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ОПОСРЕДУЮЩАЯ РОЛЬ ОТЧУЖДЕНИЯ 280

Dear readers!

We are pleased to present the fourth issue of the journal “Psychological Science and Education” (No. 4-2026). The materials in this issue are organized into two traditional sections: “Developmental Psychology” and “Educational Psychology”.

In the “Educational Psychology” section, we continue the series of publications on the professional development of specialists. This issue features the second part of a study by Arkady A. Margolis, Rector of Moscow State University of Psychology and Education (MSUPE), on the development of teacher thinking. The section includes studies on measuring project-based teaching practices among lecturers in Russian universities, the meta-resource determination of teachers' personal and professional development, and an analysis of academic stress with consideration of gender differences. A significant portion of the section is devoted to research on students' psychological well-being and resilience, including the impact of academic advising on distress and resilience, the role of peer social support in academic resilience, and a study of well-being in accelerated master's programs. Several articles address the specific features of the academic environment, ranging from supervisor–student relationships to international students' attitudes toward psychological help. The section also explores issues related to the training of future teachers, teacher effectiveness, and the relationships among creativity, problem-solving, and academic burnout.

In the “Developmental Psychology” section, considerable attention is devoted to factors of adolescent well-being. The section examines how parents and children perceive school (un)succes, the role of resilience in the structure of “responsible parenting”, and the impact of parental phubbing on academic burnout among high school students. The theme of adolescent and youth well-being is further explored through an analysis of the likelihood of adolescent involvement in bullying, the improvement of adaptation in the educational environment based on attachment and emotional regulation, as well as a review of studies on the formation of professional identity among university students.

We hope that the materials in this issue will be useful to researchers, practitioners, and all those interested in current trends in developmental and educational psychology.

Editorial Board

EDUCATIONAL PSYCHOLOGY ПСИХОЛОГИЯ ОБРАЗОВАНИЯ

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The development of teachers' professional knowledge

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Abstract

Background. This article is the second in the author's three-part series devoted to the analysis of teacher thinking in different research paradigms. **Objective.** Whereas the first article in this series, published in *Cultural-Historical Psychology* (No. 1, 2026), examined process–outcome models of teaching activity and research on pedagogical decision-making, the present article shifts the focus from the study of pedagogical decisions to an analysis of the structure of teachers' professional knowledge. **Results.** The article gives central attention to L. Shulman's concept of pedagogical content knowledge, which describes a type of knowledge specific to the teaching profession and associated with transforming subject content into forms accessible to students' understanding. The development of this line of research is considered through integrative, transformative and consensus models of teachers' professional knowledge. It is shown that the concept of pedagogical content knowledge made it possible to clarify substantially the specificity of the teaching profession and to describe the distinctive character of the knowledge required for teaching a particular school subject. At the same time, as the research focus shifted from pedagogical action to professional knowledge, the problem of the relationship between such knowledge and real teaching activity was partly lost. **Conclusion.** The article argues for the need to supplement the concept of pedagogical content knowledge with the notion of psycho-pedagogical content knowledge, which makes it possible to describe not only the teaching of subject content, but also the development of students' thinking through the means of a particular school subject.

Keywords: teacher thinking, pedagogical thinking, practical thinking, pedagogical decision-making, teaching activity, pedagogical task, teachers' professional knowledge, pedagogical content knowledge, teacher education, cultural-historical psychology

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Развитие профессиональных знаний педагога

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Резюме

Контекст. Данная статья является второй из трехчастного цикла автора, посвященного анализу мышления педагогов в различных научных парадигмах. **Цель.** Если в первой части цикла, опубликованной в журнале «Культурно-историческая психология» (№ 1, 2026), были рассмотрены процессно-результативные модели педагогической деятельности и исследования принятия педагогических решений, то в настоящей статье предметом анализа выступает переход от изучения педагогических решений к исследованию структуры профессиональных знаний педагога.

Результаты. Центральное внимание уделяется концепции педагогического предметного знания Л. Шульмана, описывающей специфический для педагогической профессии тип знания, связанный с преобразованием учебного содержания в формы, доступные пониманию учащихся. Рассматривается развитие этой исследовательской линии в интегративной, трансформационной и консенсусной моделях профессионального знания учителя. Показано, что концепция педагогического предметного знания позволила существенно уточнить специфику педагогической профессии и описать особый характер знания, необходимого для преподавания конкретного учебного предмета. Вместе с тем при смещении исследовательского фокуса с педагогического действия на профессиональное знание оказалась частично утрачена проблема связи этих знаний с реальной педагогической деятельностью. **Заключение.** Обосновывается необходимость дополнения концепции педагогического предметного знания понятием психолого-педагогического предметного знания, позволяющим описывать не только преподавание учебного содержания, но и развитие мышления учащихся средствами конкретного учебного предмета.

Ключевые слова: мышление педагога, педагогическое мышление, практическое мышление, принятие педагогических решений, педагогическая деятельность, педагогическая задача, профессиональные знания педагога, педагогические предметные знания, педагогическое образование, культурно-историческая психология

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From decision-making to the theory of teachers' professional knowledge

One of the key determinants of success in a teacher's professional perfor-

mance is their professional knowledge. Although this area of research has seemingly been explored extensively and for quite some time, the professional community has yet to reach a consensus on what

precisely constitutes teachers' professional knowledge. The spectrum of possible positions extends from a complete identification of professional knowledge with the subject matter knowledge taught by the teacher, to its understanding primarily as strictly pedagogical knowledge, including a full and detailed excursus into the field of the history of pedagogy. Also incomplete is the discourse on the very nature of teachers' professional knowledge: whether such knowledge is genuinely scientific in the strict sense of the word (that is, obtained through the scientific method, reliable, and replicable), or whether a teacher's professional knowledge should be understood as the results of pedagogical intuition, "hands-on", weakly formalized knowledge of teachers about specific techniques, methods, and ways of teaching and solving various problems that arise in the process (tacit knowledge). To a certain extent, the resolution of this question determines the definition of teaching as an occupation or a profession. According to the majority of researchers (Hargreaves, 2001), it is precisely the presence of a substantial body of specialized scientific knowledge, unique to a particular type of activity, that allows such activity to be considered a profession.

This section attempts to examine the described complex of issues from the perspective initially formulated in the works of L. Shulman, who first defined pedagogical content knowledge (PCK) as a distinct type of professional knowledge unique to the teaching profession, and to trace the subsequent evolution of this concept in the works of researchers advancing this line of research (Ball, Thames, Phelps, 2005); it also highlights

certain limitations of this approach and, in the concluding part of the article, examines teachers' professional knowledge and the process of its formation from the standpoint of the concept of practical thinking, as well as the cultural-historical and activity approaches.

In L. Shulman's model, the foundational types of teachers' professional knowledge comprise four categories found in many other traditional and alternative approaches: content knowledge, general pedagogical knowledge, psychological knowledge (knowledge of learners and learning theories), and curricular knowledge.

The final category of knowledge — curricular knowledge — is, according to L. Shulman, a crucial component of a teacher's specialized professional knowledge (Shulman, 1986). It encompasses knowledge of the curriculum for the subject being taught, the sequence of topics covered, and instructional materials (texts, computer programs, videos, experiments, dialogues, and laboratory or project work) — in other words, the educational and methodological toolkit a teacher works with. This knowledge also includes familiarity with the curricula of other subjects that students are studying concurrently, as well as knowledge of the curriculum for the given subject in preceding and subsequent grades. In the Russian tradition, this component of professional knowledge is most closely aligned with subject-specific teaching methodology.

However, the fundamentally new elements of L. Shulman's model are not so much the types of knowledge listed above, but rather two new elements, which we will discuss in more detail later.

First, it is “pedagogical content knowledge” (hereinafter referred to as PCK), that is, the knowledge of the subject matter necessary for teaching it. The term was first introduced into scholarly discourse by L. Shulman in his address at the American Educational Research Association conference in 1986 (Shulman, 1986). According to L. Shulman, unlike pure content knowledge (e.g., of mathematics) or general pedagogical knowledge (outside the context of a specific subject), PCK is a key component of teachers’ professional knowledge. It is specific to this type of activity, serving essentially as the very means of this activity, thereby making the teacher, to a certain extent, a professional and an expert, and distinguishing them from representatives of other professional groups.

Shulman included in PCK (Shulman, 1986):

- various forms of teacher representation of the subject’s core concepts, comprising a broad repertoire of illustrations, examples, analogies, and models designed to explain the subject matter to students;
- various types of students’ conceptions of the subject being studied, including incorrect ones (preconceptions and misconceptions), along with the primary effective strategies for overcoming them and transforming them into more appropriate scientific conceptions and concepts;
- common student errors (as a specific instance of incorrect initial conceptions), types of learning difficulties encountered when studying the subject, and means of individualizing instructional practice aimed at addressing them.

Secondly, according to L. Shulman, another crucial component of teachers’ professional knowledge consists of the generalizations formed directly in the course of independent teaching practice, which he figuratively termed the “wisdom of practice”.

Analyzing the nature of teachers’ professional knowledge, L. Shulman (1987) observes that, unlike in many other professions, teaching lacks a history of practice. In architecture, engineering, medicine, law, music, and even chess, a history of best practices and achievements is preserved and remains accessible to both contemporaries and subsequent generations of professionals, whereas teaching lacks such a legacy. Yet, without such a system of notation and a “memory of the profession”, it is difficult to organize its codification or ensure the analysis and advancement of professional practice. Effective teachers typically possess far more knowledge, which L. Shulman termed the “wisdom of practice”, than they are able to articulate. The objectification and signification of such knowledge are absolutely essential for the development of professional knowledge regarding pedagogical activity. Studying this practical knowledge (the thinking and actions of experienced teachers) and codifying it in the form of cases will make it accessible to other teachers only if they can understand what their more experienced colleagues did and why (Shulman, 1987).

