FORMATION OF PSYCHOLOGICAL READINESS TO FUTURE SPECIALISTS OF MARITIME TRANSPORT FOR PROFESSIONAL ACTIVITY IN EXTREME SITUATIONS

INTRODUCTION

For Ukraine, as a seafaring nation with great transport potential, the development of the maritime industry is of particular importance in the context of the dynamic European integration movement. An important condition for effective functioning of the maritime industry is a developed system of maritime education, which is designed to provide the necessary level of professional and psychological training to future specialists of maritime transport (seafarers) in accordance with modern international requirements.

Given the growing international requirements for the quality of maritime training and the frequent occurrence of accidents and catastrophes happening to maritime transport, the improvement of the quality of professional training remains an extremely urgent need. Especially such urgency is expressed in the need to improve professional and psychological training of seafarers in order to ensure a high level of their psychological readiness for professional activity in extreme situations.

High level of psychological readiness for extreme events characterizes the ability of a maritime transport specialist to act professionally and competently in case of an extreme situation. Therefore, ensuring a high level of psychological readiness of future navigators for professional activity in extreme situations is an urgent task of psychological training of a seafarer. In the international maritime labor market, employers consider the requirements for maritime transport specialists in terms of their ability to self-regulate the behavior in extreme conditions as an important factor in maritime safety and accident rate reduction.

The problem of psychological training of specialists in extreme profile of activity is constantly in the attention of scientists (BLOSHCHYNSKYI, 2021; BODOV, 2001; DYENIZHNA, 2016; FURS, 2019; KOLESNICHENKO et al., 2016; LEFTEROV, 2008; MIROSHNYCHENKO et al., 2020; MYRONETS et al., 2008; POTAPCHUK et al., 2013 et al.). However, despite the sufficiently large number of scientific works on these issues, it should be noted that the results of a comprehensive study of the ways and conditions for the formation of psychological readiness to future maritime transport specialists for professional activity in extreme situations on the basis of the development of autopsychological competence and autocompetence training require promulgation.
RESEARCH PROBLEM

The results of analysis of scientific works on the research of maritime industry problems (DULIN, 2006; GLEBOVA, 2018; ONISHCHENKO, 2012 et al.) and the experience of practical activity of navigation and ship handling specialists testify that professional activity of seafarers takes place in extreme conditions and is characterized by a huge number of extreme situations. This is due to the inherent presence of high risk to life in the essential characteristics of professional activity of seafarers, which is determined by various extreme factors and their complex interaction. Extreme professional and conditional impacts on maritime transport professionals result in psycho-emotional tension, anxiety, fear, depression, neuroticism, functional disorders and other maladaptive manifestations, which negatively affect the seafarer’s health, performance of their professional duties, and the safety of navigation.

Extreme conditions of maritime transport specialists’ activity are caused by the presence of extreme situations arising on the basis of various dangerous factors: human (individual-personal and socio-psychological), industrial-technical (technogenic), natural (weather-climatic, catastrophic), etc. It has been found out that the extreme situations of the seafarer’s professional activity together with a set of emergency situations on the ship include: threats of pirate seizure of the ship and captivity of the ship crew, threats of terrorist acts, effects of dangerous natural phenomena, disasters, natural calamities, a set of emergency situations on the ship and the like. That is why an important condition for ensuring safety at sea and reliability of professional activity of maritime transport specialists is the formation of their psychological readiness for professional activity in extreme situations as an important component of the psychological safety management system on the maritime transport.

The results of the pilot work indicate the feasibility of applying the autocompetence approach for the effective formation of psychological readiness to future specialists of maritime transport for professional activity in extreme situations. Such readiness determines the effective ability of future seafarers to self-correct anxiety and fears in extreme situations on the basis of autocompetence development of autogenic self-regulation. Under conditions of extreme professional situations, seafarer’s autocompetent self-regulation promotes autogenic blocking of activation of negative mental states development, which were present before the moment of extreme situation development (anxiety, fear, depression, professional solitude, etc.), and those states the development of which is determined by the process of extreme dynamics of the extreme situation itself.

The relevance of the problem of exploring the ways and conditions for formation of psychological readiness to future specialists of maritime transport for professional activity in extreme situations, its important practical significance for the safety of navigation, the lack of systematized theoretical and methodological developments, as well as the needs of marine practice have led to the aim of the article – according to the results of theoretical and empirical study of the problem of training specialists in dangerous professions to develop and test a system of measures for the formation of psychological readiness to future maritime transport specialists for professional activity in extreme situations.

