

Psychological and cognitive characteristics of candidates for drivers: age and gender aspect

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Abstract. The article presents research on the interrelation of gender factors with psychological and cognitive personal characteristics and strategies of doping behaviour of candidates for drivers depending on their gender and age. As a result of data generalization, it is revealed that the main gender differences are the propensity for coping problem-focused actions, as well as the severity of activating unwanted behaviour inhibition and punishment avoidance. Identified patterns can be used to compile diagnostic and corrective programs for psycho-prophylactic work to improve road safety among candidates for drivers.

Keywords: *gender characteristics, age characteristics, cognitive characteristics, psychological profile, candidates for drivers.*

Introduction. Modernization of modern society puts forward new demands on the individual, which must survive in changing conditions. The high pace of life, the rapid science and technology development, the emergence of new spheres of life is a new reality of social life. New conditions offer the variability of choosing a personal and professional path, as well as change social patterns. In society there is an active revision of “male” and “female” social roles [Hiba! A hivatkozási forrás nem található., p. 116], there is a transformation of gender behaviour strategies.

In society, there are established ideas about a driver-man and a driver-woman. “Male driver” appears as an aggressive, assertive, self-confident participant in the “road interaction”. “Woman driver” is characterized as indecisive, uncertain, anxious [Hiba! A hivatkozási forrás nem található., p. 118]. The traffic situation as a zone of increased danger, high pressure, requires a person to constantly monitor their own actions and actions of road users. The outlined problems are aggravated in large cities, where a huge amount of transport complicates the process of driving. The driver is in a situation of constant stress, pressure from other people who can cause conflict interaction [9, p. 98]. Therefore, external factors and gender stereotypes will influence the choice of behaviour strategy by candidates for drivers regardless of their gender.

Modern social behaviour of men and women is characterized by two contradictory tendencies: on the one hand, there is a pronounced tendency to the convergence of professional and family roles of men and women [11, p. 418], on the other hand, – attention is focused on differences in male and female behaviour, roles, statuses and vital purpose of men and women are opposed [3, p. 120]. These trends are manifested in the coexistence of traditional and modern gender norms in society and in the mass consciousness of people [7 p. 344].

The development of motor transport, the growing number of personal vehicles and their reduction in price determines the urgency of solving the problem of road transport accidents. The state of road safety is largely due to the psychological characteristics of drivers, which are characterized by a sufficiently high level of activity on the road, and at the time of driving a vehicle is an element of the system “man – technique – environment” [12, p. 210]. Therefore, an important task is to study the psychology of

drivers as one of the categories of road users and the nature of its impact on road safety.

One more of the leading reasons for violating the traffic rules is a complex of psychological characteristics of the driver and features of his cognitive sphere. In studies conducted by domestic and foreign scientists in order to identify general patterns of connection between accidents and cognitive and psychological spheres of drivers: the dependence of driving efficiency and emotional state (M.Chan, A.Singhal [6]), fatigue, decreased cognitive functions (D.Shinar [10]), distortion of motivational and value orientations of the driver (D.Lnevsky [2]), the influence of gender stereotypes on the behaviour of driving men and women (R.Welsh and J.Lenard [13]) are reflected. Most of the above studies reflect the set of psychological and psychophysiological characteristics of practising drivers. Diagnosis and correction of the complex of such features in candidates for drivers is an effective way to prevent traffic accidents.

It should be noted that risky behavior on the roads largely depends on the situation of activity and personal traits of a driver. The risk is characterized by a choice between less or more dangerous behaviours; at the same time, the measure of justification or groundlessness of a decision by a person regarding risky behavior is taken into account [5, p. 1633].

Most often the traffic rules violated by people aged 16-29 years [15, p. 83]. During a period of life within 18-35 years a crisis of “maturity” occurs, associated with the search for themselves and their own place in life, the realization of their own abilities [Hiba! A hivatkozási forrás nem található., p. 148]. Age characteristics of candidates for drivers indicate social maturity achievement by a person, assimilation of legal norms and regulations in the field of road traffic, and are related to other individual characteristics, which can be judged by age criteria.