According to Shulman, the essence of pedagogical activity, which distinguishes it from any other, is the transformation of a teacher’s knowledge of the subject matter they teach into a form comprehensible to students. This, in L. Shul-

man's figurative expression, involves "wrapping" this subject knowledge in a pedagogical "amalgam".

To transform one's own subject matter knowledge and understanding into knowledge understood by students is, from Shulman's perspective, the main pedagogical task of the teacher. Its resolution presupposes the transformation of subject matter knowledge (common to the teacher and a number of other professional groups) into a maximally varied set of representations and strategies for their transmission, taking into account the diverse individual characteristics of students. A teacher who possesses PCK (pedagogical content knowledge) is capable of generating the most diverse descriptions and representations of the academic content being studied and of implementing different trajectories for "bringing" them to students, in order to find a special "key" and "get through", to explain the transmitted academic content to each student in a language that is understandable to them and corresponds to their individual characteristics. Thus, it is precisely the individualization of the teacher's professional actions that proves to be one of the main directions of their professional development, lying at the intersection of subject matter and pedagogical knowledge, which ultimately leads to the formation of their pedagogical content knowledge (PCK).

Thus, in L. Shulman's conceptual framework, the role and structure of teachers' professional knowledge are inseparably linked to the goals and structure of pedagogical activity itself.

A teacher's professional activity and professional thinking (teacher reasoning and action), according to L. Shulman, al-

ways begin with working with the text of academic content and include the following main stages and actions (Shulman, 1987):

Comprehension: of the goals, the structure of the subject matter, and the ideas within and beyond the academic discipline.

Transformation:

- Preparation: critical analysis and interpretation of educational texts, their structuring and segmentation, preparation and development of a set of selected educational materials, clarification of objectives.

- Representation: the use of a broad repertoire of various representations of educational content, including examples, analogies, metaphors, and various types of explanations.

- Selection: from a broad range of methodological repertoire of specific forms and types of organization of students' educational work.

- Adaptation and individualization taking into account student characteristics: consideration of students' conceptions of the content being studied (including misconceptions), learning difficulties, as well as contextual characteristics of students (language, culture, motivation, gender, age, interests, social status, self-esteem, attention).

Instruction including: management, presentations, interactions, group work, maintenance of discipline, inquiry, and other forms of observable pedagogical actions.

Evaluation: checking students' understanding of the educational material directly in the course of teaching, interim assessment of understanding at the end of a lesson or didactic unit, evaluation of

one's own teaching and its modification in light of the experience gained.

Reflection: critical analysis of one's own professional actions and the results of the class's activities, reconstruction and restructuring of one's actions.

New comprehensions: of learning objectives, educational material, students, teaching, and oneself, consolidating new understandings into a new integrated learning experience.

In our view, the key pedagogical actions of the teacher as a professional "explainer of educational content" as described by L. Shulman, are:

Transformation of the material of the original scientific content or standard educational material from the textbook into a form that, from the teacher's perspective, is understandable to the majority of students.

Assessment of the sufficiency and adequacy of students' understanding of the educational material.

Differentiation of ways of explaining the material to those students who experience difficulties in understanding it during the previous general mode of explanation, that is, individualization of pedagogical action.

Overall, the model of a teacher's professional activity proposed by L. Shulman, despite its emphasized student-centeredness, clearly tends toward the predominance of the teacher's explanation of educational content and the organization of its understanding by students.

Further development of the PCK approach

The contribution of PCK and other components of teachers' professional knowledge to the effectiveness of a

teacher's activity has repeatedly become the subject of analysis by researchers. For example, studies (Hashweh, 1985; Hashweh, 1987) compared the professional activity of beginning teachers who, along with subject matter knowledge, had substantial pedagogical training, with the analogous activity of beginning teachers who had only good subject matter training. Teachers without pedagogical education experienced significant difficulties in transforming scientific content into a form accessible to students, or in transforming the standard mode of presentation (from the textbook) in light of the real situation in the classroom (including students' initial conceptions and the need to take them into account in the learning process).

Even more interesting results were obtained when comparing the work of two groups of experienced biology and physics teachers. Despite being effective in teaching their own subject and possessing knowledge of the content of a related discipline, they experienced significant difficulties in conducting "other" lessons, not knowing the difficult points that cause problems for students, their initial conceptions, and common errors. The results of both studies show that subject matter knowledge alone, as well as general pedagogical knowledge (in the case of experienced teachers of another subject), proves insufficient for effective teaching. Specialized knowledge of teaching a particular subject, of the specific features of students' understanding within it, and of the specific features of mastering that particular subject matter knowledge is required, which confirms L. Shulman's thesis on the importance of PCK.

In the work of M. Cochran-Smith and her colleagues (Cochran-Smith, 1991), L. Shulman's conceptions of the structure of teachers' professional knowledge were substantially refined with respect to their structure and dynamics. According to the authors of this work, the initial teachers' professional knowledge (especially a beginning teacher) can be schematically represented as four types of knowledge: subject matter knowledge, pedagogical knowledge, knowledge of students (their prior knowledge, motivation), and knowledge of the educational context.

The intersection of these independent types of knowledge (Shulman, 1986; Shulman, 1987) or their synthesis (Cochran-Smith, 1991) constitutes the pedagogical content knowledge (PCK) of a beginning teacher. However, as the teacher's experience increases, their previously independent components of professional knowledge become so closely interconnected that they effectively form a unified whole, which can be called teachers' professional knowledge.

A fundamentally important difference between M. Cochran-Smith's position and L. Shulman's position is that whereas the latter understood PCK as the intersection of different types of teachers' professional knowledge, M. Cochran-Smith believes that initially the components of this knowledge are independent in a beginning teacher (and in this sense, they do not yet have integral teachers' professional knowledge, but only a set of its components), and as experience is acquired, these components begin to interact with one another, forming a unified whole, which itself becomes PCK, that is, teachers' professional knowledge. Such

teachers' professional knowledge, integrated from its components, becomes the basis for professional expertise, distinct from the previously independent components thereof.

Thus, PCK is not one of the types of professional knowledge, but an integrated teachers' professional knowledge, which is the result of their experience and reflection.

PCK (in M. Cochran-Smith's words) is not a "salad" of four previously existing and still independent components of teachers' professional knowledge, but rather a "mousse", forming a new quality.

Incidentally, this may apparently be related to the difficulty of working with an expert teacher or involving them as a mentor. The transmission of their teachers' professional knowledge in the form of re-decomposed original components is difficult or impossible, since they have long since "fused together" into a unified whole.

A similar position is also described in the work of J. Gess-Newsome (Gess-Newsome, 1999), who introduces a distinction between two possible models of PCK: integrative and transformative. From her perspective, the definition of PCK as the result of the intersection of subject matter, pedagogical, and contextual knowledge corresponds to L. Shulman's original view. In this approach, the initial components of PCK retain their original form, integrating into a unified whole based on the demands of a particular professional task. In contrast to this view, within the transformative model of PCK, the solution of a professional task leads not merely to a combination, but to a transformation. PCK is not simply the result of adding parts together, but rather

their synthesis, with the emergence of a new entity distinct from its original components. If we use the analogy cited in the work of C. Fernandez (Fernandez, 2014), the integrative model of PCK more closely resembles the formation of a solution from two substances, which in principle remain separable and recoverable to their original form. At the same time, the formation of PCK from the perspective of the transformative model resembles the initiation of a chemical reaction between two starting components, in which a new substance is formed and the components completely disappear. The distinction between these models is shown in Fig. 1.

Another line of research that continued the study of the structure of teachers' professional knowledge and the place of PCK within this structure is associated with the work of D. Ball and her colleagues. According to D. Ball, alongside PCK, there exists specialized content knowledge (SCK), for example, knowledge of mathematics necessary for the professional tasks of teaching math-

ematics, which is distinct from the knowledge of mathematics required for other professions, known as common content knowledge (CCK). This is not knowledge about mathematics and students, but knowledge of mathematics itself, yet in a form that is not needed in other professions, but is needed specifically in pedagogy. For example, a mathematics teacher needs knowledge of how a number can be decomposed in the most diverse ways, whereas for other professions decomposition-composition does not carry the same significance, or the connection of a concept with illustrations (concept — example). D. Ball believes that teaching special “pedagogical mathematics”, that is, mathematics needed for the tasks of teaching (alongside universal mathematics, common to different professions), is a necessary part of the professional training of a future mathematics teacher.

The task of curriculum developers, according to D. Ball, is to conduct such an analysis of the educational content of the mathematics course is neces-

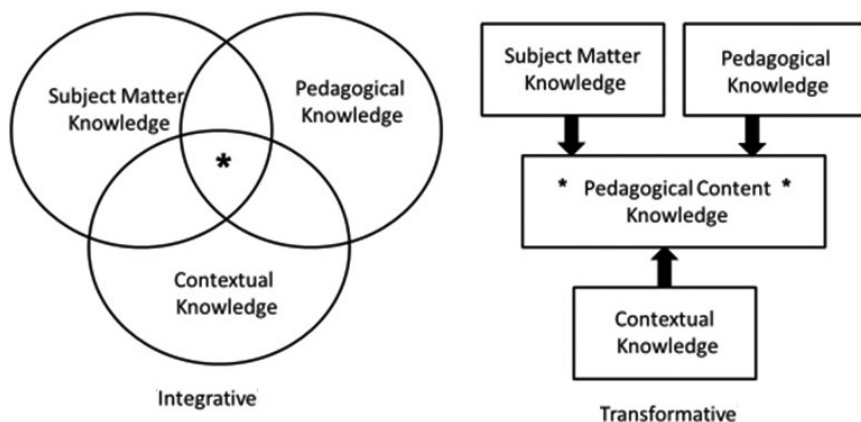


Fig. 1. Integrative and transformative models of PCK according to Gess-Newsome (Fernandez, 2014)

sary, based on the professional tasks of its teaching, which would allow for the identification of this specific knowledge of specialized mathematics and its incorporation into the traditional mathematics course for future teachers. In essence, the example described by D. Ball reveals an activity-based approach to the design of teacher education programs. The tasks of a teacher's professional activity impose special requirements on universal knowledge, which is reflected in the study, alongside universal mathematics, of what might be called "pedagogical" mathematics, necessary for the teacher's professional activity, for its teaching. Consequently, by the presence of such sections of specialized (professionally determined, in this case pedagogically determined) mathematics, one can understand to what extent a given teacher education program is activity-based or traditional.