RESEARCH METHODS

To study the specifics of maritime transport specialists’ activity and requirements to them in conditions of exposure to extreme labor factors in maritime navigation, peculiarities of the process of professional and psychological training of future seafarers for professional activity in extreme situations, determination of theoretical foundations and conceptual ways and conditions of psychological readiness for extreme situations such research methods as analysis, comparison, generalization, modeling, and systematization were used. Also the method of psychological modeling of real emergency circumstances of the activity of future specialists of an extreme profile on simulators of the corresponding professional maritime direction (DULIN, 2006; KULAKOVA, 2006; REPIN, 2005) was used in order to bring them closer to the conditions of real extreme situations of professional activity. In order to individualize the process of educational and professional training in a maritime institution of higher education, psycho-diagnostic methods (individual interviews, questioning, testing)
were used, aimed at considering individual and personal characteristics of future maritime transport specialists during the study.

The analysis of scientific sources and practical activity of navigators and generalization of the results obtained allowed to single out the components in the structure of psychological readiness of future specialists of maritime transport for professional activity in extreme situations. These are, in particular, motivational, emotional-volitional and operational components. According to the defined components there have been chosen diagnostic tools for the diagnosis of psychological readiness of future maritime professionals for professional activity in extreme situations during the ascertaining and formative stages of the experimental study:

- **motivational component** - Methodology “MAS” (Kubyshkin) [ILYIN, 2002] Methodology “Motivation of the Person to Avoid Failure” (T. Ehlers) [PRACTICAL PSYCHODIAGNOSTICS: TECHNIQUES AND TESTS, 2001];
- **emotional-volitional component** - Spielberg-Hanin Anxiety Questionnaire (KOROLCHUK et al., 2010), Eysenck’s methodology for diagnosing mental states (KOROLCHUK et al., 2010), Methodology “Test-questionnaire of volitional self-regulation” (Zverkov, Eidman) [PRACTICAL PSYCHODIAGNOSTICS: TECHNIQUES AND TESTS, 2001], FPI Methodology (Freiburg Questionnaire) (KOROLCHUK et al., 2010);
- **operational component** - Methodology “Self-management ability” (Peisakhov) (SOROKA, 2016), Methodology for identifying a style of self-regulation by Pryhin (KOROLCHUK et al., 2010), S. Muddy’s Resilience Test (adaptation by Leontiev) [RESILIENCE TEST (S. MUDDY IN ADAPTATION BY D. LEONTIEV)].

The use of these research tools provided quantitative data on the indicators of psychological readiness: the type of motivation, the level of failure avoidance motivation, the level of personal anxiety, the level of frustration, the level of aggressiveness, the level of general volitional self-regulation, the level of self-control, the level of stress resistance, the ability to self-regulate, situational awareness, the ability to predict, the ability to plan, the ability to self-control, the level of general resilience. With the help of diagnostics according to certain methods during the ascertaining stage of the experimental study, the existing position of psychological readiness of future maritime specialists for professional activity in extreme situations was revealed. At the formative stage of the experimental study in the experimental groups the program for the formation of psychological readiness to future specialists of maritime transport to professional activity in extreme situations was introduced.

After the formative stage based on the results of the navigation practice its managers were offered the authors’ “Questionnaire of expert evaluation of the level of psychological readiness of a future seafarer for professional activity in extreme situations”. Its results, as an additional objective criterion of evaluation, were used to assess the impact of the results of the formative stage of the experimental study. This is due to the fact that during the navigation practice there takes place a practical manifestation of the degree of their psychological readiness for professional activity in extreme situations by future maritime specialists and the ability of future seafarers to self-correct anxiety and fears before these situations happen on the basis of autocompetent self-regulation. To identify quantitative and qualitative characteristics of the effectiveness of the experimental study comparative analysis and content analysis, as well as statistical analysis based on ϕ*-Fisher’s test, χ² Pearson test, Spearman rank correlation coefficient r, were used in the study.

**RESEARCH RESULTS**

The results of the analysis of scientific research and practical activities of specialists in navigation and ship handling allowed among the requirements to the personality of maritime transport specialist, as a specialist of extreme profile, to determine the basic set of professionally important psychological properties, which reflects the ability to carry out professional activities based on the “safe navigation” concept (BRONEVYTSKYY, 2002; GLEBOVA, 2018; ONISHCHENKO, 2012). This complex includes: the occupational level of
attention development, thinking, operational memory; the professionally determined level of anxiety; the increased level of emotional stability and stress resistance; the developed ability to mental self-regulation and resilience; the professionally required level of indicators of social and communicative qualities. It is provided by requirements for determining the professional and psychological suitability of persons for professional activities in the maritime transport and is implemented by the procedure of professional psycho-physiological selection of candidates for training in maritime educational institutions.

