



## RELATIONSHIP BETWEEN AGGRESSIVE DRIVING, PAIN PERCEPTION AND PERSONALITY TRAITS AT DRIVERS

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### **Abstract**

*In the area of transport psychology, aggression in traffic is a widely debated topic because of its social implications, this is one of the major causes of unpleasant events that take place in society, therefore numerous studies can be found that investigate aggressive behavior of drivers, most researchers considering that personality is its best predictor. This study aims to highlight the relations between these three variables, thus providing a basis for better understanding the behavior in traffic. A total of 37 subjects, aged between 20 and 51 years old who have obtained driving license at least two years before participating in the study, and drove a car both the city and national roads or on highways, completed the Aggressive driving behavior test (AVIS), Questionnaire on Reaction to Pain (FSV) and IPIP Big Five Markers, from Vienna Test System.*

*The hypotheses of the study were partially sustained by the data.*

*Therefore, the present study managed to obtain statistically significant relations between personality traits and the aggressive behavior manifested by drivers in traffic, correlations are thus by the results of researchers who have made contributions in this area. In addition, this study expands knowledge by introducing a third variable, namely the perception of pain, thus highlighting statistically significant correlations between this and personality traits.*

**Cuvinte cheie:** personalitate, big five, comportament agresiv, soferi, trafic

**Keywords:** personality, big five, aggressive behavior, drivers, traffic

### 1. INTRODUCTION

Bushman and Anderson (2001) explain the above described identifying several types of aggression, namely: hostile aggression, instrumental aggression, physical aggression, verbal aggression, aggression directly and indirectly.

Ricardo Martinez, administrator at National Highway Traffic Safety Administration defines aggressive driving as the behavior that endangers or may endanger people or different properties (Chraif & Anitei, 2013).

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Chraif, Aniței, Burtăverde & Mihăilă (2015) conducted a study regarding the personality, aggressive driving, and risky driving outcomes. Furthermore, Chraif, Aniței, Dumitru, Burtăverde & Mihăilă (2015) were involved in developing of an english version of the aggressive driving behavior test from Vienna Tests System (2012).

After extensive researches, it was concluded unanimously that aggressiveness correlated with the risk of accident and those who reported aggressive behavior were almost in an accident (Havarneanu, 2013).

Forms of aggression in this plan are: flashes, honking without reason, swearing, obscene gestures, quarrels, fights or scandals in the street, speeding over the limit accepted by the law, stopping the engine intentionally in full street, offending participants in traffic, etc (Chraif and Anitei, 2013).

Chraif and Anitei (2013) present the most frequently occurring cases relied on by drivers who exhibit aggressive behavior behind the wheel, and they are either altercations occurred for a parking place or those arising from the stubbornness of some to not give the necessary priority or use of some maneuvers made with the intention of disturbing others (to cut one's way, to drive very slowly, giving very loud sound in the car, etc.)

So, the most common specific behaviors of drivers aggressive in traffic are: driving very close to other cars, crossing the red lights, honking excessively, running away from the scene in case of accidents, alcohol or other substances that can in a negative influence the ability to drive, driving without a seatbelt, verbal and physical abuse of road users, driving without a license if it was suspended (Chraif and Anitei, 2013).

Control over pain is focused on two aspects: one general and specific locus of control, which can be internal or external and specifically one, which refers to control of the data about his pain (Foltun, 2012). Chraif, Vilcu & Burtaverde, (2015). Investigated the relationship between personality factors and movement anticipation at young Romanian amateur drivers. Chraif, Corbu & Burtaverde (2014). Conducted a correlative study between perceived emotion, personality traits and level of wellbeing at Romanian amateur young drivers.

Researching this aspect, it was found that personality has indirect implications on accidents, concluding that the individuals most likely to manifest aberrant behaviors while driving are those having features such as aggressiveness, impulsivity, anger and anxiety. They are most often sensation-seeking showing a

low self-control and an external locus of control. (Lajunen and Parker, 2001 cited in Havarneanu, 2013).

## **2. OBJECTIVE AND HYPOTHESES**

### **2.1. OBJECTIVE**

The objectives of the study it is to testing and analysis relationship between aggressiveness, pain perception and personality traits at drivers.

Thus, the main objectives are:

- Relationship between personality traits (Big Five Factors) and aggressive driving.
- Relationship between pain perception and aggressive driving.
- Relationship between personality traits (Big Five Factors) and pain perception.

### **2.2. HYPOTHESES**

H1. There is a statistically significant correlation between personality traits and aggressive driving.

H2. There is a statistically significant correlation between pain perception and aggressive driving.

H3. There is a statistically significant correlation between personality traits and the pain perception.