Further research based on the study of mathematical knowledge — the Mathematics Knowledge for Teaching (MKT) project (Ball, Thames, Phelps, 2005) — allowed D. Ball and her colleagues to identify four components of teachers' professional knowledge:

1. Common knowledge (CK) of the subject matter (e.g., mathematics) possessed by any adult with a completed general education.

2. Specialized content knowledge (SCK) of the subject matter — subject matter knowledge that is not required in other professions, but is needed only by teachers (e.g., knowledge of various ways of representing scientific concepts, ways of explaining the same educational content, or maximally varied ways of solving educational tasks).

3. Knowledge of subject matter and students (essentially, psychological-pedagogical knowledge of the subject): typical student errors when studying a topic or concept, students' initial conceptions (including incorrect ones, misconceptions) that determine their thinking in the subject being studied, ways of motivating students with particular subject content and the organization of its mastery.

4. Knowledge of subject matter and its teaching — curricular knowledge in its most traditional form: the sequence of studying topics, the difficulty of the content being studied, ways of responding to student questions (necessary for lesson planning).

Summarizing all of the above, it can be stated that the various types of a teacher's knowledge are forms of knowledge, but not means of activity, whereas pedagogical content knowledge (PCK), or pedagogical professional content knowledge (PPCK), is knowledge for activity — that is, it is not so much one of the co-existing types of knowledge, but rather knowledge transformed into a means of the teacher's activity.

Works that, following L. Shulman, further developed the PCK approach have shifted the emphasis in research from the process of teacher decision-making to the study of what professional knowledge a teacher needs to possess for this purpose.

A significant step in the development of scholarly conceptions of the structure of teachers' professional knowledge is associated with the work of P. Grossman and her colleagues (Grossman, 1990). Developing L. Shulman's conceptions of pedagogical content knowledge (PCK), Grossman introduced substantial re-

finements to the understanding of what constitutes the content and structure of teachers' professional knowledge necessary for a teacher's successful activity. The main differences from Shulman's original model in Grossman's work are that for Shulman, PCK is a unique type of knowledge specific to a teacher's activity, but one that exists alongside other types of knowledge. From Grossman's perspective, the structure of teachers' professional knowledge is hierarchized. PCK is the central type of teachers' professional knowledge, which interacts with all its other components. The second important feature is that the very structure of PCK, which, according to Grossman, includes three main components (knowledge of the specific features of students' understanding of educational content, curricular knowledge, and knowledge of various teaching strategies), proves to be significantly dependent on the goals

of instruction and teachers' conceptions of these goals. Finally, the model developed by Grossman presents not only components of formal academic knowledge, but also elements of the teacher's practical knowledge and thinking, including their beliefs and subjective conceptions of the goals of instruction. A schematic representation of Grossman's model is shown in Fig. 2.

The model developed by P. Grossman, which extended the original conceptions of L. Shulman and his colleagues, gave rise to a number of new studies and attempts to model the structure of teachers' professional knowledge. The results of these numerous studies have made it possible to refine certain aspects of P. Grossman's model, adding individual elements to it and placing somewhat different emphases depending on the particular focus of specific researchers. For example, the model of Carlsen

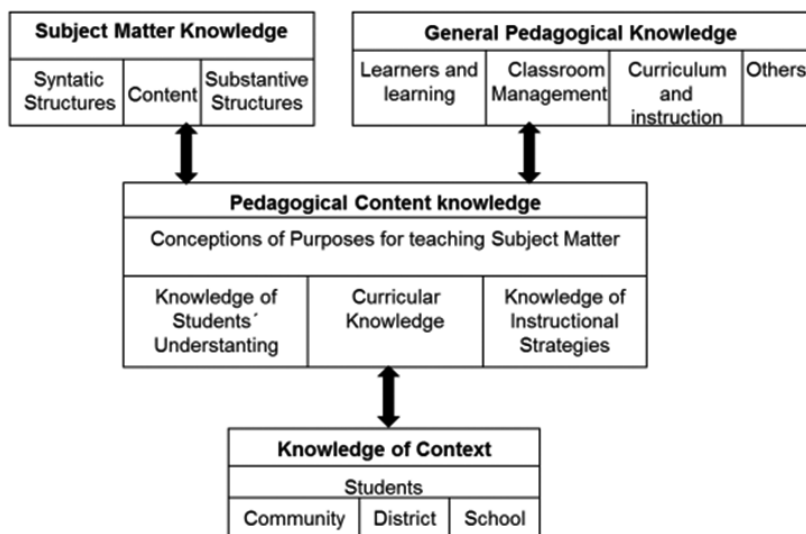


Fig. 2. Grossman's model of teachers' professional knowledge (Fernandez, 2014)

(Carlsen, 1999) added the factor of educational context and demonstrated its interrelation with various elements of the structure of teachers' professional knowledge. In the model of S. Magnusson, J. Krajcik, and H. Borko (Magnusson, Krajcik, Borko, 1999), who studied teachers' knowledge in the context of science disciplines, the factor of teachers' conceptions of instructional goals was replaced by the more general element "Orientation toward teaching science content"; in addition, "Knowledge of ways of assessing scientific literacy" (Borko, 2004) was added as a separate element of the model. In the model developed by S. Park and J.S. Oliver (Park, Oliver, 2008), referred to as the "hexagonal model of pedagogical knowledge", the role of affective components of a teacher's thinking and beliefs, as well as reflective processes influencing the formation and development of teachers' professional knowledge, was emphasized, and a separate element of evalua-

tion (self-evaluation) of the effectiveness of the teacher's activity was added.

An interesting step forward in the development of conceptions of the structure of teachers' professional knowledge was the model developed by S. Rollnick and colleagues (Rollnick et al., 2008), within which PCK is viewed as a pedagogical amalgam not only of subject matter knowledge (as in L. Shulman's original conceptions), but also of knowledge about context, general pedagogical knowledge, and knowledge about students (psychological knowledge). The authors of the model distinguish, within the proposed structure, between knowledge itself and the results of its application and use, which they call the products of education and to which they attribute various representations, teaching strategies, and methodological techniques. A schematic representation of S. Rollnick's model is shown in Fig. 3.

An important step in the further study of the processes of interaction between

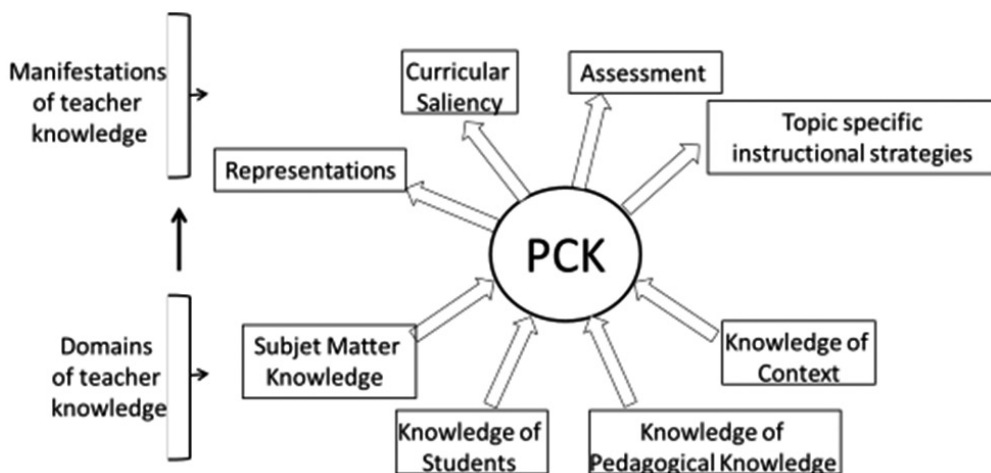


Fig. 3. Model of the structure of professional knowledge (Rollnick et al., 2008, p. 1381)

formal academic knowledge and practical knowledge was the work of G. Morine-Dershimer and T. Kent (Morine-Dershimer, Kent, 1999). These researchers succeeded in demonstrating, using the example of general pedagogical knowledge, how the processes of reflection on practical experience and contextualization of academic theoretical knowledge form a new form of context-specific pedagogical knowledge, which serves as the basis for a teacher's decisions and actions concerning classroom management, organization of interaction, and student discourse. From the perspective of these authors, under the influence of reflective processes, the teacher's personal practical knowledge and the associated beliefs and professional experience develop and are generalized.

At the same time, theoretical academic knowledge is specified and contextualized. The model they proposed is shown in Fig. 4.

The results of research conducted from the late 1980s to the early 2010s, and the various models of the structure of teachers' professional knowledge developed on their basis, were extensively discussed at the symposium (the PCK Summit), which 30 leading researchers studying pedagogical content knowledge (PCK) and the structure of teachers' professional knowledge as a whole participated in 2012. As a result of the symposium's work, the participants were able to jointly formulate a generalized model of this structure, which came to be known as the "consensus model of the structure of pedagogical knowledge" (Fig. 5).