An important requirement for the personality of a maritime transport specialist is their ability for psychological self-regulation (autoregulation), which contributes to maintaining a high level of psychological readiness for professional activity in extreme situations. With the growth of stressful extreme loads, the ability to self-regulate psychically determines the ability to not only maintain but also improve the performance indicators (LEFTEROV, 2008; PANKRATOV, 2001). The personal-psychological resource of autoregulation allows the specialist of maritime transport to counteract in extreme situations the occurrence of states of professional and personal maladaptation. Self-regulation of the seafarer’s inner personality sphere in conditions of extreme events is transformed into effective professional and competent actions in the external sphere of professional activity. At the activity level, it will be a manifestation of psychological readiness of a maritime transport specialist for professional activity in extreme situations.

The study of psychological aspects of the problem of efficiency and reliability of professional activity in special and extreme conditions has shown that a high level of psychological readiness of a specialist for professional activity in extreme situations can be effectively provided on the basis of an autopsychological approach (DERKACH et al., 2003). The development of autopsychological competence of specialists is the basis for the formation of their psychological readiness for professional activity in extreme situations, which enables to form effective autocompetence ability to correct, control and regulate oneself. Such ability of a specialist to autocompetently self-regulate determines a high level of his/her psychological readiness for effective self-managed professional activity in extreme conditions. The formation of integrative autopsychological newformations of a seafarer’s personality determines his/her high ability to self-regulate and self-correct the states of anxiety and fear of possible extreme situations of professional activity as a component of psychological readiness for various extreme situations. Psychological readiness of a specialist for the activity under conditions of extreme influences provides reliability and competence of professional actions at the level of effective ability to self-correct and self-regulate on the basis of objective self-consciousness.

Optimization of psychological readiness of a specialist for professional activity in extreme situations is provided by the development of their autopsychological competence on the basis of the ability to effective autogenic self-regulation. This contributes to the complete realization of volitional adjustment of the potential capabilities of their psyche and organism to the autopsychological realization of the pre-formed setting psychological model of activity, which is designed to balance the self-governance of the specialist’s psyche (PRYKHODKO et al., 2020). Psychological readiness of a specialist for the activity in extreme situations reflects such components as: professionally important personal qualities; motives for choosing and performing professional work; intellectual, emotional and volitional spheres of the personality; knowledge, skills and abilities necessary for effective professional activity (as an operational element on the basis of the competence approach). The above components, summarized in a single structure of psychological readiness, reflect a number of components of psychological readiness of a maritime transport specialist for activity in extreme situations, in particular: motivational-cognitive, emotional-volitional and operational components.

The results of the theoretical study allow us to conclude that in the context of the autopsychological approach the overall level of the development of psychological readiness of future maritime transport specialists for professional activity in extreme situations positively correlates with the development indicators of the autopsychological competence of the professional. The high level of psychological readiness of the seafarer for extreme situations in professional activity can be effectively provided on the basis of autocompetence approach by the development of their ability to effective autogenic self-regulation. The psychological readiness of a specialist for activity under extreme conditions is considered as an auto-
psychological controlled ability to self-regulate and self-correct rapidly under stress loads in order to maintain the optimal functional state of the employee’s efficiency (DERKACH et al., 2003).

Modern studies suggest the feasibility of applying the autocompetence approach for the effective formation of psychological readiness to future specialists of maritime transport for professional activity in extreme situations. It has been found out that psychological readiness determines the effective ability of future sailors in self-correction of anxiety and fears before extreme professional situations on the basis of autocompetence development of autogenic self-regulation. Under conditions of extreme professional situations, autocompetence self-regulation of a maritime transport specialist contributes to autogenic blocking of the development of negative mental states. This applies to the negative states existing before the development of the extreme situation and to those states whose development is determined by the process of extreme dynamics of the extreme situation itself.

The analysis of scientific literature (BLOSHCHYNSKYI et al., 2021; DERKACHet al., 2003; KOLESNICHENKO et al., 2016; KULAKOVA, 2006; SOROKA, 2016 et al.) indicates that the psychological readiness of a future maritime transport specialist for professional activity in extreme situations on the basis of the development of autopsychological competence is provided by a complex of external and internal psychological and pedagogical conditions. The external conditions include modeling and controllability of the training process of future seafarers by a set of pedagogical, psychological, organizational and other activities. The main measures of the complex are: the use of active forms of cognitive learning based on the problem approach, a set of psychological trainings, actualization of autopsychological competence of a future maritime transport specialist in the conditions of navigation and technological practice and training on simulators.

