

Научная статья | Original paper

# The development of N.A. Aminov's model of pedagogical abilities in the context of teachers' understanding of students' emotions related to mathematics

I.I. Osadcheva<sup>1</sup> ✉, V.S. Chernyavskaya<sup>2</sup>, V.I. Ekintsev<sup>2</sup>

<sup>1</sup> Federal Scientific Center of Psychological and Multidisciplinary Research, Moscow, Russian Federation

<sup>2</sup> Vladivostok State University, Vladivostok, Russian Federation

✉ [irinaosadcheva@yandex.ru](mailto:irinaosadcheva@yandex.ru)

## Abstract

**Context and relevance.** Contradictions between the importance of teacher professionalism for the state and society, and the uncertainty of his main professional abilities; the importance of mathematics for the development of the individual and its prospects, and the quality of mathematical education indicated in the documents of the Government — all this causes a scientific problem, which consists in the uncertainty of approaches to the study of the key abilities of the teacher, which cannot but affect education and society. **Objective.** Actualization of N.A. Aminov's model of pedagogical abilities within its core component — the reflective module — using the example of mathematics teachers. **Methods and materials.** Historical and psychological reflection on the works of N.A. Aminov; a theoretical analysis of studies on the psychology of teacher abilities, including the ability to understand the emotions of schoolchildren, using the example of mathematics teachers; and the formalization and refinement of N.A. Aminova's model of pedagogical abilities. **Conclusions.** The reflective module, which is the basic module for the structure of the main components of pedagogical abilities when using the additive principle, is concretized in reflexivity, pedagogical intentionality — the focus of the teacher's consciousness on the student as a subject of education, resistance to emotional burnout, and perceptive abilities — sensitivity to the student's experiences and difficulties. The severity of the basic — reflective module of teacher's pedagogical abilities can be determined using the proposed formula for the integral index. Since teaching mathematics predetermines the success of a student in other disciplines, the study of the pedagogical abilities of a mathematics teacher is an important and promising direction in psychological and pedagogical research. In the future, it is planned to study the application of the integral index to the analysis of the reflective module of pedagogical abilities using artificial intelligence, including for teachers of other profiles.

**Keywords:** teachers of mathematics, pedagogical abilities, emotions, reflexivity, pedagogical intentionality, model of N.A. Aminov

**For citation:** Osadcheva, I.I., Chernyavskaya, V.S., Ekintsev, V.I. (2026). The development of N.A. Aminov's model of pedagogical abilities in the context of teachers' understanding of students' emotions related to mathematics *Psychological Science and Education*, 31(1), 175–186. (In Russ.). <https://doi.org/10.17759/pse.2026310108>

## Развитие модели педагогических способностей Н.А. Аминова в контексте понимания учителями математики эмоций учащихся

И.И. Осадчева<sup>1</sup> ✉, В.С. Чернявская<sup>2</sup>, В.И. Екинцев<sup>2</sup>

<sup>1</sup> Федеральный научный центр психологических и междисциплинарных исследований, Москва, Российская Федерация

<sup>2</sup> Владивостокский государственный университет, Владивосток, Российская Федерация

✉ irinaosadcheva@yandex.ru

### Резюме

**Контекст и актуальность.** Противоречия между важностью профессионализма учителя для государства и общества и неопределенностью его главных профессиональных способностей; значение математики для развития личности и ее перспектив и качество математического образования, указанные в документах правительства Российской Федерации, — все это обуславливает научную проблему, которая состоит в неопределенности подходов к исследованию ключевых способностей учителя, что не может не влиять на образование и общество. **Цель.** Актуализация модели педагогических способностей Н.А. Аминова в рамках ее базовой части, рефлексивного модуля, на примере учителей математики. **Методы и материалы.** Историко-психологическая рефлексия трудов Н.А. Аминова; теоретический анализ исследований психологии способностей учителя, в том числе способностей к пониманию эмоций школьников, на примере учителей математики; формализация и уточнение модели педагогических способностей Н.А. Аминова. **Выводы.** Рефлексивный модуль, являющийся базовым для структуры главных компонентов педагогических способностей при использовании аддитивного принципа, конкретизируется в рефлексивности, педагогической интенциональности — направленности сознания учителя на ученика как субъекта образования, устойчивости к эмоциональному выгоранию и перцептивным способностям — чувствительности к переживаниям ученика и его затруднениям. Выраженность базового рефлексивного модуля педагогических способностей учителя может быть определена с помощью предложенной формулы интегрального индекса. Поскольку обучение математике предопределяет успешность школьника и по другим дисциплинам, то исследование педагогических способностей учителя математики является важным и перспективным направлением в психолого-педагогических исследованиях. В дальнейшем планируется исследовать применение интегрального индекса к анализу рефлексивного модуля педагогических способностей с помощью искусственного интеллекта, в том числе и для учителей других профилей.