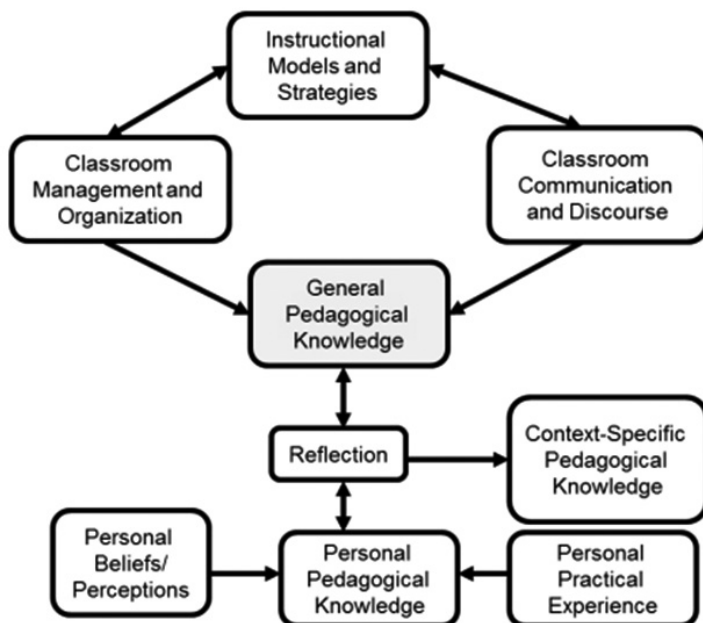


Fig. 4. Model of the formation of context-specific pedagogical knowledge (Morine-Dershimer, Kent, 1999)

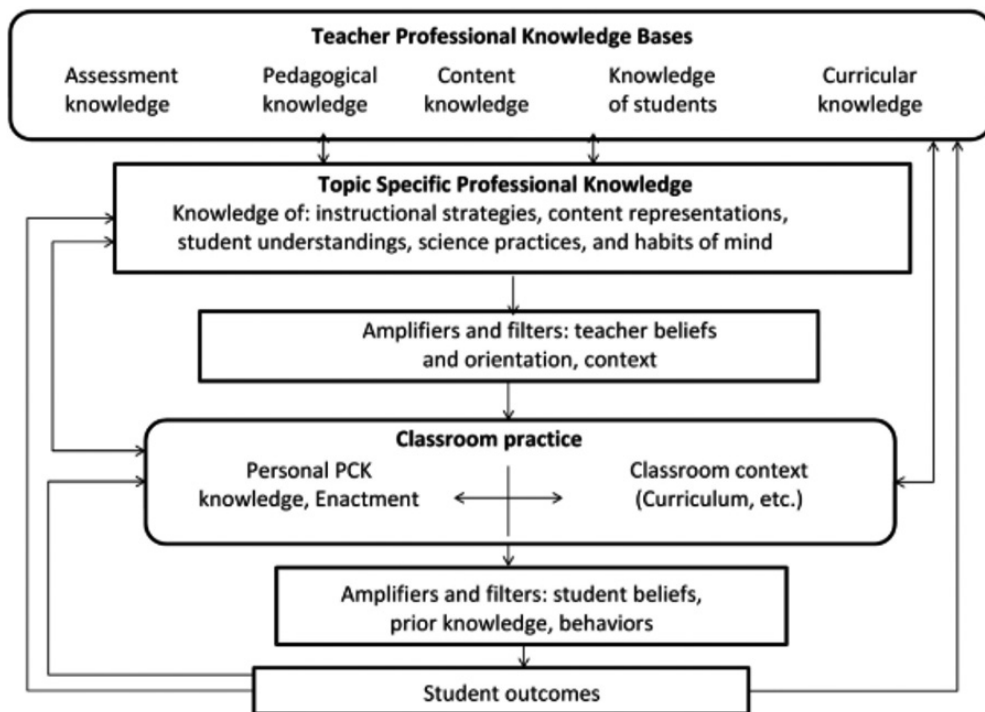


Fig. 5. Consensus model of the structure of teachers' professional knowledge (Fernandez, 2014)

According to this model, five main types of knowledge are identified: content knowledge, general pedagogical knowledge, assessment knowledge, curricular knowledge, and psychological knowledge. Collectively, these types of knowledge form the knowledge base for teachers' professional activity. This knowledge does not directly influence the teacher's pedagogical actions, but it does influence (and, conversely, is influenced by) knowledge specific to the teaching of a particular topic within a particular subject matter. Such content-specific knowledge includes instructional strategies, representations of educational content, the specific features of students' understanding of educational

material, scientific practices, and ways of thinking associated with learning within that particular subject content. In effect, this element and its content prove to be maximally close to the original definition of pedagogical content knowledge given in the works of L. Shulman. However, according to the authors of the consensus model, such knowledge does not exist in general, but is specific to particular subject content. Such content-specific knowledge also does not directly serve as the basis for pedagogical actions, but is subject to the influence of a system of filters and amplifiers, which include the affective-value characteristics of the teacher and the results of their past experience. Some of these amplify certain grounds

for constructing actions, while others, on the contrary, weaken them. Collectively, actions constructed on such grounds are evaluated in terms of their effectiveness based on the results of students' mastery of the educational content. In effect, the authors of the model postulate two different types of PCK: theoretical and personal. By theoretical they refer to the content of content-specific teachers' professional knowledge, which, in our view, would more accurately be termed objectified or collective, since its bearers may include not only individual teachers but also the professional community. At the same time, personal PCK is individualized, as it includes the beliefs, values, and past experience of a particular teacher. Both types of PCK determine the uniqueness of the teacher's professional practice and the content of their pedagogical activity. On the other hand, this practice and, in particular, the learning activities organized by the teacher exert a reciprocal influence on both types of PCK and on the content of the content-specific knowledge underlying them. Such a reciprocal influence of practice on the knowledge underlying the construction of pedagogical activity presupposes that the teacher is capable of acting as a subject of reflection, able to make their mode of action an object of analysis and examination from the perspective of the success of student learning, and to carry out several cycles of adjustment of their actions and the conceptions and knowledge underlying them in the event that educational goals are not achieved. In other words, the described model fully corresponds to the structure of pedagogical activity described by L. Shulman, which includes the stage of reflective analysis as a nec-

essary condition for the development of the teacher's pedagogical activity. Fundamentally new elements of the described model include not only an attempt to endow it with an activity-based character and to account for the complex relationships between knowledge and action, but also, in essence, the acknowledgment of a double mediation of the basic components of knowledge by content-specific knowledge and the mediation of the latter by the teacher's beliefs and past experience. This makes it possible to integrate important affective components into what was previously an exclusively cognitive structure, thereby imparting to it a cognitive-affective character (Shulman, 1986; Shulman, 1987).

Conclusion

The shift in priorities in subsequent research and the transition from studying the teacher's decision-making process (the primary research question for A. Bishop) to studying teachers' professional knowledge (under the influence of L. Shulman's ideas on PCK), as well as the shift of emphasis from studying the teacher's activity to studying the process of teacher preparation, led to the loss of one of the most important points in A. Bishop's research program. Whereas A. Bishop understood pedagogical decision-making as a mechanism linking the teacher's thinking (based on their schemas) and the teacher's action, the shift to studying teachers' professional knowledge exclusively (as a development of the concept of schemas) left the very connection of this knowledge to action outside the scope of research. But knowing something does not mean being equivalent to acting on it. To know and to

act are not the same thing. A. Bishop's original premise of studying decision-making processes (carried out on the basis of certain schemas) as the key to understanding the teacher's actions proved to be largely lost in the transition to the study of teacher knowledge, and the study of teachers' professional knowledge became closed in on itself and was no longer considered in the context of analysis (Bishop, 1976).

Limitations of the PCK approach.

The teacher whose professional actions L. Shulman enumerates and describes is, above all, a "Universal Explainer", who, by virtue of a good knowledge of the subject, of students, and a broad set of representations of concepts, methods of explaining them, an understanding of the causes of typical errors, and diverse educational materials, can explain the content of that subject to virtually any student (Shulman, 1986; Shulman, 1987).

Although understanding students' conceptions and working with them is an important part of such a "Teacher-Explainer's" work, developing the students' thinking and personality is not their primary goal. This is primarily a good, traditional, non-authoritarian teacher whose students may even experience some cognitive and personal development during lessons alongside acquiring solid subject knowledge. However, for this teacher, fostering students' thinking and personality is not a core professional objective on par with achieving subject-specific learning outcomes. This is a teacher who believes that mastering their subject matter will be sufficient for students' success after leaving school. In our view, this is a teacher of the 1990s,

who has not yet grasped the rapid pace at which new knowledge emerges and old knowledge becomes obsolete in the 21st century, nor the existence of alternative channels for acquiring knowledge outside of school.

The model of such a teacher's professional actions can be substantially expanded in light of the emergence of new educational goals (the development of thinking — meta-subject educational outcomes — and personality). Alongside PCK, we believe that PPCK (psycho-pedagogical or psychological content knowledge) should be introduced, which involves understanding how students' psychological development can be fostered through the content of a specific subject. Despite the close interconnection between PCK (Shulman, 1987) and our proposed concept of psycho-pedagogical content knowledge, distinguishing between them is just as expedient as distinguishing between subject-specific and meta-subject educational outcomes. To some extent, PPCK serves as a condition for the formation of PCK, while the latter, in turn, serves as a condition or context for the formation of PPCK.

Consequently, the operational structure of the professional actions of a teacher who fosters not only subject-specific but also meta-subject learning outcomes in students proves to be more complex than in L. Shulman's model, as its implementation involves not only PCK but also PPCK, the structure and composition of which must be described.

