PSIWORLD 2013

Validating attention tests on external criterion on driving school students - pilot study

Marina Cristina Sandu*
University of Bucharest

Abstract

The aim of this work was to validate three paper and pencil tests of attention: Toulouse Pieron, Attention distribution and driving license test. Participants in this study were 60 applicants for the driving permit, both men and women with different ages, the test being performed in a psychology laboratory of a Teo-driving school from Bucharest. The results of this research were processed using SPSS statistical software and thus were able to see the predictive power of attention on performance tests for obtaining the driving license.

© 2014 The Authors. Published by Elsevier Ltd. Open access under CC BY-NC-ND license. Selection and peer-review under responsibility of Romanian Society of Applied Experimental Psychology.

Keywords: distributive attention, focused attention, driving license, driving behavior.

1. Introduction

From the psychological perspective, there is a quota of values for each process and function required for driving a car, under which an individual should be considered unfit for such activity, instability exaggerated attention becomes an essential disruptive activity of driving. While driving a vehicle appraisal errors may occur, the time needed to perform certain maneuvers may be affected as well as distributive attention while multi-tasking etc.

* Corresponding author.
Email: chrystina29@yahoo.com
Through several psychological tests we measured cognitive abilities (perception, attention focused, distributive attention, thinking, etc.) and psychomotor skills including coordination and complex reactions: reaction time synchronization, hands down, tuning, speed, accuracy, motor learning, and so on.

Everyday driving, especially in heavy traffic conditions can be seen as a common source of irritation and negative effect of stress (Gulian et al., 1989; Novaco et al., 1990; Stokols et al., 1978). It is believed that the driver's stress levels will be higher in high congestion conditions than under conditions of low congestion. One manifestation of driver stress of great concern is aggressive driving. High congestion conditions will arouse strong feelings of frustration and irritation, so it is likely that aggressive driving to be higher in conditions of high congestion. Also, sue to the fact that aggression was related to driver stress (Gulian et al., 1989b), and because traffic congestion causes frustration, it was hypothesized that aggression will predict driver stress state of the driver in conditions of high congestion. No other predictions provided on the occurrence of other types of driving behavior. Rather, the intention is to examine any possible relationships that exist within the low and high congestion conditions. In order to review the human factor elements that overload while driving, this study has proposed to examine whether poor working conditions influence the psychological health of drivers, and identify the security features of their personality. Subjects were 208 bus drivers working in the European sector of Istanbul. It was concluded that the bus drivers in this study showed signs of poor mental health, psychological health and disease, which can be improved by modifying their work and work environment. (İsiverOnen, et al., 2002). Any travel by car as well as any conscious activity has a specific purpose. This goal is achieved over a series of obstacles on the road: stops, overtaking etc. Psychologically, for some drivers, driving becomes a real obstacle.

Driving situation as all social situations that tend to parallel purposes (professional life) is by nature a competitive situation: each is compared with each other and the rest is taken for comparison. Driving becomes a public spectacle as sport competitions: drivers are both spectators and participants. They compete in their capacity, speed, mastery and performance. In such a race the risk level rises quickly. (Blaj, 1978)

Traffic psychology includes instrumental elements related to a particular area of tasks that one must overcome. Of capacity management psycho-behavioral discusses two elements: the caution capacity and courage. The ability to maintain health precautions involve the activation and operation of self-inhibitory mechanisms to avoid critical situations, courage refers to self-trigger mechanisms for overcoming possible critical situations. Driving may improve over time with practice. Furthermore, traffic psychology considers technical and professional competence on the development and consolidation of skills and abilities necessary to dominate the vehicle and psychosocial skills resulting in the ability to coordinate and adapt individual behavior to traffic rules. As part of the proper management of your vehicle is a complex set of stimuli that convey meaningful information diversified. The identification and reception of such stimuli are captured almost all of the individual's sensory apparatus: olfactory, visual, auditory, tactile-kinesthetic. In terms of the sources of these stimuli coming into contact with the driver, they can be divided into 3 classes: a stimulus to the car, b signals from the road and the atmosphere, c stimuli from the elements on the go. From the psychological perspective, it is necessary that they be identified, recorded and stored over time. Driving cars requires strong signals from visual, auditory and tactile kinesthetic. In the laboratory of Work and Traffic psychology there were three experimental studies which tried to calibrate the time reaction test, determination test, cognitron test, inductive reasoning test and visiotest-campitest test to an external criterion measuring performances in traffic (Schuhfried, Sommer, Anitei & Chraíf, 2010; Schuhfried, Anitei, Chraíf, 2010; Anitei, Chraíf, Schuhfried & Sommer, 2011). Other studies evidenced the gender and age differences in short term memory, attention to details and inductive reasoning (Chraíf, 2012), gender differences in mental rotation young students at psychology (Chraíf, 2013) the effects of music exposure on time reaction to multiply stimuli (Chraíf, Burtăverde & Cojocaru, 2013) effects of radio noise in attention task at youngsters (Chraíf, 2013a), the effects of fatigue on impulsiveness, aspiration level at youngsters, (Anitei, Chraíf, Minea, 2013), gender and age differences in time reaction and decision to multiple stimuli and abstract figure on large Romanian sample (Chraíf, 2003b), the effects of motor coordination error on reaction time and motivation on youngsters (Anitei & Chraíf, 2013a), gender differences in motor coordination at youngsters (Chraíf & Anitei, 2013), possible correlations between reaction time, performances in competition and motivation from competition students at psychology (Chraíf, Anitei, Mateescu, 2013), and Niculicea (2010) evidenced an experimental design concerning the self-perception aggression in traffic simulation task on Romanian roads. Furthermore, Anitei & Dumitrache (2013) focused on realizing a correlative study between personality traits and aggression at young drivers, Gâțeaj (2013a) analyzed the disturbing factors of dynamics interfering during driving, Sârbescu (2013) measured the displaced aggression in Romania on
young students, Gransca & Aniței (2013) highlighted the influence of energy drinks on reactivity to multiple stimuli on young students at psychology, Golu & Gâțej (2013) evidenced the attention role in regulating driving behavior, Gâțej (2013b) analyzed driving anxiety related to drivers behavior and Burtăverde, Chraif, & Pandele (2013) were interested in highlighting possible differences between topographic memory and form gestalt perception.