**Ключевые слова:** учителя математики, педагогические способности, эмоции, рефлексивность, педагогическая интенциональность, модель Н.А. Аминова

**Для цитирования:** Осадчева, И.И., Чернявская, В.С., Екинцев, В.И. (2026). Развитие модели педагогических способностей Н.А. Аминова в контексте понимания учителями математики эмоций учащихся. *Психологическая наука и образование*, 31(1), 175–186. <https://doi.org/10.17759/pse.2026310108>

## Introduction

Psychological and pedagogical studies of the teacher's personality and professionalism were studied by Russian scientists L.S. Vygotsky, N.V. Kuzmina, A.K. Markova, I.A. Zimnaya, M.K. Kabardov, L.M. Mitina, N.A. Aminov and others. Researchers and participants in educational relations tend to attribute a large number of functions and abilities to the teacher, while he may not understand or accept other people's expectations, and his compliance with the requirements largely depends on the environment. Within the framework of current trends in prefigurative culture—the younger generation often "teaches" the elders, it is not easy for a modern teacher to realize his professional potential. Mathematics is a particularly difficult subject because it is characterized by abstraction, and modern schoolchildren find it difficult to comprehend the texts of conditions due to "clip thinking." Today, the work of a mathematics teacher is also extremely difficult because it is difficult to include the emotional sphere of a child in the study of the subject. Mathematical education is a strategically important factor in the development of an individual's intellectual potential. The development of society is directly related to the work of a teacher, but concrete objectification of the abilities of a teacher and, in particular, a teacher of mathematics, from the standpoint of theoretical and empirical data, is clearly insufficient. In 1995, N.A. Aminov, a researcher

at PI RAO (the laboratory founded by B.M. Teplov), after many years of studying individual characteristics and special pedagogical abilities, developed a highly relevant differential approach to the study of the structural organization of the main components of pedagogical abilities, the provisions of which have yet to find worthy application. N.A. Aminov developed an instrumental system for psychodiagnostics of the level of expression of pedagogical abilities among working teachers. The model of the expression of pedagogical abilities reflected its conceptual content. The development of the theoretical model itself suggested ways to verify its empirical validity for solving specific applied tasks of diagnosing a teacher's abilities. Modern technological capabilities make it possible to create such systems, psychologists and educators have a need for them as necessary tools, but such tools have not been developed. In this regard, the current problem of this study is the lack of theoretical foundations for identifying the basic components of the pedagogical abilities of modern teachers, the role of their understanding of the emotions of schoolchildren, in the context of the approach of N.A. Aminov.

In the context of the modern educational space, characterized by the dominance of digital formats, the declining prestige of the teaching profession and the growing demands on the emotional stability of the teacher, there is a need to supplement the theoretical model that can

explain how a teacher can be effective, especially in such complex subject areas as mathematics.

The model of pedagogical abilities developed by N.A. Aminov in the 1990s is of particular importance. Within the framework of this model, not just a list of qualities is proposed, but a well-founded structural organization of pedagogical abilities, which is based on a reflexive module. This model, despite its depth and predictive power, remains in insufficient demand in modern theoretical and methodological discussions. This article is aimed at its theoretical development and application in the context of the emotional interaction of a mathematics teacher with students.

### The main part

The Law on Education regulates public relations that arise in the educational process, where the teacher's activity "is aimed at personal development and the acquisition of knowledge, skills, and the formation of competencies necessary for human life in society, an informed choice of profession, and vocational education" (273 FL)<sup>1</sup>. That is, the main subject of the teacher's activity is the development of the student's personality, and his competencies and knowledge follow the development. Therefore, the teacher is responsible for the personality and activity of the student. Therefore, on the one hand, the teacher is responsible, and on the other hand, in pedagogical science, methodological approaches and practice, the list of requirements and universal competencies of a teacher is "incredibly vague" (Margolis, 2021). The resolution of contradictions can be the definition of pedagogical

abilities and professional qualities of modern teachers.

The study of individual differences, general and special abilities of a person in our country is connected with the works of the founder of Russian differential psychology and psychophysiology B.M. Teplov (Teplov, 1985). The scientists of the FNC PMI (formerly the Psychological Institute of the Russian Academy of Sciences) continue to develop his concept of abilities and study individual typological differences. N.A.'s research is devoted to the comprehensive study of special pedagogical abilities — identification, measurement, disclosure. Aminov and his students and colleagues conducted research in different regions on different samples, which allowed him to develop a model of pedagogical abilities in which the teacher's success is the initial criterion (Aminov, 1988, 1995, 2013). In his opinion, high results in pedagogical activity are ensured by the interaction of functional, operational and regulatory mechanisms, that is, by the symptom complex of the teacher's personal properties. From the perspective of the modular organization of the brain, pedagogical abilities are provided by the "frontolimbic block, which is determined by the severity of the emotional resources of future teachers, or, in other words, we can say that this block characterizes the resistance to the development of emotional burnout syndrome in the work of teachers with children" (Aminov, 1997).