## **3. METHOD**

### **3.1. PARTICIPANTS/SUBJECTS**

This study include 37 participants: 27 female and 10 male with age between 20 and 51 ( $M = 23,73$ ), having driving license at least 2 years. Participants are students at Faculty of Psychology and Educational Sciences or others (friends, family, etc.).

### 3.2. INSTRUMENTS

Aggressive driving behaviour test (AVIS) (Vienna Tests System, 2012) is a instrument to measuring aggressive driving behavior and it is designed by Herzberg. The standard form of this questionnaire contain 65 items. This instrument contain six factors as follows: instrumental aggression (18 items), anger (11 items), enjoyment of violence( 9 items) , negativism (6 items) , acting out (11 items), social desirability (9 items). Each item has eight response options (1-very often, 8- frequently).The Cronbach Alpha coefficient reported by author is .96.

Questionnaire on Reaction to Pain (FSV) (Vienna Tests System, 2012) is a multidimensional instrument to measuring reaction to pain. This instrument it was developed to measure chronic pain, and the results are used to seeing the effect of psychotherapy at patients with chronic pain.

The questionnaire contain 4 dimension:

- Avoidance
- Cognitive control
- Social support
- Activism

The questionnaire contain 29 items, its application lasts 3-5 minutes and the format of the questionnaire it is paper and pencil.

IPIP Big Five Markers (BFM) (Goldberg et al. 2005)

The five factors of personality were assessed with IPIP questionnaire which consists of 50 items made by Goldberg (1992) Each factor contain 10 items, each items with 5 response options (1= very innacurate; 5= very accurate).

IPIP questionnaire has the following structure and Cronbach Alpha coefficient:

- Emotional Stability (alpha= .86)
- Neuroticism (alpha= .87)

- Openess to experience ( alpha= .84)
- Agreeableness (alpha = .82)
- Conscientiousness (alpha = .79)

### 3.3. PROCEDURE

All study participants were informed about the nature and purpose of the study. After signing the informal consent, participants completed the instruments. The questionnaires were collected for analysis and after results, participants who wanted received a profile. Completion time was 10-15 minutes.

### 3.4. EXPERIMENTAL DESIGN

The design of this study is descriptive and correlational, and the research variables are : aggressive driving, personality traits, pain perception.

## 4. RESULTS

Table 1. Descriptive Statistics

	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic
Age	37	0	51	23.73	8.624
Extraversion	37	0	47	31.68	7.825
Agreeableness	37	0	49	38.59	8.281
Conscientiousness	37	0	50	34.92	8.454
Emotion Stability	37	0	40	24.89	7.287
Openness	37	0	50	37.92	8.159
Avoidance	37	0	29	18.05	6.612
Cognitiv Control	37	0	40	25.38	7.278
Social Suport	37	0	30	18.00	5.981
Activism	37	0	35	22.19	6.355
Instrumental aggresion	37	0	89	56.24	16.621
Anger	37	0	66	42.41	13.107
Acting out	37	0	42	22.27	9.412
Enjoyment of violence	37	0	53	29.95	10.957
Negativism	37	0	35	20.19	6.467

Table 1.2. Descriptive Statistics

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error

Age	1.487	.388	5.456	.759
Extraversion	-1.704	.388	6.585	.759
Agreeableness	-2.945	.388	12.837	.759
Conscientiousness	-1.879	.388	7.176	.759
Emotion Stability	-.952	.388	2.684	.759
Openness	-2.696	.388	12.560	.759
Avoidance	-.521	.388	-.130	.759
Cognitiv Control	-.787	.388	3.127	.759
Social Suport	-.498	.388	1.344	.759
Activism	-1.047	.388	2.922	.759
Instrumental aggresion	-.784	.388	2.271	.759
Anger	-.729	.388	1.689	.759
Acting out	.060	.388	-.289	.759
Enjoyment of violence	.065	.388	.818	.759
Negativism	-.594	.388	1.611	.759

In table 1 descriptive statistics are observed. Thus, age it has  $M=23.73$ ,  $SD=8.62$ , extraversion  $M= 31.68$ ,  $SD=7.82$ , agreeableness  $M= 38.59$ ,  $SD = 8.28$ , conscientiousness  $M = 34.92$ ,  $SD= 8.45$ , emotional stability  $M=24.89$ ,  $SD=7.28$ , openness  $M=37.92$ ,  $SD=8.15$ , avoidance  $M=18.5$ ,  $SD=6.61$ , cognitive control  $M=25.38$ ,  $SD=7.27$ , social support  $M=18.00$ ,  $SD=5,98$ , activism  $M=22.19$ ,  $SD=6.35$ , instrumental aggression  $M=56.24$ ,  $SD=16,62$ , anger  $M=42.41$ ,  $SD=13$ , acting out  $M=22.27$ ,  $SD=13.1$ , enjoyment of violence  $M=29.95$ ,  $SD=10.9$  and negativism  $M=20.19$ ,  $SD=6.4$ .

