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DOCTORAL SCHOOL OF PSYCHOLOGY

HAIDU FELICIA AURICA

MANIFESTATIONS OF AGGRESSIVENESS OF DRIVERS AND WAYS TO REDUCE IT

SPECIALTY: 511.02 - DEVELOPMENTAL PSYCHOLOGY AND EDUCATIONAL PSYCHOLOGY

Summary of PhD thesis in psychology

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Members of the Committee for the public presentation of the PhD thesis:

President:
Racu Igor, habilitated doctor in psychology, university professor, „Ion Creangă" State Pedagogical University

Scientific adviser:
Losîi Elena, associate professor, PhD in psychology, Psychology Department, „Ion Creangă" State Pedagogical University of Chișinău

Official reviewers:
Adăscăliță Viorica, PhD in Psychology, associate professor, UPS „Ion Creangă"
Potâng Angela, PhD in Psychology, associate professor, State University of Moldova
Sterian MIHAELA, PhD in Psychology, associate professor, Faculty of Educational Sciences, "Dimitrie Cantemir" Christian University, Romania

The presentation will be held at.....................................2024, ..., in the sitting of the Doctoral Committee of the Doctoral School of Psychology of UPSC "Ion Creanga", str. I. Creanga 1, MD-2069, bl.2, Senate Hall.

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The summary was sent at.. 2024

President of the Doctoral Committee   **Racu Igor, university professor, habilitated doctor in psychology,**

Scientific adviser   **Losîi Elena, associate professor, PhD in psychology**

Author   **Haidu Felicia-Aurica**

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CONTENT

CONCEPTUAL MILESTONES OF RESEARCH

The timeliness and importance of the problem addressed. Aggressiveness in traffic presents an acute problem of modern society, characterized by massive urbanization, increasing flow of cars and traffic jams, increasing number of accidents and victims of road traffic, increasing stress levels and reducing frustration tolerance of the population, increasing the number of people with undiagnosed mental disorders among the population, diminishing the value of education in general and road education in particular, public transport crisis, etc. The phenomenon of aggression in traffic reflects a mental health problem, socially and personally conditioned, which requires a multifaceted and transdisciplinary approach (education, psychology, national security, medicine, etc.). Traffic safety is on the list of priorities of all developed and developing countries, road accidents being one of the first causes of civilian mortality. The World Health Organization shows that 1.35 million people lose their lives annually in road accidents (*thus, every 30 seconds a person in the world loses his life in a road accident and every second someone is seriously injured)*[6, 19, 27]. In recent studies in the specialized literature, it is revealed that the human factor is almost entirely responsible for road accidents, and a large part of road accidents are conditioned by the aggressiveness of drivers manifested in traffic. A US study highlights that the road user is the sole factor in 95% of accidents, the roadway – in 3% and the vehicle – in 2% [6, 25, 27, 28].

The actuality of the research is also substantiated by the theoretical and practical difficulties of investigating the approached phenomenon, which materializes in the fact that human aggressiveness is not easy to study, the main difficulty resulting from the heterogeneous nature of the term. Often the concept of aggressiveness is associated with violence, anger, aggression, etc. Terminological clarification is an important aspect of this research. The psychodiagnosis of driver aggressiveness is also of particular importance in clarifying the main aspects related to the causes of driver aggression in traffic. The practical importance of the topic in this paper is also reflected in comparative analysis studies of aggressive behavior in traffic and programs for the rehabilitation of aggressive drivers.

Description of the situation in the field of research and identification of the research problem. Historically, assessing the risks of aggressive driver behavior has been based on two competing approaches: actuarial assessment and clinical judgment. An actuarial approach perspective focuses on empirical evidence of risk factors that are assessed in a weighted manner. This actuarial method has the ability to forecast incidents of pathological anger, aggression and violence. In contrast, the approach that relies solely on clinical risk assessment brings with it other difficulties, including issues of bias present in clinical assessments [10]. To assist practitioners who may be less familiar with risk assessment related to anger, aggressiveness and pathological violence, we have developed a framework that helps in formulating and evaluating cases in these areas. This framework is based on previous theories and research on anger, aggression, and violence and is aligned with cognitive-behavioral approaches to case formulation.

Present framework draws inspiration from works such as Berkowitz's in 1989, the approach proposed by Bushman and Anderson in 2001, and Gardner and Moore's model in 2008, known as the

"anger avoidance model" [3,4]. This model works with distal factors (i.e. those furthest in time and context) and actual factors of aggression, and requires idiographic analysis, i.e. an individualized approach that takes into account the specific dimensions and contexts of each case. It emphasizes factors that have been empirically claimed to have a significant influence on aggressiveness and violence. By applying this model, practitioners can have a stronger foundation for assessing and understanding cases related to anger, aggressiveness and violence, which can facilitate the development of personalized and effective intervention strategies for each individual.

We took into account the existing classifications and typologies of aggression (reactive and instrumental), which can be related to the phenomenon of aggression in traffic, reported by Dodge K.A, Meloy J.R., Raine A., et al. [5, 15, 24]. Also, in the conceptual approach of aggression, the national literature was also considered: Popescu-Neveanu P, Mitrofan N., Macovei, M. [21, 14, 18], all of whom draw attention to several criteria for assessing aggressive behavior, such as the criterion of intentionality and morality. We also analyzed the works of authors from the Republic of Moldova: Petru Jelescu, who refers to the state of certainty / uncertainty in human behavior and explains the reaction of protest, denial, aggression [7, 8]; Elena Losîi, Iulia Racu, Tatiana Gangan with the experimental study of aggression in students [13, 23]; Ina Botnari, Angela Potâng, with papers on explanatory theories of aggressiveness [22]; Valentina Mîsliţchi, with theoretical approaches to driver aggression [16], articles by Mrs. Svetlana Tolstaia and Ana-Maria Vladu on traffic safety completed the scientific and educational approach addressed by the theme of this paper [27].

As a result of a thorough investigation of the research situation and the issues addressed by the anti-researchers of the topic, we concluded that assessing aggressive behavior of drivers requires a complex approach involving clinical assessments, psychological tests and practical observations to identify the factors underlying these behaviors and to develop appropriate interventions. The ultimate goal is to ensure road safety and prevent serious traffic incidents. Thus, we came to formulate the **problem of research**, which resides in the contradiction between the urgent need of the Romanian society in functional strategies on road safety and the lack of in-depth studies of the profile of drivers at high risk for dangerous driving, as well as the insufficiency of specialized intervention programs to reduce risky driving trends. The solution of the mentioned problem consists in determining personality traits, which largely influence the behavioral manifestations of drivers in traffic and can generate various risk situations in traffic, including for the life and physical and mental integrity of road users in order to design optimal strategies for psychological intervention.

The purpose of the research is to study the manifestations and identify predictors of aggressive behavior and dangerous driving in drivers, as well as to develop an intervention program to reduce the aggressiveness of drivers.

Research objectives:

- analysis of psychological literature on aggression, anger, violence and the causes of aggressive behavior of drivers, ways to investigate aggressive behavior of drivers, as well as techniques and procedures to reduce it;
- applied study of psycho-social factors of aggressive behavior of drivers;
- identifying differences in traffic aggression and dangerous driving among drivers according to demographic variables (gender, age, living environment, religion, education, socio-economic and marital status) and personality profile;
- identifying predictors for aggressive behavior of drivers in traffic on the dimensions: aggressive driving, risky driving, negative cognitions/emotions and dangerous driving;
- developing and experimentally validating an intervention programme to reduce driver aggression.

Research hypothesis: We assume that the manifestations, levels and dynamics of aggressive behavior of drivers in traffic are determined by a complex of psychological factors such as: personality traits (agreeableness, emotional stability, conscientiousness); negative cognitions and emotions; predisposition to risk and danger; level and specificity of anger (as moderating variables) and socio-demographic factors: age, gender, background, religious affiliation, socioeconomic status, level of education, marital status, and engaging drivers in a psychological intervention program could reduce drivers aggression in traffic.

The research hypothesis is based on our firm belief that aggressive behavior in traffic can be prevented and improved if a judicious assessment of future drivers is carried out beforehand and if those already identified as aggressive are included in a rehabilitation program. Elaborating a psychosocial program for the rehabilitation of drivers who show aggression involves first of all a judicious initial evaluation, in order to *identify the general and personal context in which this behavior manifests itself in traffic.*

Thus, the work aimed, beyond the evaluation activity, at a psychological intervention plan on a number of 204 subjects in order to develop a driver rehabilitation program.

The theoretical support of the research included: *theories and concepts regarding aggression* (Berkowitz L., A. Buss, 1993; K. Lorents, Kahneman, D., Slovic, P., Tversky, A., 1982; Bushman, B. J., ANDERSON, C. A. 2001; DODGE, K.A. 1991; Miles, D. E., JOHNSON, G. L. 2003; Johansson, R., 2009; Jacobs, G., Aeron-Thomas, A., Astrop, A., 2016; Popescu-Neveanu, P., 1978; Mitrofan, 2004, Iu. Racu, 2013; M. Macovei, 2013; V. Mâslițchi, 2017; A. Potang, 2018, E. Losîi, 2020; S. Tolstaia, 2022 [3, 4, 5, 6, 9, 13, 14, 16, 21, 22, 23, 27]; *approaches to the peculiarities of adulthood* (U. Șchiopu, E. Verza, I. Racu, Iu. Racu, T. Cretu, D. Papalia, S. Wendkos Olds, S. Duskin Feldman, G. Zion, L. Steinberg) [13, 14, 29, 30, 33].

Research methodology:

Theoretical methods: literature review and synthesis that includes models for analyzing and evaluating aggression as a state and personality trait; hypothetical-deductive method of interpretation of

the obtained data; *Empirical methods:* the finding, training and control experiment; *Evaluation techniques*: questionnaire-based survey administered to drivers based on informed consent to participation and purpose of the study; DDDI test: The Dula Dangerous Driving Index; STAXI-2 questionnaire (State-Trait Anger Expression Inventory); DECAS personality inventory; *Statistical methods: Kolmogorov-Smirnov test, Mann-Whitney test, Kruskal-Wallis H test.*

The obtained results that contribute to solving the scientific problem consist of: developing a model for assessing driver behavior, identifying predictors of aggressive behavior of the driver, as well as developing and implementing a complex program of psychological intervention.

