6. THE RELATIONSHIP BETWEEN STRESS, DRIVERS SPECIFIC PERSONALITY TRAITS AND AGGRESSIVE DRIVING

IONUT GANEA, VERONICA NEACSU, VLASIE ANDREEA, DANIELA JIVAN, MIHAI CIOLACU
University of Bucharest

Abstract
This research aims to identify a correlation between stress, personality traits specific to drivers, aggressive driving and vehicle brand. The study was conducted on 90 participants aged between 18 and 63 years old. Each participant had to complete an online questionnaire containing 119 questions whose answers sketch a portrait of the person regarding its behavior in traffic. Participation in this study was performed on condition of anonymity, and the questions in the questionnaire have been formulated so as not to encroach on the privacy of the subjects. The instruments were: The Aggressive Driving Behavior Test - AVIS (Herzberg & Guthke, 2001) The Inventory of Driving Related Personality Traits - IVPE (Taubman-Ben-Ari, Mikulincer and Gillath (2004) and Perceived stress scale (Parker & Decotiis, 1983). The results evidence statistically significant positive correlations between the variables: agressively behavior and stress total (r=.291; p<.01), agressively and Self-control (r=.603; p<.01), agressively and need for excitement (r=.500; p<.01), stress total and Emotionall Stability (r=.513; p<.05), agressively and Honestly scale (r=.342; p<.01), stress total and Honestly scale (r=-.299; p<.01). Conclusions: the results evidence that the agressively behavior in traffic and total stress perceived are negative correlated with honestly scale. Furthermore, the agressively personality traits are correlated with need for excitement, total stress perceived and self-control.

Keywords: need for excitments, self-control, honesty, emotional stability

Cuvinte cheie: nevoia de aventură, autocontrol, onestitate, stabilitate emotională

1. STATE OF THE ART

The concept of stress was introduced by Selye (1936), an endocrinologist of Hungarian origin. In 1936, the existence of stress was recorded under the name of general adaptation syndrome (Selye 1936). In this way, tress was considered a unique and linear response to a stimulus. The same author also claimed that the bodies stress reaction goes through three phases: alarm, resistance phase and exhaustion phase.

Previous studies in the field of road traffic showed that many factors play a role infeeling anger and its expression, such as gender, age, driving abilities and styles, personality traits and motivational factors Farmer and Chambers (1939)
support the theory of accident predisposition that claims that most traffic accidents are caused by a small number of people who possess certain personality traits.

Epstein (1979) pointed out that the accumulation of different behaviors, no matter what the situation is, is the most appropriate and reliable criterion when it comes to the influence of personality on behavior. In this way the authors highlighted that personality traits play an important role in predicting the risk-taking behavior in traffic, compared to the frequency of accidents. Hence Booth - Kewley and Vichers (1994) noted an increase in the correlation between personality traits and risky behavior.

Chraif, M., Aniței, M., Burtăverde, V., & Mihăilă, T., (2015) conducted a study regarding driving aggression predicted by personality traits. The results highlighted that the risky driving outcomes is predicted by agreeableness and the aggressive driving is predicted by emotional stability, agreeableness, and conscientiousness. Furthermore, driving aggression according the study predict accidents, tickets, and license suspension.

Chraif, Vâlcu, Burtăverde & Mihăilă (2015) were interested to show in a study the relationship between personality factors and movement anticipation ability measured by ability test system. Chraif, Aniței, Dumitru, Burtăverde & Mihăilă (2015) developed an English version of the aggressive driving behavior test in a recent study. Dogoter & Mihaila (2015) were interested to verify if personality traits are predictors of aggressive driving behavior in a replicate study. Chraif (2013) presented in her book a model of personality traits predictors for car accidents where the big five personality traits predict the car accidents (Dahlen, Edwards, Tubre, Zyphur & Warren, 2011).

2. THE OBJECTIVE AND HYPOTHESES

2.1. Objectives

In this research the objective is focused on the relationships between the variables: stress and driver specific personality traits and aggressive driving behaviour.

2.2. Hypothesis

There is a statistically significant bivariate correlation between stress, and sensation seeking.
There is a statistically significant bivariate correlation between stress, and emotional stability.
There is a statistically significant bivariate correlation between stress, and sens of responsability.
There is a statistically significant bivariate correlation between stress, and self-control.
There is a statistically significant bivariate correlation between stress, and honestly scale.
There is a statistically significant bivariate correlation between stress, and aggressively behavior.

3. METHOD

For this study there were sampled 90 participants with ages between 18 and 63 years old (M= 26.87; SD = 878) old and having a driving license for 1 to 36 years, both male and females, rural and urban areas.

3.1. The Instruments/Measures

The Aggressive Driving Behavior Test- AVIS (Herzberg & Guthke, 2001) is composed from 35 item questionnaire rated on a Likert scale from 1 to 8. The standard questionnaire has 130 items. In the first series, the items are presented in normal conditions; in the second category, the respondent is subjected to stress. The 8 choices can be selected with the mouse, keyboard, answer panel and the touch screen. The necessary time of response it’s between 8 and 25 minutes, instructions included.

