

Psychological Factors Influencing Creation of Individual Driving Style Characteristics and Efficiency of Instructing on Practical Vehicle Driving

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Abstract: This article is about an individual style of vehicle driving as a factor governing the efficiency of instructing on practical vehicle driving in the driving schools and the level of safety of road behavior of a particular driver. The article treats of the results of approbation of a personal feedback form aimed at evaluating certain characteristics of driving style. It gives a brief description of five feedback form scales: risk, safety, planning, impulsion, attitude to safety aids in a vehicle, driving culture, masterfulness during parking. The main attention is focused on the scale of planning-impulsion. A high level of planning is related to a tentative activity component prevailing over the performance component. A compensation character of shaping such a driving style characteristic as planning with the drivers featuring low-level rate of attention changeover, is at issue in the article. It shows the correlation links between individual properties of the central nervous system, stress accentuations of an individual and shaping definite driving style characteristics. A presence of dependence between torpidity of nervous processes, scrupulousness and predisposition to planning; affectability and tendency to risk, affective exalted behavior and uncertainty at parking has been stated.

Key words: Driving style characteristics • Individually typological and features of the trainees • Torpidity of nervous system • Individual stress accentuations • Correlative analysis • Tentative and performance activity components • Compensation due to planning • Rate of attention changeover • Safe road behavior.

INTRODUCTION

We would like to discuss in this article a trend of activity aimed at individualization of the driving instructions process associated with the driving style characteristics with the driving schools students corresponding to their individualities and compensating for some or the other natural limitations.

A problem of emergence of psychological incompatibility in the pairs like: student-instructor is not uncommon. At that, an issue of consistency of style characteristics of an instructor and a student in organizing the training process is not taken into account, whereas the objective laws of shaping skills get manifested in case of discord in that the process of skill automation discontinues since a student attempts to

individualize the skills at a certain stage of training [1]. If a student and an instructor were concordant with each other, this stage could have been minimized. Therefore, we give consideration to an individual driving style and analyze the reasons of shaping its individual characteristics among the psychological factors influencing the success of training [2,3].

One can encounter among the works of foreign authors such works, which are devoted to the analysis of a vehicle driving style. Most frequently they contemplate the factors that contribute to shaping and exhibiting an aggressive style of driving a vehicle [4-6]. There are many works devoted to analyzing the role of such factors as sex and age in shaping the individual peculiarities of driving a vehicle [7, 8]. The investigation of Gila Miller, Orit Taubman-Ben-Ari are close to ours as far as the

subject of our investigations is concerned, which focus attention on studying influence of the specific features of the parents' road behavior on the road behavior of the youngsters [9]. Whereas, we study in our work the relations between individually typological features of the trainees (torpidity of nervous processes), individual stress accentuations and driving style characteristics. A similarity of driving styles of parents and children (mentioned by Gila Miller, Orit Taubman-Ben-Ari) can fairly be explained by the influence of inherited capabilities of the central nervous system functioning on the choice of methods and aids of vehicle driving contributing to dependability and efficiency. The upbringing received in a family can shape the stress accentuations of the person's temper bringing along the appearance of the same peculiarities of road behavior as with the parents. Orit Taubman-Ben-Ari, Dalia Yehiel analyze in their work the relations between the driving style, the individual peculiarities and the motivation [10]. A problem of efficiency of instructing to drive is most frequently analyzed in the Russian scientific literature not from the psychological point of view but from the positions of elaborating standards on training the drivers and legislative support of activity aimed at preventing the reasons for motor vehicle accidents in Russia [11].

MATERIALS AND METHODS

The Methods Used in the Investigation:

- feedback form of Leongard-Shmishek intended for revealing stress accentuations of an individual;
- feedback form of Strelau intended for measuring features of the central nervous system;
- authors's feedback form for assessing individual characteristics of the driving style developed by Yu.I. Lobanova with assistance of L.V. Komkova and N.Yu. Lebedeva.
- red and black Table, i.e. methods used for evaluating speed of attention changeover;
- feedback form with information related to participation of the examined drivers in the road accidents.

Totally, 225 individuals have participated in a study as testees (at two different investigation stages) (125 at the first and 100 at the second one). Two groups have been formed for processing, analysis and interpretation of data:

amateurs-professionals (43 and 44 persons); accident drivers-accident-free drivers (34 and 53 persons, accordingly). Those drivers, who had no accidents as well as those getting into an accident due to someone else's fault.

