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## THE RELATIONSHIP BETWEEN SUBJECTIVE WELL-BEING, PERCEPTION OF TRAFFIC SIGNS, RISK TAKING AND ERRORS IN TRAFFIC

MIHAELA, CHRAIF<sup>a</sup>

<sup>a</sup> *University of Bucharest, Faculty of Psychology and Educational Sciences  
Department of Psychology*

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### **Abstract**

*The study is focused on evidencing the relationship between the variables Psychological well-being, Reckless and fun driving, Violation of traffic rules, Reckless and fun driving, Dangerous errors and the Perception of traffic signs. The participants were a number of 45 amateur drivers with driving license minimum 2 years. The instruments were: The Flourishing Scale (Diener et al. 2009), The Manchester Driver Behaviour Questionnaire (DBQ) the version of Sucha, Sramkova & Risser (2014), Risk-taking attitudes and risky driving behaviour (Iversen, 2004) (Violation of traffic rules/speeding, Reckless driving/fun driving) and the traffic signs perception scale. The participants consent was collected before the application. The hypotheses were confirmed at the statistically significance between .01 and .05. Hence the variables Psychological well-being and reckless/fun driving predicts the perception of traffic signs. Furthermore, the reckless/fun driving and violation of traffic rules predict positive statistically significant the dangerous traffic errors. The findings evidence the importance of defensive driving and increasing the drivers subjective well-being.*

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*Keywords: Perception of traffic signs, Flourishing, Fun driving, Errors in traffic.*

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### 1. THEORETICAL FRAMEWORK

Iversen (2004) was interested to highlight the relationship between the risk-taking attitudes and risky driving behavior. Hence, the results evidenced a significant effect of the attitudes towards rule violations/speeding and towards the careless driving of others on risky driver behavior as drinking, driving and seat belt use.

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*Mihaela Chraif*

*E-mail adress: mihaela.chraif@fpse.unibuc.ro*

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Furthermore, the authors highlighted that drivers involved in road traffic accidents in the last year took more risky behaviors.

Allahyari, et al. (2008) conducted a study regarding the relationship between the Driving errors, cognitive failures and driving accidents. The authors used the Cognitive Failures Questionnaire and Driving Behavior Questionnaire 24 items version. The results evidenced that the cognitive failures dimensions predict the traffic accidents.

Sucha & Sramkova & Risser (2014) were interested to evidence the relationship between the driving behavior, road accidents and offences, while the study conducted by Vladu, Gatej, Rizeanu (2019) concluded that psychological aggressive characteristics have negative effects in learning driving skills.

Bichajlo (2017) conducted a study in the real road traffic environment. In this way the author equipped the participants with eye measurement system for the eye fixation on the advertisement tables. The results evidenced three groups of participants as follows: the first group focusing on the surface, the second group focusing on the advertisements and road signs and the third group focusing on the selected objects as road signs and advertisements.

Trespalacios, Truelove, Watson, & Hinton (2019) highlighted the impact of road advertising signs on driver behaviour and road safety. In this way the authors investigated studies focused on driver inattention and distraction as road safety factors.

The findings of Hawkis et al. (2012), Izadpanah et al. (2014) and Yannis et al. (2014) cited by Trespalacios, et al. (2019) highlighted that the changing luminescence road advertising signs attract and hold driver's attention.

Hudak & Madleňák (2016) conducted a study focused on the research of driver's gaze at the traffic signs. The authors used the human eyes tracking glasses, designed to record the human gaze behavior.

Beijer (2004) cited by Hudak & Madleňák (2016) underline that traffic signs provide information and keep vigilance of drivers on the road. Moreover, the traffic signs offer indications about the route, the dangerous parts, what is allowed and what not to run on the route. In this way, the traffic signs equipped with light bulbs will focus the drivers' attention and reduce the accident risk. Edquist (2011) cited by the same authors consider that the roadside advertisements represent driver distraction from the road sign and the route.

