2008 rated aggressive drivers as a serious problem for traffic safety (AAA Foundation for Traffic Safety, 2008).

The cost of this safety problem in terms of loss of life and property damage indicates the level of concern: 56% of fatal accidents in 2003 and 2007 involved one or more actions of the driver typically associated with aggressive driving (Foundation AAA Traffic Safety, 2009).

Moreover, the administrative and medical costs and also the costs for employers regarding lost productivity can be considered. And since none of the drivers is immune to the negative effects of this behavior, anyone who tries to get a better understanding of this work is worthwhile. This, in turn can inform the design of strategies to mitigate this behavior.

2. PERSONALITY AND AGGRESSIVE DRIVING BEHAVIOR

A framework for understanding the aggressive driving was proposed by two researchers in a study published in more than 60 years ago. Tillmann and Hobbes (1949) established that personality is the determining factor which causes some people to crash.

These researchers examined the social behavior of two groups of taxi drivers: 20 drivers with high accident risk and 20 drivers with low accident risk. The first group was composed of persons incapable of tolerating aggressive authority, while the other end was found to be composed of serious, stable and well-adjusted people.

In an effort to increase generalize this finding, Tillmann and Hobbes (1949) also analysed the social behavior of 96 male drivers with four or more accidents recorded and 100 drivers without accidents. Thus, it proved that there is a similar frequency of road accidents in the general population to a specific group of taxi drivers.

This conclusion was confirmed by Broughton (2007), which investigated the relationship between the number of crimes motoring and non-motoring on a sample of over 52,000 British drivers during the period of 1999-2003.

Broughton (2007) found a strong correlation between the number of motoring offenses and non-motoring. Specifically, he found that 2.5% of male drivers have committed at least one non-motoring offense (eg violence against a person, sexual offense, theft, robbery, theft of / from a vehicle fraud and forgery, criminal damage and drug offenses), but 30.6% of this group had committed at least one serious motoring offense (eg, time of suspension, reckless driving, or they drink and drive). The correlation was stronger for feminine.

Tillmann and Hobbes (1949) and Broughton (2007) have demonstrated a correlation between social maladjustment and tendency to drive aggressively. But which is the real contribution of an individual's personality when it comes to aggressive driving? People with certain personality types tend to drive the vehicles

aggressive, or something about driving, which causes aggressive behavior even among educated individuals?

What aspects of an individual's personality could play a role in aggressive driving? And besides, if personality plays a role in aggressive driving, this behavior is affected by changes in personality as the individual gets older? Attempts to answer these questions have been made by several researchers. Personality traits (or dimensions) associated with assertiveness and impulse actions are made a priori reasonable candidates to study driving behavior.

Renner and Anderle (2000) conducted a study that attempted to clarify the relationship between these variables. They found that traffic offenders have achieved high scores on extraversion dimension than individuals in a control group that did not have traffic offenses. Moreover, previous group scored a great score for a sense of adventure than the other group.

Renner and Anderle (2000) defined extraversion dimension of personality that describe people who are comfortable, "who do not keep their feelings well under control so that introverts, who sometimes tend to act spontaneously and even aggressive and therefore less likely to comply with regulations "(p. 674). On the other hand, these researchers define the sense of adventure that personality dimension involving "a tendency to act on the spur of the moment, to seek thrill and adventure" (p.674).

Other researchers had a more focused approach, looking at aggressive driving behavior and linking it with personality traits. For example, Lajunen and Parker (2001) studied the relationship between general aggression, anger driver, and driving aggressively.

These researchers surveyed over 270 UK drivers (171 men and 98 women) using a modified version of Deffenbacher's Driving Anger Scale (DAS; Deffenbacher et al., 1994), Buss and Perry's Aggression Questionnaire (Buss and Perry, 1992) and impulsivity questionnaire of Eysenck (Eysenck et al., 1985). The results showed that people who describes himself that verbal aggression were more likely to offend driving recklessly other drivers, and in addition, "With so riled more so gave an answer verbally aggressive" (p. 252) .