In other words, if pedagogical content knowledge (PCK) enables the adaptation of normative or curriculum-specified subject matter knowledge to specific students (taking into account their initial

conceptions), then psycho-pedagogical knowledge of students enables building a bridge from normative requirements for student development (meta-subject and, to some extent, personal educational outcomes, as specified, for example, by the Federal State Educational Standards [FSES]) to their actual level of development within the context of a specific subject. In fact, students' conceptions, along with their ways of interacting with the learning content, encompass the underlying modes of thinking and action; in this sense, they are crucial for the formation of both PCK and PPCK. It is important, in this regard, that the teacher (essentially, a teacher practicing developmental education) keeps both dimensions of this development in focus during the lesson.

To the same extent that, according to L. Shulman, a teacher's subject matter knowledge exists not in the abstract, but specifically for teaching it to stu-

dents within a particular subject (PCK), a teacher focused on developmental goals must equally possess knowledge about students and the characteristics of their thinking not in the abstract, but specifically in relation to how these cognitive features manifest within a particular subject. However, if for L. Shulman this is merely a context for mastering the subject content, then for a teacher focused on developing students' thinking within a specific subject (manifested through their conceptions, modes of action, and errors), these cognitive characteristics are not just a context for mastering subject knowledge, but rather an equally independent focus of attention as the knowledge being mastered itself. Understanding students' thinking within a specific subject is essential for their development and their progress toward achieving the required meta-subject educational outcomes.

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Measuring the project-based learning practices of Russian university teachers

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Abstract

Context and relevance. Traditionally, the operationalization of project-based activity among university teachers has been confined to either an inventory of didactic techniques or a delineation of role functions. Yet, should project-based activity be regarded as a distinct construct — namely, a pedagogical competency — it becomes necessary to provide empirical validation of its structure and to demonstrate that each of the selected indicators makes a measurable contribution to the overarching characteristic. **Objective.** To examine the possibility of regarding the aggregate of project-based practices as a unified construct featuring indicators that are differentiated according to their level of intensity. **Hypothesis.** Project-based practices can be effectively assessed by means of a vignette-type (scenario-based) instrument. **Methods and materials.** The developed questionnaire was piloted on a sample of 259 teachers from Russian universities. **Results.** The created instrument demonstrated the theoretically expected one-dimensionality and high reliability. The results of the analysis showed that the project work of the teachers from the sample rarely goes beyond the university. The least used practices were those of attracting external partners and encouraging student interaction with “customers” or beneficiaries of project results outside the university. The most typical project practice was the product orientation of projects. Teachers with little experience (up to 4 years) use significantly less pronounced forms of project work, but these differences concern only more traditional pedagogical practices: organizing control, presenting project results, organizing reflection on the work done. **Conclusions.** The findings suggest that project-based practices may be conceptualized as an integrated competency (distinct construct), whose constituent components are mutually related and amenable to reliable measurement through a questionnaire framed as an explicit continuum.

Keywords: project-based learning, questionnaire, scenario scale, higher education

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Измерение практик проектной работы преподавателей российских вузов

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Резюме

Контекст и актуальность. Операционализация проектной деятельности преподавателя вуза традиционно сводится либо к перечню дидактических приемов, либо к описанию ролевых функций. Однако если рассматривать проектную деятельность как самостоятельный конструкт (педагогическую компетенцию), требуется эмпирическое обоснование его структуры и подтверждение того, что все выделенные индикаторы измеримо вносят вклад в общую характеристику. **Цель.** Проверить возможность рассматривать совокупность проектных практик как единый конструкт с индикаторами, дифференцированными по степени интенсивности. **Гипотеза.** Практики проектной работы эффективно измерять инструментом виньеточного (сценарного) типа. **Методы и материалы.** Разработанный опросник был апробирован на выборке из 259 преподавателей российских вузов. **Результаты.** Созданный инструмент показал теоретически ожидаемую одномерность и высокую надежность. Согласно результатам анализа, проектная работа преподавателей из выборки редко выходит за пределы вуза. Наиболее малоиспользуемыми были практики привлечения внешних партнеров и поощрения взаимодействия студентов с «заказчиками» или благополучателями проектных результатов вне вуза. Наиболее типичной проектной практикой стала продуктовая ориентация проектов. Преподаватели с небольшим стажем (до 4 лет) значительно меньше используют выраженные формы проектной работы, но эти различия касаются только более традиционных педагогических практик: организации контроля, представления результатов проекта, организации рефлексии над проделанной работой. **Выводы.** Результаты анализа показывают, что практики проектной работы можно рассматривать как целостную компетенцию (самостоятельный конструкт), отдельные компоненты которой взаимосвязаны и могут быть надежно измерены опросником в формате эксплицитного континуума.

Ключевые слова: проектная деятельность, опросник, сценарная шкала, высшее образование

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Introduction

Student project work, or project-based learning, is “a student-centred form of instruction characterized by students’ au-

tonomy, constructive inquiry, goal-setting, collaboration, communication and reflection within real-world practices” (Kokotsaki, Menzies, Wiggins, 2016). Project-based

learning is regarded as a popular innovative pedagogical approach in higher education. Within this approach, students seek solutions to non-routine problems by posing and refining questions, discussing ideas, making predictions, developing plans, conducting experiments, collecting and analysing data, drawing conclusions, publicly presenting their findings, generating new hypotheses, and creating products (Yakovleva, 2014; Li, Zhang, He, 2015; Guo et al., 2020; Mota et al., 2025).

Early conceptualizations described project-based learning along two dimensions: (1) whether the purpose of the project was based on academic topics or on “real-world” problems in a social and political context; and (2) whether control over project implementation and outcomes was centred on instructors or students (Morgan, 1983). Activities oriented more strongly toward “real-world” problems and giving students greater control were regarded as more intensive forms of project-based learning. Thus, even early conceptualizations assumed that a learning task could vary in its degree of “projectness”: in other words, it could approximate authentic professional tasks to a greater or lesser extent and could be controlled by students to a greater or lesser extent.

The need to operationalize the notion of “real-world” tasks led to an expansion of the list of characteristics associated with project work. The key features of project-based learning are now considered to include a driving question, the creation of a product, inquiry activity, the need to apply soft skills (critical thinking, communication, and collaboration) and technological skills, the central role of feedback, mandatory public presentation of the project, and high student autonomy (Larmer, Mergendoller, Seven, 2010; Guo et al., 2020; Al-Busaidi, Al-Seyabi, 2021; Husin et al., 2025).

The value of project-based learning lies in shifting the emphasis from mastering theoretical knowledge and discrete abilities/skills toward obtaining a practical result through the application of this knowledge and these abilities/skills. Project outcomes should be obtained by addressing meaningful tasks; moreover, the external outcome of a project should be applicable in practice, while the internal outcome, or experience of activity, becomes part of students' own resources and part of their system of values and competencies, integrating knowledge and skills (Khalilov, 2012).

The effectiveness of project-based learning in the educational process has been demonstrated across different levels of education and in different countries (Kokotsaki, Menzies, Wiggins, 2016; Granado-Alcón et al., 2020). According to the Federal State Educational Standard,¹ the development and implementation of projects is a universal competency that should be developed in undergraduate and master's students during higher education. Project-based learning has numerous advantages for both instructors and students (Chi, 2023). It develops not only students' professional competencies but also thinking skills (Husin et al., 2025), soft skills (Guo et al., 2020; Saputri, Maura, 2024), teamwork skills (Cresp, Garc a-Ramos, Queiruga-Dios, 2022; Afzal, Tumpa, 2025), intrinsic motivation to learn (Granado-Alc n et al., 2020), educational initiative (Distenfeld, Paletskaya, 2024), autonomy (Novalia et al., 2025), engagement and satisfaction (Naseer et al., 2025), reflectivity (Kudryavtseva, 2025), self-regulation (Zarouk et al., 2020; Wu, 2024), civic-mindedness (Pevnaya, Boronina, Pochatkova, 2024), social responsibility, readiness for career development (Chistyakov et al., 2023; Domingues et al., 2025; Zaafour, Ait Hammou, Hamdanat, 2025), and adaptability.

The literature describes the process and technologies involved in implementing project-based learning. Shpeizer (2019), for example, discusses the inevitable transformation of instructor and student roles: during a project, students assume greater responsibility for the outcome than in conventional instruction, while instructors become mentors or coordinators. Factors associated with the effectiveness of project-based learning include the use of modern digital technologies, teamwork, instructor assistance and support, a balance between didactic and inquiry-based methods, and the use of formative assessment and feedback (Kokotsaki, Menzies, Wiggins, 2016). In other words, the instructor's role as an organizer and facilitator of project-based teaching practices is recognized as important (Li, Zhang, He, 2015; Sartika, Syafryadin, Azwandi, 2022). At the same time, project-based teaching from the perspective of the instructor as the organizing agent has been studied less extensively. In project-based learning, instructors pursue instructional, educational, and developmental objectives (Akmurzieva, 2020), maintain their level of practical skills, and create opportunities to exchange experience with practitioners or other instructors (Scott, Weimann, van der Merwe, 2011). Evenddy et al. (2023) note instructors' resistance to and lack of readiness for implementing project-based learning. In Russian universities, project work has also caused difficulties for instructors because of insufficient time for project implementation and inflexible curricula that do not allow the project-based approach to be used fully (Talanov, Berezin, 2019).