Topol & Drahotský (2017) point out that young people under the age of 24 are the most dangerous drivers because they exceed the speed limit, hit the red traffic signal and take risky manoeuvre and the study conducted by Gatej, Rizeanu, Ursachi, (2017) evidenced the same conclusion.

The psychological well-being of drivers represents the key of focused attention on the road during driving. This is related to a high level of quality of life and memory and attention to optimal parameters, while.

## **2. OBJECTIVE AND HYPOTHESES**

### **2.1. OBJECTIVE**

The objectives of the research:

1. To highlight possible correlations between the variables: perception of traffic signs and dangerous errors.
2. To evidence that psychological well-being predicts the perception of traffic signs.
3. To evidence that Reckless and fun driving predict dangerous errors.
4. To highlight that Violation of traffic rules predicts dangerous errors.
5. To evidence that Reckless and fun driving predict the perception of traffic signs.

### **2.2. HYPOTHESES**

The research hypotheses are the followings:

1. There is a statistically significant negative correlation between perception of traffic signs and dangerous errors.
2. Psychological well-being predicts the perception of traffic signs.
3. Reckless and fun driving predict dangerous errors.
4. Violation of traffic rules predicts dangerous errors.
5. Reckless and fun driving predict the perception of traffic signs.

## **3. METHOD**

### **3.1. The participants**

The participants were a number of 23 man and 22 woman drivers, age between 21 and 46 years old (Mean =28.56, S.D.=7.35), amateur drivers. The selection criteria was minimum 2 years of driver licence. The responses were collected by interview, respecting the ethical rules and the informed consent, voluntary and anonymized data. The participants were agreed the publication of the anonymized results.

### 3.2. The instruments

1. The Flourishing Scale (Diener, Wirtz, Tov, Kim-Prieto, Choi, Oishi, & Biswas-Diener, 2009). The scale is composed from a number of 8 items from 1-very low to 7-very high. The flourishing scale revealed a strong factor with an eigenvalue of 4.24, representing 53% of the variance and no other eigenvalue above 1.0. The factor load ranged from .61 to .77. The test has a Cronbach Alpha index of .87.

2. The Manchester Driver Behaviour Questionnaire (DBQ) (Reason, Manstead, Stradling, Baxter & Campbell, 1990), the version of Matus Sucha & Lenka Sramkova & Ralf Risser (2014). The Manchester driver behaviour questionnaire is self-reports of behaviour among drivers. The items are scaled from 1- very low to 5 very high. The Alpha Cronbach reliability was calculated between .63 and .73 for the British, Finnish and Dutch data (Lajunen, Parker & Summala, 2004). The Romanian data follows the trend.

3. Risk-taking attitudes and risky driving behaviour (Iversen, 2004) The following dimensions were applied: Violation of traffic rules/speeding (Alpha Cronbach=.847), Reckless driving/fun driving (Alpha Cronbach= .671). The applied items for this study are scaled from 1-very low to 5 very high.

4. Traffic signs perception scale was issued for the purpose of the present study. The Alpha Cronbach is ,83. A sample of the items are the followings:

1. I can easily see the indicator! pedestrian crossing!
  2. I can easily perceive visually the traffic signs from 30 meters.
  3. I can easily see the sign! Crossing the railway level!
  4. I can easily see the indicator masked by the leaves of the tree.
  5. I can easily see the signs in the rain.
  6. I can easily see the indicators even when I have financial problems.
  7. I can easily distinguish the indicators at night from a distance of 30 meters.
- The scale was Likert from 1-very low to 5-very high.

### 3.3. Procedure

The instruments were applied paper pencil during the interview with the participants. The interview lasted between 6 and 12 min. The Ethical code and legislation were respected. In the beginning of the items interview, the participants were informed about the study, the ethics, consent and the instruction. They were

volunteer, the anonymized data is respected and they agreed for the publication of the results.

### 3.4. The design

To test the regression hypotheses, the variables were the followings:

- Independent variables: Psychological well-being, Reckless and fun driving, Violation of traffic rules and Reckless and fun driving.
- Dependent variables: dangerous errors, the perception of traffic signs.