Krahe & Fenske (2002) studied the relationship between "macho personality" and aggressive driving. Mosher and Sirkin (1984) defined personality that exaggerated macho stereotype that male approval, which is acquired in middle childhood. Similar macho personality described above, another personality trait

which has a self-concept is narcissism. Schreer (2002) examined the relationship between this trait and aggressive driving behavior.

In this study, narcissism, selfishness threatened defined in the context of theory, it is an attitude characterized by a full view of itself. Schreer (2002) surveyed 91 students (63 females and 28 males) at a small college in the Northeast.

The tests used include Rosenberg Self-Esteem Scale (Rosenberg, 1965), Narcissistic Personality Inventory (NPI, Raskin and Terry, 1988), Driving Anger Scale (Deffenbacher et al., 1994), and a questionnaire with 12 items regarding aggressive driving created by the author to measure common behaviors identified as indicators of aggressive driving (eg swearing, obscene gestures).

One line of research on aggressive driving, which has a different orientation is exemplified by Moore and Dahlen (2008). Instead of trying to identify the personality dimensions that exacerbate aggressive driving, these researchers were interested in investigating the personality factors that could reduce this behavior. In particular, Moore and Dahlen (2008) examined the effects of two personality factors on the risk of aggressive driving, trait of forgiveness and consideration of future consequences.

Another study (Yi-Lang, 2007) revealed that drivers with raised scores of aggression to personality questionnaires are using more mobile phones while driving, compared to the non-aggressive.

Miles and Johnson (2003) studied the relationship between a wide range of personality dimensions and aggressive driving. Specifically, they investigated the relationship between personality, attitudes, beliefs, and aggressive driving. Personality characteristics were measured using the International Personality Pool (Goldberg, 1999).

The results showed that the two groups have significantly different scores in terms of driving as behavior, attitude and conviction. There were no significant differences, however, between personality traits, conscientiousness, agreeability and neuroticism.

Dahlen and associations have conducted two studies combined several personality dimensions in the study of aggressive driving. Dahlen et al (2006) studied the usefulness of combining trait anger (for example, tend to become angry when faced with frustration and challenge the way), sensation seeking, and five personality factors, Dahlen et al (2006) found that openness, emotional stability, good companionship, trait anger, and sensation seeking predict driving behavior.

According to a research carried out on Norwegian drivers (Iversen, Torbjörn, 2002), people with high scores of aggression committed driving riskier manoeuvres, feeling they can master the events that are experienced, take risks and commit accidents resulting in injuries and property damage materials more than other drivers.

A research conducted among Serb drivers (Jovanovic et al., 2011) tries to enter the deepness of aggressiveness at the wheel, considered an epidemic of worldwide proportions, analysing personality factors likely to determine the driver's aggressive behavior.

High correlations were found between neuroticism and anger / reactivity at the wheel, full factorial result (comprising also the size and agreeability and conscientiousness) explaining a high proportion of the variance of aggressive driving behavior.

Also in France, Vernet A. (2001) conducted a study on the personality of 127 driver's offenders and concluded that there is no psychological particularities of them when compared to drivers who break the law, but motorcycle pass holders have certain personality features of the group.

However, in terms of gender differences, the author discovered that men, unlike women, make a narcissistic investment in their car, with a significant contribution on their image and self-esteem. The car becomes a "support of masculine identity" and the exacerbation of identity is associated with various behaviors that favour the risk of crime and accidents.

3. OBJECTIVE AND HYPOTHESES

3.1. OBJECTIVE

The objective of this research is to investigate the gender differences on personality traits of drivers, aggressive driving behavior and car brand. Thus, the main objectives of this research are:

- the first objective of the research is to investigate gender differences on personality traits and aggressive driving behavior.
- the second objective of the research is to investigate the aggressive driving and car brand.

3.2. HYPOTHESES

1. There are significant differences on gender differences and aggressive driving behavior.
2. There are significant differences on aggressive driving and car brand.
3. There are significant differences on personality traits and aggressive driving behavior.