An analysis of existing instruments for assessing university instructors' attitudes toward project-based learning identified the use of questionnaires with open-ended questions concerning their experience of im-

plementing projects (Lasauskiene, Rauduvaite, 2015). Closed-ended questions in another study were grouped under the themes "learning environment", "opportunities for project-based learning", and "skill development" (Harrou, Hellalet, 2021). In Acarol (2019), a semi-structured interview with open-ended questions about the advantages, disadvantages, and intentions to use project-based learning was used to assess Turkish school teachers' attitudes toward project work (Acarol, 2019). Questionnaires have also been used to assess college instructors' readiness to implement project-based learning (Ealangov, Jamaludin, 2024), with instructors directly evaluating their knowledge, skills, and attitudes toward project-based learning. A similar approach was demonstrated in the study by Yang, Skelcher, and Gao, which used a questionnaire with direct responses to open-ended questions (Yang, Skelcher, Gao, 2021).

The literature review suggests that there is no generally accepted approach to studying project-based teaching practices (Boronina, Olkhovikova, Baliasov, 2024). Developing a questionnaire of university instructors' project-based teaching practices would allow the implementation of project-based learning in Russia to be studied more thoroughly.

The aim of the present study was to examine whether the set of project-based teaching practices can be regarded as a single construct comprising indicators differentiated by their level of intensity, using items in an explicit continuum scale format. The following hypotheses were tested:

Hypothesis 1. The use of project-based teaching practices constitutes a distinct, complex competency within teaching activity. This hypothesis will be supported if statistical analysis of the questionnaire results confirms a unidimensional structure of the data.

Hypothesis 2. Instructors with moderate and extensive teaching experience will use project-based teaching practices more actively than instructors with limited experience, because many practices require both accumulated teaching experience (reflection practices and monitoring of student activity) and established relationships with potential project beneficiaries or clients. This hypothesis will be supported if differences in individual practices between groups with different levels of teaching experience are statistically significant and have a medium or large effect size.

Materials and methods

Development of the assessment instrument

The explicit continuum item format was used as the methodology for questionnaire development (Antipkina, Ivanov, Guzhelya, 2025). Explicit continuum scales consist of sets of vignettes describing characters with low, moderate, and high levels of an indicator of the measured construct. Previous studies have shown that this format helps reduce ceiling effects compared with the Likert questionnaire format, even in high-stakes assessment contexts (Antipkina, Ivanov, Guzhelya, 2025). Respondents can evaluate the intensity of an indicator in themselves in comparison with the characters by selecting a position corresponding to one of the characters or between characters arranged in order of increasing intensity. Methodologically, explicit continuum scales are based on two approaches to measurement:

1) Treating the construct as a continuum along which low, moderate, and high levels of its characteristics can be differentiated (Tay, Jebb, 2023). Historically, continuum-based scales, originally proposed by Thurstone (Thurstone, 1928), did not become widespread, although later studies demonstrated their advantages

over the Likert format (Drasgow, Chernyshenko, Stark, 2010). Research over the past two decades has established continuum specification as a recommended practice in questionnaire development (Tay, Jebb, 2023) and has led to new scale formats, such as the expanded format (Kam, 2020), which demonstrates highly stable dimensionality. Continuum specification refers to an operationalization of construct indicators that makes it possible to describe behavioral characteristics corresponding to different levels of the construct.

2) Describing indicators through vignettes rather than short statements (Ludlow et al., 2020). The vignette format is more resistant to ceiling effects (that is, respondents are less likely to choose the highest scores in self-assessment), is stable in its representation of dimensionality, and allows recognizable, realistic descriptions to be created, although it places greater demands on respondents' reading skills (Ludlow et al., 2014; Ludlow et al., 2020).

Thus, methodologically, we conceptualize project-based teaching practices not as dichotomous discrete variables ("a particular technique is either used or not used"), but as continuous variables in which each selected indicator of the construct "project-based teaching" may be expressed with low, moderate, or high frequency or intensity. Following the literature review, the following eight indicators were selected:

Collaboration with external stakeholders. At one end of this continuum are practices involving projects conducted for, or with the participation of, representatives of commercial and governmental organizations, other university departments, and similar external participants. At the opposite end are projects based solely on instructional tasks generated by the instructor and implemented entirely within the student group.

Student engagement with external clients and/or beneficiaries. At one end of this continuum are authentic communication practices involving active student interaction with project clients or beneficiaries outside the university. The opposite end represents traditional student work within the university and the development of soft skills through interaction with other students enrolled in the course.

Authenticity of project tasks. This indicator contrasts relevant, authentic projects that “can be included in a portfolio” with traditional instructional projects (game-based or simulated).

Structured student reflection. This indicator assesses methodological competence in incorporating reflection practices into the project implementation plan, in contrast to completing project tasks without specially organized reflection exercises, as may occur, for example, during practical placements.

Degree of procedural guidance. At one end of this continuum are projects that require a separate stage of discussion about implementation because they generally have no standard or algorithmic solution. At the opposite end are projects closely controlled by the instructor and focused on applying a specific set of basic skills.

Orientation toward authentic project outputs. A product outcome refers to the integrated presentation of a project in a form that allows its results to be scaled or makes the project available to other users — for example, by presenting the results as a methodological guide or publishing them on open-access resources. At the opposite end of the continuum are projects that are not used after completion and are not made available for use by others.

Project milestones in medium- and long-term projects. One end of this continuum describes a lack of monitoring; the other

describes support for student autonomy while focusing on the metacognitive skills of planning, monitoring, and evaluating students’ own activity.

Dissemination of project outcomes. At one end of this continuum is the traditional presentation of results during a project defense within the student group. At the other end are more intensive practices aimed at developing meta-skills in presenting project outcomes as a news item, a conference presentation, or through other means of communicating project outcomes to an external audience.

3) Developing descriptions of characters with low, moderate, and high levels of each of the eight indicators in instructors’ behavior, based on the methodology of scenario scales (Ludlow et al., 2020). Within each item, the descriptions of all three characters followed a uniform structure; high and low levels were described in affirmative terms rather than by negating the opposite end of the continuum. Within each item, all characters were of the same gender, while male and female character names were distributed equally across items.

4) Conducting cognitive laboratories with five university instructors, two specialists in project-based learning, and three university students. The purpose of the cognitive laboratories was to assess the completeness of construct coverage by the indicators, the clarity of the wording, and the realism of the descriptions. Item wording was revised following the cognitive laboratories.

5) Pilot testing of the scale and psychometric analysis.

An example of an item in the explicit continuum format is presented in Figure 1. The item heading contains the name of the indicator, and the three character descriptions are arranged in ascending order of the characteristics specified in the head-

ing. Respondents may select any of the points beneath the character descriptions or between them; in the latter case, the response indicates a level of the characteristic between the two described stories. Selecting the extreme points indicates that respondents assess the characteristic in themselves as stronger or weaker than in all three stories.

The item instruction was worded as follows: “Please evaluate the extent to which your projects are oriented toward student interaction with the beneficiaries of project work.

Less than Arina
Approximately like Arina
Between Arina and Daria
Approximately like Daria
Between Daria and Tatiana
Approximately like Tatiana
More than Tatiana.”

Responses to each vignette were coded from 0 to 6, from lower to higher levels of the indicator. The instructions for the full questionnaire and the complete text of all questionnaire items are provided in the Appendix.

Sample. The sample comprised 259 instructors from Russian universities who participated in a study conducted by the

Ministry of Science and Higher Education of the Russian Federation jointly with the Association of Volunteer Centers and the National Research University Higher School of Economics in the autumn and winter of 2024. Participation was based on self-selection, because only instructors who used the project-based approach in their teaching were invited to complete the questionnaire.

Data collection procedure. The survey was anonymous, untimed, and administered through Yandex Forms. Each item was presented as an image, with the stories also duplicated as text to facilitate reading when completing the questionnaire on smartphones. Previous studies have shown that presenting items as images or in an interactive format using specially programmed items produces invariant item characteristics (Antipkina, Ivanov, Guzheleva, 2025).

Analysis procedures. The questionnaire was analysed in R. Psychometric analysis was conducted using the Partial Credit Model (Masters, 1982) in the TAM package (Robitzsch, Kiefer, Wilhelm, 2023). Statistical analysis was conducted using descriptive statistics and the Mann–Whitney test.

Students' interaction with external clients or beneficiaries

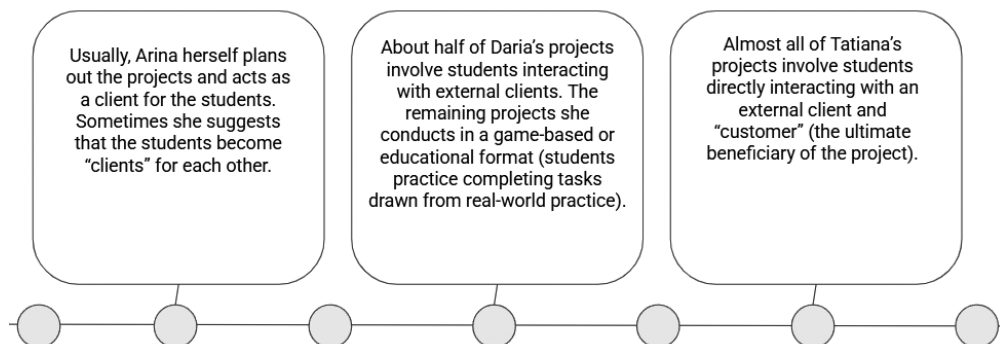


Fig. 1. An example of an item for assessing the project practices of teachers at Russian universities

Results

Psychometric evaluation of the instrument

The questionnaire was analysed in R. Psychometric analysis was conducted using the Partial Credit Model (Masters, 1982) in the TAM package (Robitzsch, Kiefer, Wilhelm, 2023).

Dimensionality analysis indicated the essential unidimensionality of the questionnaire: the eigenvalue of the first residual contrast was 1,6, which is below the conventional criterion of 2,0 (Smith, 2007). This indicates that all measured indicators relate to a common construct, supporting the structural validity of the instrument. Thus, the first hypothesis — that project-based teaching practices can be represented as a unidimensional set of continuum-based indicators — was supported.