Scientific novelty and originality: For the first time in Romania and the Republic of Moldova, the profile of the aggressive driver was analyzed and interpreted from a psychological perspective, revealing and describing the psychic and personality peculiarities of the driver with aggressive manifestations. Also, psychological conditions have been established that make it possible to reduce aggression by becoming aware of early maladaptive schemes and thought and behavior patterns, relational patterns and by restructuring them within a psychological intervention program centered on cognitive-behavioral therapy and transactional analysis.

The theoretical significance of the research refers to the scientific knowledge obtained about the psychological nature of the manifestation of aggression of drivers and its essential characteristics that give it identity in relation to other concepts in the area of aggressive manifestations:

- mental structures responsible for the manifestation of aggressive driving behavior;

- psychological profile of the aggressive driver;

-strategies to diminish aggressive manifestations in traffic, aimed at identifying the psychological causes that generate them.

The applicative value of the thesis consists in the possibility of applying the psychological intervention program aimed at reducing aggressive behaviors in drivers and proposing this program to be used at national level in the process of training future drivers. The proposed programme can also be a practical guide and a valuable methodological benchmark for psychologists in the fields of developmental, educational and transport psychology. The results of such assessments can be important methodological and scientific milestones in reassessing the criteria and stages of obtaining the license and managing the aggressive behavior of drivers with a driving history marked by anger, overt aggressive behavior and escalating tendencies of traffic conflicts.

Main scientific results submitted for support:

1. There is an association relationship between personality traits and the level of aggression behind the wheel.

2. Aggressive and risky driving in traffic is fuelled by negative emotions and thoughts, which can be characteristic of any road user as a driver.

3. Variables such as age, religion, marital status, educational level and gender and anger indicator can be predictors of drivers' behavior in traffic on the dimensions: aggressive driving, negative cognitions/emotions, risky driving and dangerous driving.

4. Specially organized psychological interventions, focused on cognitive restructuring and emotion analysis, can contribute to achieving significant progress in terms of acquiring a new pattern of thinking and a new pattern of behavior in traffic in situations potentially anger-triggering, can increase awareness of drivers' responsibility regarding their reactivity in traffic in tense moments that can generate aggression.

Implementing of scientific results. The results of the theoretical-experimental research were implemented in the educational process of training students in the disciplines Vocational Orientation, Work Psychology, Master students in the disciplines Organizational Psychodiagnosis, Recruitment, Professional Selection and Evaluation, Adult Psychology, Career Counseling and Planning, in the process of continuous and complimentary training of psychologists, vocational counselors and psychotherapists.

Approval of research results. The most important aspects of the research were discussed and analyzed at the reporting sessions of the doctoral activity within the Doctoral School of Psychology and the Department of Psychology of the "Ion Creangă" State Pedagogical University; were published in various scientific journals and presented during the annual sessions of doctoral students, national and international scientific conferences; were implemented during the counseling / rehabilitation sessions of drivers who violated road traffic rules with a risk of license withdrawal in the Transport Psychology Cabinet. In the future, we foresee the implementation of scientific results in the process of training psychologists, especially in areas such as transport psychology, educational psychology, clinical psychology and within the psychological counseling activities of people with aggressive tendencies. Also, the proposed psycho-educational program could be framework of a good practice guide and national courses accredited by the Romanian Psychologists' Colleges and included as part of a national educational policy program aimed at reducing traffic aggression in general and aggressive drivers in particular.

CONTENT OF THE THESIS

The thesis consists of annotations (in two languages), list of abbreviations, introduction, three chapters, general conclusions and recommendations, bibliography and annexes.

In the *Introduction* are argued the actuality and importance of the research topic, the degree of research of the problem, the purpose and objectives of the research, the important scientific problem solved, the scientific novelty of the recorded results, the theoretical importance and applicative value of the work, the way of implementing the research results.

In *Chapter I,* entitled***: Theoretical substantiation of drivers' aggressiveness in traffic***, the conceptual divergences of the semantic field of aggression are described and clarified: anger, rage, aggression, violence; the main theories of aggression are presented and critically analyzed; different types of aggression are described and explained, latent/passive aggression, aggression as an expression of passive/aggressive personality disorder, overt aggression, aggressive behavior; Various causes of driver

aggression in traffic, ways to measure driver aggression and models of aggressive behavior assessment, ways to reduce driver aggression are studied.

The study of human aggression proves difficult both conceptually and in terms of concrete actions. This is largely due to the varied nature of the term. On the one hand, aggression is a complex phenomenon, expressing itself in various forms, and on the other hand, the term aggression is often associated with connotations such as violence, anger and aggression. For this reason, it is necessary to precisely establish the conceptual boundaries of the semantic field of aggression, which can encompass elements such as anger, violence, anger, aggression and self-aggression.

In an etymological sense, the notion *of aggression* refers to an individual potentiality, to the ability to face one obstacle, to confront another and not to back down in case of difficulty [16, p.121]. In this sense, aggression is necessary, sometimes even useful for carrying out and completing an activity. It represents a capacity that allows the individual to assert himself, not to shrink in the face of difficulties or to avoid the struggle as a phase of confrontation with others in achieving success.

There are also explanatory attempts that raise the issue of aggression in terms of tendency. In *the Dictionary of Psychoanalysis*, authors Laplanche and Pontalis define aggression as "a tendency or set of tendencies that are actualized into real or phantasmatic behaviors aimed at harming another, destroying, coercing, humiliating him, etc." [12].

In Romanian psychology, P. Popescu-Neveanu defines *aggression* as a type of "destructive and violent behavior oriented towards persons, objects or oneself" [21], a definition to which we partially subscribe. We mention that throughout this research, the terms *aggression* and *aggressive behavior* were used in parallel, as a state and manifestation / expression of one and the same phenomenon.

From the analysis of all concepts referring to human aggression in general and that of the driver in particular, the analysis of types of aggression and causes generating aggressive behaviors as well as from the analysis of models and tools for assessing anger and related emotions, we have drawn some important theoretical conclusions:

✓ *Aggression is an* internal tendency, *a potentiality that allows the individual to face social problems and constraints,* which may or may not update into external aggression depending on temperament and other internal factors as well as external factors, as a response to a verbal or physical aggression initiated by others;

✓ The nature of aggression is dependent on context and the diversity of situations that call for aggressive behavior.

✓ Even though there is research on aggressive behavior in traffic, a unanimously accepted conclusion on this concept has not yet been reached [1, 17, 26].

✓ The factors and causes of aggressive behavior of drivers in traffic are multiple and require a careful assessment approach: from defense reaction to mental disorder, and its approach will be diverse depending on the generating factors; Assessing aggressive driver behavior requires a comprehensive

approach involving clinical assessments, psychological tests and practical observations to identify the underlying factors of these behaviors and develop appropriate interventions.

✓ Aggressive traffic behavior may be clinically associated with antisocial, narcissistic, or histrionic personality disorders. Also, aggression can occur as a result of general medical conditions, such as head trauma, epilepsy, hypothyroidism, neoplasms of the central nervous system, cardiovascular diseases and others. These medical conditions can influence a person's behavior and control of emotions, and can contribute to aggression in traffic.

✓ Regarding road safety policy in Romania, there are positive signs, as in the last five years, courts have begun to stipulate in final judgments the use of a cognitive-behavioral therapist and even prescribe a minimum number of sessions. This indicates greater awareness of the problems related to aggressive behavior in traffic and a more therapeutic solution-oriented approach.

✓ Contemporary studies reveal that aggressive behavior in traffic can be prevented and improved through a rigorous assessment of potential drivers and by including those already identified as aggressive in rehabilitation programs. We are encouraged to believe that developing a therapeutic rehabilitation program for aggressive drivers first requires a careful initial assessment to identify the general and personal context in which this behavior manifests itself in traffic. It is important to understand the underlying reasons for aggression and develop strategies to manage anger and improve road behavior.

In *Chapter II - **Empirical research of aggressive behavior and its predictors of drivers in traffic***, we reported the results of comparative, relationship studies and identification of predictors of aggressive behavior in traffic.

The purpose of the research for the finding stage is to determine the specifics of the aggressive behavior of the driver in traffic, to identify the general and personal context in which this aggressive behavior manifests itself in traffic.

In order to achieve the proposed goal, we have put forward the following **research objectives**:

1. Investigating the relationship between socio-demographic aspects and the manifestation of aggressive behavior in drivers in traffic.
2. Highlighting personality traits that contribute to aggressive behavior of drivers in traffic.
3. Determining the particularities of the emotional and cognitive state (negative cognitions and emotions) in relation to personality traits in drivers in traffic.
4. Identifying predictors for aggressive behavior of drivers in traffic on the dimensions: aggressive *driving, risky driving, negative cognitions/emotions and dangerous driving.*

General hypothesis. We assume that the manifestations, levels and dynamics of aggressive behavior of drivers in traffic are determined by a complex of psychological factors such as: personality traits (agreeableness, emotional stability, conscientiousness), negative cognitions and emotions, predisposition to risk and danger level and specificity of anger (as moderating variables) and socio-demographic factors: gender, age, background, religious affiliation, socio-economic status, level of education, marital status.

The general assumption allowed the following ***operational hypotheses*** *to be launched*:

1. We assume that there are statistically significant differences in aggressive traffic behavior based on background, religion, gender, socioeconomic status, marital status, educational attainment, and age.

2. We assume that there is an association relationship between aggressive behavior manifested in traffic and personality traits of drivers: openness, extraversion, conscientiousness, agreeableness, emotional stability.

3. We assume that the trigger predictor of aggressive behavior of drivers in traffic is anger as reaction, trait and temperament.

Methodology of ascertaining research.

Research variables: VI - *negative cognitions/emotions*, gender, age, background, religious affiliation, marital status and level of education, personality traits: openness, extraversion, conscientiousness, agreeableness, emotional stability; **VD** - aggressive behavior of drivers, quantified by (aggressive driving, dangerous driving, risky driving) - DDDI: The Dula Dangerous Driving Index); **VMo** **-** anger.