4. METHOD

4.1. PARTICIPANTS

In this research, the sample is to 36 participants (18 male and 18 female), with ages between 20 and 30 years old ($M= 23,69$, $SD= 2.24$). Participants coming to rural and urban environment.

4.2. INSTRUMENTS

1. Aggressive Driving Behavior Questionnaire (AVIS)- Vienna Test System. This instrument contain 35 items with 3 scales to measure aggressive driving behavior: instrumental aggression, anger and enjoyment of violence. This instrument it has eight answers options using Likert scale (1- Never; 8- Very often). The internal consistency of the instrument it is greater than $\alpha = .80$ for each scales.

2. Inventory of driving related Personality Traits (IVPE)- Vienna Test System. This instrument is an multidimensional instrument to measure personality traits for drivers: Emotional Stability, Sense of responsibility, Self-control, Adventure, Need for Adrenaline. This instrument contains 47 items, with 9 items for control questions. This instrument it has eight answers options using Likert scale (1- Never; 8- Very often). The internal consistency of the instrument it is greater than $\alpha = .86$ for each scales.

4.3. PROCEDURE

The instruments were uploaded on Google Docs and the participants completed the instruments. Before completing the instruments, participants read an informed consent. The participants were volunteers and received no reward.

4.4. EXPERIMENTAL DESIGN

The design of this research is descriptive and correlational and the variables of the research are: gender differences, aggressive driving behavior and car brand.

5. RESULTS

Table 1. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Gender	36	1	2	1,50	,507
Instrumental_agg	36	14,00	68,00	36,5278	14,71731
Anger	36	7,00	42,00	24,6944	9,33142
Enjoyment of violence	36	5,00	22,00	9,3056	4,04135
Emotional stability	36	12,00	52,00	26,7222	10,23889
Sens of responsibility	36	15,00	77,00	55,4167	14,24756
Self Control	36	6,00	41,00	27,5000	7,90840
Aadventure & need for adrenaline	36	12,00	77,00	40,8056	15,71863
Honesty	36	16,00	59,00	39,8611	9,21847

Table 2. Descriptive Statistics

	N	Std. Deviation		Skewness		Kurtosis	
		Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Gender	36		,507	,000	,393	-2,121	,768
Instrumental_agg	36		14,71731	,637	,393	-,544	,768
Anger	36		9,33142	,004	,393	-,353	,768
Enjoyment of violence	36		4,04135	1,511	,393	2,444	,768
Emotional stability	36		10,23889	,785	,393	,141	,768
Sens of responsibility	36		14,24756	-,556	,393	,347	,768
Self Control	36		7,90840	-,931	,393	,931	,768
Aadventure & need for adrenaline	36		15,71863	,104	,393	-,643	,768
Honesty	36		9,21847	-,358	,393	,673	,768

In table 1 and table 2 it can be observed the instrumental aggression (M=36,52, SD=14,71), anger (M=24,69, SD=9,33), enjoyment of violence (M=9,30, SD=4,04), emotional stability (M=26, 72, SD= 10,23), sens of responsibility (M=55,41, SD=14,24), self-control (M=27,50, SD=7,90), aadventure and need of adrenaline (M=40,80, SD=15,71), honesty (M=39,86, SD=9,21).

In table 1 and 2, it can be observed that there are significant differences between negative emotions : instrumental aggression (M= 36), enjoyment of violence (M=24), aadventure (M=9), need of adrenaline (M= 40). Thus, there no

significant differences between emotional stability, self-control, but exist significant differences between sense of responsibility and honesty.