The system of psychological support of the process of autocompetence formation of psychological readiness of future specialists of maritime transport for professional activity in extreme situations accumulates external psychological and pedagogical conditions of this process, including three blocks: socio-psychological, psycho-diagnostic and individual psychological. The socio-psychological block includes a number of activities with future seafarers, in particular: special course on “Psychology of extreme situations on maritime transport” in the form of informative lectures, a set of psychological trainings aimed at the development of components of psychological readiness of a future seafarer to extreme situations; training activities in the classroom, during navigation practice, as well as on specialized simulators and the like. The method of psychological modeling of tasks, conditions, complications and difficulties of seafarers’ professional activity in extreme conditions is actively used at the lessons.

Activities of psycho-diagnostic block (individual interview, questioning, testing) are used to individualize the process of educational and professional training in a maritime educational institution. They are aimed at taking into account the individual-personal component of future specialists of maritime transport while forming their psychological readiness for extreme professional situations. Individual-psychological block of psychological support of the process of formation of psychological readiness to future seafarers for extreme professional situations contains individual work on the development of autopsychological self-regulation (autogenic self-correction of anxiety and fear of possible extreme situations in professional activity). The main efforts are directed at the practical development of autocompetence components (self-control, self-correction, and self-regulation) of psychological readiness of a future maritime transport specialist to act in extreme situations. The main tasks are: individual mastering of autocompetent technologies of autogenic self-regulation on the basis of psychological training course and autocompetence work of cadets on learning the complex methodology of autogenic training and effective psychological techniques.

Internal conditions for the formation of psychological readiness to future specialists of maritime transport for extreme situations are personal complex of professionally important qualities, as well as knowledge and practical abilities and skills (personal-professional complex). The complex defines the structure of psychological readiness in terms of systemic structuring of autopsychological competence. It has been determined that the components of psychological
readiness of future specialists of maritime transport for extreme situations of professional activity are:

- motivational component (type of motivation, level of failure avoidance motivation);
- emotional-volitional component (the level of personal anxiety, the level of frustration, the level of aggression, the level of general volitional self-regulation, the level of self-control, the level of stress resistance, ability to self-regulate);
- operational component (situational awareness; the ability to predict; the ability to plan; the ability to self-control; the style of self-regulation; the level of overall resilience).

The personal-professional complex reflects the future seafarer’s psychological readiness for the activity in extreme situations based on the development of autopsychological competence for effective self-correction of anxiety and fear of possible extreme situations in professional activity. Characteristics of autopsychological competence development of a specialist (adaptability, independence, anxiety, depression, activity, responsibility, courage when facing uncertainty, motivational orientation on professional success, ability to regulate oneself) adequately reflect the essential characteristics of formation of psychological readiness to future maritime transport specialists for professional activity in extreme situations.

The internal conditions for the formation of psychological readiness for professional activity also include: reflection of professional formation, autoidentification with positive professional motives and activity patterns; active autopsychological monitoring of intrapersonal contradictions between the achieved and necessary levels of professional formation of a future seafarer. During the study of psychological readiness of the future specialist of maritime transport to professional activity in extreme situations there were conducted the ascertaining and formative stages of experimental research. The aim of the ascertaining stage of the experimental study was to determine the state of psychological readiness of future maritime specialists for professional activity in extreme situations according to certain indicators at the beginning of the research work. The respondents were third-year students of the Danube Institute of the National University “Odessa Maritime Academy” with a total of 214 people.

It has been revealed that among the types of motivation the majority of cadets give preference to the social prestige of professional activity (41.58%), competition as a type of motivation has been called by 32.67% of respondents, and goal achievement is considered as motivation for professional activity only by 25.75% of cadets. Among the indicators of the emotional-volitional component, we should note a high level of personal anxiety among 28.51% of the cadets, frustration among 33.17% of the cadets and aggressiveness among 24.33% of the cadets, and a low level of general volitional self-regulation (24.77% of the cadets), self-control (25.70% of the respondents), resistance to stress (21.98% of the cadets). As for the operational component, the following distribution of the cadets regarding self-regulation styles was established: autonomy is characteristic of 23.36% of the cadets, uncertainty – 50.42%, and dependence – 26.23% of the cadets. There has also been noted a low level of development of the ability to predict (24.77%), to plan (26.60%), and to self-monitor (26.64%).