2. Objectives and hypotheses

2.1. Objectives

The objective was to validate specific tests of attention, pencil and paper, the criterion by which drivers get their driver's license.

2.2. Hypotheses

Toulouse Distributive Attention and Labyrinth test have predictive value for the driving performances evaluated in traffic as external criterion.

3. Method

3.1. Participants

Participants in this study were 60 applicants for the driving exam, age between 18 and 30 years old, both men and women, trying to get their driver's license, the test being performed within the psychology laboratory of a drivers school. They completed the consent certificate in order to do the testing trials.

3.2. Measures

Instruments: Paper pencil test for attention (labyrinth) and focused attention. Toulouse Distributive Attention and driving license test. All test were distributed on paper and working time was about 25 minutes.

3.3. Procedure

Testing was done in a psychology laboratory of a driving school. The participants were informed about the period of time lasting the applications and the technical instructions to complete the psychological testing.

4. Results

The results showed that of the three tests, the highest predictive value criterion to obtain driver's license, was the labirinth test (t = 3.04, p = .004), this test focused it's attention on combining psychomotor coordination.

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP bifate</td>
<td>.002</td>
<td>.002</td>
<td>.582</td>
<td>1</td>
<td>.446</td>
<td>1.002</td>
</tr>
<tr>
<td>TPomise</td>
<td>-.048</td>
<td>.043</td>
<td>1.281</td>
<td>1</td>
<td>.258</td>
<td>.953</td>
</tr>
<tr>
<td>ADCORECTE</td>
<td>-.236</td>
<td>.454</td>
<td>.269</td>
<td>1</td>
<td>.604</td>
<td>.790</td>
</tr>
<tr>
<td>labirintcorrecte</td>
<td>-4.310</td>
<td>8038.323</td>
<td>.000</td>
<td>1</td>
<td>1.000</td>
<td>.013</td>
</tr>
</tbody>
</table>
Y = -4.75*Correct labirintin - 4.310* labyrinth correct + 112.123
In table 1 can be seen the predictive model of the testing variables using an external criterion. Hence the test “labirinth” were found to be a statistically significant predictor for the external criterion as driving performances.

5. Conclusions

This study noted the importance of psycho-motor coordination tests on obtaining a driver’s license. Psychological test may seem difficult to get the driver license. In fact anyone can successfully pass the psychological test, provided they have a medium level of physical and mental development without the need for special training prior. A psychologically stable and emotionally balanced person can pass the test despite having strong emotions. One of the most common problems is anxiety, this emotion installing due to the desire to do well, and do to the fear that they could be wrong. If there is no optimal coordination between movements and visual perception, the driver can easily cause accidents. If the speed is above the legal limits any mild movement of the driver can lead to serious road events. These reactions are more common in novice drivers who do not have the best driving ability. Too quick reactivity can also lead to serious accidents. Reaction time required is dependent on several factors, driver aptitude for the operation of the entire set of controls, the speed of the car at the time, the climatic state of the route in driving conditions. Driving on a road is a matter of understanding the feelings of moral and social responsibility and prevention. Traffic law care of pedestrians first because if the driver does not give priority to pedestrians when accidents happen they are severe.

References

Anitiei, M., & Chraif, M., (2013a). The Effects of Motor Coordination Error Duration on Reaction Time and Motivational Achievement Tasks among Young Romanian Psychology Students, International Journal of Social Sciences and Humanity, 3 (2), 139-144
Chraif, M. (2013b). Gender and age differences in time reaction and decision to multiple stimuli and abstract figure comparison on a romanian sample, Revista de Psihologie a Academiei Române, Vol. 59, nr. 1/2013 p.29-36


