American Journal of Applied Psychology, 2015, Vol. 3, No. 1, 11-14
Available online at http://pubs.sciepub.com/ajap/3/1/3

DOI:10.12691/ajap-3-1-3

Risky Behaviors and Stress Indicators between Novice and Experienced Drivers

Sergio Useche[1], Andrea Serge[2], Francisco Alonso[1,*]

[1]DATS (Development and Advising in Traffic Safety), INTRAS (Research Institute on Traffic and Road Safety), University of Valencia, Valencia, Spain
[2]Department of Psychology, Universidad Nacional de Colombia. Bogotá, Colombia
*Corresponding author: francisco.alonso@uv.es

Received December 30, 2014; Revised February 22, 2015; Accepted March 03, 2015

Abstract Background: Road accidents are a serious public health problem and one of the leading causes of unnatural death. This study aimed to compare the incidence of physiological and representational indicators of stress and risky behaviors while driving, in a sample of drivers in an advanced stage of the learning process in driving schools, with respect to the indicators presented by a group of experienced drivers. Methods: It was used a sample of 120 drivers of Bogotá (Colombia), divided in two groups: drivers in learning process and drivers with one or more years of experience driving any vehicle, who answered to four self-report scales: Driving Behavior Questionnaire (DBQ) including subscale for positive behaviors; Global Scale of Perceived Stress (EPGE); Driver Social Desirability Scale (DSDS) and a complementary questionnaire about physical symptoms of stress. Results: Comparative analysis showed that the drivers with more driving experience had more self-reported risky behaviors while driving, lapses, aggressive violations and violations of traffic regulations. Additionally, significant associations between measures of positive driving behaviors, social desirability and perceived stress were found, as well as stress indicators shows a positive and significant association with driving errors and violations. Conclusions: The protective role of driving experience seems to be relative regarding to risky and positive behaviors while driving, taking into account that some of the risk factors that have been evaluated have a higher prevalence among the most experienced drivers. It is appropriate to emphasize on the need to raise the inclusion of components directed to the promotion of mental health and recognition/coping with risk factors such as stress and risky behaviors in the programs designed for driver training.

Keywords: *driving experience, novice drivers, stress, risky behaviors, positive behaviors*

Cite This Article: Sergio Useche, Andrea Serge, and Francisco Alonso, "Risky Behaviors and Stress Indicators between Novice and Experienced Drivers." *American Journal of Applied Psychology*, vol. 3, no. 1 (2015): 11-14. doi: 10.12691/ajap-3-1-3.

1. Introduction

According to the World Health Organization [1], road accidents are a serious public health problem worldwide and one of the leading causes of unnatural death. One of the most widely addressed factors in the international literature on drivers and road accidents is driving experience, which could have a protective role, considering that more prolonged interaction with the route may represent a longer period of learning and adapting to the demands of the activity of driving [2]; some studies claim that, in the case of novice drivers, lack of experience may be associated with problems as their overestimation of their own abilities, an underestimation of the dangers, and a longing for excitement and sensation. According to SWOV [3], it could take some years before a person has gained enough driving experience for the crash rate to decline substantially.In other hand, driving experience could, also, represent a risk factor, given that can be associated with the prolonged presence of bad attitudes and misbehaviors, in the case of drivers who over time develop patterns, styles and indicators of risky driving behavior, which, not being intervened promptly, may represent an increased risk of accident [4].

In the specific case of novice drivers (in process of formation), training needs are often limited to the knowledge of the norm, the vehicle and the essential characteristics of the driving task. However, few training programs provided by driving schools that provide sufficient information on the impact of processes such as stress, fatigue and mental health in general on driving performance. Furthermore, it can be said that in the case of Latin America, training programs do not teach drivers to cope adequately some factors that adversely affect the ability to properly operate the vehicle, improving the prevention of traffic accidents from training [4]. Also, the impact of the first months of driving in novice drivers and their relationship with stress and risky driving behaviors has been slightly studied. Unlike the high-income countries, where prevention of crashes by novice drivers is a key focus for many policymakers and researchers, in the Latin American context there is a marked absence of

studies and interventions on the performance of novice drivers [2].