According to the results of the study, a program for the formation of psychological readiness to future specialists of maritime transport for professional activity in extreme situations has been developed. The objective of the program is the formation of psychological readiness of future seafarers for professional activity in extreme situations on the basis of autocompetent ability to autogenic self-correction of anxiety and fear of possible extreme situations in professional activity. The program is designed for 27 hours of training sessions (7 hours of special course in the form of informational lectures, 8 hours of practical sessions of the training course “Self-knowledge and self-control training”, 12 hours of practical lessons in mastering the complex Methodology of autogenic training by V. Lobzin and M. Reshetnikov (LOBZIN, 1986)) and 12 hours of independent work of future maritime transport specialists (individual self-improvement of autogenic skills, self-correction, self-control and self-regulation skills by future maritime specialists in the conditions of navigation practice, practical independent
application of autocompetence skills and skills of developing a high level of psychological readiness for professional activity in extreme situations).

The program consists of three stages, which have a specific objective and their own content.

I. The preparatory stage of psychological readiness is aimed at developing the motivational component of psychological readiness. The main aim is to create organizational and psychological and pedagogical conditions for the process of formation of psychological readiness to future specialists of maritime transport for professional activity in extreme situations, to plan the training and practical work based on the implementation of strategic principles of integration, humanization and individualization. The main tasks are: organizational; organizational-psychological (implementation of the principle of individualization of future seafarers’ training in the process of autocompetence development of psychological readiness); psycho-pedagogical (information-psychological training in the form of lecture-informational special course “Psychology of extreme situations and its specificity in the maritime transport”).

II. The stage of psychological readiness formation on the basis of autocompetence development of mental self-regulation of the future specialist of maritime transport – aimed at the development of the emotional-volitional and operational components of psychological readiness. The main aim is practical formation and development of autocompetence components (self-control, self-correction, and self-regulation) of psychological readiness for extreme situations of professional activity of a future seafarer. The main tasks are: reflexive-diagnostic (autopsychological reflection of an initial level of development of psychological readiness, definition of tasks of autocompetence development of criteria of psychological readiness of a specialist for extreme situations) and psychological (mastering autocompetence techniques of autogenic self-correction, self-control and self-regulation with the help of psychological training, learning effective ways of psychological self-correction on the basis of autogenic training).

III. The final stage in the formation of psychological readiness (practical activity of future specialists of maritime transport on development of psychological readiness for extreme situations in the conditions of navigation practice) – is aimed at the development of all the components of psychological readiness: motivational, emotional-volitional and operational. The main aim is to complete the process of formation of psychological readiness of future seafarers for professional activity in extreme situations, improvement of future specialists’ autopsychological skills of autogenic self-correction of anxiety and fear of possible extreme situations of professional activity in the conditions of navigation practice. The main tasks are: the practical application by future seafarers in the conditions of navigation practice autocompetent abilities and skills to act in extreme situations of professional activity; individual self-improvement of future seafarers’ autogenic abilities and skills of self-correction, self-control and self-regulation in the conditions of staying on board the ship; assessment of the existing level of autopsychological formation of psychological readiness to future seafarers for professional activity in extreme situations, skills and abilities of autogenic self-correction of anxiety and fear of possible extreme situations of professional activity.

The aim of the formative stage of the experimental study was to test the program for the formation of psychological readiness to future specialists of maritime transport for professional activity in extreme situations. To conduct the experiment there was formed a control group (CG) of 105 people and an experimental group (EG) of 109 people out of the cadets of the third year of the Danube Institute of the National University “Odessa Maritime Academy”.

At this stage after implementation of the program for the formation of psychological readiness to future specialists of maritime transport for professional activity in extreme situations among the EG cadets there was established a decrease in the level of personal anxiety and accompanying negative states, emotional tension, increase of stress resistance, self-control, poise, self-confidence, formed operative links of the system of autopsychological process of self-regulation of the future maritime specialist. There was also recorded an increase in the level of autonomy of action, an increase in the level of resilience as a characteristic of the ability to maintain an optimal level of efficiency and activity under stressful conditions, an increase in the level of development of autopsychological competence. There was revealed a statistically
reliable positive dynamics: the increase in motivation of professional activity “to achieve the goal”; the reduction of motivation for professional actions “in defense”; the increase of the ability to self-control and self-regulate by reducing the impulsiveness of professional actions; the increase of the ability to general volitional self-regulation. In general, the following indicators of psychological readiness have improved the most clearly: the number of cadets who consider goal achievement to be a type of motivation for professional activity has increased by 17.16%; the high level of self-regulation ability has increased by 18.3%; orientation in the situation has improved by 14.58%; 13.49% more cadets choose autonomy as a style of self-regulation. The results of the formative stage of the experimental study are presented in Table 1.