## 4. RESULTS

In the table 1 can be seen the Means and Std. Deviation for the variables: Psychological well-being, Reckless and fun driving, Violation of traffic rules, Dangerous errors and the Perception of traffic signs.

Table 1.- Descriptive statistics

Variable	Mean	Std. Deviation
Psychological well-being	37.44	8.923
Reckless and fun driving	44.04	14.953
Violation of traffic rules	44.04	14.953
Dangerous errors	59.40	18.467
Perception of traffic signs	29.13	8.179
N	45	

Applying the Pearson correlation test the following bivariate correlations were obtained:

There are statistically significant positive correlations between the variables: Psychological well-being and Perception of traffic signs ( $r=.587$ ;  $p<.001$ ), Errors and Violation of traffic rules ( $r=.552$ ;  $p<.01$ ), Reckless and fun driving and Violation of traffic rules ( $r=.466$ ;  $p<.01$ ) and Reckless and fun driving and Dangerous errors ( $r=.806$ ;  $p<.01$ ).

There are statistically significant negative correlation between the following variable: Perception of traffic signs and Dangerous errors ( $r=-.456$ ;  $p<.01$ ), Perception of traffic signs and Violation of traffic rules ( $r=-.631$   $p<.01$ ), Psychological well-being and Reckless and fun driving ( $r=-.370$ ;  $p<.05$ ), Perception of traffic signs and Reckless and fun driving ( $r=-.312$ ;  $p<.05$ ).

The correlation hypotheses (There is a statistically significant negative correlation between perception of traffic signs and Dangerous errors) was tested with

the bivariate Pearson correlations statistical test. The hypothesis was confirmed for  $r = -.456$  and  $p < .01$ .

For the rest of the hypotheses were applied simple linear regression models. Hence, the following results were obtained:

1. Testing the second hypotheses "Psychological well-being predicts the perception of traffic signs." it was confirmed for  $R = .587$ ,  $p < .01$ . The simple linear regression model is the following:

$$\text{Perception of traffic signs} = 9.001 + .538 * \text{Psychological well-being}$$

2. Testing the third hypotheses "Reckless and fun driving predict dangerous errors." it was confirmed for  $R = .806$ ,  $p < .01$ . The regression equation is the following:

$$\text{Dangerous errors} = 11.513 + 1.483 * \text{Reckless and fun driving}$$

3. Testing the fourth hypotheses "Violation of traffic rules predicts dangerous errors." it was confirmed for  $R = .552$ ,  $p < .01$ . The linear regression model is the following:

$$\text{Dangerous errors} = 29.390 + .681 * \text{Violation of traffic rules}$$

4. Testing the fifth hypotheses "Reckless and fun driving predict the perception of traffic signs." it was confirmed for  $R = .312$ ,  $p < .01$ .

The linear regression model is the following:

$$\text{Perception of traffic signs} = 37.332 - .254 * \text{Reckless and fun driving}$$

## 5. CONCLUSIONS

The research hypothesis were tested with the Pearson bivariate correlation test and the simple linear regression model statistical tests. All the fifth hypotheses were confirmed for  $p < .01$ . Furthermore, there were obtained statistically significant bivariate correlations between Psychological well-being and Perception of traffic signs, Dangerous errors and Violation of traffic rules, Reckless and fun driving and Violation of traffic rules, Reckless and fun driving and Dangerous errors, Perception of traffic signs and Dangerous errors, Perception of traffic signs and Violation of traffic rules, and Perception of traffic signs and Reckless and fun driving for the statistically significant threshold between .01 and .05. The linear regression models evidence that the variables Psychological well-being and Reckless and fun driving predicts the perception of traffic signs. Furthermore, the risk assuming behaviour as reckless and fun driving and violation of traffic rules predict in a positive statistically significant way Dangerous errors.

Analysing these findings, the implementation of a defensive driving program for amateur drivers would encounter the needs for safety driving (Rizeanu, Gatej, Ciolacu, 2017). Also, increasing the perception of the traffic signs represents a major objective for reducing the risk of minor and major traffic accidents.

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