A large part of the studies made with novice drivers denotes that this group has a greater propensity to certain road risky behaviors (e.g. excessive acceleration, disuse of protective elements, low efficiency in the recognition and management of signals, and action guidelines on the road) [2,3]. However, it is also known that in the case of drivers with more experience negative factors such as the prolonged presence of stress, fatigue and bad driving habits can increase the risk of accident. Having said that, in the present study are approached two of the more fully described problems in the international literature on road accidents: risky behaviors (errors and violations) [5,6] in drivers with different levels of experience, and the influence of processes such as stress and other indicators of physical and mental health, that affect the capacity and effectiveness of the driver to respond to the demands involving in the task of driving a vehicle [7,8].

The aim of this study was to compare the incidence of physiological indicators and representational of stress and self-reported risky behaviors in a sample of drivers in an advanced stage of the learning process in driving school, with respect to the indicators presented by a group of usual drivers with two or more years of driving experience.

2. Materials and Methods

2.1. Participants

In this cross-sectional study were included 120 drivers of Bogotá (Colombia), divided in two groups: The first group of 76 drivers in learning process. The requirements for participation of novice drivers were to have at least a month in the process of theoretical training in driving school and have fulfilled all the hours of practice driving course. It was found with an average time of 3.5 months experience in driving tasks; the average age of this group was 29.7 years. A second group of 44 drivers with two or more years of experience in driving any vehicle (except motorcycles), whose only requirement for participation was having a valid license and have driven regularly in the recent months; in the case of this group, an average of 13.5 years of driving experience, and a mean age of 36.2 years were found.

2.2. Measures

The following self-report scales were used: Driving Behavior Questionnaire (DBQ) with positive behaviors supplement (PDBQ) to determine the frequency with which drivers had been involved in various behaviors of risk or protective driving behaviors; Global Scale of Perceived Stress (EPGE); Social Desirability Scale Drivers (DSDS) and a supplementary questionnaire about physical discomfort, to assess the presence of physiological indicators of stress during the last month.

3. Results

3.1. Comparative Analysis

The comparative analysis between drivers in training and those with more than two years of driving experience, allowed identifying significant differences in some of the main variables of the study, through an statistical analysis using t tests for independent samples:

- Risky Behaviors while driving: *errors* ($t_{(1,113)}$=-2.35, $p<0.05$); *lapses* ($t_{(1,115)}$=-2.79, $p<0.01$); *aggressive violations* ($t_{(1,113)}$=-5.45, $p<0.01$); and *violations of traffic regulations* ($t_{(1,115)}$=-4.55, $p<0.01$); in all cases the mean for the case of drivers with more driving experience was higher. Regarding to positive driving behaviors, no significant differences between the two groups were found.
- Social Desirability: *Response modification index* (DMI) ($t_{(1,114)}$=-3.005, $p<0.01$); the highest average were for drivers in training process.
- Regarding to the physiological symptoms of stress, differential analyzes were performed in the means of affectation presented by both groups of drivers. The following results were found:*pain* ($t_{(1,118)}$=-2.736, $p<0.01$) and *anxiety* ($t_{(1,118)}$=-2.984, $p<0.01$), being both higher means for the case of experienced drivers(see Figure 1).