Table 1. Results of the formative stage of the experimental study

| Indicators of psychological readiness | Levels of indicators expression | EG Quantity | % | CG Quantity | % |
|--------------------------------------|---------------------------------|-------------|---|-------------|---|
| Type of motivation                   | Achieving the goal              | 54          | 49.54 | 34          | 32.38 |
|                                      | Rivalry                         | 31          | 28.44 | 27          | 25.71 |
|                                      | Social prestige                 | 34          | 31.20 | 44          | 41.90 |
| Level of motivation to avoid failure | High                            | 11          | 10.09 | 20          | 19.05 |
|                                      | Medium                          | 35          | 32.11 | 44          | 41.90 |
|                                      | Low                             | 63          | 57.80 | 41          | 39.05 |
| Personal anxiety level               | High                            | 13          | 11.93 | 26          | 24.76 |
|                                      | Medium                          | 65          | 59.53 | 62          | 59.05 |
|                                      | Low                             | 31          | 28.44 | 17          | 16.19 |
| Frustration level                    | High                            | 10          | 9.17  | 18          | 17.14 |
|                                      | Medium                          | 68          | 62.39 | 71          | 67.62 |
|                                      | Low                             | 31          | 28.44 | 16          | 15.24 |
| Level of aggressiveness              | High                            | 18          | 16.51 | 26          | 24.76 |
|                                      | Medium                          | 48          | 44.04 | 50          | 47.62 |
|                                      | Low                             | 43          | 39.45 | 29          | 27.62 |
| The level of general volitional self-regulation | High                            | 35          | 32.11 | 23          | 21.90 |
|                                      | Medium                          | 67          | 61.47 | 63          | 60.00 |
|                                      | Low                             | 7           | 6.42  | 19          | 18.10 |
| Level of self-control                | High                            | 46          | 42.20 | 31          | 29.52 |
|                                      | Medium                          | 56          | 51.38 | 55          | 52.38 |
|                                      | Low                             | 7           | 6.42  | 19          | 18.10 |
| Level of resistance to stress        | High                            | 40          | 36.69 | 26          | 24.76 |
|                                      | Medium                          | 60          | 55.05 | 60          | 57.14 |
|                                      | Low                             | 9           | 8.26  | 19          | 18.10 |
| Ability to self-regulate             | High                            | 49          | 44.96 | 28          | 26.66 |
|                                      | Medium                          | 53          | 48.62 | 61          | 58.10 |
|                                      | Low                             | 7           | 6.42  | 16          | 15.24 |
| Situational awareness               | High                            | 46          | 42.20 | 29          | 27.62 |
|                                      | Medium                          | 54          | 49.54 | 55          | 52.38 |
|                                      | Low                             | 9           | 8.26  | 21          | 20.00 |
| Ability to predict                   | High                            | 48          | 44.04 | 33          | 31.43 |
|                                      | Medium                          | 50          | 45.87 | 55          | 52.38 |
|                                      | Low                             | 11          | 10.09 | 17          | 16.19 |
| Ability to plan                      | High                            | 44          | 40.36 | 33          | 31.43 |
|                                      | Medium                          | 56          | 51.38 | 54          | 51.43 |
|                                      | Low                             | 9           | 8.26  | 18          | 17.14 |
| Ability to self-control              | High                            | 41          | 37.62 | 30          | 28.57 |
|                                      | Medium                          | 61          | 55.96 | 54          | 51.43 |
|                                      | Low                             | 7           | 6.42  | 21          | 20.00 |
| Self-regulation style                | Autonomy                        | 50          | 45.87 | 34          | 32.38 |
|                                      | Uncertainty                     | 48          | 44.04 | 50          | 47.62 |
|                                      | Dependence                      | 11          | 10.09 | 21          | 20.00 |
| Level of general resilience          | High                            | 40          | 36.70 | 29          | 27.62 |
|                                      | Medium                          | 59          | 54.13 | 56          | 53.33 |
|                                      | Low                             | 10          | 9.17  | 20          | 19.05 |

Source: Search data.

Fig. 1 shows the dynamics of improving the indicators of psychological readiness of future specialists of maritime transport for professional activity in extreme situations.
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**Figure 1.** Dynamics of improvement of indicators of psychological readiness

![Figure 1](image)

**Source:** Search data.

The designation in Fig. 1 is taken as follows: 1 - type of motivation; 2 - level of motivation to avoid failure; 3 - level of personal anxiety; 4 - level of frustration; 5 - level of aggressiveness; 6 - level of general volitional self-regulation; 7 - level of self-control; 8 - level of resistance to stress; 9 - ability to self-regulate; 10 - situational awareness; 11 - ability to predict; 12 - ability to plan; 13 - ability to self-control; 14 - self-regulation style; 15 - level of general resilience.