The classification of pedagogical abilities is based on the differentiation of terminal abilities (individual psychological characteristics — they ensure success in activities, increase competitiveness in

<sup>1</sup> Federal Law No. 273-FZ dated December 29, 2012 (as amended on July 31, 2025) "On Education in the Russian Federation" <https://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=LAW&n=499764&dst=100001#YvmZawUekzWRzizv> (accessed: August 10, 2025).

a competitive situation) and instrumental abilities (with their help, success is achieved without competition), abilities are divided into general and special. To the general ones N.A. Aminov attributed the perceptual abilities of the teacher: the ability to understand the student and feel his emotional state, while special abilities include emotional characteristics (resistance to burnout syndrome).

The abilities of a mathematics teacher dealing with a discipline that "puts the mind in order" (MV Lomonosov) should be studied in particular. V.N. Druzhinin's work shows that to determine the profile and level of learning, it is sufficient to determine three types of abilities — verbal, mathematical and spatial, while the success of learning in algebra and geometry is reliably related to the level of all these types of abilities (the highest positive correlation) (Druzhinin, 2025). It is the level of study of mathematics that determines the success of a student in all disciplines. Therefore, the acquisition of mathematics is of such importance in the course of teaching other disciplines that they can be considered potentially the most significant, as well as extrapolated to the abilities of teachers of other disciplines. The relevance of this is emphasized and addressed in the Comprehensive Action Plan for Improving the Quality of Mathematical and Natural Science Education until 2030, approved by the Government of the Russian Federation in November 2024, which contains areas for improving the quality of training for teachers of mathematics and natural science subjects and improving their qualifications. Thus, the pedagogical abilities of a mathematics teacher contribute to the development of intellectual and personal resources in general. They affect the academic performance of students and are determined by the dialogical nature of modern educa-

tion. In Russian and foreign psychology, there are ideas that teachers' personal and professional resources are associated with resistance to burnout (Rogov, Trubitsyna, 2022), (Carroll et al., 2022).

One of the prerequisites for burnout is emotional labor, as a process of expressing socially expected emotions in interpersonal interaction. Hiding one's feelings or showing insincere emotions correlates with burnout (Kariou, Koutsimani, Montgomery, 2021).

Burnout, in the context of the emotional side of a teacher's professional activity, is a natural stage in the case when a teacher does not reflect, does not accept and hides his feelings, expressing a socially desirable reaction, researchers have confirmed that this strategy correlates with burnout (Krushelnitskaya, Kochetkov, Marina et al. 2024), (Kochetkov, Marina, Orlov, 2023), (Mitina, 2025, Khusnutdinova, 2017), (Kariou, Koutsimani, Montgomery, 2021; Carroll, 2022), (Middleton, Wiesel, Jansen, Smith, 2023).

N.A. Aminov showed that one of the important and underestimated factors of the success of teaching mathematics is the professional abilities associated with the emotions of the teacher. The emotional component of the lesson, the emotions of the students are included in the general continuum of attitudes towards education and the subject of mathematics. Modern foreign researchers believe that the study of the emotional sphere is a promising but underrepresented area of research in mathematical education (Schoenherr, Schukajlow, Pekrun, 2025), (Semeraro, Giofre, Coppola et al., 2020), (Di Martino, Gregorio, Iannone, 2023), (Pekrun, 2024), (Schoenherr, Schukajlow, Pekrun, 2025). The professional resources of a mathematics teacher in the context of emotions are widely updated

abroad. (Goetz, Lüdtke, Nett, 2013), (Jacob, Frenzel, Stephens, 2017), (Wang, Xu, Fei, 2024), (Schoenherr, Schukajlow, Pekrun, 2025).

Despite the large number of theoretical objects of research "pedagogical skills", "abilities", "pedagogical professionalism", explaining or predicting the results of a teacher's activity, the "key" is currently needed — the theoretical content — the definition of the essence, functions and organization of the main components of pedagogical abilities that explains the relationship between the characteristics of a teacher and the results of his students. This problem was solved in the research of N.A. Aminov (Aminov, 1988, 1995a). In particular, he showed that the basic module of pedagogical abilities is a reflective module reflecting the additive nature of pedagogical abilities. Having narrowed the search area using a theoretical analysis of research and step-by-step regression analysis of empirical data on the characteristics of teachers (including winners of professional competitions), Aminov showed that the structure of the main pedagogical abilities is based on productivity, as well as emotional stability, which is a factor of resistance against burnout syndrome and personality retention (Aminov, 1995a).