Table 3. Tests of Normality

	Statistic	Df	Sig.
Instrumental_agg	.937	36	.040
Anger	.971	36	.466
Enjoyment of violence	.851	36	.000
Emotional stability	.939	36	.047
Sens of responsibility	.963	36	.259
Self Control	.935	36	.037
Aadventure & need for adrenaline	.971	36	.467
Honesty	.967	36	.353

Table 3.1 One-Sample Kolmogorov-Smirnov Test

	Instrumental_agg	Anger	Enjoyment of violence	Emotional stability	Sense of responsibility	Self Control	Aadventure and need of adrenaline	Honesty
N	36	36	36	36	36	36	36	36
Normal Parameters ^{a,b}	Mean	36.52	24.69	9.30	26.72	55.41	27.50	39.86
	Std. Deviation	14.717	9.33	4.04	10.23	14.24	7.90	9.21
Most Extreme Differences	Absolute Positive	.17	.10	.18	.10	.08	.14	.12
	Negative	-.07	-.08	-.14	-.07	-.08	-.14	-.12
Kolmogorov-Smirnov Z		1.02	.60	1.09	.62	.53	.84	.76
Asymp. Sig. (2-tailed)		.24	.86	.18	.82	.93	.46	.59

In table 3 and table 3.1 it was applied the Kolmogorov-Smirnov Z for normal distribution, thereby it has been observed that instrumental aggression, anger, enjoyment of violence, emotional stability, sense of responsibility, self-control, adventure and need of adrenaline and honesty have a normal distribution of data.

Table 4. Mann Whitney U test

	Ranks			
	Gender	N	Mean Rank	Sum of Ranks
Instrumental_agg	Male	18	21,56	388,00
	Female	18	15,44	278,00
	Total	36		
Anger	Male	18	18,69	336,50
	Female	18	18,31	329,50
	Total	36		
Enjoyment of violence	Male	18	19,69	354,50
	Female	18	17,31	311,50
	Total	36		
Emotional stability	Male	18	16,64	299,50
	Female	18	20,36	366,50
	Total	36		
Sense of responsibility	Male	18	16,86	303,50
	Female	18	20,14	362,50

	Total	36		
Self-Control	Male	18	22,47	404,50
	Female	18	14,53	261,50
	Total	36		
Aadventure& need of adrenaline	Male	18	21,03	378,50
	Female	18	15,97	287,50
	Total	36		
Honesty	Male	18	20,44	368,00
	Female	18	16,56	298,00
	Total	36		

In table 4, it can be observed significant differences by gender. Regarding the dimensions of aggressive driving behavior, it can be observed significant differences to instrumental aggression, self control, adventure, need of adrenaline and honesty.

Table 5. Between-Subjects Factors

	Value	Label	N
Brand	1	Audi	2
	2	Ford	5
	3	VW	4
	4	Opel	7
	5	Skoda	3
	6	Chevrolet	3
	7	BMW	2
	8	Dacia	5
	9	Renault	4
	10	Kia	1

The participants which have Opel and Ford cars had the highest score at aggressive driving behavior.

Table 6. Descriptive statistics

	Brand	Mean	Std. Deviation	N
Instrumental_agg	Audi	33.5000	.70711	2
	Ford	47.8000	15.53061	5
	VW	36.0000	19.25271	4
	Opel	33.2857	15.91346	7
	Skoda	42.0000	22.53886	3
	Chevrolet	28.0000	6.92820	3
	BMW	23.0000	1.41421	2
	Dacia	31.8000	6.94262	5
	Renault	49.7500	6.34429	4
	Kia	18.0000	.	1
	Total	36.5278	14.71731	36
Anger	Audi	20.0000	2.82843	2
	Ford	27.4000	7.36885	5
	VW	23.0000	11.69045	4
	Opel	21.7143	9.51690	7
	Skoda	21.6667	8.38650	3
	Chevrolet	22.6667	9.81495	3
	BMW	18.0000	15.55635	2
	Dacia	30.8000	10.84896	5
	Renault	29.0000	9.30949	4
	Kia	29.0000	.	1
	Total	24.6944	9.33142	36