It is possible to measure using the author's method, first of all, a tendency to risk. A tendency of the testees to violate the traffic rules especially when making the heightened-danger maneuvers has been assessed too. The second characteristic is planning, i.e. impulsivity of behavior on the road (scale allows analyzing a tendency of drivers to the planned proven process of vehicle driving, intention to forecast a situation as opposed to the situational has been assessed too. The second characteristic is planning, i.e. impulsive behavior on the road). [12, 13]. In the course of developing this scale we have attempted to think over the questions, which could help assess the role and the location of the approximate activity in the process of driving a vehicle with a particular driver. These questions associated with the level of serious-mindedness of the drivers about a preliminary familiarization with the driving route, to what extent they are aware about the patterns of organizing traffic at some intersections, whether they need any additional information about the conditions at which they perform the road traffic. The feedback form is useful in evaluating such a style characteristic as an attitude towards the aids ensuring passive and active safety of a driver and a vehicle. The fourth scale makes assessment of a degree of driver's conviction in his actions while parking. The questions included into this scale are aimed at getting data regarding a degree of the drivers' comfort when parking a vehicle within a limited space. The fifth scale, the driving culture, helps assess a degree of the driver's awareness with respect to the expressing politeness, what is the level of politeness and attentiveness of the driver towards the other road traffic participants.

The following tasks were being solved in this fork:

- Analysis of relations between characteristics of the driving style, individually typological and personal peculiarities with different groups of drivers.
- Studying a possibility of compensating the insufficiently high speed of attention changeover with a driver due to shaping such a characteristic of the driving style as planning.
- Description of personal and style peculiarities of safer drivers.

- Formulation of recommendations for making pairs of instructor-student type taking into account the driving style characteristics.

RESULTS AND DISCUSSION

A relation between a tendency to planning and scrupulousness (tendency to ultra-accuracy, promptitude in obeying, observing rules, instructions) has appeared to be a significant factor with the amateur drivers (0.35 at 0.1).

A relation has been registered between a lability of nervous processes and planning (-0.22 at 0.02-a final result with 125 testees: a joint group of amateurs and professionals). These figures testify to the fact that such a style characteristic as planning is being more frequently formed with the positively sluggish drivers. The fact that the relation is not strong can be explained by the deficient consciousness of the drivers proper.

At the second stage (100 testees, a mixed group) we have compared such parameters as the speed of attention changeover, level of planning and accident rate. It has been supposed that drivers featuring conventional qualification or being non-qualified regarding a parameter of attention changeover can tend to compensate for the natural fault available with them, including due to use of capabilities of a tentative components of the activity. As a result, the road situation becomes more predictable for such drivers; there is no need to additionally change over to analyze the road signs and markings. The drivers received conventional points evaluating the level of their compensation (from 0 to 3) on the basis of acquired results according to red-black table and the planning scale: 0 points were received by the drivers with low indices in changing over attention and in the level of planning, 3 points were given to those with high indices in attention planning. The rest have found themselves in the intermediate groups with 1 and 2 points. The compensation points have been correlated with the level of accident rate of the tested drivers. The accident rate has been evaluated by the conventional points (from 0 to 2): 0 points were given to the accident-free drivers, 1 point was given to those having a road accident with mutually acknowledged guilt, 2 points were given to those having road accidents that had occurred due to their personal fault. The statistical analysis has shown that there exists a correlative negative relation between the level of compensation and the level of

accident rate (-0.33 with the level of significance of 0.02). Thus, the assumption regarding a compensational influence of planning level on such a psycho-physiological characteristic as the speed of attention changeover has proven true.

A relation has been revealed in both groups (professionals and amateurs) between a cyclotomicity and an attitude towards safety aids. Though, this relation is negative in the group of amateurs (-0.3 with the level of significance of 0.1), while in the group of professionals the relation is positive (0.24 with 0.1). This means that cyclotomic amateurs have a perfunctory attitude to the safety assurance aids. They take the liberty to do this since they have an ability to withdraw from driving a vehicle being in an unfavourable psycho-physiological state. However, the professionals, who have experienced the negative influence thereof on the dependability of activity earlier in their practice, are ready and willing to use the means of passive and active safety [14].

Both groups feature a negative relation between a sensitivity and a culture of driving (-0.33 with 0.1 and -0.25 with 0.1, accordingly). The sensitive people are highly anxious, susceptible, featuring low compliance with the pressures, they do not notice the gestures of politeness on behalf of the other drivers and they themselves do seldom resort to them.

A presence of the negative correlative relation between the affective-exaltation and masterfulness at parking has been noticed in the same group. This can be explained by the fact that a turbulent expression of emotions hinders to get concentrated when executing the parking maneuvers.

CONCLUSION

- The planning as a characteristic of individual style of activity is more frequently manifested with the persons featuring passive type of nervous system (additional data acquisition makes the behavior thereof more adaptive). The planning is mostly characteristic of the scrupulous amateur drivers.
- The accident of drivers has appeared to be related to the scale of risk (safety): those, who most frequently violated the traffic rules, more frequently became the participants of road accidents. Such individual stress accentuations as excitability and sensitivity are expressed to a higher degree with the drivers of dangerous group.

- Such individual stress accentuation as scrupulousness is more expressed in the safe group of drivers. The scrupulous drivers tend to observe the traffic rules, more actively forecast the progress of situations on the road, which positively affects the level of reliability of activity thereof.
- It is preferable to invite drivers, who have higher points regarding the parameter of planning to work as instructors, since the additional information acquisition pertaining to the road situations and patterns of organizing the traffic is necessary for the inactive and scrupulous drivers and is useful for the other categories of trainees.

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