Table 2. One-Sample Kolmogorov-Smirnov Test

		Extraversion	Agreeableness	Conscientiousness
N		37	37	37
Normal Parameters <sup>a,b</sup>	Mean	31.68	38.59	34.92
	Std. Deviation	7.825	8.281	8.454
Most Extreme Differences	Absolute	.153	.208	.186
	Positive	.101	.122	.087
	Negative	-.153	-.208	-.186
Test Statistic		.153	.208	.186
Asymp. Sig. (2-tailed)		.028 <sup>c</sup>	.000 <sup>c</sup>	.002 <sup>c</sup>

Table 2.1. One-Sample Kolmogorov-Smirnov Test

		Emotional stability	Openness	Avoidance	Cognitiv control
N		37	37	37	37
Normal Parameters <sup>a,b</sup>	Mean	24.89	37.92	18.05	25.38
	Std. Deviation	7.287	8.159	6.612	7.278
Most Extreme Differences	Absolute	.101	.180	.117	.122
	Positive	.079	.110	.117	.088
	Negative	-.101	-.180	-.113	-.122
Test Statistic		.101	.180	.117	.122
Asymp. Sig. (2-tailed)		.200 <sup>c,d</sup>	.004 <sup>c</sup>	.200 <sup>c,d</sup>	.182 <sup>c</sup>

Table 2.2. One-Sample Kolmogorov-Smirnov Test

		Social suport	Activism	Instrumental aggression	anger
N		37	37	37	37
Normal Parameters <sup>a,b</sup>	Mean	18.00	22.19	56.24	42.41
	Std. Deviation	5.981	6.355	16.621	13.107
Most Extreme Differences	Absolute	.093	.143	.082	.086
	Positive	.066	.143	.068	.049
	Negative	-.093	-.103	-.082	-.086
Test Statistic		.093	.143	.082	.086
Asymp. Sig. (2-tailed)		.200 <sup>c,d</sup>	.053 <sup>c</sup>	.200 <sup>c,d</sup>	.200 <sup>c,d</sup>

Table 2.3 One-Sample Kolmogorov-Smirnov Test

		Acting out	Enjoyment of violence	Negativism
N		37	37	37
Normal Parameters <sup>a,b</sup>	Mean	22.27	29.95	20.19
	Std. Deviation	9.412	10.957	6.467
Most Extreme Differences	Absolute	.107	.101	.095
	Positive	.107	.101	.065
	Negative	-.080	-.101	-.095
Test Statistic		.107	.101	.095
Asymp. Sig. (2-tailed)		.200 <sup>c,d</sup>	.200 <sup>c,d</sup>	.200 <sup>c,d</sup>

In table 2 were applied indices of normal distribution of the data is has been observed that extraversion  $z=.153$ ,  $p<.05$ , agreeableness  $z=.208$ ,  $p<.05$ , conscientiousness  $M = 34.92$ ,  $SD= 8.45$ , openness  $z=.180$ ,  $p<.05$  and activism have a normal distribution, and emotional stability  $z=.101$ ,  $p>.05$ , avoidance  $z=.117$ ,  $p>.05$ , cognitive control  $z=.122$ ,  $p>.05$ , social support  $z=.093$ ,  $p>.05$ , instrumental aggression  $z=.082$ ,  $p>.05$ , anger  $z=.086$ ,  $p>.05$ , acting out  $z=.101$ ,  $p>.05$ , enjoyment of violence  $z=.101$ ,  $p>.05$  and negativism  $z=.095$ ,  $p>.05$  doesn't have a normal distribution.

Table 3. Correlations between variables

		Extraversion	Agreeableness	Conscientiousness	ES	Openness	avoidance	Cognitiv control
Spearman's rho	Extraversion	Correlation Coefficient	1.000					
	Agreeableness	Correlation Coefficient	.529**	1.000				
	Conscientiousness	Correlation Coefficient	.179	.230	1.000			
	ES	Correlation Coefficient	.241	.472**	.230	1.000		
	Openness	Correlation Coefficient	.284	.361*	.192	.361*	1.000	

Avoidance	Correlation Coefficient	-.157	-.233	.234	-.233	-.212	1.000	
Cognitiv control	Correlation Coefficient	.110	.014	.129	.014	.366*	.148	1.000
Social suport	Correlation Coefficient	.120	.036	.357*	.036	-.028	.492**	.270
Activism	Correlation Coefficient	.319	.243	.160	.243	.444**	-.259	.340*
Instrumental aggression	Correlation Coefficient	.365*	-.132	.276	-.132	.003	-.033	-.025
Anger	Correlation Coefficient	.359*	-.152	.180	-.152	.179	-.231	.059
Acting out	Correlation Coefficient	.380*	-.211	.107	-.211	-.039	.154	-.054
Enjoyment of violence	Correlation Coefficient	.411*	-.097	.112	-.097	-.011	.037	-.014
Negativism	Correlation Coefficient	.392*	-.118	.118	-.118	.170	-.127	-.046