The experimental research was conducted entirely during 2017-2018, within the Haidu Felicia individual psychology practice.

Research sample: The research sample consisted of 204 drivers. We present below the socio-demographic data: Average age 37.5 (min 20 years - maximum 55 years), of which 177 men and 27 women, rural area 56 subjects, urban area 148 subjects, religious affiliation: 189 Orthodox religion and other religions 15; socio-economic status with income below average level 60 and above average level 144; by marital status 135 married, Unmarried -16, divorced -13, educational level with vocational school 24 subjects, high school -86, and undergraduate or graduate studies 94 subjects. The sample was random.

This research involved drivers who attend the annual periodic evaluation (periodic control), during which the test battery was administered. All subjects were informed that the data would be used in a study, that the data would not influence the result of the periodic check-up, and for greater credibility of the psychologist and increased confidence in the examiner.

The presentation of the results of the finding experiment follows the order of objectives and hypotheses exposed in the research. Both descriptive and inferential statistics are presented, where depending on the specifics of the hypothesis, it is appropriate to elucidate these details. Likewise, statistical and psychological interpretations with conclusions for each operational hypothesis are presented.

From the perspective of the scientific approach in accordance with **objective no. 1,** which involves *Investigating the relationship between socio-demographic aspects and the manifestation of aggressive behavior of drivers in traffic, the following operational **Hypothesis no. 1** was put forward: **We assume that there are statistically significant differences in aggressive behavior manifested in traffic (aggressive driving, dangerous driving, risky driving) based on gender, background, religious affiliation, socioeconomic status, marital status, educational level and age.***

The influence of demographic indices is of major importance in researching aggressive behavior of drivers in traffic, because the accident rate differs depending on the environment (area), the driver's attitude towards the traffic process, his ability to analyze the situation or his emotional state, as demonstrated by existing statistics on the rate of road accidents. In order to prevent these aggressive behaviors in traffic, we set out to study the incidence of aggressive behavior in traffic of drivers, taking into account demographic indicators, so that, subsequently, we can intervene with specialized, psychological intervention programs based on these data.

To verify this hypothesis, we used demographic data from questionnaires applied as *an independent variable* and to identify the level of aggressive behavior manifested in traffic, applied as *a dependent variable*, scores from the **Dula Indicator** were used*,* quantified and operationalized by the following subscales (variables): aggressive driving, risky driving, negative cognitions and emotions.

The research of demographic variables that can intervene as allied factors, or as confused variables that could influence the specificity of this research allowed us to highlight the lack of statistically significant differences that would influence, at a certain stage of life, drivers in traffic. The hypothesis put forward, according to which we assumed that *there were statistically significant differences in aggressive behavior in traffic, depending on background, religious affiliation, gender, socioeconomic status, marital status, educational attainment level and age, was not statistically confirmed.*

The only difference found was identified in the variable *risky driving,* depending on the socio-demographic factor*, the age of the drivers*. The differences were identified with minimal odds in the first decade of age, with a subsequent increase towards middle age and a decrease towards the third decade of age. This is explained by the fact that in middle age, most drivers acquire some alleged driving experience and commit risky maneuvers in traffic, being sure of their induced behavior, compared to the first decade where drivers are just beginning to explore their driving potential, and towards the third decade of age, Following several experiences, both negative and positive, many people's choice of risky driving is diminishing.

We will specify that the modeling *of aggressive behavior of drivers in traffic* includes exactly those elements according to the Dula indicator, which consists of several components as shown in figure 2.1.
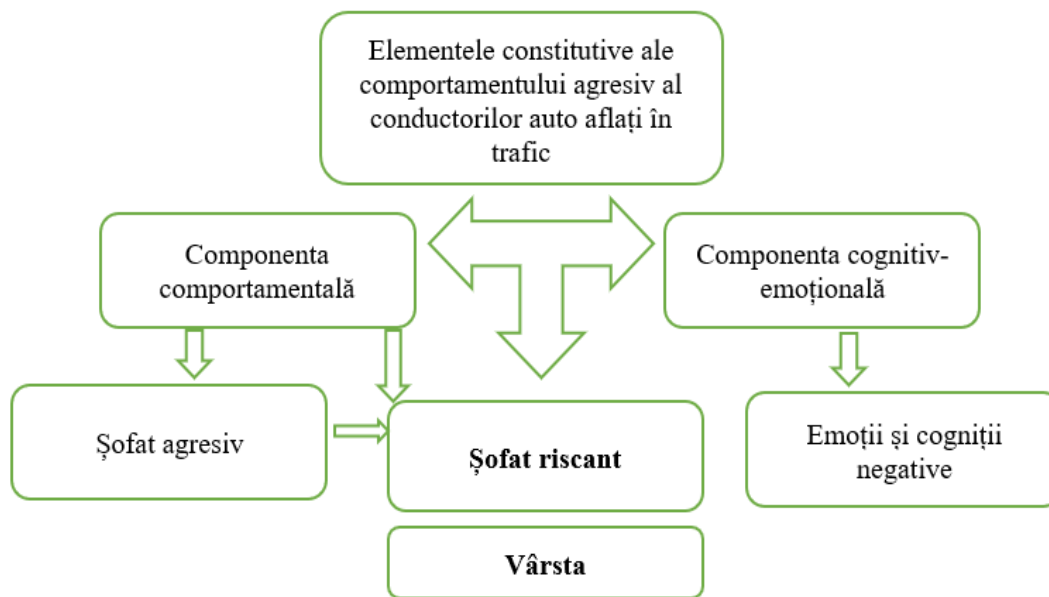
Figure 2.1. Modelling aggressive behavior in traffic according to drivers' behavioral and cognitive emotional expression

Based on the data obtained in the research, we can consider that all drivers participating in traffic, regardless of any socio-demographic factor, such as *medium of provenance, religion, gender, socioeconomic status, marital status, educational level and age* adopt the *s*ame type of behavior, except for variable *risky driving,* which depends largely on *age of driver* and which has a fairly large share in the manifestation of aggressive behavior of drivers, since it is a component part of this behavior. In this case, we can talk about behaviors that are not simply aggressive or dangerous, but undesirable. Thus, the maintenance of aggressive behavior can be fuelled by any facet of it, either by adopting an aggressive and imposing driving style, or by exposing to risks through dangerous maneuvers, all of which are conditioned emotionally and decisionally by the factor of negative emotions and cognitions.

In the next experimental sequence, we will try to delimit what would be *the psychological factors* that can prevent the adoption of aggressive behavior in traffic and vice versa that fuel it, such as certain *personality traits and anger as a state, trait or temperament* that also implies spontaneity throughout this process, but which can also give continuity to aggressive behavior, manifested by the driver in traffic. We will also mention that, in the context of this research, we are interested specifically in the manifestation of this behavior in traffic, the limits of the study being reduced only to this subject, we do not explore the characteristics of aggression of each subject, apart from participation in traffic, because, as studies conducted so far show, the manifestation behind the wheel and outside driving is different. In this case, we will refer to the idea that, like many other complex social behaviors, aggression is acquired through social learning, according to the theory of A. Bandura [2] and this allows us to delimit, in our study, aggression as a trait and aggression as a state, the latter being conceptualized in this paper as the equivalent of aggressive behavior of drivers in traffic.

From the perspective of the scientific approach in accordance with **objective no. 2** which involve**s** highlighting personality traits that contribute to the manifestation of aggressive behavior of drivers *in traffic, the following operational **Hypothesis no. 2*** was put forward*:* We assume that there is an association relationship between aggressive behavior manifested in traffic and personality traits of drivers: Openness, extraversion, conscientiousness, agreeableness, emotional stability.

To verify hypothesis no. 2. we used **the DECAS Personality Inventory** to assess *drivers' personality traits* from the perspective *of openness*: active imagination, aesthetic sensitivity, attention to life and internal feelings, preference for variety, intellectual curiosity, independence of thought, aspects not necessarily associated with education or general intelligence. This factor allowed us to understand the nature of driver openness and how this openness influences the adoption of aggressive behavior in traffic. *Driver extraversion* allows for the identification of enthusiasm, gregarious spirit, assertiveness, activism, seeking stimulation, positive emotions and could serve as a potential demotivator in resorting to aggressive traffic behaviors on the part of drivers. *Conscientiousness* as order, competence and sense of duty or possibly the desire to achieve, self-discipline, deliberation, can also serve as a stopper in adopting aggressive behavior in traffic. *Agreeableness* that manifests itself through trust, sincerity, altruism, modesty, gentleness, but also *emotional stability* manifested through emotional reactions appropriate to the situation, resistance to frustration / stress and last but not least through self-control.

In order to identify the level *of aggressive behavior manifested in traffic*, as a *dependent variable*, the scores from the ***Dula Indicator*** were quantified and operationalized by the following subscales (variables) aggressive driving, risky driving, negative cognitions and motions).

Depending on the polarity of the selected variables (personality traits), the positive or negative effect on the possibility of adopting aggressive behavior in traffic can be estimated. Below we present the results related to the personality traits of drivers.