The severity of pedagogical abilities is determined by five independent variables combined into two classes: a subgroup of factors of effective capabilities of the teacher's personality and a subgroup of factors of effective capabilities of the "working environment" (Aminov, 1995a, Aminov, Osadcheva, Chernyavskaya, 2020). We consider the first subgroup — factors of effective personal capabilities. Within this subgroup lies reflexivity, an ability that N.A. Aminov identified as the main one, therefore he called the basic module the

reflexive module of the main components of pedagogical abilities. The essence of reflexivity, as an ability, reflects activity in the ability to make oneself the object of one's own observation, formulate one's pedagogical credo and conform to it in professional activity (Aminov, 1995a, Karpov, Zhedunova, 1998).

The reflexivity of a teacher is the basis of professional qualities and abilities, which helps establish relationships in the educational process. It is important that students' results are delayed, and it is difficult, or rather almost impossible, to determine the contribution of a particular teacher. An important component of the reflexive module is intentionality — the teacher's focus on the student as a subject of education, his knowledge of the goals of education and the alignment of activities in accordance with the goals. In the development of the ideas of N.A. Aminova, one of the authors of the article, develops the phenomenon of pedagogical intentionality, an essential component of pedagogical orientation, which shows that for a teacher, the subject of his professional activity is the student, with his abilities and subjective experience (Aminov, Chernyavskaya, 2019).

The criterion of reflexivity, within the framework of a teacher's (oral or written) speech, is the presence in it (the teacher's speech) of statements indicating reflections on his (her) role in the educational process, ways to achieve goals. Therefore, such statements are called reflexive.

It has been shown in the works of N.A. Aminov that the more a teacher corresponds to his individual, psychophysiological type in his professional activity and accepts it, the more successful he is (Aminov, 1988, 1995b). This indicates the important role of authenticity and reflexive abilities of the teacher. It has

been shown that an important component of pedagogical abilities is the ability to resist burnout syndrome. N.A. Aminov attributes this ability to a reflexive module (Aminov, Osadcheva, Chernyavskaya, 2020).

In mathematics, emotions are primarily procedural in nature. They arise not from the content (numbers, functions, axioms are neutral in nature), but from encountering a cognitive barrier: a lack of understanding of the logical chain, fear of error, frustration from abstraction. Emotions in mathematics lessons most often manifest themselves as a reaction to difficulty, rather than to meaning. That is why the ability of a mathematics teacher to recognize, verbalize and transform such states — from anxiety to curiosity, from passivity to research interest — becomes a key competence of the teacher. This difference allows us to introduce the concept of "specific emotional competencies" in subjects. The teacher is not just "emotionally literate" in the general sense, but has subject emotional literacy the ability to:

- diagnose typical emotional patterns associated with a given discipline;
- use a subject language to reflect emotions;
- design learning situations in which emotions become a resource rather than an obstacle.

Thus, the "emotional literacy of a subject student" is not a universal trait, but a professionally specific skill formed in the process of mastering disciplinary culture and pedagogical experience.

The theoretical value of the model of pedagogical abilities is revealed not only in explaining the differences between teachers, but also in its potential as a basis for the practical transformation of the educational process. If the reflexive module is indeed the core of professionalism,

then its components — reflexivity proper and pedagogical intentionality — should not only be diagnosable, but also developed through specific didactic practices. This allows us to move from describing the educational process to designing it — from understanding "what is" to shaping "how it should be." In this context, the activity — based approach in teacher education, developed by A.A. Margolis (2021), is particularly relevant, which emphasizes the need to operationalize professional competencies — to translate them into observable, measurable and developable forms. Although our article is theoretical in nature, we consider it important to show how the N.A. model Aminova can be structured for diagnostic and methodological purposes without losing its humanistic depth.

Following the logic of N.A. Aminov, pedagogical abilities can be represented as an additive structure, where the reflexive module acts as a basic one and determines the severity of the nominal level of pedagogical abilities.

A generalized characteristic of the weighted contributions of the key components of the reflexive module (RM) is represented by: reflexivity (P); pedagogical intentionality (PI), emotional stability (EU), perceptual abilities (PS). Such a structure objectifies the success of a teacher as a function of the ability to understand oneself, introspection and a meaningful orientation of the activity attitude towards the student, and not only as subject knowledge, understanding and acceptance of one's emotions and the student's emotions, his cognitive difficulties. This model is qualitatively descriptive and can serve as a basis for the development of diagnostic profiles and development programs.

