

Brief information about the project

Name of the project	AP09259875 «Development of algorithms for recognition of negative emotional states of military personnel of the Armed Forces of Kazakhstan»
Relevance	Service in the Armed Forces is characterized by several features that allow it to be classified as a special type of public service. Important personal-subjective factors that have a significant impact on the performance of official duties are the psychoemotional state of the soldier [1]. Negative emotions, which inevitably arise in the performance of official duties in extreme situations dangerous to life and health, can potentially lead to aggressive-chaotic, affective actions, or to the refusal of necessary actions and departure from the performance of official tasks, which can lead to emotional disruption, accidents, injuries, and death of personnel. Increasing the combat capability and psychological well-being of personnel through timely and operational monitoring of psycho-emotional well-being and reducing the negative burden of the consequences of negative emotional states is relevant.
Purpose	The purpose of the project is to study and develop algorithms for facial expression of a person (soldier) of the Armed Forces of the Republic of Kazakhstan to recognize negative emotional states based on the construction of psychological model of behavior in the professional environment.
Objectives	<ol style="list-style-type: none"> 1. Clarify the concept of emotions as a general psychological phenomenon, determine its structure, evaluation criteria and role in the everyday life of the soldier, taking into account the individual typological and ethnopsychological characteristics of the personnel; 2. To conduct a deep systematic analysis of modern methods of cognitive neuroscience, as well as theoretical and applied methods of studying negative emotional states to create the design of the empirical part of the research on the study of algorithms of negative emotional states in military personnel; 3. Develop and empirically check the model of behavior of the soldier considering the individual-typological and ethnopsychological specifics of the personnel of the Armed Forces of the Republic of Kazakhstan, namely algorithms for the manifestation of negative emotional states in combat duty conditions. 4. Based on the obtained results, develop and substantiate a program of training in algorithms to recognize negative emotional states in military personnel in the military environment. 5. Develop and implement the SPOC "Features of the manifestation of emotional states" for the teaching staff of the universities of the Republic of Kazakhstan engaged in the training of psychologists.
Expected and achieved results	The analytical review of the experience of the world countries in the study of negative emotional states was carried out. Domestic and foreign experience in recognizing negative emotional states in the psychological literature was studied and a theoretical review was conducted. The best experience of the world countries in recognizing negative emotional states was studied, criteria and indicators of their effectiveness were selected; the review of

previous scientific research related to the topic under study was carried out. Publications were analyzed according to the following sections: genre of publications, empirical object of research, research methods and techniques, areas and topics of research. As a result, it was found that the recognition of negative emotional states is studied together with other phenomena such as: emotional intelligence, mental states, individual and personality traits, professional burnout, coping behavior strategies, satisfaction and effectiveness in different spheres of life activity. Emotional states can be detected by external manifestations, first, by facial expression. The expression of emotions on the face functions from birth. Among other nonverbal means, human mimicry occupies a special place, since the change of facial muscles almost always carries an emotional load, reflecting the feelings of a person at a given moment. Researchers pay special attention to the formation of the ability to recognize emotions by a person as part of the development of emotional intelligence. The studies pay attention to such peculiarities of human emotion recognition as gender and age peculiarities, cognitive style of recognition.

Pilot study of psycho-emotional state of cadets (anxiety, aggression, depression, level of subjective well-being in general), as well as their relationship with socio-demographic characteristics, testing of screening techniques to identify negative emotions on a sample of Kazakhstani servicemen was conducted. Sample: 600 servicemen - cadets of 1-4 courses of the Military Institute of Ground Forces and Military Engineering Institute of Radioelectronics and Communications.

The systematization map on the experience of countries in the field of developing an algorithm for recognizing negative emotional states of servicemen, the program of training algorithms for recognizing negative emotional states in servicemen in the military environment has been developed. The experience of the world's countries in developing an algorithm for recognizing negative emotional states of servicemen is systematized. The systematization map on the experience of countries in the field of developing an algorithm for recognizing negative emotional states of servicemen includes information from 443 sources combined into 24 factors.

A structural and content model of serviceman's behavior has been developed, considering individual-typological and ethnopsychological specificity of the RK Armed Forces personnel with algorithms for manifestation of negative emotional states in the conditions of combat duty. The model of recognition of basic emotions consists of stages: screening stage, stage of fixation on camera, stage of processing of screening information, stage of allocation of risk group on negative emotional states, stage of in-depth assessment of the serviceman's condition for revealing risks with suicidal behavior, depressive state, high anxiety, stage of drawing up a conclusion. The model reflects the levels of representation of emotional states: 1) communicative level (interactivity of the emotional state); 2) gnostic level (its cognizability); 3) heuristic level (novelty of the emotional state). The main categorical characteristics of the emotional state are