Psychocognitive characteristics reflect the driver's ability to perceive traffic information, comprehend it, make decisions and respond in a timely manner to changes in the traffic situation. Psychocognitive properties determine the characteristics of the mental and physiological processes of the body. These properties include perception (sensations), attention, thinking, memory, emotions, as well as personal qualities [4, p. 104].

In modern conditions, scientists and practitioners ac-

tively discuss the issues of road safety, offer a systematic and phased approach to their solution, but the analysis of conference materials and international forums shows that the psychological and cognitive characteristics of candidates for drivers do not find proper reflection in these discussions and in a particular reality.

The purpose of the study was to determine the individual psychological characteristics and features of the sphere of perception, attention and memory of candidates for obtaining a driver's license depending on age and gender.

Materials and methods. Within the framework of the experiment, a questionnaire was conducted on a differentiated sample, which was attended by 69 male and female persons aged 18 to 49 years (average age – 26.1 ± 8.9 years), students of preparatory courses for obtaining a driver's license category B. By gender, the study participants were distributed as follows: 59.5% of respondents were women, 40.5% – men. Each participant of the study got acquainted with the content of the questionnaire and signed informed consent.

The methodical complex includes tests to assess the neuropsychological characteristics of perception, attention and memory, the level of activation of inhibition and activation of behaviour (the test “Amount of short-term memory,” digital material “by Jacobson, questionnaire developed by Cavera-White, evaluating the Behavioral Activation System (BAS) and behavioral inhibition – Behavioral Inhibition System (BIS), as well as psychological testing to clarify the peculiarities of the psychological profile of the study participants (Bass-Perry's aggressiveness level questionnaire, “Methods of adequate behavior” by R.Lazarus, the technique of “Big Five”).

3. Results and Discussion. Within this survey results were obtained, which reflect the usual behavioural coping strategies of male drivers and female drivers. To identify gender differences, we compare averages using the statistical criterion of U. Mann-Whitney. It was found that men are characterized by pronounced activation of unwanted behavior inhibition (BIS parameter, reverse scale), which indicates significant sensitivity to punishment and negative stimuli ($p < 0.01$). Significant differences in the use of such coping strategy as problem-focused actions ($p < 0.05$) are also revealed: men are more inclined to apply an analytical approach to solving the problem situation. Therefore, we can assume that men in the traffic situation implement dominant trends in behaviour, unlike women who need help and support. Men are more prone to aggressive manifestations. Women are more likely to make concessions than to occupy a dominant role on the road. Emotionality is inherent in representatives of both genders, which manifests itself depending on the situation. However, the results obtained require clarification and confirmation by quantitative data.

To clarify the age characteristics of candidates for drivers, the sample is divided into 4 groups: the first group included persons aged 18 to 21 years, the second – aged 22 to 29 years, the third - 30-39 years, the fourth group included persons aged 40-49 years. Comparison of samples by means of one-factor dispersion analysis allowed to reveal significant differences between groups ($P < 0.05$). With the help of the formed bank of methods, the collection of psychodiagnostic data was sequentially

carried out. Next, the average values for each group were calculated, the reliability of differences was determined using the H-criterion of the Mann-Whitney U-criterion. Mathematical processing of the obtained data was carried out using the computer program SPSS 22.0. The reliability of the obtained results was recognized as significant for a level of no higher than 5%.

To establish the gender specificity of the strategies of candidates' behaviour, the drivers had a psychological diagnosis of the personal characteristics of candidates for drivers and strategies of behaviour. The situation on the road is a zone of increased danger, where there is a constant collision of interests, violation of borders and rules, and conflict interaction between the participants of the traffic is also possible. It is revealed that all groups differ in the peculiarities of undesirable behaviour inhibition, as well as the predominance of various coping strategies (search for social support, acceptance of responsibility, positive reevaluation).

Psychological profiles of candidates for drivers depending on the age range are shown in Fig. 1.