Trăsăturile de personalitate ale conducătorilor auto

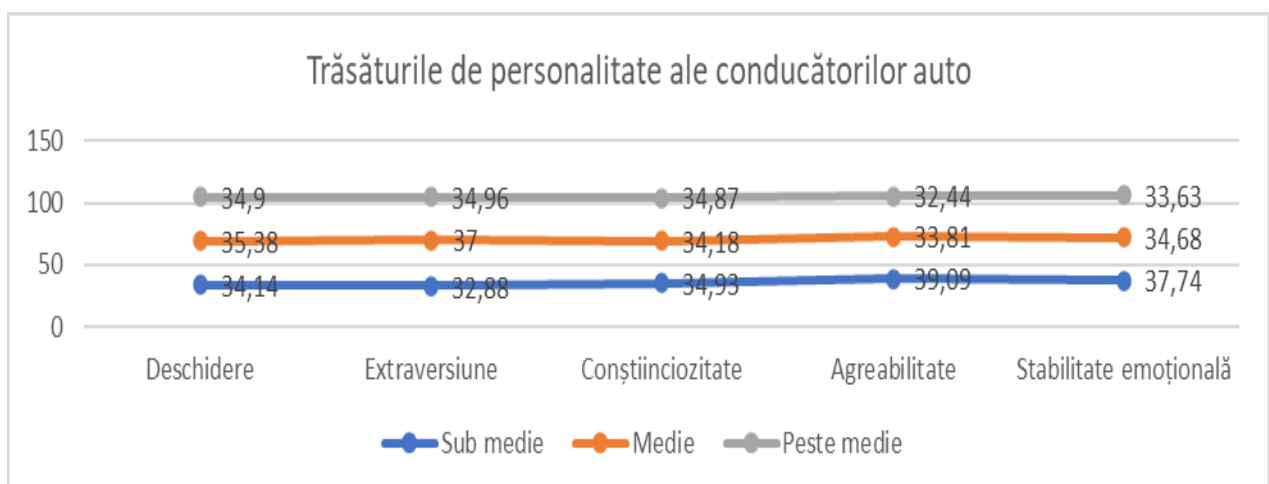|	Deschidere	Extraversiune	Conștiinciozitate	Agreabilitate	Stabilitate emoțională
Sub medie	34,14	32,88	34,93	39,09	37,74
Medie	35,38	37	34,18	33,81	34,68
Peste medie	34,9	34,96	34,87	32,44	33,63

Figure 2.2. Results on personality traits in drivers according to different polarities

Identifying *the personality traits of drivers* reveals that most drivers score above average on all personality traits measured, apart from the *conscientiousness scale*, where (40.7%) of respondents have a level below average. A fairly high percentage is also maintained on the agreeableness scale below average

level (32.2%), the situation is also quite alarming regarding the emotional stability of drivers where we have a margin of (24.3%) below average. (See Table 2.1.)

Table 2.1. Frequencies of manifestation of polarity of personality traits in drivers

	Opening	Extraversion	Conscientious-ness	Agreeableness	Emotional stability
Below average	27.70%	23.70%	**40.70%**	**32.20%**	**24.30%**
Average	11.90%	13.60%	21.50%	11.90%	10.70%
Above average	**60.50%**	**62.70%**	37.90%	**55.90%**	**65%**

These results also indicate that, for the most part, drivers have a preponderant orientation towards positive polarity in personality traits, meaning they are quite emotionally stable (65%), agreeable (55.9%), extroverted (62.7%) and open (60.5%), but less conscientious (40.7%). At the same time, the rather high rate of personality accents with below-average orientation and the variables agreeableness (32.20%) and emotional stability variable (24.30%) remain a problem. These data also allow us to outline a profile of the driver, which manifests itself through attention to life and internal feelings, independence of thought, which would not necessarily mean that we are facing an intelligent driver, but, instead, he is attentive to what is happening around him in traffic and has full capacity to analyze the situation. *Extraversion* as dominant in shaping the driver's profile, assertiveness, activism, seeking to stimulate positive emotions, could serve as grounds for experiencing emotions that could lead to aggressive behaviors in traffic. *Conscientiousness*, which in the vast majority is at a low level and which denotes a lack of sense of duty towards other road users or possibly a lack of discipline, can contribute to aggressive behavior in traffic. *The agreeableness* of drivers, being attested at an above average level, is manifested by confidence, modesty, gentleness and can condition some braking mechanisms in spontaneously aggressive traffic behaviors. *Emotional stability* is above average in the vast majority of drivers and denotes the lack of manifestation of emotional reactions inappropriate to the situation, the ability to resist frustration and stress and last but not least through self-control, which leads to minimizing the incidence of aggressive behavior of drivers in traffic.

In determining the association between the personality traits of drivers: openness, extraversion, conscientiousness, agreeableness, emotional stability and aggressive behavior manifested in traffic (aggressive driving, risky driving, negative emotions and cognitions), we performed descriptive statistics to determine the appropriate statistical method for that data set.

To determine the differences in polarities in personality traits in relation to aggressive driving, the Kruskal-Wallis H omnibus test was performed to establish differences between different personality levels and aggressive driving. Thus, we observed that for the *openness, extraversion and conscientiousness scales,* the data do not indicate statistically significant differences associated with aggressive driving ($p > 0.05$). In contrast, there are statistically significant differences *between the level of agreeableness in aggressive driving* (H (2) = 14.696, $p < 0.001$) and between the level of emotional stability in aggressive

driving ($H_{(2)}$ = 7.410, p = 0.025). To see more precisely between which levels of agreeableness and emotional stability there are significant differences in aggressive driving, we used the post-hoc Mann-Whitney U tests. This allowed us to see at which level of manifestation of the scale there is weight to say that aggressive driving can be manifested, and these results will serve as a basis for evaluating psychologists in examining the existing risks regarding the manifestation of aggressive behavior in traffic of drivers.

To avoid an undesirable increase in Type I error (false positive), due to multiple comparisons, we applied the Bonferroni correction and adjusted the test materiality threshold to 0.0167. Thus, all p-values associated with post-hoc tests were compared with the adjusted threshold value. (See Table 2.2.)

Table 2.2. Kruskal-Wallis H test to test the association between DECAS scales and aggressive driving

DECAS scale	Level	Median	Mean	SD	Average ranks	H	Df	p
Opening	Below average	7.0	7.84	1.28	94.89	1.313	2	.519
	Average	7.0	8.43	2.90	89.62			
	Above average	7.0	8.12	3.26	86.18			
Extraversion	Below average	7.0	7.81	2.36	85.14	1.020	2	.601
	Average	7.0	8.21	1.79	96.52			
	Above average	7.0	8.15	3.13	88.83			
Conscientiousness	Below average	7.0	8.27	2.61	92.65	.837	2	.658
	Average	7.0	7.80	1.34	86.07			
	Above average	7.0	8.04	3.54	86.74			
Agreeableness	Below average	8.0	9.23	4.49	106.41	**14.696**	2	**<,001**
	Average	7.0	7.71	1.01	91.81			
	Above average	7.0	7.50	1.10	78.38			
Emotional stability	Below average	8.0	8.80	4.37	104.20	**7.410**	2	**.025**
	Average	7.0	7.74	1.05	91.82			
	Above average	7.0	7.87	2.16	82.85			

The conclusions we can draw with reference to **hypothesis no. 2** -We *assume that there is an association link between aggressive behavior manifested in traffic and personality traits of drivers: openness, extraversion, conscientiousness, agreeableness, emotional stability* - are that the research hypothesis was confirmed by the following structure: aggressive behavior, quantified by: aggressive driving + risky driving + negative emotions and cognitions + dangerous driving, is associated with personality traits such as agreeableness and emotional stability. As studies show, it's about the negative polarity of these personality traits. Similarly, an association was identified between conscientious personality trait and risky driving behavior.

Given that we have delimited the behavioral sphere from the affective and cognitive sphere in our paper, regarding the modeling of aggressive behavior in traffic, depending on the behavioral and cognitive emotional expression of the driver, we have drawn a special objective, **objective no. 3** referring to *Determining the particularities of the emotional and cognitive state (negative cognitions and emotions) in relation to personality traits in drivers on the road, reflecting part of research hypothesis 2 with reference to the existence of an association link between aggressive behavior in traffic and personality traits of drivers: openness, extraversion, conscientiousness, agreeableness, emotional stability. Here we*

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will make a clarification, that it is about that component of dangerous driving, quantified in aggressive behavior of drivers: negative emotions and cognitions.

In determining the association between drivers' personality traits and negative cognitions and emotions, we also performed descriptive statistics to determine the appropriate statistical method for that dataset. In this case, the association between personality traits and negative emotions and cognitions was studied.

These results outline a profile of the driver with aggressive traffic behavior, characterized by lack of conscientiousness, low agreeableness and emotional instability. In determining the size of the effect between personality traits and aggressive behavior in traffic, medium and low effects were identified. Aggressive behavior in traffic, manifested by risky driving, is conditioned by poor preparation to face traffic challenges, disorganization, recklessness and lack of respect for social rules and norms, all these facets being expressed within the conscientious personality trait. Another conditioning of aggressive behavior manifested in traffic, in terms of personality traits, is the lack of agreeableness on the part of drivers and is manifested by cynical thinking, with tendencies to paranoid thinking, obvious tendency to conflict with other road users, individualism manifested in the driving process and impulsivity accompanied by aggressive and quite harsh manifestations. The third personality trait, with medium interaction effect, is emotional stability, or rather lack of emotional stability. Emotionally unstable drivers tend to adopt aggressive behavior in traffic, namely by having difficulty controlling their impulses, which is why they underestimate the dangers of traffic, but at the same time, they overestimate their own limits and capabilities, which, in relation to emotional state, gross behavior and inappropriate social behaviors, lead to excessive alcohol consumption and the likelihood of getting behind the wheel drunk.

In accordance with **objective no. 4** *Identifying predictors for aggressive behavior of drivers in traffic on the dimensions: aggressive driving, risky driving, negative cognitions/emotions and dangerous driving,* **Hypothesis no. 3**. *is* drawn *We assume that the trigger predictor of aggressive behavior of drivers in traffic is anger as reaction, trait and temperament.*

This objective is oriented towards the research of anger, with all its manifestation components (anger *as reaction, trait and temperament*), in drivers as a moderating variable in the generation of aggressive behavior. The aim is to highlight whether anger can influence aggressive behavior of drivers in traffic, on the dimensions: aggressive driving, negative cognitions/emotions, risky driving and dangerous driving. We start from the premise: drivers with certain personality traits, low level of agreeableness, emotional instability, low conscientiousness under the influence of anger as a moderating variable adopt aggressive behavior in traffic. This is made possible by identifying the predictor for each constituent element of aggressive behavior. Thus, anger could be the final constituent element, which generates, under certain conditions, the manifestation of aggressive behavior in traffic.

Expressing anger and controlling anger are defined concepts as having several major components based on internalizing anger and externalizing anger based on engaging in aggressive behavior in a variety of situations. Therefore, this experimental sequence took into account each constituent component of

aggressive behavior of drivers. In the first phase of our research, we conducted a multiple linear regression analysis to determine potential predictors of aggressive driver behavior. The dependent variable consisted of scores on the aggressive driving subscale, and independent variables included age, gender, and scores on various scales and subscales of STAXI, which measure anger and personality traits related to aggressive behavior.