Table 3.1. Correlations between variables

		Social suport	Activism	Instrumental aggression	Anger	Acting out	Enjoyment of violence	Negativism
Social suport	Correlation Coefficient	1.000						
Activism	Correlation Coefficient	.153	1.000					
Instrumental aggression	Correlation Coefficient	-.031	-.004	1.000				
Anger	Correlation Coefficient	.085	.234	.784**	1.000			
Acting out	Correlation Coefficient	.053	-.027	.809**	.629**	1.000		
Enjoyment of violence	Correlation Coefficient	-.108	-.082	.817**	.549**	.730**	1.000	
Negativism	Correlation Coefficient	-.099	.081	.863**	.767**	.668**	.690**	1.000

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

In table 3, can be observed the relationship between the study variables. Thus, there is a significant relationship between extraversion and instrumental aggression ( $r=.36$ ,  $p<.05$ ), extraversion and anger ( $r=.45$ ,  $p<.05$ ), extraversion and acting out ( $r=.38$ ,  $p<.05$ ), extraversion and enjoyment of violence ( $r=.41$ ,  $p<.05$ ), extraversion and negativism ( $r=.39$ ,  $p<.05$ ), Conscientiousness and social support ( $r=.35$ ,  $p<.05$ ), openness and cognitive control ( $r=.36$ ,  $p<.05$ ), openness and activism ( $r=.44$ ,  $p<.05$ ).

## 5. CONCLUSIONS



Following the statistically interpretation of the study results, it can be concluded that there are relationships between personality factors, perception of pain and aggression in traffic.

Thus, the first hypothesis which argues there is a significant relationship between extraversion and aggressive driving, it is confirmed the second hypothesis which argues there is a significant relationship between agreeableness and aggressive driving, it is confirmed.

The third hypothesis, which shows that there is a significant relationship between conscientiousness and aggressive driving, is accepted.

The fourth hypothesis, which presents that there is a significant relationship between openness to experience and aggressive driving, it is confirmed.

The fifth hypothesis, which argues that there is a significant relationship between pain perception and aggressive driving is not confirmed, and the sixth hypothesis that sustains the relationship between big five factors and pain perception, it is partially confirmed.

Following the results, it its observed the fact that only four of the sustained hypotheses were conformed, noting that:

- Personality correlates with aggression in traffic, observing statistically significant relationship between it and all the factors measured by the AVIS questionnaire (instrumental aggression, anger, enjoyment of violence, negativism, the desire to stand out).
- The perception of pain is not correlated with aggression in traffic, but correlations were observed between this and personality traits, such as: social support correlated with conscientiousness and openness correlates both with cognitive control and activism.
- Correlations evidenced by the positive results are significant statistically.

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## **REZUMAT**

*În domeniul psihologiei transporturilor, agresivitatea în trafic este o temă larg dezbătută datorită implicațiilor sociale pe care le are, aceasta fiind una dintre cauzele majore ale evenimentelor neplăcute petrecute în societate, motiv pentru care pot fi găsite numeroase studii realizate cu scopul de a investiga comportamentul agresiv al conducătorilor auto, cei mai mulți cercetători considerând că personalitatea este cel mai bun predictor.*

*Acest studiu își propune să evidențieze relațiile dintre aceste trei variabile, oferind astfel o bază pentru o mai bună înțelegere a comportamentelor manifestate de către conducătorii auto în trafic. Un număr de 37 de subiecți, cu vârste cuprinse între 20 și 51 de ani, care au obținut permisul de conducere cu cel puțin doi ani înainte de a participa și au condus automobilul atât în oraș, cât și pe drumurile naționale sau pe autostrăzi, au completat un set de chestionare, și anume "Aggressive driving behaviour test" (AVIS), Questionnaire on Reaction to Pain (FSV) și IPIP "Big Five Markers" din bateria de testare Vienna Test System. Așadar, studiul de față a realizat obținerea unor relații semnificativ statistice între trăsăturile de personalitate și comportamentul agresiv manifestat în trafic de către șoferi, corelațiile obținute fiind susținute de rezultatele cercetătorilor care au adus contribuții în acest domeniu*

*Ipotezele studiului au fost parțial susținute de rezultatele cercetării. Așadar, studiul de față a realizat obținerea unor relații semnificativ statistice între trăsăturile de personalitate și comportamentul agresiv manifestat în trafic de către șoferi, corelațiile obținute fiind susținute de rezultatele cercetătorilor care au adus contribuții în acest domeniu.*