	<p>highlighted: 1) introspectivity (aspiration for inner contemplation, systematic and purposeful analysis of emotional experiences, their awareness); 2) instrumentality (orientation to obtaining and applying emotional knowledge in practice); 3) implicitness (accessibility for inner observation and differentiation of emotional experiences).</p> <p>Structural components are described: cognitive and behavioral, their content components: reflection and identification of emotions and emotional states, self-regulation. The factors conditioning the recognition of the actual emotional state in servicemen are considered. The developed structural and content model of algorithms of recognition of negative emotional states of servicemen solves the actual problem of identification of non-verbal predictors of suicidal behavior, depressive state, allowing the most accurate description of the emotional state of servicemen in the conditions of combat service, which will undoubtedly be useful for specialists of psychological services of military organizations. A computer program for video tracking of the emotional state of military personnel has been developed.</p> <p>SPOC "Peculiarities of manifestation of emotional states" was developed for the teaching staff of universities of RK engaged in training of psychologists. The course is based on modern theories of emotions and includes practical approaches and methods. Different types of emotions and their manifestations, methods of diagnostics of emotional states, possible strategies of correction of negative emotional states are considered. A wide range of tools for emotional support of employees of organizations engaged in service activities (military, operational workers, law enforcement officers, etc.) is offered. The course consists of 10 sessions, each including a lecture (text, presentation and video lecture), practical exercises, materials for additional study, a list of recommended literature and useful references on the topic, as well as tests for self-control.</p> <p>Training of specialists of the Sagadat Nurmagambetov Military Institute of Land Forces and the Military Engineering Institute of Radioelectronics and Communications of the Ministry of Defense of the Republic of Kazakhstan on recognition of negative emotional states in servicemen was organized. The program of training of specialists on recognition of negative emotional states in servicemen, consisting of a cycle of lectures on the nature and recognition of negative emotional states, training practical exercises on management, diagnostics of emotional states of servicemen is developed. There are acts of implementation. The training was conducted during a year, in several stages.</p>
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	<p>4.Zukhra Sadvakassova - candidate of pedagogic sciences, associate professor Scopus Author ID 56366558900, ORCID ID 0000-0002-0969-2942</p> <p>5. Nazira Sadykova – candidate of psychological science Scopus Author ID 57216611800, ORCID ID 0000-0002-1769-0656.</p> <p>6. Andrey Sukhov – senior lecturer at the Military Engineering Institute of Radioelectronics and Communications.</p> <p>7.Alkambayev Askhat - senior lecturer at the Military Institute of the Army</p> <p>8. Adiev Kuat – psychologist at the Military Institute of the Army</p>
List of publications with links to them	<p>1.Kudaibergenova, S., Madaliyeva, Z., Baimoldina, L., Sadykova, N., & Sadvakassova, Z. (2023). Procedure for Identifying Negative Emotional States in Military Personnel. Bangladesh Journal of Medical Science, 22(3). https://www.scopus.com/record/display.uri?eid=2-s2.0-85163045077&origin=resultslist&sort=plf-f</p> <p>2.Madaliyeva Z., Kasen G., Sadykova N., Baymoldina L., Sadvakasova Z. Theory and practice of recognition of negative emotional states in applied psychology. //Bulletin of KazNPU im. Abay, Psychology series, №3(72), 2022-pp.63-73 // https://bulletin-psychology.kaznpu.kz/index.php/ped/issue/view/14/96</p> <p>3.Sadvakasova Z., Madaliyeva Z., Aimaganbetova O., Sadykova N. Modern technologies for recognizing lies and negative emotions // BULLETIN OF KazNPU im. Abay, series "Psychology", №2(71) 2022 – p.40-49 https://doi.org/10.51889/2022-2.1728-7847.06 https://bulletin-psychology.kaznpu.kz/index.php/ped/issue/view/11</p> <p>4.Sadvakasova Z., Madaliyeva Z., Sadykova N., Kudaibergenova S., Alkambayev K. Modern technologies and algorithms of recognizing negative emotions in a person. BULLETIN OF KazNPU named after. Abay, series "Psychology", № 3(72), 2022-p.40-55 p.84-97 https://doi.org/10.51889/1447.2022.54.92.009 https://bulletin-psychology.kaznpu.kz/index.php/ped/article/view/927</p> <p>5.Sukhov A., Botin D. Features of the manifestation of negative emotional states among military personnel. // Scientific works of VIIZEiS. - №3(45), 2021.- pp. 122-127.</p> <p>6.Kudaibergenova S., Madaliyeva Z., Alkambaev K., Adiev A. Study of negative emotional states and subjective well-being of cadets of higher military educational institutions.// Bulletin of Al-Farabi Kazakh National University, series "Pedagogical Sciences".- No.4(69) -2021-p.28-41. https://bulletin-pedagogic-sc.kaznu.kz https://doi.org/10.26577/JPsS.2010.v69.i4.013</p> <p>7.Sadvakasova Z., Madaliyeva Z., Sariev D., Sadykova N. On the issue of studying aggressive human behavior. // Bulletin of KazNPU named after Abay, Psychology series, No. 3(68) 2021-p.22-32 https://doi.org/10.51889/2021-3.1728-7847.03 https://bulletin-psychology.kaznpu.kz/index.php/ped/article/view/355</p> <p>8.Kudaibergenova S., Sadykova N., Aliyeva Z., Sadvakasova M. Anxiety in psychological research (based on the materials of the Literary Review) // Bulletin of KazNPU named after Abai, Psychology - 2021 Series -№ 3 (68). P-76-8. https://doi.org/10.51889/2021-3.1728-7847.10</p>