The results of this analysis showed that the model explained only a small fraction (4.9%) of the variability in aggressive driving. This statistically significant percentage was obtained $(F(11,192) = 1,802,$ $p = 0.05)$. This means that aggressive driving is influenced by the anger variable, but also by other variables involved, such as personality traits like low agreeableness and emotional instability. These personality traits condition the appearance of anger for the driver. Once anger is triggered, it leads the driver to aggressive actions and successive aggressive maneuvers in traffic.

We present below how the model of the manifestation of aggressive behavior of drivers in traffic is presented, from the perspective of its genesis and conditioning.
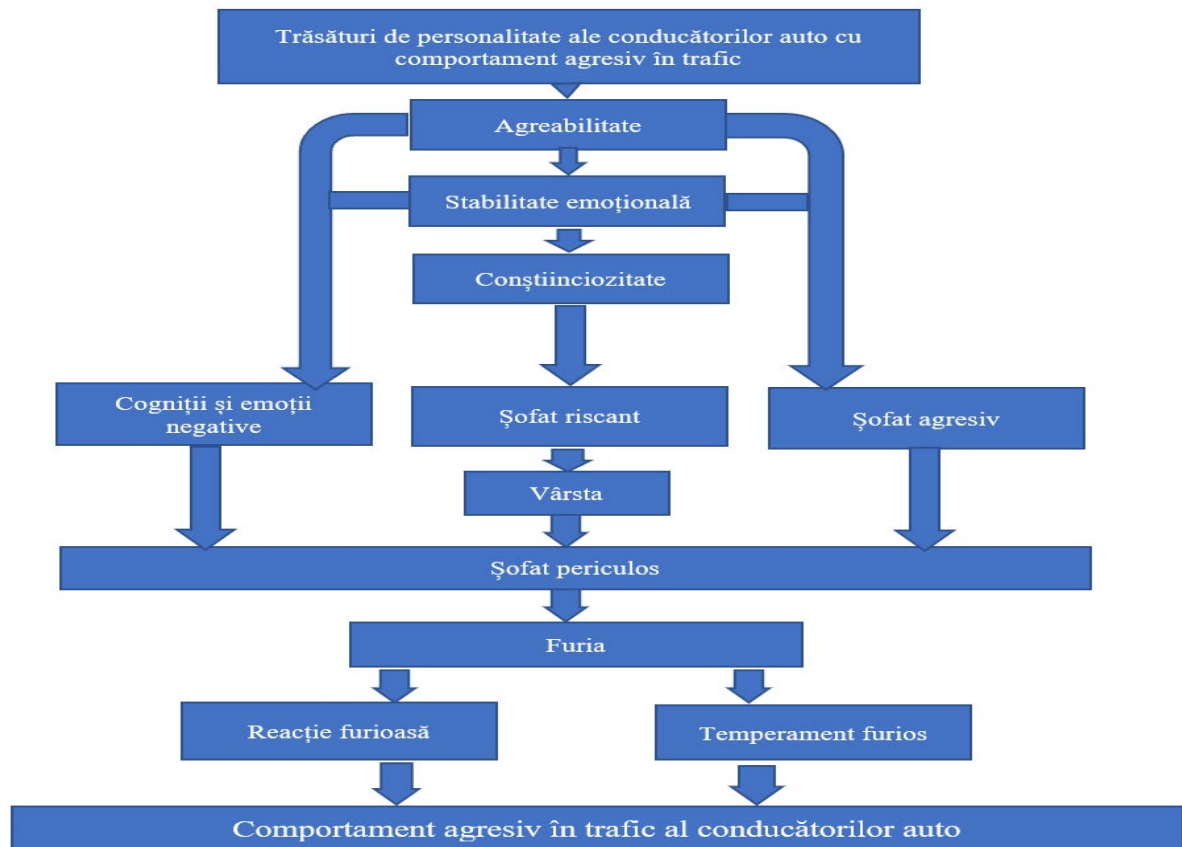

Figure 2.3. The manifestation of aggressive behavior of drivers in traffic (personal contribution of the author)

These results suggest that anger and personality traits play a significant role in determining aggressive driver behavior, and these factors interact to influence how anger manifests and leads to aggressive actions in traffic.

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As a result, personality accents, manifested by drivers to the factors agreeableness, emotional stability with low scores, are related to behavioral manifestations aggressive driving, negative cognitions/emotions and dangerous driving. And to the behavioral manifestation of risky driving is added the emphasis on personality, conscientiousness with a low level. Finally, another independent variable- age- is added to the risky driving behavior. **The general hypothesis,** according to which *the manifestations, levels and dynamics of aggressive behavior of drivers in traffic are determined by a complex of psychological factors such as: personality traits (agreeableness, emotional stability, conscientiousness), negative cognitions and emotions, predisposition to risk and danger; level and specificity of anger (as moderating variables) and socio-demographic factors gender, age, environment Provenance, religious affiliation, socio-economic status, marital status,* has been partially confirmed.

The finding experiment aimed to determine the factors that contribute to the manifestation of aggressive behavior of drivers in traffic. The research also focused on highlighting the personality traits of drivers who show aggressive behavior in traffic, but also on identifying predictors, as moderator variables, that could intervene, under certain conditions, in triggering aggressive behavior in traffic, such as anger with all its manifestations. The analysis of the results of experimental research led us to the following conclusions:

1. Drivers who adopt aggressive behavior in traffic do not differ according to their background, religious affiliation, gender, socio-economic status, marital status, level of education. Regardless of demographic factors, drivers also exhibit aggressive behavior in traffic, aggressive and risky driving being fuelled by negative emotions and thoughts, which is characteristic of any road user as a driver. The demographic variables that can intervene as random factors, or as confused variables that could influence the specificity of the research, allowed us to highlight the lack of statistically significant differences that would influence, at a certain stage of life, drivers in traffic.

2. Drivers aged 30-40 tend to have higher levels of risky driving compared to other age groups (age differences). Risky driving is increasing towards middle age and decreasing towards old age. Less experienced drivers are still not aware of the existing risks due to age, and with the accumulation of experience, in the third decade of age, more credibility is shown in the maneuvers performed. This only concerns risky driving as a component of aggressive behavior in traffic and cannot be taken into account outside of the personality traits of the subject and anger.

3. The results regarding the personality traits of drivers indicate that most drivers have a preponderant orientation towards positive polarity in personality traits, i.e. they are quite emotionally stable (65%), agreeable (55.9%), extraverted (62.7%) and open (60.5%), but less conscientious (40.7%). At the same time, there remains a problem with the rather high rate of personality accents with below-average orientation and the variables agreeableness (32.20%) and emotional stability variable (24.30%).

4. In establishing the relationship between personality traits conscientiousness, agreeableness, emotional stability and aggressive driving, risky driving, negative cognitions and emotions,

dangerous driving, indirect correlations were established between agreeableness, emotional stability and aggressive driving, risky driving, negative cognitions and emotions, dangerous driving and indirect correlation between conscientiousness and risky driving. Drivers with a low level of conscientiousness make very reckless, impulsive decisions that lead to adopting a risky driving style. Risky driving is due to distrust of other road users, arrogance, lack of goodwill, orientation towards conflict. Emotional instability, as a personality trait that statistically significantly correlates with aggressive driving, risky driving, negative cognitions and emotions, and dangerous driving, contributes even more to the manifestation of aggressive behavior in traffic. Emotionally unstable drivers tend to adopt risky driving in combination with aggressive driving, being under the influence of nervousness and irritability, with a very frequent likelihood of getting involved in conflicts with other road users.

5. Aggressive behavior, quantified by (aggressive driving + risky driving + negative emotions and cognitions + dangerous driving), is associated with personality accentuations such as agreeableness and emotional stability, conscientiousness as studies show is about the negative polarity of these personality traits.

6. A psychological profile of the driver with aggressive behavior in traffic characterized by: Poorly pronounced conscientiousness + Low agreeableness from drivers + Emotional stability at low levels was also outlined.

7. The trigger of aggressive behavior, in association with risky driving style and age, negative emotions and cognitions, personality accentuations (agreeableness, emotional instability, conscientiousness) of drivers in traffic is anger as reaction, trait and temperament and manifests itself in the tendency to frequently and easily try intense feelings of anger at the slightest provocation, lack of anger control associated with impulsivity, high sensitivity to criticism and negative evaluations.

In *Chapter III - **Reducing aggressive behavior of drivers under experimental conditions***, the main landmarks of the formative experiment are described: objectives, hypotheses and methodology of the scientific approach, the structure of the intervention program with specific activities is presented. Education of this type aims at the participation of drivers in rehabilitation courses following the finding of aggressive behaviors in traffic or accidents caused by them, which have as source aggressive acts that could have been prevented with greater self-control on their part. Thus, two types of therapies were proposed as support materials: transactional analysis and cognitive-behavioral psychotherapy. We believe that each of these approaches could be the most appropriate as a methodology in developing a national program for the rehabilitation of aggressive drivers. In this section of the paper are analyzed the effects of the implemented program, the efficiency of the implemented program is evaluated.

The finding experiment allowed us to identify predictors that contribute to the manifestation of aggressive behavior in traffic, determined by a complex of psychological factors such as: personality traits (agreeableness, emotional stability, conscientiousness), negative cognitions and emotions, predisposition

to risk and danger, manifested by aggressive, risky and dangerous driving, being conditioned by angry temperament and angry reaction.

In this context, it is absolutely necessary to organize a program focused on the mentioned predictors, which would contribute to reducing aggressive behavior in traffic. In the formative experiment we aimed to reduce aggressive traffic behavior of drivers, taking into account these psychological factors. In logical order of ideas, we should have taken into account the reduction of anger in psychosocial intervention, but as the literature shows, the psychological parameter angry temperament and angry reaction cannot be modified although they are predictors of aggressive behavior, being constant variables. The angry temperament measures the disposition to feel anger without a specific provocation, and the angry reaction measures the frequency with which feelings of anger are felt in situations involving frustration and negative evaluations. So, it's about anger as a trait that cannot be modified experimentally, as anger is as a state. In the formative program it is planned to keep this factor under control, from the perspective of developing emotional *self-regulation parameters.*

The purpose of the formative experiment is to develop parameters of emotional self-regulation of aggressive drivers, expressed by identifying and modeling negative cognitions and emotions, awareness of their manifestation through aggressive, risky and dangerous driving and creating psychological conditions in order to reduce aggressive behavior in traffic in drivers.