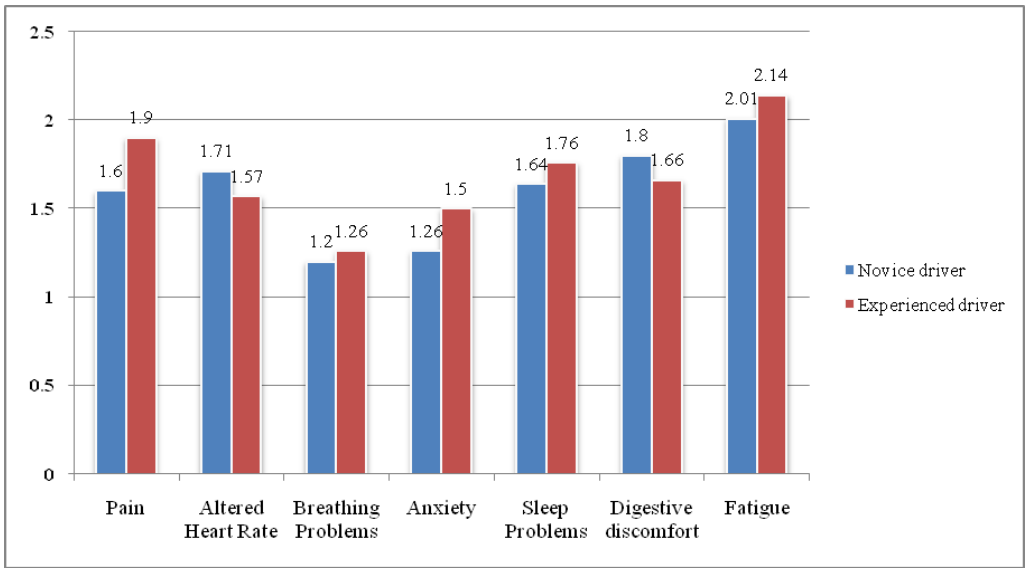

Figure 1. Comparison of the degree of affectation by reported physiological stress symptoms between two groups of drivers

3.2. Correlational Analysis

Trough the correlational analysis it was possible to establish measures of positive and significant association between positive behaviors while driving and the two factors of social desirability scale (response modification and overconfidence), and an inverse correlation with perceived stress. Similarly, driving errors and violations correlated negatively and significantly with social desirability, and positively with the index of perceived stress. Finally, it was found that physiological stress indicators show a positive and significant association with driving errors and violations (see Table 1).

Table 1. Pearson correlations for the study variables

		1	2	3	4	5	6
1	**Positive Behaviors**	1					
2	**Errors**	0,029	1				
3	**TrafficViolations**	-0,013	,708**	1			
4	**Trendto response modification**	,234*	-,390**	-,534**	1		
5	**Overconfidence**	,235*	-,307**	-0,158	,468**	1	
6	**Perceived stress**	-,209*	,473**	,353**	-,220*	-,294**	1
7	**Physiological Stress Symptoms**	0,094	,643**	,434**	-,289**	-,234*	,561**

* Correlation is significant at the level 0,05. ** Correlation is significant at the level 0,01.

4. Discussion

Several studies attribute to the experience driving a protective role against risky behaviors and a greater adaptation to the road demands and essential features of driving [2,9]. However, it has been found in some studies that the driving experience can also promote the development and maintenance of risk factors such as stress, poor driving habits and systematic violation of traffic regulations [8,10].

The results of this study establish that, in the sample used, there are significant differences in the involvement in errors and violations that place drivers with more experience as more frequent offenders, even when drivers in training process do not have the same experience and the assumed level of control of the vehicle, interaction with signals and road demands in general, compared with the other group of drivers. In this sense, although the experience has a role that may be protective [11], have also been found results that allow visualize the negative role of processes such as stress [8], theoretically related to the commission of risky behaviors [7,12]. Although no significant differences were found in terms of positive behaviors, the average was slightly higher for the group of drivers with more experience, which is consistent with some studies that state there are protective factors based on the driving experience [11].

It remains to discuss more from theoretical bases, if the exposure time to the task is the only factor explaining these differences, or whether individual factors not addressed in this case, as (among others) the driving style, psychomotor skills, attitudes toward the norm and other complementary indicators of physical and mental health that were not included in this study.

