

## Chapter #16

### AN IMPLICIT MODEL OF ASSESSMENT OF ATTITUDE TO HEALTH OF SPECIALISTS IN AN ORGANIZATION

Elena Rodionova, Vladislav Dominiak, Zoya Dudchenko, & German Nikiforov  
*St. Petersburg State University, St. Petersburg, Russia*

#### ABSTRACT

Attitude to health can be considered as one of the most important factors of efficiency and professional success of employees today, as it is a regulator of human behavior in a challenging and controversial professional situation. Studies of psychologists (starting with R. La Pierre's phenomenon, 1934) often fix the discrepancy between the declared attitude to health and true attitude and behavior. The imperfection of methods of diagnostics of attitude to health may be one of the reasons for such discrepancy. The authors suggest studying the attitude to health of specialists in an organization not only by traditional survey methods (for example, R.A. Berezovskaya's (2003) attitude-to-health questionnaire, a questionnaire on studying the barriers of health-seeking behavior by Nikiforova, Rodionova, Vodopyanova, & Dudchenko, 2016.), but also by means of an implicit method (based on the priming effect, implicit associative test). The article presents the results of a study conducted by using the implicit methodology for studying attitude to health, which is based on a model of polar values.

*Keywords:* implicit method, attitude to health, occupational health, dual model.

#### 1. INTRODUCTION

The relevance of the study of attitude to health with the purpose of predicting an employee's professional conduct in situations related to a high level of stress, hazardous production and the importance of a clear and rapid response to a professional situation is acute in organizational psychology, where there is a likelihood (and sometimes it is very high) of life- and health-threatening situations (in the profession of oil refining industry specialists, specialists responsible for the life and health of other people, pilots, engine-drivers, doctors, etc.). For some professions a stress factor is concurrent, it is associated with experiencing mental tension due to having the highest responsibility in making decisions. Under current conditions, health gains an economic value and there is no doubt about the relevance of maintaining occupational health. Prediction of an employee's behavior in such a situation is one of the key tasks that can be resolved by psychological methods.

Health and professional health are a systemic property of a person, which ensures his or her working capacity, efficiency in professional activities, as well as a high quality of life. In our article, we consider health in the context of professional activity (professional health). Professional health is understood as a combination of the physiological, psychological, and social components of well-being during the period of work, as well as the absence of injuries and occupational diseases in the subject of activity. Today, research on the study of occupational health factors is relevant in order to develop and implement programs aimed at

maintaining the health of employees in organizations (Joseph, 2015, Bakker & Derks, 2010, Nikiforov, 2010, etc).

Among the factors of professional health, non-subjective (organizational, environmental, social), intersubjective (labor satisfaction, involvement, professional identity and relevance (subjective assessment), level of stress resistance in professional activities) and intrasubjective factors are distinguished. In the article, we place more emphasis on intrasubjective factors, which include attitude to health, the external locus of health control, responsibility for one's own health, personal level of stress resistance, etc. Attitude to health is understood as "a system of individual selective links of a person with various phenomena of the surrounding reality, contributing to or, conversely, threatening human health, as well as determining personal assessment of physical and mental state" (Zhuravleva & Lakomova, 2019, p. 52).

A number of authors (Allport, 1935; Haber & Fried, 1975 think that attitude leads to certain behavior, i.e. attitude determines behavior.

A concept of "implicit personality theory" was proposed by J. Bruner and R. Tagiuri in 1954 and is still used to denote the unconscious hierarchical system of ideas about the mental structure of other people. Two main approaches are distinguished in the study of implicit personality theories – traditional and alternative (psycho-semantic) ones. The traditional direction is represented by the works of J. Bruner and R. Tagiuri (1954a and 1954b), a causal attribution theory by Kelley (1967), etc. An alternative approach, which was presented by its ancestor Kelley, originated in line with a personal construct theory and was developed as a psycho-semantic direction (Petrenko, 1982) and others). Representatives of the latter approach, in addition to highlighting the substantial components of the implicit personality theory, conduct a factor analysis, which allows for evaluating and combining the qualities and links between separate components into a personal semantic space.