Based on his logic, we propose the following formal scheme of the reflexive

module of a teacher's pedagogical abilities expressed through an integral index:

$$RM = \alpha UR + \beta PI + \gamma EU + \delta PS$$

where: UR — level of reflexivity — the ability for self-analysis and formulation of a pedagogical credo;

PI — pedagogical intentionality — teacher's consciousness oriented towards the student as a subject of development; EU — emotional stability — resilience to emotional burnout; PS — perceptual abilities — the skill to recognize students' emotional states and cognitive difficulties;  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$  — coefficients reflecting the specifics of the subject that need to be adapted.

All components can be normalized in a certain range, the weight coefficients are set depending on the subject profile.

N.A. Aminov's model demonstrates high adaptability: it not only explains the internal structure of pedagogical abilities, but also offers guidelines for their development in various contexts, from subject specifics to methodological work. However, any theoretical construction, in order to remain relevant, must evolve along with the changing conditions of professional activity. In the light of the digitalization of education, the transformation of teacher roles and the growing attention to the emotional well-being of participants in the educational process, there is a need to expand and modernize the initial model.

The model has a high potential for practical application in the system of teacher training and advanced training. The prospects for the development of the model of pedagogical abilities are seen in the development in three key areas.

First, it is necessary to integrate it into the digital context. To do this, it is important to examine the teacher's ability to understand the specifics of interaction in online and mixed formats, where emotional signals are limited and the risk of emotional

alienation is high. The difficulty of recognizing a student's emotions by text, voice, and behavior requires special attention and is a new challenge for the reflexive module of the teacher's abilities.

Secondly, it is advisable to develop an "emotional profile" of a mathematics teacher, a theoretical construct describing typical patterns of emotional perception, regulation, and expression characteristic of effective teachers in this subject area. Such a profile could serve as a guideline for selection, training, and self-assessment.

Thirdly, based on the reflexive module, it is possible to create a theoretical and methodological tool, for example, a manual or a diagnostic kit for psychological support of teachers. It could include: a map of reflexive questions for lesson analysis, a scale of pedagogical intentionality, an algorithm for interpreting students' emotional reactions in the context of mathematical content.

This development of the model not only actualizes the legacy of N.A. Aminov, but also turns it into a living, developing theoretical resource capable of responding to the challenges of modern education.

## Conclusion

1. In the context of the dominance of foreign-language concepts in psychology, which are not always consistent with the Russian mentality, the potential of the model of N.A. Aminov, a domestic scientist, whose work has broad prospects not only regarding the analysis of pedagogical professionalism, inclusion in the context, and possibly the standard of professional education of future teachers, certification, evaluation and improvement, has been revealed. professional qualifications of working teachers.

2. The role of the teacher's ability to understand his emotions in preventing the formation of burnout syndrome is

substantiated. The role of emotions in the educational process in the mathematics lesson is revealed, despite the high level of abstraction of the discipline itself and the individual nature of the experience of solving mathematical problems. This role is significant in the modern situation, where the dynamics of the influence of technology on education contributes to a decrease in attention to the manifestations of purely human emotions and reflection

among participants in the educational process and leads to anthropological risks for whole generations.

3. The components of N.A. Aminov's model of pedagogical abilities are clarified and disclosed, taking into account mathematical culture, its content is formalized, which makes it possible to further apply technologies to expand its resource for use in theoretical and applied aspects of education.