Although can not directly attribute an effect of physiological and perceptual indicators of stress on errors and/or violations while driving, due to this document presents the results of a cross-sectional descriptive study, it can be inferred from the correlational analysis that those drivers with higher rates of stress have, also, a higher involvement in unintentional errors and deliberate transgressions of the rules while driving. Additionally, it has been found in previous research in the area that stress is a major risk factor [8,13], highly relevant to the explanation of risky driving behaviors and traffic accidents, which can be prevented through the design and implementation of appropriate interventions [7,14].

5. Conclusion

The results of this study leads to emphasize the need to raise the inclusion of issues such as recognition and stress management in the training and learning programs for drivers, as well as the development of specific methodologies for permanent monitoring of these factors at specific times as permanent training and evaluation of physical and mental health to drive during the initial formation/assessment period and the license renewal process.

Acknowledgements

We would like to thank institutions and particular persons (academics, students and participants) that have facilitated data collection process. Also, to Mayte Duce and DATS group for the support received in the publication process of the final text.

Statement of Competing Interests

The authors declare that they have no competing interest regarding the publication of this paper.

References

[1] WHO. "World report on road traffic injury prevention". World Health Organization, 2004. [PDF]. Available: http://whqlibdoc.who.int/publications/2004/9241562609.pdf.

[2] Ivers, R., Senserrick, T., Boufous, S., Stevenson, M., Chen, H.Y., Woodward, M. and Norton, R. “Novice Drivers' Risky Driving Behavior, Risk Perception, and Crash Risk: Findings From the DRIVE study”. *Am J Public Health*, 99(9). 1638–1644.Sep.2009.

[3] SWOV. *Young Novice Drivers*. SWOV Institute for Road Safety Research, 2012. [PDF] Available: http://www.swov.nl/rapport/Factsheets/UK/FS_Young_drivers.pdf.

[4] CARRS. *State of the road: Novice drivers*. CARRS Centre for Accident Research & Road Safety, 2013.[PDF] Available: http://www.carrsq.qut.edu.au/publications/corporate/novice_drivers_fs.pdf.

[5] Useche, S. and Ruiz, J. *Prevention on road safety: Development of an evaluation strategy for the assignment and renovation of driving licenses*. Colciencias, Bogotá, 2012.

[6] Reason, J., Manstead, A., Stradling, S., Baxter, J. and Campbell, K. “Errors and violations on the roads: a real distinction?”. *Ergonomics*, 33(10-11). 1315-1332. 1990.

[7] Taylor, A. and Dorn, L. “Stress, fatigue, health, and risk of road traffic accidents among professional drivers: The contribution of physical inactivity”. *Annu Rev Public Health*, 27. 371-391.2006.

[8] Rowden, P., Matthews, G., Watson, B. and Biggs, H. “The relative impact of work-related stress, life stress and driving environment stress on driving outcomes”. *Accident Anal Prev*, 43(4). 1332-1340. Jul.2011.

[9] Mills, K.L., Hall, R.D., Mcdonald, M. and Rolls, G. "The effects of hazard perception training on the development of novice driver skills", in*Roadsafe’96. Influences affecting road user behaviour*, Transport Research Laboratory,134–146.

[10] RémiKouabenan, D. "Occupation, driving experience, and risk and accident perception". *J Risk Res*, 5(1). 49-68.2002.

[11] Cavallo, A. and Catchpole, J. "Accidents of first year drivers: what can we learn about skill development?", in *Australasian Road Safety Research Policing and Education Conference*, Centre for Automotive Safety Research, 300-306.

[12] Clarke, D., Ward, P., Bartle, C. and Truman, W. "Young driver accidents in the UK: The influence of age, experience, and time of day". *Accid Anal Prev*, 38(5). 871-878.Sep. 2006.

[13] Oz, B., Özkan, T. and Lajunen, T."Professional and non-professional drivers’ stress reactions and risky driving". *Transp Res Part F*, 13(1). 32–40. Jan.2010.

[14] Barbet, I., Meskali, M., Berthelon, C., Mottet, D. and Bootsma, R.J. "Effects of driving experience and age on the detection of upcoming collision". *Le travail humain*, 69. 209-227.2006.