	Audi	10.5000	6.36396	2
	Ford	10.8000	3.27109	5
	VW	8.5000	2.64575	4
	Opel	10.7143	4.78589	7
	Skoda	10.0000	4.00000	3
Enjoyment of Violence	Chevrolet	7.6667	1.15470	3
	BMW	7.0000	2.82843	2
	Dacia	6.0000	1.00000	5
	Renault	12.0000	6.78233	4
	Kia	6.0000	.	1
	Total	9.3056	4.04135	36

In table 6 it can be observed, the first three brands car that have significant means:

- Instrumental Aggression: Renault (M=49,75), Ford (M=47,80), Skoda (M=42.00)
- Anger: Dacia (M=30), Renault and Kia (M=29)
- Violence: Renault (M=12), Ford (M=10,80) and Opel (M=10,71)

Tabelul 7. Group Statistics

	Gen	N	Mean	Std. Deviation	Std. Error Mean
Instrumental_agg	Male	18	41.6111	16.39992	3.86550
	Female	18	31.4444	11.05719	2.60620
anger	Male	18	24.7778	9.32142	2.19708
	Female	18	24.6111	9.61089	2.26531
Enjoyment of violence	Male	18	9.9444	4.70884	1.10988
	Female	18	8.6667	3.25396	.76696

In table 7 it can be observed the gender differences between male and female for instrumental aggression.

Tabelul 8. Mancova

Source	Dependent Variable	Tests of Between-Subjects Effects				
		Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	Emotional stability	275.761 ^a	4	68.940	.630	.645
	Sense of responsibility	100.306 ^b	4	25.077	.111	.978
	Self control	338.474 ^c	4	84.619	1.418	.251
	Adventure & need for adrenaline	2107.983 ^d	4	526.996	2.498	.063
	Honesty	409.697 ^e	4	102.424	1.238	.315
Intercept	Emotional stability	1520.662	1	1520.662	13.892	.001
	Sense of responsibility	9067.004	1	9067.004	40.128	.000
	Self control	1431.171	1	1431.171	23.975	.000
	Adventure & need for adrenaline	942.822	1	942.822	4.469	.043
	Honesty	3587.708	1	3587.708	43.367	.000
Instrumental_agg	Emotional stability	7.514	1	7.514	.069	.795
	Sense of responsibility	.900	1	.900	.004	.950
	Self control	1.782	1	1.782	.030	.864
	Adventure & need for adrenaline	377.822	1	377.822	1.791	.191
	Honesty	87.930	1	87.930	1.063	.311
Anger	Emotional stability	44.844	1	44.844	.410	.527

	Sense of responsibility	.477	1	.477	.002	.964
	Self control	47.842	1	47.842	.801	.378
	Adventure & need for adrenaline	261.213	1	261.213	1.238	.274
	Honesty	78.574	1	78.574	.950	.337
	Emotional stability	13.473	1	13.473	.123	.728
Enjoyment of violence	Sense of responsibility	7.335	1	7.335	.032	.858
	Self control	25.519	1	25.519	.427	.518
	Adventure & need for adrenaline	104.174	1	104.174	.494	.487
	Honesty	105.388	1	105.388	1.274	.268
	Emotional stability	160.646	1	160.646	1.468	.235
	Sense of responsibility	76.427	1	76.427	.338	.565
	Self control	183.507	1	183.507	3.074	.089
	Adventure & need for adrenaline	133.899	1	133.899	.635	.432
	Honesty	173.146	1	173.146	2.093	.158
	Emotional stability	3393.461	31	109.466		
Gender	Sense of responsibility	7004.444	31	225.950		
	Self control	1850.526	31	59.694		
	Adventure & need for adrenaline	6539.656	31	210.957		
	Honesty	2564.609	31	82.729		
	Emotional stability	29376.000	36			
Error	Sense of responsibility	117661.000	36			
	Self control	29414.000	36			
	Adventure & need for adrenaline	68591.000	36			
	Honesty	60175.000	36			
	Emotional stability	3669.222	35			
Total	Sense of responsibility	7104.750	35			
	Self-control	2189.000	35			
	Adventure & need for adrenaline	8647.639	35			
	Honesty	2974.306	35			
	Emotional stability					
Corrected Total	Sense of responsibility					
	Self-control					
	Adventure & need for adrenaline					
	Honesty					
	Emotional stability					