### Список источников / References

1. Аминов, Н.А. (1995). Дифференциальный подход к исследованию структурной организации главных компонентов педагогических способностей. *Вопросы психологии*, 5, 5–17. EDN ZBYHXV.  
Aminov, N.A. (1995). A differential approach to the study of the structural organization of the main components of pedagogical abilities. *Questions of Psychology*, 5, 5–17. EDN ZBYHXV. (In Russ.).
2. Аминов, Н.А. (1995). Опыт прогнозирования эффективности работы учителя математики. *Психологический журнал*, 16(1), 122–129.  
Aminov, N.A. (1995). Experience in predicting the effectiveness of a math teacher. *Psychological Journal*, 16(1), 122–129. (In Russ.).
3. Аминов, Н.А. (1988). Психологические и психофизиологические предпосылки педагогических способностей. *Вопросы психологии*, 5, 71–77.  
Aminov, N.A. (1988). Psychophysiological and psychological prerequisites of pedagogical abilities. *Questions of Psychology*, 5, 71–77. (In Russ.).
4. Аминов, Н.А. (2013). *Психодиагностика специальных способностей у преподавателей средней и высшей школы*. Монография. М.: изд-во МГОУ.  
Aminov, N.A. (2013). *Psychodiagnostics of special abilities of secondary and higher school teachers*. Monograph. Moscow: publishing house of the Moscow State Open University (In Russ.).
5. Аминов, Н.А., Чернявская, В.С. (2019). *Новые принципы современной дидактики*. Владивосток: Владивостокский государственный университет экономики и сервиса.  
Aminov, N.A., Chernyavskaya, V.S. (2019). *New principles of modern didactics*. Vladivostok: Vladivostok State University of Economics and Service. (In Russ.).
6. Аминов, Н.А., Чернявская, В.С., Осадчева, И.И. (2020). Дифференциальный контекст исследования педагогических способностей и педагогического мастерства. *Мир психологии*, 3(103), 131–143. DOI:10.51944/2073-8528\_2020\_3\_131  
Aminov, N.A., Chernyavskaya, V.S., Osadcheva, I.I. (2020). The differential context of the study of pedagogical abilities and pedagogical skills. *The world of psychology*, 3(103), 131–143. (In Russ.). DOI:10.51944/2073-8528\_2020\_3\_131
7. Дружинин, В.Н. (2010). *Психология общих способностей*. СПб.: Питер.  
Druzhinin, V.N. (2010). *Psychology of general abilities*. St. Petersburg: Peter. (In Russ.).
8. Кабардов, М.К. (2013). *Языковые способности: психология, психофизиология, педагогика*. М.: Смысл.  
Kabardov, M.K. (2013). *Linguistic abilities: psychology, psychophysiology, pedagogy*. Moscow: Smysl. (In Russ.).
9. Карпов, А.В., Жедунова, И.М. (1998). Рефлексия в структуре общих способностей. *Вестник ЯГПУ им. К.Д. Ушинского*, 2, 57–61.  
Karpov, A.V., Zhedunova, I.M. (1998). Reflection in the structure of general abilities. *Bulletin of Yaroslavl State Pedagogical University named after K.D. Ushinsky*, 2, 57–61. (In Russ.).
10. Кочетков, Н.В., Маринова, Т.Ю., Орлов, В.А., Расходчикова, М.Н., Хаймовская, Н.А. (2023). Актуальные зарубежные исследования профессионального выгорания у учителей. *Современная зарубежная психология*, 12(2), 43–52. <https://doi.org/10.17759/jmfp.2023120204>  
Kochetkov, N.V., Marinova, T.Yu., Orlov, V.A., Razgotchikova, M.N., Khaimovskaya, N.A. (2023). Current foreign studies of professional burnout among teachers. *Modern Foreign Psychology*, 12(2), 43–52. <https://doi.org/10.17759/jmfp.2023120204> (In Russ.).