In recent years, when psychological studies of social attitudes were conducted, interest in the use of a special subgroup of indirect measuring methods (implicit methods) has grown significantly (Greenwald, McGhee & Schwartz, 1998; Rudman, 2011; Fazio & Olson, 2003). The active use of these methods in this area of research was due to the fact that they allow researchers to study "true" and not only declared socially desirable attitudes, as well as to avoid the effect of insufficient introspection, the "Rosenberg effect" and other distorting effects. The authors have suggested that such implicit methods may also be applicable to the attitude to health.

Many researchers have noted a mismatch between a person's declared attitude to health and real behavior. There are differences between explicit and explicit attitudes towards health. In our article, we have made an attempt to correlate explicit and implicit attitudes towards the health of specialists in organization in relation to the level of safe behavior.

## 2. METHODS

In the framework of this project, the authors aim to explore the possibility of predicting human behavior in tense and dangerous professional situations based on an employee's "attitude to health" profile. For this purpose, the following tasks have been formulated: 1) to analyze existing methods of study of the attitude to health (identifying a declared attitude to health) and to develop an implicit method that would allow study of the deepest level of attitude to health, 2) to empirically test a dual model of attitude to health, 3) to analyze the results of the implicit diagnostics of attitude to health and distinguish types of employees in relation to real (objective) data on health groups.

The following research methods are to be used: observation, questionnaires, biographical interviews and implicit methods (development of the authors' methodology for studying customer loyalty based on the priming effect). For processing research results—content analysis and methods of mathematical-statistical analysis are the chosen methods.

We hypothesized that implicit attitudes toward health and illness may be related to explicit indicators such as attitudes toward illness, internal or external goals of the individual, and assessment of quality of life.

Why exactly implicit attitudes towards health?

In the study, the authors used an implicit method which has recently become widely used in the study of attitudes. This method is based on the priming effect, measuring the time of reaction of test subjects (Greenwald et al., 1998; Dominyak, 2012; Fazio & Olson, 2003). Allowing for exclusion of a factor of social desirability, this method reveals the inner, hidden attitudes of a person. In this study, an implicit method is used to study attitude to health, which is a relatively new approach. Implicit measures of attitudes are commonly seen to be primarily capable of predicting spontaneous behavior. However, evidence exists that these measures can also improve the prediction of more deliberate behavior (Friese, Bluemke, & Wänke, 2007). At first, a good deal of research on and with the IAT dealt with its general properties (for an in-depth overview see Maximilian Eberl, 2018). One major discussion evolved around the question whether IAT measures correspond to explicit self-report measures (see Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005, for a metaanalysis).

In psychological studies, the MODE model (Quandt & Baumol, 1966), which is used in situations where people rely primarily on labor-intensive processing for motivation and the ability to consciously regulate their behavior. In our opinion, implicit measures should be particularly valuable predictors. Behaviors for situations in which people are limited control over your actions. Several researchers have drawn attention to this reasoning and found partial or even complete dissociation patterns according to the MODE model when they predicted controlled and less controlled behavior through explicit and explicit measures (e.g. Asendorpf, Banse, & Mücke, 2002; Dovidio, Kawakami, & Gaertner, 2002).

In our work, we propose to study the implicit characteristics of attitudes towards health and illness in a dual model called the "Model of orthogonal implicit settings." The measurement tool was proposed by the consulting company Dominanta (health.mydominanta.com) and is called the Double Target IAT, because it is a sequentially presented, modified version of the ST-IAT (Bluemke & Friese, 2008; Dominyak, 2012), regarding two target categories (in this case: health and illness). Implicit in the model is that there is an object that reflects the most important features of the studied phenomenon, object, or process. In our case, this is an attitude to such concepts as "health" and "disease." Hypothetically, four types of employees are distinguished in this model; they have qualitative characteristics and belong to risk groups, where Type I is the lowest risk group and Type IV the highest risk group, which includes employees who are most at risk of losing health and prone to occupational injuries. It is dangerous to engage such employees in work on challenging and stressful work sites.