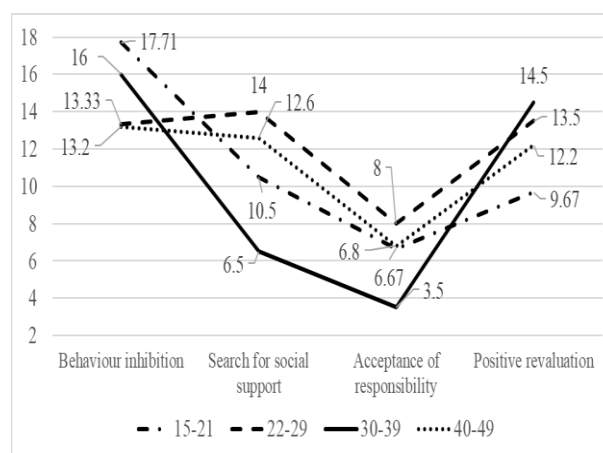


Fig. 1. Psychological characteristics of candidates for drivers depending on age

A group of persons aged 18 to 21 years were characterized by the least pronounced activation of unwanted behavior inhibition, as well as the average frequency of preference for such coping strategies: the search for social support for taking responsibility and a low propensity to positive reevaluation in a difficult situation. Thus, the main emphasis in correctional and developmental work with candidates for drivers of this age group will be the formation of functional activity of the nervous mechanisms associated with inhibition of behaviour, as well as their training in the use of adaptive coping strategies as the adoption of the responsibility and search for social support.

A group of persons aged 22 to 29 years is characterized by high activation of unwanted behaviour inhibition, the advantage of adaptive coping of responsibility and the search for social support, as well as the average frequency of resorting to coping a positive reevaluation of a difficult situation. Thus, such a group is the most adaptive to driving a vehicle.

The individual psychological profile of people aged 40 to 49 years is most similar to the profile of a group of persons aged 22 to 29 years, differs from them by less expressiveness to the use of all three types of overcoming stressful behaviour. Recommendation for corrective work

for this group is the focus of training on the use of adaptive ways to get out of a stressful situation.

The most maladaptive individual psychological characteristics differed candidates for drivers aged 30 to 39 years. They were characterized by a low frequency of adaptive coping strategies for finding social support and taking responsibility with the advantage of reevaluating the difficult situation in favour of personal growth. A maladaptive combination of adequate behavior types with an average expressiveness of the ability to inhibit unwanted behaviour determines recommendations to the correctional program for candidates for drivers of this age group.

In order to clarify the general relationship between the age of candidates for drivers and their individual psychological characteristics, a correlation analysis (rank correlation of r-Spearman) was carried out. It was found that the older respondents were, the more sensitive they are to negative stimuli ($r = -0.478$; $p < 0.001$), more persistent in achieving long-term goals ($r = 0.399$; $p < 0.01$), perceive others less hostile ($r = -0.561$; $p < 0.01$), at the same time they more often act offensively to change the situation, which combined with general goodwill, propensity to cooperate ($r = 0.654$; $p < 0.01$), and are characterized by increased efficiency to perform the sample for attention ($r = 0.778$; $p < 0.01$). Despite the fact that the value of the Spearman correlation coefficient for the “sensitivity to negative stimuli” parameter is negative, such a relationship is interpreted as a direct positive, since the scale itself has inverse values.

To determine the individual psychological characteristics and characteristics of perception, attention and memory depending on the neurological characteristics of inhibition and activation of behaviour on various stimuli, cluster analysis was carried out according to the parameters: “inhibition of unwanted behaviour”, “activation for pleasure”, “activation for the achievement of remote goals” and “activation for obtaining approval”. Characteristics of two isolated clusters are shown in Fig. 2.

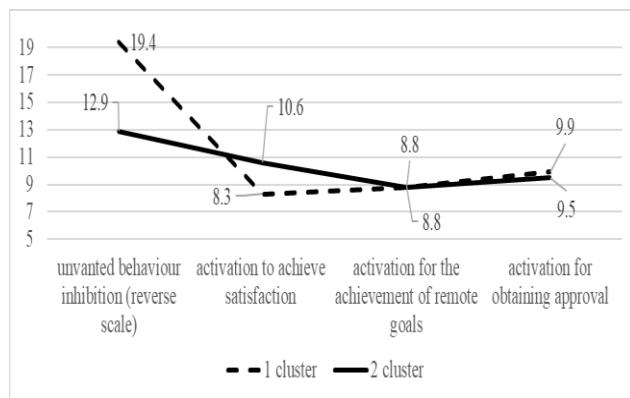


Fig. 2. Features of behaviour activation and inhibition systems of clusters 1 and 2