11. Крушельницкая, О.Б., Кочетков, Н.В., Маринова, Т.Ю., Орлов, В.А., Расходчикова, М.Н., Хаймовская, Н.А. (2024). Личностные факторы профессионального выгорания у школьных учителей. *Консультативная психология и психотерапия*, 32(1), 139–157. <https://doi.org/10.17759/cpp.2024320107>
- Krushelnitskaya, O.B., Kochetkov, N.V., Marina, T.Yu., Orlov, V.A., Razgotchikova, M.N., Khaimovskaya, N.A. (2024). Personal factors of professional burnout among school teachers. *Counseling Psychology and Psychotherapy*, 32(1), 139–157. <https://doi.org/10.17759/cpp.2024320107> (In Russ.).
12. Марголис, А.А. (2021). Деятельностный подход в педагогическом образовании. *Психологическая наука и образование*, 26(3), 5–39.
- Margolis, A.A. (2021). The activity-based approach in teacher education. *Psychological Science and Education*, 26(3), 5–39. (In Russ.). <https://doi.org/10.17759/pse.2021260301>
13. Матюшкина, Е.Я., Кантемирова, А.А. (2019). Профессиональное выгорание и рефлексия специалистов помогающих профессий. *Консультативная психология и психотерапия*, 27(2), 50–68. <https://doi.org/10.17759/cpp.2019270204>
- Matyushkina, E.Ya., Kantemirova, A.A. (2019). Professional burnout and reflection of specialists in helping professions. (In Russ.). *Consultative Psychology and Psychotherapy*, 27(2), 50–68. <https://doi.org/10.17759/cpp.2019270204>
14. Митина, Л.М. (2020). *Профессионально-личностное развитие педагога: диагностика, технологии, программы: учебное пособие для вузов*. М.: Юрайт.
- Mitina, L.M. (2020). *Professional and personal development of a teacher: diagnostics, technologies, programs: a textbook for universities*. Moscow: Yurayt. (In Russ.).
15. Павлова, Н.Д., Гребенщикова, Т.А. (2017). *Интект-анализ: основания, процедура, опыт использования*. М.: Изд-во «Институт психологии РАН». (Методы психологии).
- Pavlova, N.D., Grebenshchikova, T.A. (2017). *Intent analysis: grounds, procedure, experience of use*. Moscow: Publishing House "Institute of Psychology of the Russian Academy of Sciences". (Methods of Psychology). (In Russ.).
16. Рогов, Е.И., Трубицина, Д.А. (2022). Особенности профессиональных представлений учителей-математиков с разным педагогическим стажем. *Мир университетской науки: культура, образование*, 9, 107–114. <https://doi.org/10.18522/2658-6983-2022-9-107-114>
- Rogov, E.I., Trubitsina, D.A. (2022). Features of professional representations of mathematics teachers with different teaching experience. *The world of university science: culture, education*, 9, 107–114. (In Russ.). <https://doi.org/10.18522/2658-6983-2022-9-107-114>
17. Теплов, Б.М. (1985). *Избранные труды*: в 2 т. М.: Педагогика.
- Teplov, B.M. (1985). Selected works: in 2 volumes. Moscow: Pedagogika. (In Russ.).
18. Ушакова, Т.Н. (2019). *Природа осмысленности слова*. М.: Институт психологии РАН.
- Ushakova, T.N. (2019). *The nature of the meaningfulness of the word*. Moscow: Institute of Psychology of the Russian Academy of Sciences. (In Russ.).
19. Ушакова, Т.Н. (2009). О механизмах вербальных процессов человека. *Психология. Журнал Высшей школы экономики*, 6(1), 99–113.
- Ushakova, T.N. (2009). On the mechanisms of human verbal processes. *Psychology. Journal of the Higher School of Economics*, 6(1), 99–113. (In Russ.).
20. Хуснутдинова, М.Р. (2017). Социальный статус профессии учителя: самоопределение российских педагогов. *Психологическая наука и образование*, 22(4), 38–48. <https://doi.org/10.17759/pse.2017220406>
- Khusnutdinova, M.R. (2017). The social status of the teaching profession: self-determination of Russian teachers. *Psychological Science and Education*, 22(4), 38–48. <https://doi.org/10.17759/pse.2017220406> (In Russ.).
21. Carroll, A., Forrest, K., Sanders-O'Connor, E., Flynn, L., Bower, J., Fynes-Clinton, S., York, A., Ziaei, M. (2022). Teacher stress and burnout in Australia: examining the role of intrapersonal and environmental factors. *Social Psychology of Education*, 25, 441–469. <https://doi.org/10.1007/s11218-022-09686-7>
22. Frenzel, A.C., Goetz, T., Lüdtke, O., Pekrun, R., Sutton, R. (2009). Emotional transmission in the classroom: Exploring the relationship between teacher and student enjoyment. *Journal of Educational Psychology*, 101, 705–716. <https://doi.org/10.1037/a0014695>
23. Goetz, T., Lüdtke, O., Nett, U.E., Keller, M.M., Lipnevich, A.A. (2013). Characteristics of teaching and students' emotions in the classroom: Investigating differences across domains. *Contemporary Educational Psychology*, 38(4), 383–394. <https://doi.org/10.1016/j.cedpsych.2013.08.001>
24. Jacob, B., Frenzel, A.C., Stephens, E.G. (2017). Good teaching feels good-but what is "good

- teaching"? Exploring teachers' definitions of teaching success in mathematics. *ZDM Mathematics Education*, 49. DOI:10.1007/s11858-017-0848-6
25. Kariou, A., Koutsimani, P., Montgomery, A., Lainidi, O. (2021). Emotional Labor and Burnout among Teachers: A Systematic Review. *International Journal of Environmental Research and Public Health Review* 18, 12760. <https://doi.org/10.3390/ijerph182312760>
26. Llurba, C., Palau, R. (2024). Real-Time Emotion Recognition for Improving the Teaching-Learning Process: A Scoping Review. *Imaging*, 10(12), 313. doi:10.3390/ijimaging10120313
27. Schukajlow, S., Rakoczy, K., Pekrun, R. (2023). Emotions and motivation in mathematics education: Where we are today and where we need to go. *ZDM. Zentralblatt für Didaktik der Mathematik*, 55(2), 249–267. <https://doi.org/10.1007/s11858-022-01463-2>
28. Semeraro, C., Giofrè, D., Coppola, G., Lucangeli, D., Cassibba, R. (2020). The role of cognitive and non-cognitive factors in mathematics achievement: The importance of the quality of the student-teacher relationship in middle school. *PLoS one*, 15(4), <https://doi.org/10.1371/journal.pone.0231381>
29. Stockinger, K., Dresel, M., Marsh, H., Pekrun, R. (2025) Strategies for regulating achievement emotions: Conceptualization and relations with university students' emotions, well-being, and health. *Journal Article Open Access Open Access Learning and Instruction*, 98, 102089–102089. DOI:10.31234/osf.io/egm2p\_v2
30. Wang, C., Xu, Q., Fei, W.Q. (2024). The effect of student-perceived teacher support on math anxiety: chain mediation of teacher-student relationship and math self-efficacy. *Frontiers in psychology*, 15, 1333012. <https://doi.org/10.3389/fpsyg.2024.1333012>
31. Meyer, J.H.F., Land, R. (2003). Threshold concepts and troublesome knowledge: linkages to ways of thinking and practising. In: Rust, C. (ed.), *Improving Student Learning — Theory and Practice Ten Years On*. (pp. 412–424). Oxford: Oxford Centre for Staff and Learning Development (OCSLD).