- <https://bulletin-psychology.kaznu.kz/index.php/ped/article/view/373>
9. Sadvakasova Z., Kusain A. Psychological stability of the individual // Bulletin of the Al-Farabi Kazakh National University "Series of Sociology and Psychology" - No. 1, 2021- pp. 94-103. DOI: <https://doi.org/10.26577/JPsS.2021.v76.i1.09>
<https://bulletin-psysoc.kaznu.kz/index.php/1-%20psy/article/view/1171>
10. Madalieva, Z., Sadvakasova, Z., Kudaibergenova, S., Kasen, G., Sadykova, N. Recognition of negative emotional states in military personnel: technologies, algorithms, diagnostics: monograph / – Almaty: Kazakh University, 2023. – 213 p. ISBN 978-601-04-6338-7
11. Madalieva Z., Kudaibergenova S., Sadvakasova Z., Kasen, G., Sukhov A. Recognition of negative emotional states in military personnel: monograph / З.Б. Мадалиева, С.К. Кудайбергенова, З.М. Садвакасова, Г.А. Касен, А.О. Сухов. – Алматы: Қазақ университеті, 2021. – 218 с. ISBN 978-601-04-5680-8.)
12. Zabira Madaliyeva; Gulmira Kassen; Nazira Sadykova; Laura Baimoldina; Adilet Gabdrakhman The use of art therapy techniques in the management of the emotional state of military personnel. 2023-03 | Conference paper. INTED2023 Proceedings 17th International Technology, Education and Development Conference Valencia, Spain. 6-8 March, 2023. DOI: 10.21125/inted.2023.2096
<https://library.iated.org/view/MADALIYEVA2023USE>
13. Sadvakasova Z., Adiev A. Modern world technologies for recognizing negative human emotions" / Collection of materials of the International Scientific and Theoretical Conference: "Topical issues of the development of military science". - Almaty: Military Institute of Land Forces named after Sagadat Nurmagambetov., 2023. – 387 p. Volume 1. ISBN 978 – 601 – 7856 – 76 – 2.- pp.277-291.
<https://pps.kaznu.kz/ru/Main/FileShow2/208678/106/3/1779/2022//>
14. Zhidebay, Zh., Kudaibergenova S. Features of the psychological well-being of military personnel (according to the literature review materials) Collection of materials of the International Scientific and theoretical conference: "actual issues of development of scientific research". - Almaty: Military Institute of the Land Forces named after Sagadat Nurmagambetov - 2023. - 387 pages. Volume 2. ISBN 978 – 601 – 7856 – 76 – 2. - pp. 131-137.
15. Yafarov, R., Alkambayev K. Features of psychological assistance in PTSD. Collection of materials of the International Scientific and Theoretical Conference: "Topical issues of the development of military science". - Almaty: Military Institute of Land Forces. named after Sagadat Nurmagambetov.- 2023. – 387 bet. Volume 2. ISBN 978 – 601 – 7856 – 76 – 2. - pp. 346-352.
16. Sadvakasova Z., Kudaibergenova S., Sariev D., Sukhov A. The nature of negative emotions and its prevention in psychological support of a person. //Collection of materials of the International Scientific and Theoretical Conference: "Topical issues of the development of military science". - Almaty: Military Institute of

Land Forces. named after Sagadat Nurmagambetov., 2022zh. 307 bet. ISBN 978 – 601 – 211 – 372 – 3.- c.129-138.