In the first cluster of persons with low activation of behaviour inhibition and unexpressed activation to achieve satisfaction mainly included male candidates for drivers – 62.5% aged 18-21 years – 81.3%. Representatives of the first cluster significantly differed by less short-term memory capacity, extroversion, at the same time they are antagonistic as related to others; they are also characterised by the propensity to spontaneous, impulsive behaviour. We assume that correctional programs aimed at

developing the ability to inhibit unwanted behaviour will also be intertwined with the correction of this individual psychological profile, as well as with an increase in the volume of short-term memory.

The second cluster mainly included female respondents – 76.2%, aged 19-22 years – 38.1% and respondents from older age group 40-49 years – 23.8%. Persons included in the second cluster were significantly distinguished by a larger amount of short-term memory, introversion, benevolence and propensity to cooperate, organization. Therefore, the combination of high activation to achieve satisfaction and inhibiting unwanted behaviour is the most adaptive.

To summarize, we note that this experimental research allowed to identify statistically grounded relationships that exist between the personal characteristics of candidates for drivers and their gender and age characteristics, strategies of behaviour. The configuration of individual characteristics of the subject varies depending on his/her dominant coping strategy of behavior.

Conclusions. The study of the psychological characteristics of candidates for drivers and characteristics of their cognitive sphere allowed to distinguish gender and age differences. Men more often than women prefer coping strategies of problem-focused action, and they also have a more pronounced activation of unwanted behaviour inhibition and avoidance of punishment. It is revealed that the older respondents were, the more is developed their inhibition of unwanted behaviour and expressed motivation to achieve suspended goals. They are less aggressive, but they often solve the problem situation using aggressive strategies. This is combined with a general benevolence and a tendency to cooperate, as well as high resistance to voluntary attention. It is established that the most maladaptive personal characteristics belong to a group of persons aged 30 to 39 years. The revealed combination of adequate behaviour types with an average severity of the ability to inhibit unwanted behaviour determines recommendations for corrective programs for candidates for drivers of such age group.

The revealed regularities can be used to draw up individualized training programs for candidates for drivers, as well as for drafting correctional programs for candidates for drivers who are at risk of high accidents and high-risk behaviour. The results of the study make it possible to take into account individual psychophysiological differences of candidates for drivers, to accelerate their adaptation to the conditions of training in driving schools by applying methods of ideomotor training and reflexological prophylaxis, which contributes to the increase of efficiency and quality of training.

Prospects for further research. Despite the fact that between the occurrence of an accident and the psychological characteristics of the driver interdependence, at first glance, is not obvious, but it exists. Vocational training cannot guarantee 100% absence of an accident. There are such psychological features that “predispose to accident rate”, although they are not fatal. Due to the fact that there are more and more facts confirming the relationship between the psychocognitive characteristics of the driver and the accident rate on the roads, conducting a study of professionally important qualities of all candidates for drivers becomes especially relevant. Obviously, here it is

necessary to begin with drivers' training, that is, to conduct similar studies in driving schools at the initial stage of training. Diagnosis of the psychological characteristics of drivers for any purpose involves identifying the characteristics of low, medium, good and excellent level of functioning, taking into account the type of transportation and driver's reliability.

It is advisable to conduct research in the form of testing, in which it would be possible to fix the main indicators: reaction speed, memory, attention, resistance to various obstacles, etc. This testing, first, will determine which categories of vehicle management are most suitable for the candidate. Secondly, testing allows to reveal the

level of expression of professionally important qualities. This will make it possible to carry out correctional measures in order to increase the level of expression of qualities that do not meet the stated requirements, as well as to change the training program in such a way that it is as effective as possible. Thirdly, candidates who, in terms of development of professionally important qualities fulfil the requirements at the minimal level, need a more in-depth course of study. Based on the results of studying psychophysiological qualities of candidates, a decision is made on additional lessons in the theoretical course, or on the development of practical driving skills.

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