Weighted Likelihood Estimation (WLE) reliability was 0,86. WLE reliability is recommended for analysing polytomous items; it also accounts for bias in person parameter estimation and does not require a prior-distribution assumption. The conventional internal consistency coefficient, Cronbach's alpha, was 0,87. McDonald's omega was 0,84. Together, these indices indicate high reliability of the assessment instrument.

All questionnaire items except one showed excellent fit to the model: weighted and unweighted mean-square statistics (MNSQ) and weighted and unweighted standardized statistics (ZSTD) were below the conventional criteria (1,2 for mean-square statistics and 2,0 for standardized statistics). One item concerning collaboration with external stakeholders had an unweighted statistic above 1,2 but below 1,3, which is also considered acceptable (Boone et al., 2014). These fit statistics indicate unexpected responses to this particular item — for example, respondents with

a high overall score selecting low response categories.

The questionnaire scale was well targeted: the mean item difficulty matched the average level of the characteristic among instructors. Thus, the questionnaire demonstrated good psychometric properties, providing evidence of construct validity.

Figure 2 presents the distribution of total scale scores. The minimum score was 0, the maximum was 42, the mean was 22,4, and the median was 23. The distribution of total scores approximated a normal distribution.

The table presents descriptive item characteristics. The most difficult practices for respondents were “Collaboration with external stakeholders”, “Student engagement with external clients or project beneficiaries”, and “Authenticity of project tasks.” The easier items, for which instructors readily selected high levels of the indicators, were “Orientation toward authentic project outputs”, “Project milestones”, and “Dissemination of project outcomes.”

Most inter-item correlations fell within the recommended range of 0,2–0,5 (Stefana et al., 2025), indicating that the items did not duplicate one another. Only the items concerning the use of complex skills and the organization of multiple project milestones were strongly associated ($r = 0,6$), which is theoretically plausible because more complex projects are difficult to implement without regular monitoring.

Statistical analysis

To test Hypothesis 2, the questionnaire included a question about teaching experience with categorical response options. Teaching experience of “less than 1 year” was reported by 108 respondents; “1 to 3 years” by 20; “4 to 10 years” by 31; “11 to 15 years” by 28; and “16 years or more” by 51. Twenty-one respondents (8%) did not

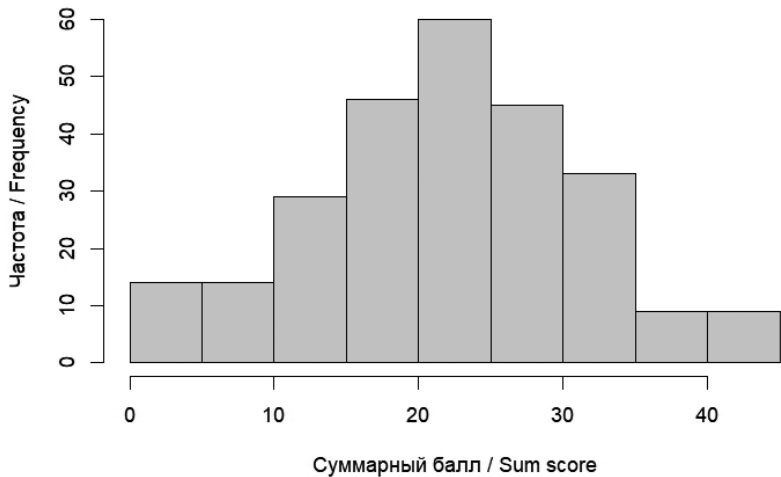


Fig. 2. Distribution of the total score on the questionnaire of project-based teaching practices

Table

Characteristics of the project-based teaching practices questionnaire items

Items	Difficulty (logits)	Mean raw score	St. deviation	Pearson item-rest correlation (adjusted discrimination)
External partners	0,21	2,73	1,78	0,53
Communication with customers	0,24	2,61	1,67	0,62
Real tasks	0,15	2,80	1,64	0,68
Reflexivity	0,00	2,95	1,56	0,64
Algorithmicity of skills	0,07	3,01	1,65	0,65
Product orientation	−0,19	2,67	1,63	0,53
Control	−0,05	3,33	1,92	0,60
Presentation of results	−0,07	3,12	1,65	0,64

answer the question. We combined these categories to obtain groups that were comparable in size but contrasting: instructors with up to 3 years of experience (128 participants) and instructors with 4 years or more (110 participants). A Mann–Whitney test showed a significant difference in to-

tal questionnaire scores between these groups ($p = 0,02$). The effect size was $r = 0,138$ ($Z = 2,227$), corresponding to a small effect.

Figure 3 presents a violin-box plot showing that instructors with moderate and extensive teaching experience had

greater response variance and a higher median total score. Overall, responses among highly experienced instructors were more heterogeneous.

To determine what contributed to the difference between the groups, we analysed differences in responses to each scale item among instructors with different levels of experience. Only three items showed significant differences in favour of more experienced instructors: items concerning structured student reflection, project milestones, and public presentation (Mann–Whitney test, $p < 0,05$).

Discussion

The findings from the questionnaire on instructors' project-based teaching practices partially corroborate previously reported evidence. For example, the items concerning collaboration with external stakeholders and student involvement in direct communication with them were the most difficult,

which is consistent with students' reports that projects are not brought to practical implementation (Vylegzhanina, 2019).

The unidimensionality of the questionnaire supports the first hypothesis. With respect to the second hypothesis, differences associated with teaching experience concerned only the more traditional pedagogical components of project-based teaching: systematically organizing monitoring of project implementation, presenting outcomes, and, less expectedly, the orientation toward authentic project outputs. No differences by teaching experience were found for the more demanding practices that are specifically characteristic of project-based teaching.

Traditional questionnaires often ask respondents to rate a statement on a Likert scale (Pan, Shankararaman, Koh, Gan, 2021), which does not always fully capture the nuances of implementing a specific practice, whereas qualitative methods

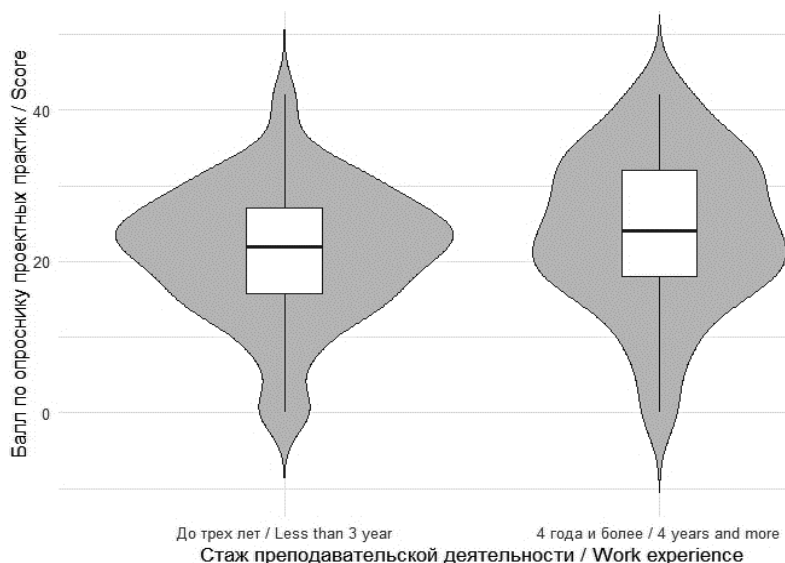


Fig. 3. Differences in project-based teaching practices questionnaire scores between two groups of instructors with different teaching experience

are more resource-intensive (Gülbahar, Tinmaz, 2006). The explicit continuum scale format used in this study allows respondents to assess the intensity of their use of a particular practice more deliberately and enables researchers to conduct a more fine-grained analysis of relationships among different aspects of project work.

Conclusion

The empirical validation of the questionnaire on a substantial sample of Russian university instructors supports treating the construct “university instructors’ project-based teaching practices” as a distinct competency. The unidimensionality of the questionnaire data indicates that a common construct underlies the intensity of the individual practices.

The findings obtained with this questionnaire confirm trends noted in other studies concerning the predominantly internal orientation of project work in universities (Vylegzhanina, 2019), while also identifying areas requiring particular attention. For example, limited collaboration with external stakeholders and weak student interaction with real project clients/beneficiaries

indicate a need to strengthen the orientation of project work toward the real needs of society and the economy. This underscores the importance of further developing mechanisms for stakeholder involvement in the educational process and promoting a practice-oriented approach to teaching.

Future research: The questionnaire could be improved by refining its indicators. This applies particularly to dividing the item “Encouraging student interaction with external clients or project beneficiaries” into one item on interaction with clients and another on interaction with beneficiaries. It is also debatable whether other university departments should be classified as external stakeholders in the item “Collaboration with external stakeholders”, because this depends substantially on the size and structure of the university and on how “other departments” are interpreted.

Limitations. The limitations of the study include the lack of criterion evidence of validity in the form of a correlation of the scale score with external criteria, as well as a relatively small sample obtained without the use of randomization.

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Appendix

Appendix A. The full text of all questionnaire items. DOI: 10.6084/m9.figshare.29939981 <https://figshare.com/account/articles/29939981?file=57279482>

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Antipkina I.V. — development of the research instrument; conducting cognitive laboratories; psychometric analysis; statistical analysis.

Gorbushina A.V. — development of the research instrument, conducting cognitive laboratories, literature analysis.

Manina V.A. — development of the research instrument, conducting cognitive laboratories, literature analysis.

Nikolskiy V.S. — idea of the research, theoretical framework of the questionnaire, organization of data collection.