So, the content of the program for the formation of psychological readiness to future specialists of maritime transport for professional activity in extreme situations is defined on the basis of increasing the level of autopsychological competence of future seafarers on the development of autogenic self-correction (self-regulation) of anxiety and fear of possible professional extreme situations. On the basis of justification of characteristics, possibilities and advantages of the complex autogenic training technique presented in the developed program, practical recommendations to future specialists of maritime transport on self-correction of anxiety and fear of possible extreme situations in professional activity have been processed. To do this, comprehensive exercises have been chosen for general calm, for achieving trained muscle relaxation, as well as for strengthening the emotional-volitional sphere. Practical recommendations have been defined taking into account the possibilities of effective educational mastering of the complex technique of autogenic self-regulation and for its independent effective implementation into the professional activity of seafarers.

**CONCLUSIONS**

For statistical evaluation of the results of the formative experiment we made calculations with the help of Pearson's \( \chi^2 \) criterion, which allowed us to confirm the objectivity of the changes that occurred in the formation of psychological readiness for professional activity in extreme situations in the EG and the effectiveness of the proposed program for its formation. The results of statistical processing are shown in Table 2.
Table 2. The results of the research of the state of psychological readiness of future specialists of maritime transport for professional activity in extreme situations in the control and experimental groups after the implementation of the program for its formation.

| No. | Psychodiagnostic method | Indicators of psychological readiness | $\chi^2_{\text{emp}}$ | $\chi^2_{\text{cr},0.05}$ | $\chi^2_{\text{cr},0.01}$ |
|-----|--------------------------|--------------------------------------|----------------------|----------------------|----------------------|
| 1   | Methodology “MAS” (M. Kubyshkin) | Type of motivation | 1,477 | 7,119 | 5,991 | 9,210 |
| 2   | Motivation of the Person to Avoid Failure (T. Ehlers) | Level of motivation to avoid failure | 2,486 | 13,456 | 7,815 | 11,345 |
| 3   | Spielberg-Hanin Anxiety Questionnaire | Level of personal anxiety | 1,945 | 8,798 | 5,991 | 9,210 |
| 4   | Eysenck’s methodology for diagnosing mental states | Frustration level | 2,765 | 7,778 | 5,991 | 9,210 |
| 5   | Methodology “Test-questionnaire of volitional self-regulation” (A. Zverkov, V. Eidman) | Level of general volitional self-regulation | 1,868 | 10,441 | 9,488 | 13,277 |
| 6   | FPI Methodology (Freiburg Questionnaire) | Level of resilience to stress | 1,417 | 7,245 | 5,991 | 9,210 |
| 7   | Methodology “Self-management ability” | Situational awareness | 0,95 | 8,161 | 5,991 | 9,210 |
|     |                           | Ability to predict | 1,247 | 7,817 | 5,991 | 9,210 |
|     |                           | Ability to plan | 1,247 | 8,399 | 5,991 | 9,210 |
|     |                           | Ability to self-control | 1,496 | 8,557 | 5,991 | 9,210 |
| 8   | Methodology for identifying a style of self-regulation by H. Pryhin | Self-regulation style | 1,631 | 7,471 | 5,991 | 9,210 |
| 9   | S. Muddy’s Resilience Test | Level of general resilience | 0,869 | 6,632 | 5,991 | 9,210 |

Source: Search data.

Analysis of the results of the experimental study obtained during the practical implementation of the program makes it possible to draw the following conclusions:

- in all CGs a statistical study of $\chi^2_{\text{emp}}$ and critical $\chi^2_{\text{cr}}$ values revealed no differences at a statistically significant level of $p \leq 0.05$ before and after the formative experiment. In all CGs (future ship power engineers and navigators) the dynamics of changes in the indicators is multidirectional, positive-moderate, characteristic in the absence of directional impact of the author’s program;

- in all EGs the study the values of $\chi^2_{\text{emp}}$ and critical values of $\chi^2_{\text{cr}}$ revealed the presence of reliable differences at the statistically significant level of $p \leq 0.05$ before and after the formative experiment. In addition, for the criteria of the four techniques, the statistical significance of the recorded differences is reliable at the level of $p \leq 0.01$ for future navigators and ship power engineers.