In table 8 it can be observed there are no significant differences between emotional stability ($F(0,06)=0,7$, $p>0,05$), sens of responsibility ($F(0,00)=0,9$, $p>0,05$), self control ($F(0,30)=0,8$, $p>0,05$), adventure and need of adrenaline ($F(1,79)=0,1$, $p>0,05$) and honesty ($F(1,06)=0,3$, $p>0,05$), depending to instrumental aggression.

In table 8 it can be observed there are no significant differences between emotional stability ($F(0,41)=0,5$, $p>0,05$), sens of responsibility ($F(0,00)=0,9$, $p>0,05$), self control ($F(0,80)=0,3$, $p>0,05$), adventure and need of adrenaline ($F(1,23)=0,2$, $p>0,05$) and honesty ($F(0,95)=0,3$, $p>0,05$), depending to anger.

In table 8 it can be observed there are no significant differences between emotional stability ($F(0,12)=0,7$, $p>0,05$), sens of responsibility ($F(0,03)=0,8$, $p>0,05$), self control ($F(0,42)=0,5$, $p>0,05$), adventure and need of adrenaline ($F(0,49)=0,4$, $p>0,05$) and honesty ($F(1,27)=0,2$, $p>0,05$), depending to enjoyment of violence.

6. CONCLUSION

This research aims to highlight gender differences on personality traits, aggressive driving and car brand.

Thus, the main objectives of the study were:

- -first objective of the study is to investigate the gender differences on personality traits and aggressive driving.
- the second objective of the study is to investigate the aggressive driving and car brand.

After statistical interpretation of the present study, we concluded: the first hypothesis "There are statistically significant differences regarding gender differences and aggressive driving." was confirmed, also hypothesis 2 which "no statistically significant differences on aggressive driving and car brand." has been confirmed, and the last hypothesis "There are statistically significant differences on personality traits and driving agresiv" was invalidated.

REFERENCES

- Arnett, J. (1994). Sensation seeking: a new conceptualization and a new scale. *Personality and Individual Differences*, 16, 289–296.
- Ball, K., Owsley, C., Stalvey, B., Roenker, D. L., & Graves, M. (1998). Driving avoidance, functional impairment, and crash risk in older drivers. *Accident Analysis and Prevention*, 30, 313-322.
- 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 and Prevention*, 37, 341-348.
- Eysenck, S. B. G., Eysenck, H. J., & Barrett, P. (1985). A revised version of the Psychoticism Scale. *Personality and Individual Differences*, 6, 21–29.
- YI-Lang C.,(2007). Driver personality characteristics related to self-reported accident involvement and mobile phone use while driving, *Safety Science*, 45(8),823–831.
- Vienna Test System (2007). *Manual Vienna Test System*. Austria.

REZUMAT

Obiectivul acestei cercetări este acela de a investiga diferențele de gen asupra trăsăturilor de personalitate ale șoferilor, agresivitate în trafic și mărcile de mașini. Primul obiectiv al studiului este acela de a investiga diferențele de gen asupra trăsăturilor de personalitate și a condusului agresiv, iar al doilea obiectiv este acela de a investiga condusul agresiv și marca mașinii. Instrumente: Aggressive Driving Behavior (AVIS) pentru măsurarea agresivității în trafic, iar pentru măsurarea personalității s-a utilizat instrumentul IVPE (Inventory Driving related Personality traits). Rezultate: S-a confirmat că există diferențe de gen cu privire la agresivitatea în trafic, dar nu există diferențe pe agresivitate în trafic cu privire la brandurile mașinilor. Concluzii: s-au confirmat două ipoteze din trei, existând diferențe de gen dar nu și din punctul de vedere al brandurilor mașinilor cu privire la agresivitate în trafic.