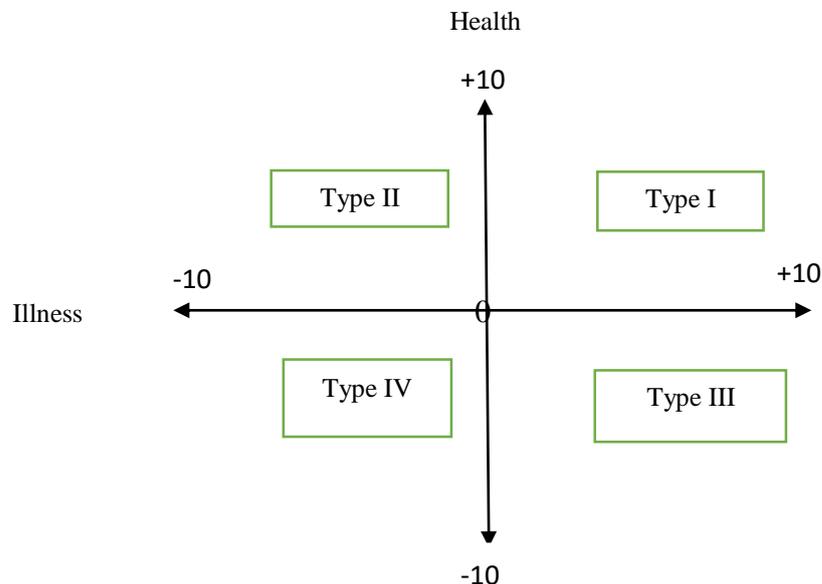
To study an explicit assessment of the attitude towards the disease, the questionnaire "Type of attitude towards the disease" (TOBOL) was used. To assess quality of life and health status, we used the WHO-26 questionnaire (WHOQOL-BREF). To identify external / internal goals, Desi-Kasser's Aspiration Index was used. Behavioral indicators of attitudes toward health and illness were identified through questionnaires and interviews. Why internal / external goals? Studies in the theory of self-determination, in particular, the theory of

Desi-Ryan goals, confirm the connection of the structure of life aspirations (external / internal goals) with somatic diseases, stress and depression (Kasser & Ryan, 2001). The study contains the data on internal/external goals (Kasser & Ryan, 2001). The authors assumed that employees who are focused on internal goals will show a positive attitude to health, while employees focused on external goals will show a negative attitude to health.

We received health groups from the medical centers of the organizations to which the employees participating in the study belong. For statistical data processing, the statistical capabilities of MS Excel and SPSS 22 were used.

Graphically, the model of health relatedness is shown in Figure 1.

*Figure 1.  
A dual model of attitude to health.*



The study involved 310 employees of organizations associated with hazardous production, including drivers carrying dangerous shipments. The average age of respondents was 36 years old. At this stage of the study, the authors did not take into account the scope of activities; it was only important for us that respondents worked in organizations. In addition, such indicators as self-assessment on a health scale, a health group and quality-of-life assessment were important criteria for assessing the results.

### 3. FINDINGS AND DISCUSSION

1. Consider the results for healthy indicators (health groups for medical indicators).

Implicit assessments of attitudes to health and illness were confirmed in health groups of the respondents: Health Group 1 (employees who get sick very rarely) included Type I and Type II respondents (positive attitude to health), Health Groups 2 (recurrent diseases, without chronic diseases) and 3 (recurrent diseases with chronic diseases) included Type III respondents and Health Group 4 (employees who get sick very often) included Type IV employees. Thus, an implicit attitude to health and illness is directly related to the number of

illnesses (health group). At the same time, the self-assessment of one's state of health is not related to implicit attitude. The authors found a direct correlation between health self-assessment and a positive attitude to illness, i.e. employees assess an illness as a positive state and highly assess their state of health. The results of distribution of a health group by type of implicit attitude to health are clearly presented in Table 1.