The Inventory of Driving Related Personality Traits- IVPE (Taubman-Ben-Ari, Mikulincer and Gillath (2004) is composed from 6 dimensions: Emotionall Stability, Sense of responsabililt, Self control, Adventurousness and need for excitement and Honestly scale. The 44 items are measured on the 8 divisions scale from very low to very high.

The stress was measured with the Perceived Stress Scale (Parker & Decotiis, 1983) is composed of 10 items rated with a scale from 1 to 5 messuring perceived stress.
3.2. Experimental design

The design is a non-experimental design, within subject’s design, the same group receiving questioners for stress, aggressive driving and drivers’ specific personality traits.

The variables are: stress, aggressive driving, drivers specific personality traits measured by: emotional stability, responsibility, self-control, extreme sensation seeking and the honesty scale.

3.3. Procedure

The questionnaires were applied online using the Google Docs program, there were asked both males and females to participate, the only condition was to hold a driving license. A consent accord has been completes as well regarding the ethics is research and the protection of the participants data collection. The participants completed the questionnaire online mentioning their age and gender. The answers from this test outline the relationship between stress, personality traits specific for drivers and aggressive driving.

4. RESULTS

The data were computed using SPSS 15 program. In the begining the descriptive statistics was computed for the variables of the study.

Table 1 shows the descriptive statistics for: gender, driving experience, age.

<table>
<thead>
<tr>
<th>Table 1 Descriptive Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>Sex</td>
</tr>
<tr>
<td>vechimea permisului</td>
</tr>
<tr>
<td>Varsta</td>
</tr>
</tbody>
</table>

The participants were 90 people, 49 females (54.4%) and 41 males (45.6%).

Regarding the Driving experience variable, we can observe from Table 1 the difference between the highest and lowest value (the interval) is 34 years, with a minimum of a year and a maximum of 35 years. The mean is 6.49, with a standard deviation of 6.169. Between 1 and 3 years there are 31.11% people, between 4 and 6 years there are 40%, and approximately 29% (28.89) there are respondents with driving experience between 7 and 35 years.
We shall observe that between 18-26 years old, there are 70% of the total of subjects, between 27-35 there are 16,7% of the group, between 36-44 there are 6,7% of the total, between 45-53 there are 3,3%, between 54-63 years there are also 3,3% of the total number of participants. The minimum age of the participants taking part in this study is 18 years old, and the maximum is 63. M is around 27 years old (26,9), with a SD of 8,898.

As far as their favourite car brand is concerned, 11,1% prefer Mercedes, 17,8% prefer Audi, 14,4% prefer BMW, 10 % choose Ford, 14,4 % are thrilled
about Volkswagen, 6.7% choose Opel, 4.4% prefer Skoda and the rest of the brands are less representative towards the preferences of the study group.

The top of the favourites colours of the participants opens with black, chosen by 37.78%. Second place goes to blue colour with 15.56% of the votes, and the third one is grey, preferred by 12.22% of the total. On the fourth place there is the red colour (11.11%), on the fifth place the silver colour and the white one (7.78% each).

Figure 3 Subject distribution depending on the „car color” variable
As we can see, in figure nr. 4, the graphic representation as histogram of the "stress" variable, M is 21.92, with a SD of 6.545, which shows a tendency of overcoming the medium scores. At more detailed analysis, we can see that the suitable relative level of low stress is situated towards 34.4% of the total participants. A medium level of stress represent 54.5% of the participants, which means more than half of the total.

With a high level of stress, there are 11.1% of the participants, a semnificative percentage. That way, we can say that this group is formed of people with a medium to low level of stress.
We can observe in figure nr. 5, The graphic representation of traffic aggressivity, that the variable doesn’t have a normal distribution, with a predomination of low scores. Another low level of aggressivity is declared by 71.1% of the group, a medium level represented by 24.5% and a high level can be observed at 4.4% of the participants.

Figure 6. The graphic representation of the emotional stability.
From the previous graphic, figure nr. 6, The graphic representation of the emotional stability, we can see again an asymmetrical distribution, showing predomination low scores. 67.8% of the respondents have a high level of emotional stability, and 32.3% have a lower level, a tendency towards overreacting, emphasized by the higher scores.

![Histogram showing distribution of emotional stability scores.](image)

Figure 7. The graphic representation of the sense of responsibility.

The researched lot presents certain characteristics regarding the level of the sense of responsibility. As far as we can see, figure nr. 7, The graphic representation of the sense of responsibility emphasizes the variable's distribution is asymmetrical, with a strong orientation towards high scores. Thus, only 5.6% of the total presents a low level of responsibility, 3.6% a medium level, and an overwhelming 55.5% of them declare that they have a high level of responsibility while driving.
The subjects of the research declare to have a moderate self control. We observe in Figure 8, The graphic representation for self control that the scores have a tendency of overcrowding on the medium values interval. Just 17.8% of the subjects have a low self control, of recklessness, compared to 30% who declare themselves strongly preoccupied of their self control. Also, we remark that the majority of them, 52.6% present a moderate level of self control.
Regarding the variable need for thrills, we note that 38.9% of participants present an extremely low level, 45.5% have a moderate level, and 15.6% declare a high level of need for stimulation (Fig. 9 Graphical representation of need for thrills). We assume this asymmetrical distribution is correlated with the participants' age.