### Information about the authors

**Irina I. Osadcheva**, Candidate of Science (Psychology), Senior Researcher at the Laboratory of Differential Psychology and Psychophysiology, Federal Scientific Center of Psychological and Multidisciplinary Research, Moscow, Russian Federation, ORCID: <https://orcid.org/0000-0001-9310-6573>, e-mail: [irinaosadcheva@yandex.ru](mailto:irinaosadcheva@yandex.ru)

**Valentina S. Chernyavskaya**, Doctor of Pedagogical Sciences, Professor of the Department of General and Legal Psychology, Vladivostok State University, Vladivostok, Russian Federation, ORCID: <https://orcid.org/0000-0001-6674-6305>, e-mail: [valstan13@mail.ru](mailto:valstan13@mail.ru)

**Vladislav I. Ekintsev**, Candidate of Science (Psychology), Associate Professor of the Department of General and Legal Psychology, Vladivostok State University, Vladivostok, Russian Federation, ORCID: <https://orcid.org/0000-0001-8079-6982>, e-mail: [ekintsev@mail.ru](mailto:ekintsev@mail.ru)

### Информация об авторах

**Ирина Игоревна Осадчева**, кандидат психологических наук, старший научный сотрудник лаборатории дифференциальной психологии и психофизиологии, Федеральный научный центр междисциплинарных и психологических исследований (ФГБНУ ФНЦ ПМИ), Москва, Российская Федерация, ORCID: <https://orcid.org/0000-0001-9310-6573>, e-mail: [irinaosadcheva@yandex.ru](mailto:irinaosadcheva@yandex.ru)

**Валентина Станиславовна Чернявская**, доктор педагогических наук, профессор кафедры общей и юридической психологии, Владивостокский государственный университет (ФГБОУ ВО ВГУ), Владивосток, Российская Федерация, ORCID: <https://orcid.org/0000-0001-6674-6305>, e-mail: [valstan13@mail.ru](mailto:valstan13@mail.ru)

**Владислав Иванович Екинцев**, кандидат психологических наук, доцент кафедры общей и юридической психологии, Владивостокский государственный университет (ФГБОУ ВО ВГУ), Владивосток, Российская Федерация, ORCID: <https://orcid.org/0000-0001-8079-6982>, e-mail: [ekintsev@mail.ru](mailto:ekintsev@mail.ru)

### **Contribution of the authors**

Irina I. Osadcheva — formulation of the idea, scientific text editing, preparation of the publication text.  
Valentina S. Chernyavskaya — theoretical substantiation, development of interpretation, review of data, preparation of metadata.

Vladislav I. Ekintsev — systematization of literature, analysis of modern approaches to emotions and burnout.

All authors participated in the discussion of the results and approved the final text of the manuscript.

### **Вклад авторов**

Осадчева И.И. — формулировки идеи, научное редактирование текста, подготовка текста к публикации.

Чернявская В.С. — теоретическое обоснование, разработка интерпретации, обзор данных, подготовка метаданных.

Екинцев В.И. — систематизация литературы, анализ современных подходов к эмоциям и выгоранию.

Все авторы приняли участие в обсуждении результатов и согласовали окончательный текст рукописи.

### **Conflict of interest**

The authors declare no conflict of interest.

### **Конфликт интересов**

Авторы заявляют об отсутствии конфликта интересов.

Поступила в редакцию 14.09.2025

Поступила после рецензирования 25.12.2025

Принята к публикации 09.02.2026

Опубликована 27.02.2026

Received 2025.09.14

Revised 2025.12.25

Accepted 2026.02.09

Published 2026.02.27