*Table 1.*  
*Attitude to health in connection with a group of the disease N=192).*

		disease	
		negatively	positively
health	positively	1 (N=44), 2 (N=34), 3 (N=36)	2 (N=48)
	negatively	4 (N=49)	1 (N=19), 2 (N=32), 3 (N=24)

Explanatory notes for the table. The table shows a group of the disease. Group 1 – employees get sick very rarely (0.1 diseases per year); Group 2 – employees rarely get sick (1-2 diseases per year), quickly recover and get back to work, in case of chronic diseases, they are in a stage of stable remission; Group 3 (2-3 diseases per year, including exacerbation of chronic diseases); Group 4 – frequently ill employees (more than three diseases per year, including the exacerbation of chronic diseases, including disability).

2. The results of the correlation of implicit attitudes for health and illness with behavioral indicators presented in the survey.

Interesting indicators were the data on the ratio of types of employees with behavioral characteristics that contribute to maintaining a healthy lifestyle (sporting activities, active recreation, the ratio of work and rest, cold water treatment, balanced diet, etc.) or, on the contrary, adherence to destructive lifestyles (alcohol consumption, eating junk food, etc.). At the same time, Type I and Type II employees adhered to the behavioral characteristics of a healthy lifestyle, unlike Type III and Type IV employees ( $R^2=54$ ). The largest distribution of destructive behavioral norms was observed in the group of Type IV employees. A qualitatively significant difference in rational habits of maintaining a healthy lifestyle was observed in Type I and Type II respondents ( $R^2=48$ ). Type I respondents actively kept a healthy lifestyle through a balanced diet and an active lifestyle, but their average duration of sleep and rest was statically significantly lower than that of Type II employees.

Thus, the implicit attitude to health was confirmed by behavioral manifestations of the respondents and the objective data on health indicators (health group). However, the authors have not revealed a connection between the self-assessment of the attitude to health and implicit evaluations.

3. Results of implicit attitude to health with the predominance of external/internal goals (Aspirations Index).

Analyzing the data by type of implicit attitude to health with the predominance of external/internal goals (Aspirations Index), the authors obtained the following results: employees of Type I and II (positive attitude to health) have such internal aspirations as “personal growth” and “relationships,” while among employees of Type II (positive attitude to disease and health) the prevalence of such internal goal as “health” is also statistically

significant ( $R^2=52$ ). As for employees of Type III and IV, no statistically significant differences in the prevalence of internal/external goals in this sample have been found. Thus, an employee focused on health and self-care has an internal potential for self-development, personal growth, and building constructive relationships with others and with society as a whole.

4. Results of implicit attitude to health with the quality of life and health status (WHOQOL-BREF).

A study of health status and quality of life showed that on all scales of the WHO-26 questionnaire, average indicators were identified in accordance with the standards on the scales. At the same time, employees of Type I and II statistically significantly evaluate themselves higher on the scale of "physical and psychological well-being" and "self-perception" ( $p \leq 0.04$  and  $p \leq 0.03$ , respectively) than employees of Type IV (statistically significant differences according to the above no scales were found between Type I and Type II employees and Type III and Type IV employees). That is, employees believe that they do not need any medical care in their daily lives. They have enough energy for life, are satisfied with their sleep and ability to work. Statistically significant differences were obtained between a positive attitude to health (Types I and II) and a negative attitude to health (Types III and IV) on the scale of "Social Well-being" ( $p \leq 0.06$ ). Respondents who are positive about health feel quite safe in everyday life, consider that the physical environment around is acceptably healthy. According to the scales "Quality of Life" and "Health Status," no statistically significant differences were found for an implicit attitude to health (in this sample), but statistically significant differences were obtained for an implicit attitude to illness ( $p \leq 0.3$ ). Employees of Types II and IV are more inclined to evaluate their health as a cross between satisfied / dissatisfied, leaning towards satisfaction.