Figure 9. Graphical representation of the need for thrills

Figure 10. Graphic representation of the scale of honesty
By applying the scale of honesty we found that 21.1% of participants shows low scores on this scale, 46.7% have an average level of honesty and 32.2% are totally honest. We believe that one of the factors that probably influenced this distribution is social desirability.

Table nr. 2 The correlation matrix between variables: AVIStotal, stresstotal, Ivpe, Emotionall Stability, Ivpe Sense of responsibility, Ivpe Self-control, Ivpe need for excitement, Ivpe Honestly scale

<table>
<thead>
<tr>
<th></th>
<th>AVIStotal</th>
<th>stresstotal</th>
<th>Ivpe Emotionall Stability</th>
<th>Ivpe Sense of responsibility</th>
<th>Ivpe Self-control</th>
<th>Ivpe need for excitement</th>
<th>Ivpe Honestly scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVIStotal</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>stresstotal</td>
<td>.291**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ivpe Emotionall Stability</td>
<td>.603**</td>
<td>.513**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ivpe Sense of responsibility</td>
<td>.109</td>
<td>.022</td>
<td>.098</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ivpe Self-control</td>
<td>.195</td>
<td>.103</td>
<td>.012</td>
<td>.000</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ivpe need for excitement</td>
<td>.503**</td>
<td>.336**</td>
<td>.72</td>
<td>.144</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ivpe Honestly scale</td>
<td>-.342**</td>
<td>-.299**</td>
<td>-.260</td>
<td>-.561**</td>
<td>.446**</td>
<td>-.027</td>
<td>1</td>
</tr>
<tr>
<td>N</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).
* . Correlation is significant at the 0.05 level (2-tailed).

In the table can be seen positive strong bivariate correlations between variables: avistotal and stresstotal (r=.291; p<.01), avistotal and Ivpe Self-control (r=.603; p<.01), avistotal and Ivpe need for excitement (r=.500; p<.01), stresstotal and Ivpe Emotionall Stability (r=.513; p<.05)

There are negative strong semnificative statistic bivariate correlations between avistotal and Ivpe Honestly scale (r=.342; p<0.01), stresstotal and Ivpe Honestly scale (r=.299; p<0.01).
5. CONCLUSION

Regarding the relationship between aggressiveness in traffic and stress are indicative from a statistic point of view p<0.05, therefore we consider that the more stressed people are the more aggressive become in traffic.

The relationship between aggressiveness in traffic and emotional stability is significant from a statistic point of view p<0.01, therefore we consider that the more emotional stable people are the less aggressive they become in traffic.

The relationship between aggression in traffic and the need for thrills is significant from a statistic point of view p<0.01, indicating that as the need for thrill increases the higher level of aggression in traffic.

The relationship between stress and emotional stability is statistically significant p< 0.01, such as the higher is level of stress the lower level of emotional stability is.

The relationship between stress and sense of responsibility is statistically significant p<0.05 and inversely proportional. Thus the greater the stress level the lower sense of responsibility is.

The relationship between emotional stability and the need for thrills is significant from a statistic point of view p<0.01. Such as the more a person is emotionally unstable, the greater the need for thrills is.

The relationship between self control and sense of responsibility is significant from a statistic point of view p<0.01. Participants of this research have a tendency to show a higher level of responsibility in traffic as the level of self-control is higher.

Level of honesty negatively correlates from a statistic point of view p< 0.05 level stress aggressiveness and emotional stability. Therefore, the more stressed a person is, with a higher level of aggressiveness and emotionally unstable, the higher tendency to distort the truth.

Level of honesty positively correlates from a statistic point of view p< 0.05 with level of responsibility and self-control. Thus, people who consider themselves responsible and have a high level of self-control are more sincere. There is no correlation between the level of honesty and the need for thrills.

Given the above results, we conclude that the hypothesis: There is a significant relationship from a statistic point of view between stress, personality traits specific to drivers and aggressive driving, are confirmed. Research results show that people with higher levels of stress presents a high level of
aggressiveness, low levels of emotional stability and responsibility. Interestingly, the high level of stress is associated with a high level of circumventing the truth.

A possible limitation of the research could be biased of the data obtained due to the influence of social desirability. Thus, we believe that it is possible for the subjects to have answered by judging the social value of responses, indicating known behaviours to be socially accepted and appreciated, not necessarily the real ones.

REFERENCES


Taubman-Ben-Ari, O., Mikulincer, M., Gillath, O. (2004). The multidimensional driving style inventory—scale construct and validation, Accident Analysis & Prevention 36 (3), 323-332