The study hypothesis for the formative experiment is: *Psychological intervention at the level of self-regulation parameters of negative cognitions and emotions, awareness of the manifestation through aggressive, dangerous and risky driving will diminish the aggressive behavior manifested in traffic of drivers.*

The research objectives **in the formative approach are:**

1. Development and implementation of the psychosocial intervention program in order to reduce the aggressive behavior of drivers in traffic.

2. Evaluation of self-regulation parameters of negative cognitions and emotions, awareness of manifestation through aggressive, risky and dangerous driving at the test/retest stage.

3. Determining the impact of psychosocial intervention on parameters that lead to reducing aggressive behavior of drivers in traffic.

4. Analysis of the relationship between the results of the experimental group and the control group (GE and GC).

5. Interpretation of results and evaluation of the effectiveness of the psychosocial intervention program.

The research sample consisted of a homogeneous group of 100 people who were selected from subjects who participated in the finding experiment and showed a high level of aggressive behavior in traffic, aged between 20 and 55 years.

The training program focused primarily on *people with high scores on the scale of aggressive behavior in traffic*. The main selection criterion for the research sample was therefore aggressive driving behavior.

The duration of the program was 6 months, running from 1 September 2018 to 1 February 2019, with a frequency of meeting once a week. A total of 24 sessions took place (during the holidays, homework assignments were addressed and activities such as completing self-monitoring journals of emotions and behaviors were assigned).

A total of 48 hours were allocated for group sessions and 30 hours for "homework" sessions. The program took place in the Individual Psychology Practice of the researcher, specialist in transport psychology, work and organizational psychology, clinical psychology and national security, and psychotherapist specialized in transactional analysis, being also an expert psychologist in forensic psychology. The regular annual evaluation of drivers took place in this cabinet.

Independent variable A consists of the evaluation stages of the intervention programme:

- A1 - Pretest (initial assessment)
- A2 - Posttest (post-programme evaluation)

The independent variable B is the type of group under study, which was divided into two groups:

- B1 - experimental batch (50 drivers)
- B2 - control lot (50 drivers)

The dependent variable of the study was aggressive behavior of drivers in traffic.

This was a mixed bifactorial design approach, which allowed to assess the impact of the intervention program on aggressive behavior of drivers, comparing the results of pre-tests and post-tests between the experimental and control groups.

Working methods and techniques.

The program was focused on a combination of methods and techniques specific to different schools of psychotherapy, such as cognitive-behavioral methods and transactional analysis. Within the group therapeutic module, the sessions had an average duration of 60-90 minutes. The evaluation of the program is carried out both qualitatively, by observing the decrease in the frequency and intensity of aggressive behaviors in the drivers included in the program, and by their subsequent retesting.

Results: It can be concluded that the implemented intervention program led to a decrease in aggressive traffic behavior of drivers, quantified by the variables: aggressive, risky and dangerous driving, negative cognitions and emotions. The variability for each variable was different, so the effect size for the aggressive driving variable is low. It is important to note that the implemented intervention program led to a decrease in aggressive driving behaviors among participants.

In the case of the variables *aggressive* driving, risky *driving, negative cognitions and emotions, dangerous driving, the first step was to compare, through the U Mann Whitney test, the experimental group (GE/pretest) and the control group (*GC/pretest) to identify the homogeneity of the groups. The obtained results indicate the absence of differences, finding the homogeneity of batches in all variables: *aggressive driving (z = -0.885, p = 0.376), risky driving (z = -1.928, p = 0.060); negative cognitions and emotions* (z =-1.301, p=0.193); *dangerous driving* (z = -0.319, p = 0.750).

In order to capture the differences, progresses, improvements and optimizations obtained from the

Psychosocial Intervention Program, we made the comparison through the U Mann Whitney test experimental group (GE / posttest) and the control group (GC / posttest), this allowed us to find statistically significant differences in the investigated variables as follows: *aggressive driving* (z = -2.672, p = 0.008), *risky driving (z = -1.928, p = 0.06),* negative cognitions and emotions (z = -4.401, p = 0.001), *dangerous driving* (z = -6.071, p = 0.001).

In order to investigate to what extent the changes listed above are due to the psychosocial intervention program, the results obtained in the GE/GC test and retest through the Wilcoxon test for aggressive driving variable *were examined (Wilcoxon test for GE test/posttest Z=-2.145, p=0.032, for GC test/posttest, Z=-0.562, p=0.574); risky driving* (Wilcoxon test for GE test/posttest, Z=-5.963, p=0.001, for GC test/posttest, Z=-1.633, p=0.102); *negative cognitions and emotions* (Wilcoxon test for GE test/posttest, Z=-3.731, p=0.001, for GC test/posttest, Z=-1.633, p=0.102); *dangerous driving* (Wilcoxon test for GE test/posttest, Z=-5.951, p=0.001, for GC test/posttest, Z=-0.707, p=0.479).
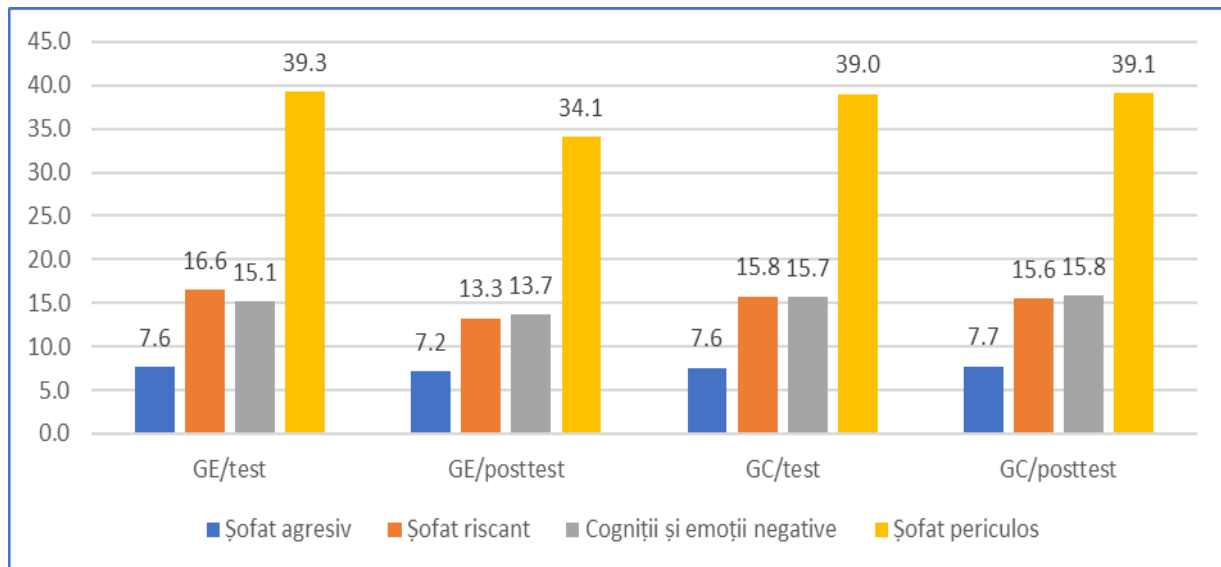

Figure 3.1. Test and retest frequencies for GE and GC

The graphical representation of the averages obtained by GC and GE at the pre-testing stage shows no differences between the two research batches, which allows us to assume that the batches are homogeneous. The average results obtained by the experimental subjects from the two groups are as follows: for the aggressive *driving variable* – GC/test (M_1=7,58; SD=0,73) and GE/test (M_2=7.62; SD=1.34); GC/posttest (M_1=7.74; SD=2.22) and GE/posttest (M_2=7.18; SD=0.66); for *risky driving* variable GC/test (M_1=15.78; SD=2.59) and GE/test (M_2=16.56; SD=1.96); GC/posttest (M_1=15.56; SD=2.62) and GE/posttest (M_2=13.26; SD=1.10); for the variable *negative cognitions and emotions* – GC/test (M_1=15.68; SD=1.99) and GE/test (M_2=15.12; SD=2.30); GC/posttest (M_1=15.82; SD=1.75) and GE/posttest (M_2=13.70; SD=2.53); for *dangerous driving* variable GC/test (M_1=39,04; SD=3,880) and GE/test (M_2=39.30; SD=3.97); GC/posttest (M_1=39.12; SD=4.84) and GE/posttest (M_2=34.14; SD=2.75).

Thus, the results demonstrate that the intervention had a positive impact in reducing aggressive driving behaviors. However, it is important to emphasize that the size of the effect is relatively small, and

the group of participants explains only a small part of the variability observed in the variable in question. Consequently, further research and development of additional interventions is needed to achieve a more significant and sustainable decrease in aggressive driving behaviors.

For the risky driving variable, the effect size, measured by partial eta squared, it is 0.44, which indicates an average effect size. Thus, the results highlight that the implemented intervention program led to a significant decrease in risky driving behavior. The size of the effect indicates that the intervention has a significant influence on the results achieved. Therefore, the intervention program proved effective in reducing risky driving behavior in participants in the experimental group.

For the variable negative cognitions and emotions, the effect size is average, represented by partial eta squared, it was 0.307. This result suggests that the intervention had a significant impact, explaining about 30.7% of the variability in scores on the negative cognitions and emotions scale. In conclusion, the results obtained in the experimental group support the fact that the intervention program was successful in reducing negative cognitions and emotions behind the wheel.

For the variable dangerous driving, the results obtained in the experimental group show that the implemented psychological intervention program led to a decrease in dangerous driving behaviors. However, the effect size is low, as these results explain only 7.5% of the variability in scores for the variable dangerous driving (partial eta squared = 0.075). Thus, although psychological intervention had a positive impact in reducing dangerous driving behaviors, it is important to note that this effect is relatively small, accounting for only a small fraction of the observed variability. Further exploration is needed to explore other factors and interventions that contribute to a more significant decrease in these behaviors. These findings may be relevant for the development of future road safety strategies and interventions.