5. Results of implicit attitude to health with the type of illness attitude (TOBOL).

The study of an explicit assessment of the relationship to diseases (ergopathic (14.4), anosognosic (13.7) and sensitive (12.3)),

The ergopathic type is characterized by the reaction of "going to work with the disease." Respondents are selective in examining and treating because they want to continue to work, despite the severity of the disease. They strive to maintain their professional status in the eyes of colleagues and to continue active work, offering the same quality. Interestingly, 55% of the respondents who ended up being in Group II because of their implicit assessment of their attitude to health and illness (a positive attitude to health and a negative attitude to illness) had ergopathic and anosognosic types of attitude to the disease (the anosognosic type suggests the negation and ignoring of symptoms of the manifestation of a disease). Such employees tend to reject thoughts of the disease and try not to think about its consequences. They have a tendency to refuse a medical examination; on the contrary, there is a desire to understand problems on their own, hoping that everything will work out by itself.

Statistically significant differences were revealed between Type I (positive attitude to health and illness) and Type III (negative attitude to health and positive attitude to illness), which is a hypochondriacal type of explicit assessment of attitude to illness ( $p \leq 0.04$ ). Type III respondents are more likely to focus on subjective pain and other unpleasant sensations (9.00) than Type I respondents (4.88). They show a desire to constantly talk about their subjective feelings to doctors, medical staff, relatives, friends, and others. They tend to seek out nonexistent diseases and suffering.

Statistically significant differences were found between the groups of respondents of Type I (a positive attitude to health and illness) and the group of respondents of Type IV (a negative attitude to health and illness) ( $p \leq 0.03$ ) and an explicit assessment of the attitude to the disease in the manifestation of anxiety type of response ( $p \leq 0.03$ ). Type IV employees

rate health conditions lower (2.60) than Type I employees (3.44). It should also be noted that Type IV employees are significantly more anxious (11.00) than Type I employees (6.51). Respondents with a negative attitude to health and illness show constant anxiety and suspiciousness regarding the unfavorable course of the disease, possible complications, inefficiency, and even the danger of treatment.

Employees of Type II (a positive attitude to health and a negative attitude to illness) are less likely to be indifferent to their fate, the outcome of the disease, and treatment outcomes (4.36) than employees of Type IV (negative attitude to health and illness (10.80). In addition, employees of Type IV are much more likely to show suspicion and alertness to talking about themselves and to medicines and procedures.

6. Results of implicit attitude to health with the accident rate drivers.

A more detailed analysis of the accident rate of drivers is presented in the article (Rodionova & Dominyak, 2013) ) additional data that are not included in the article and are of interest in the framework of this study with a view to its more complete presentation.

To test the model for the level of safety, drivers carrying cargo over long distances (long-haul drivers) took part in the study. The study involved 108 truck drivers. All drivers are employees of one transport company, they are all men, aged from 28 to 56, average age 38 years, standard deviation 4.99. The company has an objective scale of drivers' safety, which includes the following indicators:

1. the number of accidents per year per person;
2. the severity of accidents (on a 10-point system, where 1 – a slight accident, 10 – severe damage to the vehicle without the possibility of recovery);
3. damage to health (on a 10-point system, where 1 – almost no damage to health, 10 – great damage to health, including death);
4. absenteeism, flight disruption with, or without valid excuse.

As a result of the correlation of types obtained upon the "Model of orthogonal implicit attitudes," the following data on drivers were obtained:

Type I (positive attitude to health, negative attitude to disease): 1 accident per year with the accident severity estimate equal to 2.5 points. All accidents had no damage to health.