The research of the character of statistical relation between the indicators of autopsychological competence at the ascertaining stage and the results of expert assessment of the future seafarer’s psychological readiness for professional activity in extreme situations according to the “Questionnaire of expert assessment of the level of psychological readiness of the future seafarer for professional activity in extreme situations” (stage after finishing the program ) showed the absence of statistically reliable ($p \leq 0.05$) correlation relations. Consequently, the low level of the development of autopsychological competence of future specialists of maritime transport (stage before the experiment) does not correspond to the level of effectively established (program influence) psychological readiness of a future seafarer for professional activity in extreme situations. Such a statistically significant ($p \leq 0.05$) discrepancy is recorded for both EG and CG samples of future navigators and ship power engineers.

In the study of the nature of the statistical connection between the indicators of autopsychological competence after the completion of the formative experiment the presence of a statistically reliable ($p \leq 0.05$) direct correlation connection between the revealed indicators for all the four groups of the experimental sample has been revealed, as the condition is met: $rs_{\text{emp.}} \geq rs_{\text{cr}} (p \leq 0.05)$. For the two groups (both groups are future navigators) the above condition is also met at the level of significance $p \leq 0.01$. The condition
rs emp<rs kr (p ≤ 0.05) is met in all the four groups of the control sample (both for future navigators and for future ship power engineers), which indicates the absence of statistically reliable correlations.

Thus, the obtained results of the experiment are statistically reliable (p ≤ 0.05) indicating the feasibility of the autocompetence approach for the effective formation of psychological readiness to future specialists of maritime transport for professional activity in extreme situations. The future seafarer’s effective ability of autogenic self-regulation, self-control and self-correction, formed on the autocompetence basis, determines a high level of their psychological readiness for professional activity in extreme situations.

Approbation of the program of formation of psychological readiness of future specialists of maritime transport for professional activity in extreme situations has shown its effectiveness, which makes it possible to use it in maritime educational institutions in accordance with the modern requirements of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers.

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Formation of psychological readiness to future specialists of maritime transport for professional activity in extreme situations

Resumo
O artigo é dedicado à pesquisa do problema da formação da prontidão psicológica aos futuros especialistas do transporte marítimo para atividade profissional em situações extremas. Os resultados da fase teórica do estudo permitiram que os autores concluíssem que situações extremas nas atividades profissionais dos profissionais de transporte marítimo podem ser as seguintes – a ameaça de apreensão pirata do navio, e o cativeiro do tripulão do navio, ameaças de atos terroristas, os efeitos de fenômenos naturais perigosos, catástrofes, desastres naturais, emergências e outras situações anormais na nave. De acordo com os resultados do estudo, foi determinada a viabilidade e a possibilidade de aplicação da abordagem de autocompetência para a efetiva formação da prontidão psicológica aos futuros especialistas do transporte marítimo para atividade profissional em situações extremas.

Palavras-chave: Prontidão psicológica. Atividade profissional. Abordagem de auto competência. Programa de formação. Competência auto psicológica.

Abstract
The article is dedicated to the research of the problem of the formation of psychological readiness to future specialists of maritime transport for professional activity in extreme situations. The results of the theoretical phase of the study allowed the authors to conclude that extreme situations in the professional activities of maritime transport may be as follows – the threat of pirate seizure of the ship, and the captivity of the ship’s crew, threats of terrorist acts, the effects of dangerous natural phenomena, disasters, natural disasters, emergencies and other abnormal situations on the ship. According to the results of the study, the feasibility and possibility of applying the self approach to the effectiveness of psychological readiness to future specialists of maritime transport for professional activity in extreme situations was determined.

Keywords: Psychological readiness. Professional activity. Autocompetence approach. Formation program. Autopsychological competence.

Resumen
El artículo está dedicado a la investigación del problema de la formación de la preparación psicológica a los futuros especialistas del transporte marítimo para la actividad profesional en situaciones extremas. Los resultados de la fase teórica del estudio permitieron a los autores concluir que las situaciones extremas en las actividades profesionales de los profesionales del transporte marítimo pueden ser las siguientes: la amenaza de apresamiento pirata del buque y el cautiverio de la tripulación del buque, las amenazas de actos terroristas, los efectos de fenómenos naturales peligrosos, desastres, desastres naturales, emergencias y otras situaciones anormales en el buque. De acuerdo con los resultados del estudio, se determinó la viabilidad y posibilidad de aplicar el enfoque de autocompetencia para la formación efectiva de la preparación psicológica a los futuros especialistas del transporte marítimo para la actividad profesional en situaciones extremas.

Palabras-clave: Preparación psicológica. Actividad profesional. Enfoque de autocompetencia. Programa de formación. Competencia autopsicológica.