At the same time, as Kohlberg L.'s experiment shows, there may be a difference between moral judgment and moral behavior [11]. In other words, for a behavior to be stable over time and integrated into a new driving personality, a longitudinal study is needed, which follows the behavior of drivers over a longer term than the present research, in our opinion, of at least 5-10 years.

In conclusion, the program has achieved its objectives in terms of developing parameters of self-regulation of negative cognitions and emotions, awareness of the manifestation through aggressive, risky and dangerous driving in order to reduce aggressive behavior in traffic to drivers. The research hypothesis within the formative experiment was confirmed: *Psychological intervention at the level of self-regulation parameters of negative cognitions and emotions, awareness of the manifestation through aggressive, dangerous and risky driving contributes to reducing the aggressive behavior manifested in traffic of drivers.*

Through the intervention program, we managed to contribute to the awareness of drivers' responsibility regarding their level of reactivity in traffic situations that can trigger aggression. This program focused on cognitive restructuring and emotion analysis to facilitate significant progress in emotional and behavioral self-regulation. The aim was to help participants acquire a new level of reactivity and different behavior in traffic in situations with the potential to trigger anger.

GENERAL CONCLUSIONS AND RECOMMENDATIONS

Research and presentation of characteristics and predictors of aggressive behavior of drivers in Romania, trends, components, types of aggression in traffic is a challenge for scientific researchers both in the field of psychology and sociology, national security, occupational medicine, etc.

The problem of the research lies in the contradiction between the urgent need of the Romanian society in functional strategies on road safety and the lack of in-depth studies of the profile of drivers at high risk for dangerous driving, as well as the insufficiency of specialized intervention programs to reduce risky driving trends.

The solution of the stated problem, from the perspective of the present research, consisted in determining the socio-demographic and personality traits, which largely influence the behavioral manifestations of drivers in traffic and can generate various risk situations in traffic, including for the life and physical and mental integrity of road participants in order to design optimal psychological intervention strategies.

In Romania, there are currently no studies with scientific significance to correlate demographic and personality variables with aggressive drivers. Comparative analysis studies of driver behavior were conducted in this paper in order to determine if there are significant differences between the level of aggression depending on: age, marital status, education level, gender, socio-economic status, background, religion, as well as identifying predictors of aggressive behavior and dangerous driving in drivers in order to develop an intervention program to reduce aggression of drivers.

The important scientific results obtained through the *finding experiment* aimed to determine the factors that contribute to the manifestation of aggressive behavior of drivers in traffic. The research also focused on highlighting the personality traits of drivers who show aggressive behavior in traffic, but also on identifying predictors, as moderator variables, that could intervene, under certain conditions, in triggering aggressive behavior in traffic, such as anger with all its manifestations. The analysis of the results of experimental research led us to the following conclusions:

1. Drivers who adopt aggressive behavior in traffic do not differ according to their background, religious affiliation, gender, socio-economic status, marital status, level of education, except for the variable *risky driving,* which largely depends on the *age of drivers* and which has a fairly large share in the manifestation of aggressive behavior of drivers *(subchapter 2.2.1. pp. 58-87)*. Drivers aged 30-40 tend to have higher levels of risky driving compared to other age groups (age differences). Risky driving is increasing towards middle age and decreasing towards old age.

2. The results regarding the personality traits of drivers (subchapter 2.2.2. pp. 87-106) indicate that most drivers have a preponderant orientation towards positive polarity in personality traits, i.e. they are quite emotionally stable (65%), agreeable (55.9%), extraverted (62.7%) and open (60.5%), but less conscientious (40.7%). At the same time, there remains a problem with the rather high rate of personality accents with below-average orientation and the variables agreeableness (32.20%) and emotional stability variable (24.30%).

3. Although we cannot outline a profile with specific personality traits of the aggressive driver, there is no personality cluster, but several (research related to this aspect has highlighted four types of profiles - respectful, aggressive-vindictive, aggressive-dominant and situationally aggressive), in this paper we have outlined a miniprofile that included general aspects in the sphere of thinking, emotional and behavioral (2.2.2., pp. 87-106), as follows: Poorly pronounced conscientiousness + Low agreeableness on the part of drivers + Low emotional stability.

4. The trigger of aggressive behavior, in association with risky driving style and age, negative emotions and cognitions, personality accentuations (agreeableness, emotional instability, conscientiousness) of drivers in traffic is anger as reaction, trait and temperament and manifests itself in the tendency to frequently and easily try intense feelings of anger at the slightest provocation, lack of anger control associated with impulsivity, high sensitivity to criticism and negative evaluations.

The profile of the aggressive driver in Romania, built through empirical research, has become an important clue for the elaboration of the intervention program, having as objective the awareness of the degree of reactivity manifested in traffic and the awareness of the importance of self-control and emotional stability, which aims not only at contextual behavioral and emotional regulation (only when driving), but also at acquiring communication and emotional regulation skills that will positive footprint and other spheres of activity of the person.

Therefore, the predictors analyzed and identified in the finding experiment helped us elaborate the content of the intervention program in order to improve the psychological and emotional self through self-knowledge and interrelationship activities with other group members.

The conclusions of *the formative experiment* are as follows:

1. Through the psychological intervention program it was obtained: the development and change of attitudes and behavior patterns of group members in situations similar to those in traffic; supported those in the experimental group in the sense of subsequently adopting a better positioning in situations potentially triggering anger and limit situations (swearing, crowded traffic, collisions, minor accidents, etc.); the program helped them identify their own vulnerabilities in interpersonal, undeveloped or unexercised relationships; developed their ability to actively listen to and understand the messages sent by others and, most importantly, taught them to express their anger in a socially acceptable manner and not just in traffic; Also, the development of self-control was a short-term benefit (according to the retesting presented in subchapter 3.2., pp. 128-138) and long-term; learning control strategies in conflict situations (frustration, anger, stress, anxiety).

2. The program has achieved its objectives in terms of developing parameters of self-regulation of negative cognitions and emotions, awareness of the manifestation through aggressive, risky and dangerous driving in order to reduce aggressive behavior of drivers in traffic. The research hypothesis in the formative experiment was confirmed.

3. Also, awareness of the driver's responsibility regarding the degree of reactivity manifested in traffic in situations triggering aggression was obtained. The intervention program aimed through cognitive

restructuring and emotion analysis to achieve significant progress in learning a new level of reactivity and a new pattern of behavior in traffic in potentially anger-triggering situations.

In conclusion, the results of the studies in this paper complement the theoretical bases of psychology with new knowledge in the field of behavioral sciences of road users, respectively new ways of managing the behavior of drivers in traffic. The intervention program can be capitalized on by proposing to be implemented at national level as an alternative and/or complementary measure for the rehabilitation of aggressive drivers. A positive implication of applying such a programme at national level would be to reduce the degree of aggression manifested in traffic and, implicitly, to reduce the share of aggressive driving behavior s.

With all these favorable conclusions of the research, we must nuance some less outlined results, which present the **Limits** of the current research:

Although the psychological intervention program revealed a general decrease in the indices of aggression of drivers in traffic, the size of the statistically calculated effect is relatively small and medium (partial eta squared = 0.064 for aggressive *driving; partial eta squared = 0.420 for risky* driving; partial eta squared = 0.027 for negative cognitions and emotions and *partial eta squared =* 0.266 for *dangerous driving*) and the group of participants explains only a small part of the variability observed in the variable in question. Consequently, further research and development of additional interventions is needed to achieve a more significant and sustainable decrease in aggressive driving behavior s.

The limitation of the formative valences of the program could be explained by the fact that the results of the studies undertaken in this paper show us rather that we cannot create universal programs, with general methods, which can be applied to all aggressive drivers; First we need a complex system for evaluating anger (as a trait and as a state).

In accordance with these identified limits, some perspective **Directions** of the research of aggressive behavior of drivers in traffic and its predictors are outlined:
-   study of psychosocial factors and dimensions of aggressive behavior in traffic;
-   cross-cultural study of aggressive behavior in traffic;
-   impact study of various psychological intervention programs, etc.

From the perspective of solving the practical problems addressed in the paper, which consist in identifying effective tools to reduce aggressive behaviors in drivers in traffic, we come with the recommendation to apply the psychological intervention program developed within the research to be used at national level in the process of training future drivers.

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ADNOTARE
Haidu Felicia Aurica. Manifestarea agresivității la conducătorii auto și modalități de diminuare.
Teză de doctor în psihologie. Chișinău, 2024

Structura tezei: adnotări, lista abrevierilor, introducere, trei capitole, concluzii generale și recomandări, bibliografie din 238 titluri, 4 anexe, 15o pagini de text de baza, 50 tabele, 32 figuri. Rezultatele obținute sunt publicate în 11 publicații științifice.

Cuvinte cheie: agresivitate, conducător auto, trafic, șofat agresiv, șofat periculos, șofat riscant.

Domeniu de studiu: Psihologia personalității, Psihologia dezvoltării și psihologie educațională, Psihologia transporturilor.

Actualitatea și importanța problemei abordate: Agresivitatea în trafic prezintă o problemă acută a societății moderne, caracterizată de urbanizarea masivă, fluxul crescut de mașini și ambuteiaje, creșterea numărului accidentelor și victimelor traficului rutier, creșterea nivelului de stres și reducerea toleranței la frustrare a populației. Siguranța în trafic se regăsește în lista priorităților naționale, România fiind pe ultimele clasamente între țările europene în ce privește siguranța rutieră, iar accidentele rutiere fiind printre primele cauze ale mortalității civile. Cultura șofatului reflectă nivelul de sănătate mentală a populației, asupra căreia este posibil de influențat pozitiv prin educație rutieră dar și prin implicarea în programe psihologice de diminuare a agresivității și altor reacții și factori psihologici, care subminează echilibrul psihologic al șoferului, astfel încât să se creeze contextul unei dinamici de trafic sigure.

Scopul cercetării constă în studiul manifestărilor și identificarea predictorilor comportamentului agresiv și șofatului periculos la șoferi precum și elaborarea unui program de intervenție pentru reducerea agresivității conducătorilor auto.