Type II (positive attitude to health, positive attitude to disease): 0.1 accident per year with the accident severity estimate equal to 2.0 points. All accidents had no damage to health.

Type III (positive attitude to disease, negative attitude to health): 2.2 accidents per year with the accident severity estimate equal to 3.0 points. All accidents had no damage to health.

Type IV (negative attitude to health and disease): 6.9 accidents per person per year with the accident severity estimate equal to 8.8 points. All accidents caused damage to health. In the sample of Type IV drivers, there were two deaths.

The result of the presence of absenteeism among drivers by types of attitude to health is presented in Table 2.

*Table 2.*  
*Presence of absenteeism (N=108).*

		disease	
		negatively	positively
health	positively	0 (N=33)	0 (N=40)
	negatively	6 (N=20)	5 (N=15)

A statistically significant difference in the empirical distribution of health damage among drivers in accidents and expected theoretical distribution ( $\chi^2=46$ ,  $p=0.00000$ ) has been found. A statistically significant difference in the empirical distribution of the presence of absenteeism/flight disruption and the expected theoretical distribution ( $\chi^2=50.3$ ,  $p=0.00000$ ) has been found.

The Mann-Whitney test was used for the analysis, the error probability is indicated with due account for the Bonferroni adjustment.

#### **4. FUTURE RESEARCH DIRECTIONS**

In our article, we did not test the model; we studied implicit attitudes of health and illness with explicit attitudes, behavioral indicators of a healthy lifestyle, and an aspiration index.

The study of attitudes to health in the context of professional activity is clearly of interest since it reveals not only the possibilities of preventing specialist health problems, but also for gaining theoretical and practical knowledge that allows creation of conditions for preservation and development of regulatory properties of the organism, its physical, mental, and social well-being. In turn, this ensures high reliability of professional activity, career longevity, and maximum life expectancy. In this case, it is important to develop models of a professionally healthy employee and methods of diagnostics of a person's attitude to health.

The authors assume that a single model cannot fully replace the studied object, since it displays only some of its properties. But sometimes, when solving certain tasks, in our case the identification of types of employees that can be successful in a tense and dangerous professional activity, the dual model of attitude to health can be interesting and practically significant.

The study of the ratio of the actual attitude to health and professional behavior also remains relevant. There is a need for a theoretical model of "occupational health" based on the identification and classification of implicit and explicit factors that shape the attitude to health.

The authors suppose that the study of a person's attitude to health and the issues of maintaining occupational health can fully reveal the nature and structure of a healthy personality and solve theoretical-methodological and methodical issues in developing programs of psychological support for specialists in maintaining occupational health.

#### **5. CONCLUSION**

The analysis of explicit and implicit attitudes to health showed statistically significant differences in their estimates. Employees can explicitly assess health positively, while implicitly showing a negative attitude to health. The "Model of orthogonal implicit attitudes" helped to identify four groups of employees, which are determined by polar vectors of attitude to health and disease. At the same time, the analysis of distribution of employees by group in relation to health groups and safety criteria showed that Type I employees, showing an implicitly positive attitude to disease and health, are the most positive and efficient ones in terms of work performance. This may be explained by the fact that employees who have a positive attitude to health try to adhere to healthy behavior, and a positive attitude to disease contributes to the fact that they do not ignore the symptoms of the disease; they notice the symptoms in the initial stages and make efforts for recovery. In this case, they do not always consciously do it.

Type IV employees, showing a negative attitude to health and disease, are the most negative and dangerous type regarding labor safety. This is explained by the fact that by unconsciously denying the state of disease and health, a person involuntarily seeks the next state, which is different from disease and health, and this is a trauma that may cause death. Such employees are usually called “accident-prone.” Type IV employees, included in health group 4 (they constantly get sick with frequent complications of chronic diseases), have a large number of accidents per year with a high degree of severity and damage to health.