17.Sadvakasova Z., Alkambayev K., Yafarov R., Nazarova A. "Management of a person's negative emotional state in stressful situations" / V11 International Scientific and Practical Conference on psychology in extreme conditions. "Improvement of work on the organization of psychological training of junior officers-commanders to act in extreme situations, taking into account modern security threats." (Military Engineering Institute of Radio Electronics and Communications May 27, 2022)

18.Kudaibergenova S., Madalieva Z. On the issue of studying anxiety of military personnel // materials of the international scientific and methodological conference "actual problems of the development of a competitive personality in Psychological Science and practice" dedicated to Professor S. M. Zhakupov. - Almaty: Kazakh University, 2022. – 397 pp. 305-310. ISBN 978-601-04-5979-3)

19.Кудайбергенова С.К., Мадалиева З.Б., Садвакасова З.М., Сухов А.О. Recognition of negative emotional states of military personnel as a psychological problem / / Materials of the international scientific and methodological conference "The role of psychological science and practice in solving social problems of society", dedicated to the 60th anniversary of the birth of Doctor of Psychological Sciences, Professor, Mukhan Atenovich Perlenbetov and the II-th Congress of the NGO "Kazakh Psychological Society". – Almaty, 2021 – 380 (p.78-83)

20.Sukhov A. Post-traumatic stress disorders (historical aspect) // Proceedings of the VII International Scientific and Practical Conference "Improving the work on the organization of psychological training of junior officers-commanders to act in extreme situations, taking into account modern security threats". – Almaty: VIIREiS, 2021. pp.92-99.

21.Sukhov A. Features of the manifestation of negative emotional states among military personnel //Materials of the VII International Scientific and Practical Conference "Improvement of work on the organization of psychological training of junior officers-commanders to act in extreme situations, taking into account modern security threats". – Almaty: VIIREiS, 2021. – pp. 88-92.

22.Sadvakasova Z., Yafarov R., Nazarova A., Alkambayev J. Management of negative emotional state in stressful situations //Materials of the VII International Scientific and Practical Conference "Improvement of work on the organization of psychological training of junior officers-commanders to act in extreme situations, taking into account modern security threats". – Almaty: VIIREiS, 2021- p.72-82

23.Sadvakasova Z., Aimaganbetova O., Madalieva Z., Nazarova M. - The role of emotional intelligence in the recognition of negative emotional states of personality / Materials of the international scientific and methodological conference "The role of psychological science and practice in solving social problems of society", dedicated to the 60th anniversary of the birth of Doctor of Psychological Sciences, Professor Perlenbetov and II-th congress of

	the NGO "Kazakh Psychological Society". – Almaty, 2021 – p.123-131
Patents	<p>Copyright certificate</p> <p>1.Madalieva Zabira Bekeshovna, Sadvakasova Zukhra Maratovna,Kudaibergenova Sandugash Kansarovna, Adilova Elnur Temirkanovna Structural and content model of algorithms for recognizing negative emotional states of military personnel A product of science № 34824 from "18" April 2023</p> <p>2.Madalieva Zabira Bekeshovna, Sadvakasova Zukhra Maratovna, Kudaibergenova Sandugash Kansarovna, Sadykova Nazira Margushovna, Adilova Elnur Temirkanovna A systematized map based on the experience of countries in the field of developing an algorithm for recognizing negative emotional states A product of science № 34895 from «19» April 2023</p> <p>3.Madalieva Zabira Bekeshovna, Kudaibergenova Sandugash Kansarovna, Sadvakasova Zukhra Maratovna,Alkambayev Kuatbek Zhekebekovich,Masalimova Aliya Rmgazinovna, Adiev Askhat Serikovich Procedure for recognizing negative emotional states of military personnel A product of science № 34905 from «20» April 2023</p> <p>4.Madalieva Zabira Bekeshovna, Sadvakasova Zukhra Maratovna, Kudaibergenova, Sandugash Kansarovna, Kasen Gulmira Amankyzy, Sadykova Nazira Margushevna Recognition of negative emotional states in military personnel: technologies, algorithms, diagnostics. Monograph. A product of science № 35744from «16» May 2023</p> <p>5.Madalieva Zabira Bekeshovna, Kudaibergenova Sandugash Kansarovna, Sadvakasova Zukhra Maratovna, Adilova Elnur Temirkanovna, Kairatova Inkar Kairatkyzy SPOC «Features of the appearance of emotional states» № 39459 from «6» October 2023</p> <p>6.Madalieva Zabira Bekeshovna, Sadvakasova Zukhra Maratovna, Kudaibergenova,Sandugash Kansarovna, Masalimova Aliya Rmgazinovna, Daurenbekova Sandugash Altynbayeva, Alkambayev Kuatbek Zhekebekovich, Adiev Askhat Serikovich, Adilova Elnur Temirkanova, Sadykova Nazira Margushevna Object name: Training program for the recognition of negative emotional states in military personnel Copyright object: literary work № 39506 from«10» October 2023</p> <p>7.Madalieva Z. B., Kudaibergenova S. K., Sadvakasova Z. M., Kasen G. A., Sukhov A. O. – Almaty: Kazakh University, 2021.Recognition of negative emotional states in military personnel. A product of science №20550 28 September 2021</p>