Obiectivele cercetării: studiul teoretico-aplicativ al factorilor psiho-sociali ai comportamentului agresiv al conducătorilor auto; identificarea diferențelor în ceea ce privește agresivitatea în trafic și șofatul periculos la șoferi în funcție de variabile demografice (gen, vârstă, mediu de trai, religie, studii, statut socio-economic și marital) și profilul de personalitate; elaborarea și validarea experimentală a unui program de intervenție pentru reducerea agresivității conducătorilor auto.

Noutatea și originalitatea științifică. Pentru prima dată la nivel național au fost realizate studii comparative în vederea identificării predictorilor comportamentului agresiv în trafic, manifestărilor și particularităților șofatului riscant și periculos, precum și validarea unui program psihologic de reducere a comportamentului agresiv la conducătorii auto din România.

Rezultatele obținute care contribuie la soluționarea problemei științifice importante: Studiile comparative de identificare a predictorilor comportamentului agresiv a conducătorului auto relevă că reacția furioasă este un predictor semnificativ al cognițiilor/ emoțiilor negative; cu cât reacția furioasă este mai intensă cu atât crește numărul și intensitatea emoțiilor negative; pe de alta parte, vârsta și temperamentul, ca latură dinamico-energetică a personalității și reacția furioasă sunt predictori semnificativi ai șofatului riscant, elaborarea și implementarea unui program complex de intervenție psihologică.

Semnificația teoretică constă în elucidarea caracteristicilor și predictorilor comportamentului agresiv al conducătorilor auto, a tendințelor, componentelor, tipurilor de agresivitate în trafic. Rezultatele studiilor completează bazele teoretice ale psihologiei cu noi cunoștințe din sfera științelor comportamentale ale participanților în trafic, noi modalități de diminuare a comportamentului agresiv la conducătorul auto.

Valoarea aplicativă a lucrării: a fost elaborat și implementat un program psihologic de reducere a agresivității conducătorului auto din România; rezultatele obținute completează informațiile prezente, lucrarea putând constitui fundamentul unui ghid de bune practici, atât din punct de vedere teoretic, cât și din punct de vedere practic. Relația de asociere dintre trăsăturile de personalitate și nivelul agresivității la volan poate servi la elaborarea unor chestionare de evaluare mai complexe a agresivității conducătorilor auto, dar și a personalității celor care urmează să obțină permisul de conducere.

Implementarea rezultatelor științifice. Rezultatele științifice ale acestei cercetări au fost publicate în diverse reviste științifice și volume ale conferințelor; prezentate în cadrul sesiunilor anuale ale doctoranzilor, conferințelor științifice naționale și internaționale; au fost implementate în cadrul ședințelor de consiliere / reabilitare a șoferilor ce au încălcat regulile de circulație rutieră cu risc de retragere a permisului în cadrul cabinetului de psihologie a transporturilor.

ANNOTATION

Haidu Felicia Aurica. The manifestation of aggression in drivers and ways to diminish. PhD thesis in Psychology. Chisinau, 2024

Thesis structure: annotations, list of abbreviations, introduction, three chapters, general conclusions and recommendations, bibliography of 238 titles, 4 annexes, 150 pages of basic text, 50 tables, 32 figures. The obtained results are published in 11 scientific publications.

Keywords: aggressiveness, driver, traffic, aggressive driving, dangerous driving, risky driving.

Field of study: Personality Psychology, Developmental Psychology and Educational Psychology, Transport Psychology.

Timeliness and importance of the problem addressed: Aggressiveness in traffic presents an acute problem of modern society, characterized by massive urbanization, increased flow of cars and traffic jams, increasing the number of accidents and victims of road traffic, increasing stress levels and reducing frustration tolerance of the population. Traffic safety is on the list of national priorities, Romania being on the last rankings among European countries in terms of road safety, and road accidents being among the first causes of civilian mortality. The driving culture reflects the level of mental health of the population, on which it is possible to positively influence through road education, but also by engaging in psychological programs to reduce aggression and other psychological reactions and factors, which undermine the psychological balance of the driver, so as to create the context of safe traffic dynamics.

The purpose of the research is to study the manifestations and identify predictors of aggressive behavior and dangerous driving in drivers, as well as to develop an intervention program to reduce the aggressiveness of drivers.

Research objectives: theoretical-applicative study of psycho-social factors of aggressive behavior of drivers; identification of differences in terms of aggression in traffic and dangerous driving in drivers depending on demographic variables (gender, age, living environment, religion, education, socio-economic and marital status) and personality profile; development and experimental validation of an intervention program to reduce aggression Drivers.

Scientific novelty and originality. For the first time at national level, comparative studies were conducted to identify predictors of aggressive behavior in traffic, manifestations and peculiarities of risky and dangerous driving, as well as to validate a psychological program to reduce aggressive behavior of drivers in Romania.

Results obtained that contribute to solving the important scientific problem: Comparative studies identifying predictors of aggressive behavior of the driver reveal that angry reaction is a significant predictor of negative cognitions/emotions; the more intense the angry reaction, the higher the number and intensity of negative emotions; on the other hand, age and temperament, as the dynamic-energetic side of personality and reaction Angry are significant predictors of risky driving, developing and implementing a complex program of psychological intervention.

The theoretical significance lies in elucidating the characteristics and predictors of aggressive behavior of drivers, trends, components, types of aggression in traffic. The results of the studies complement the theoretical bases of psychology with new knowledge in the field of behavioral sciences of road users, new ways to reduce aggressive behavior in the driver.

Applicative value of the work: a psychological program to reduce driver aggression in Romania was developed and implemented; the results obtained complement the present information, the paper being the foundation of a good practice guide, both theoretically and practically. The association relationship between personality traits and the level of aggression at the wheel can serve to develop more complex questionnaires to assess the aggressiveness of drivers, but also of the personality of those who are going to obtain a driving license.

Implementation of scientific results. The scientific results of this research have been published in various scientific journals and conference volumes; presented during annual sessions of doctoral students, national and international scientific conferences; were implemented during counseling / rehabilitation sessions for drivers who violated road traffic rules with a risk of license withdrawal within the Transport Psychology Practice.

АННОТАЦИЯ

Хайду Фелиция Аурика. Проявление агрессии у водителей и пути ее снижения. Кандидатская диссертация по психологии. Кишинев, 2024 г.

Структура диссертации: аннотации, список сокращений, введение, три главы, общие выводы и рекомендации, библиография из 238 наименований, 4 приложения, 150 страниц основного текста, 50 таблиц, 32 рисунка. Полученные результаты опубликованы в 11 научных изданиях.

Ключевые слова: агрессия, водитель, дорожное движение, агрессивное вождение, опасное вождение, рискованное вождение.

Область исследования: Психология личности, Психология развития и психология образования, Психология транспорта.

Актуальность и важность рассматриваемой проблемы: Агрессия на дорогах представляет собой острую проблему современного общества, характеризующуюся массовой урбанизацией, увеличением потока автомобилей и пробок, увеличением числа аварий и жертв дорожно-транспортных происшествий, ростом уровня стресса и снижение толерантности к фрустрации населения. Безопасность дорожного движения находится в списке национальных приоритетов, Румыния находится на последнем месте среди европейских стран по безопасности дорожного движения, а дорожно-транспортные происшествия являются одной из первых причин смертности среди гражданского населения. Культура водителя отражает уровень психического здоровья населения, на который можно положительно повлиять посредством участия в психологических программах по снижению агрессии и других психологических реакций, и факторов, подрывающих психологическое равновесие водителя, с целью создания контекста безопасной динамики дорожного движения.

Цель исследования - изучить проявления и выявить предикторы агрессивного поведения и опасного вождения водителей, а также разработать программу вмешательства по снижению агрессивности водителей.

Задачи исследования: теоретико-прикладное изучение психосоциальных факторов агрессивного поведения водителей; выявление различий в дорожной агрессии водителей в зависимости от демографических переменных (пол, возраст, среда обитания, религия, образование, социально-экономическое и семейное положение) и профиля личности; разработка и экспериментальная проверка программы вмешательства по снижению агрессии водителя.

Научная новизна и оригинальность. Впервые на национальном уровне проведены сравнительные исследования с целью выявления предикторов агрессивного поведения в дорожном движении, проявлений и особенностей рискованного и опасного вождения, а также валидации психологической программы снижения агрессивного поведения среди водителей в Румынии.

Полученные результаты способствуют решению важной научной задачи: Сравнительные исследования по выявлению предикторов агрессивного поведения водителя показывают, что реакция гнева является значимым предиктором негативных когниций/эмоций; чем интенсивнее гневная реакция, тем больше количество и интенсивность отрицательных эмоций; с другой стороны, возраст и темперамент как динамично-энергетическая сторона личности и гневная реакция являются значимыми предикторами рискованного вождения.

Теоретическая значимость состоит в выяснении особенностей и предикторов агрессивного поведения водителей, тенденций, составляющих, видов агрессивности на дорогах. Результаты исследований дополняют теоретические основы психологии новыми знаниями из наук о поведении участников дорожного движения, новыми способами снижения агрессивного поведения водителей.

Прикладная ценность работы: разработана психологическая программа по снижению агрессии водителей в Румынии; Полученные результаты дополняют настоящую информацию, а диссертация может стать основой руководства по передовой практике как с теоретической, так и с практической точки зрения. Связь ассоциации между личностными качествами и уровнем агрессии за рулем может служить для разработки более сложных опросников оценки агрессии водителей, а также личности тех, кто собирается получить водительские права.

Внедрение научных результатов. Научные результаты этого исследования были опубликованы в различных научных журналах и сборниках конференций; представлены на ежегодных сессиях докторантов, республиканских и международных научных конференциях; реализованы в рамках консультирования/ реабилитационных занятий водителей, нарушивших правила дорожного движения с риском лишения прав на базе кабинета транспортной психологии.

HAIDU FELICIA AURICA

MANIFESTATIONS OF AGGRESSIVENESS OF DRIVERS
AND WAYS TO REDUCE IT

SPECIALTY: 511.02 - DEVELOPMENTAL PSYCHOLOGY AND EDUCATIONAL
PSYCHOLOGY

Summary of PhD thesis in psychology