Type II employees’ implicit attitude to health is positive and they have a negative attitude to disease, and so they often ignore the symptoms of the disease, making them interesting for the analysis. This approach can lead to an accident as a result of a sudden disease, heart attack, high job burnout, etc.). Such employees are usually called workaholics. They almost never get sick and are constantly at work. The danger may lie in the fact that by unconsciously ignoring the symptoms of the disease (negative attitude to disease), they can put themselves into a state of extreme fatigue, job burnout, stress, or a nervous breakdown.

Thus, knowledge of an employee’s type by implicit attitude to health (“Model of orthogonal implicit attitudes”) can contribute to creating a safe environment in a company, offering a way to provide support to frequently ill employees to maintain their performance, and to optimize work processes for workaholic employees.

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E. Rodionova, V. Dominiak, Z. Dudchenko, & G. Nikiforov

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## KEY TERMS & DEFINITIONS

**Implicit Method:** The implicit method is a hidden, implied, unexpressed meaning. In psychology, implicit methods are understood to include: 1) projective tests, implicit representations may be found in human-made narratives on uncertain stimuli); 2) methods of fixing the reaction time (the degree of implicit communication of a certain concept with positive / negative attitudes is estimated); 3) implicit associative test (Greenwald et al. 1998).

## ACKNOWLEDGMENTS

The article was compiled with the support of the RFBR grant, project number 18-013-00568.

## AUTHORS' INFORMATION

**Full name:** Elena Rodionova

**Institutional affiliation:** St. Petersburg State University

**Institutional address:** 7/9 Universitetskaya nab., St. Petersburg, 199034, Russia.

**Short biographical sketch:** Ph.D., Associate Professor of the Department of Psychological Support of Professional Activity. Full member EAWOP the International Society for the Study of Individual Differences (ISSID). Organizational psychologist and consultant (planning, development of business training and training programs for employees of organizations; adult education expert; support of business negotiations; polygraph examiner, verifier; consulting and training activities on motivation, organizational culture, personnel assessment and planning, personnel management, competencies of manager; management of research projects).

**Full name:** Vladislav Dominiak

**Institutional affiliation:** St. Petersburg State University

**Institutional address:** 7/9 Universitetskaya nab., St. Petersburg, 199034, Russia.

**Short biographical sketch:** : Ph.D., Associate Professor, Department of Organizational Behavior and Personnel Management, Graduate School of Management. The presence and direction of practical activities: counseling adults, organizational counseling, incl. coaching, social and psychological training. Research interests: Organizational and economic psychology, employee and organization relationships, employee attitudes, organizational and professional loyalty, staff involvement and motivation, organizational culture. Full member EAWOP.

**Full name:** German Nikiforov

**Institutional affiliation:** St. Petersburg State University

**Institutional address:** 7/9 Universitetskaya nab., St. Petersburg, 199034, Russia.

**Short biographical sketch:** Doctor of Psychology, Professor, Head of Department of Psychological Support of Professional Activity. Full member of the Academy of Humanities. G. S. Nikiforov made a major contribution to the development of theoretical and practical foundations of human psychology as a subject of mental self-government. For the first time in domestic and foreign psychology, he developed the doctrine of self-control as a fundamental psychological mechanism. Under his leadership and with his personal participation, methodological and theoretical-practical issues of the concept of psychological support of professional activity proposed by him are being developed, which determined the formation of a new scientific direction in the field of practical psychology. Psychology of management and psychology of health are two new scientific directions.

**Full name:** Zoya Dudchenko

**Institutional affiliation:** St. Petersburg State University

**Institutional address:** 7/9 Universitetskaya nab., St. Petersburg, 199034, Russia.

**Short biographical sketch:** Ph.D., Associate Professor of the Department of Psychological Support of Professional Activity. Research interests: health psychology, healthy personality, psychology of occupational health, psychology of a healthy lifestyle, prevention of professional burnout, cognitive psychology, cognitive-behavioral psychotherapy.