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

Вклад авторов

Антипкина И.В. — разработка инструмента исследования; психометрический анализ; статистический анализ.

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

Conflict of interest

The authors declare no conflict of interest.

Конфликт интересов

Авторы заявляют об отсутствии конфликта интересов.

Ethics statement

The study did not collect personal data that could identify participants; the study was low stakes (there were no consequences for the participants); and the study did not cover sensitive topics.

Декларация об этике

В исследовании не собирались личные данные, которые могут идентифицировать участников; исследование имело низкие ставки (не несло последствий для участников); исследование не затрагивало чувствительных тем.

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Meta-resource determinants of teachers' personal and professional development as a system of interrelated structural and functional components: reflexive design and constructive coping

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Abstract

Context and relevance. In an era of rapid change across all spheres of social life, growing scholarly attention has been directed to studies exploring the phenomenon of «resourcefulness» and its manifestations in educational settings. The theoretical foundation of this research is the concept of resource-predictive determination of personal and professional development among educational subjects. Particular attention deserves the issue of resourcefulness in the quality training of teaching staff. Understanding that a system of interrelated resource components is a crucial predictor of professional success and productivity in teaching, and relating this understanding to the contemporary sociocultural context, determines the relevance of this research. **Objective.** This study examines the relationships between reflexive projecting and constructive coping, conceptualized as a system of psychological factors underlying the meta-resource determination of future teachers' personal and professional development. **Hypothesis.** Proactivity, as a component of the constructive coping resource complex, enables teachers to anticipate future challenges, account for uncertainty, and make independent decisions — capacities that are further supported by the reflexive projection resource. **Methods and materials.** The study involved 115 students majoring in Teacher Education and Educational Psychology ($M = 20,8$, $SD = 2,03$). A specifically designed assessment battery was used, comprising tests to evaluate the components of reflexive projection and to measure proactive behavior as part of constructive coping. **Results.** Reflexive projection indicators were positively correlated with constructive proactive behavior and showed no correlation with destructive proactivity. Statistical analysis revealed a significant relationship between the dependent variable (proactivity index) and the predictors (reflexive projection indicators). **Conclusions.** At a conscious procedural level, constructive proactivity and reflexive projection serve as interrelated components of resource complexes that underlie meta-resource determination in future teachers' personal and professional development. When intentionally cultivated, these resources may contribute to improved outcomes in teacher education.

Keywords: meta-resource determination, personal and professional development, reflexive projecting, constructive coping, proactive behavior, student teachers

Supplemental data. The authors are unable to make the dataset publicly available due to ongoing data collection as part of a state-funded research project: "Resource-predictive determination of personal and professional development of students and teachers as subjects of continuing education: psychological foundations, technologies, efficiency factors" (FNRE — 2024 — 0017).

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Метаресурсная детерминация личностно-профессионального развития педагогов как система взаимосвязанных структурно-функциональных компонентов: рефлексивное проектирование и конструктивное совладание

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Резюме

Контекст и актуальность. В эпоху интенсивного ускорения всех сфер жизни общества повышенное внимание уделяется научным работам, исследующим феномен «ресурсность» и его аспекты в образовательном пространстве. Особого отношения заслуживает проблема ресурсности в качественной подготовке педагогических кадров. Понимание того, что система взаимосвязанных ресурсных компонентов является важнейшим предиктором профессиональной успешности и продуктивности педагогической деятельности, и соотнесение данного понимания с современной социокультурной ситуацией определяют актуальность исследования. Теоретической основой исследования послужила концепция ресурсно-прогностической детерминации личностно-профессионального развития субъектов образования. **Цель.** Определить особенности взаимосвязей показателей ресурсных комплексов «рефлексивное проектирование» и «конструктивное совладание» как системы психологических факторов метаресурсной детерминации личностного и профессионального развития будущих педагогов. **Гипотеза.** Проактивность как компонент ресурсного комплекса «конструктивное совладание» обуславливает способность педагога предвидеть будущее, учитывать его неопределенность и принимать самостоятельные решения, что обеспечивается компонентами рефлексивно-проектировочного ресурса. **Методы и материалы.**

В исследовании приняли участие 115 студентов направлений подготовки «Педагогическое образование» и «Психолого-педагогическое образование» ($M = 20,8$, $SD = 2,03$). Применялась специально разработанная методическая программа, включающая батарею тестов оценки компонентов рефлексивного проектирования и диагностики проактивного поведения как компонента конструктивного совладания. **Результаты.** Показатели рефлексивно-проектировочного ресурса положительно коррелируют с показателями конструктивного проактивного поведения и не коррелируют с деструктивной проактивностью. Анализ статистических данных показал наличие значимой взаимосвязи между зависимой переменной (индексом проактивности) и предикторами (показателями рефлексивно-проектировочного ресурса). **Выводы.** Конструктивная проактивность и рефлексивное проектирование как система взаимосвязанных компонентов ресурсных комплексов на процессуально осознанном уровне обеспечивают метаресурсную детерминацию личностно-профессионального развития будущих педагогов и при целенаправленном формировании могут создать условия повышения эффективности опережающего педагогического образования.

Ключевые слова: метаресурсная детерминация, личностно-профессиональное развитие, рефлексивное проектирование, конструктивное совладание, проактивное поведение, студенты-педагоги

Дополнительные данные. Авторы не имеют возможности сделать доступным набор данных ввиду продолжающегося в настоящее время сбора данных в рамках научной темы государственного задания «Ресурсно-прогностическая детерминация личностного и профессионального развития учащихся и педагогов как субъектов непрерывного образования: психологические основы, технологии, факторы эффективности» (FNRE — 2024 — 0017).

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Introduction

The relevance of studying human psychological resources and the conditions for their formation and realization is driven by constant, ever-increasing changes occurring both in society as a whole and within the modern education system. The reform of education necessitates updating the content and methods of pedagogical activity and poses new professional and personal challenges for teachers, which require internal potentials (reserves, resources, meta-resources). Understanding the nature and mechanisms of forming a teacher's psychological resources allows not only to

optimize the educational process but also, fundamentally, to create conditions for a new practice of psychological training for future teaching professionals, thereby contributing to the development of highly qualified personnel ready to meet contemporary time-related challenges.

Currently, there are numerous approaches to understanding the phenomenon of “resourcefulness”, which creates difficulties not only in describing its “internal side” but also in defining its place within the conceptual field of science. This diversity of approaches generates both a wealth of interpretations and problems with opera-

tionalization, hindering the comparison of results and the construction of an integral theory. Despite the exponential growth in research volume, the scientific understanding of resourcefulness remains conceptually “blurred” and methodologically complex, requiring systematization.

An analysis of Russian and foreign studies on the resource-based approach across various fields of psychology (Mitina, Mitin, Vostokova, 2024) allowed us to identify a unique context associated with the study of psychological potentials:

— Reflexivity (Karpov, 2023; Prokhorov, Chernov, 2025; Semenov, 2023; Tyler, Boldi, Cherubini, 2022) and its role in self-regulation of personal development (Khanina, Zvezdina, Khachatryan, 2024; Kholodnaya, 2022; Li, 2025);

— Self-project and forecasting of one's own future (Zeer, Stepanova, 2023; Kuzmenkova, 2023; Samsonenko, 2020; Fasoli, Poli, 2024; Stingl, Gerald, 2023);

— Adaptive strategies for overcoming difficulties (Dementy, Malenov, Malenova, 2020; Leontiev, 2025; Odintsova, Lubovskiy, Kuzmina, 2024; Behbahani, Lajoie, 2024; Mammadov, Wang, Lu, 2024) and proactive personality behavior (Mironenko, Sorokin, 2022; Sunko, Grishel, Lykova, 2024; Doğanülkü, Korkmaz, 2023);

— Emotional-value engagement (Pavlova, 2024; Martin et al., 2024; Bakker, Wingerden, 2024) and meaningful involvement in professional activity (Kashapov et al., 2025; Tolochev, 2025; Wang, Hofkens, Fredricks, 2024).

Our critical analysis of major theoretical approaches enabled us to structure the research field, outline methodological gaps, and develop the concept of resource-prognostic determination of teachers' personal and professional development (Mitina, 2024). For the first time, this concept identi-

fies and defines the psychological content of several notions:

— Reserves: accumulated professional competencies, individual style, and refined interaction models that serve as a stabilizing buffer supporting a teacher's professional viability;

— Resources: dynamic processes that act as catalysts, triggering the transformation of the professional system and the formation of its new qualities;

— Meta-resources: actualize and synchronize the work of all components at the highest level of the complex system of psychological resources, reconfiguring the system to achieve qualitatively new, previously unattainable outcomes.

Conceptual substantiation, experimental verification, and technological support for the results of theoretical-empirical research (Mitina, 2024; Mitina, Mitin, Vostokova, 2024) made it possible to present the meta-resource determination of teachers' personal and professional development as a system of interconnected structural-functional components:

— Reflexive projecting enables a teacher to analyze and correlate goals, values, and meanings with the processes and outcomes of their own actions. This lays the foundation for making one's life activity the subject of practical transformation and developmental forecasting (Mitina, Vostokova, 2025);

— Constructive coping is based on integral personality characteristics (orientation, competence, flexibility) and a high level of self-awareness, characterizes the teacher's personal maturity, supports their professional health, and performs a buffer function protecting against negative external influences (Mitina, Shchelina, 2021);

— Engagement-involvement Complex: deep emotional-value engagement of a teacher in their profession is reflected in the

comprehension and modification of their behavior and relationships with students. This internal state, in turn, triggers evoking as a system of actions aimed at actively involving students in learning activities, leading to a growth in their own engagement in the educational process (Mitina, Anisimova, Mitin, 2025).

The psychological content of each resource has been studied in separate investigations, proving the influence of psychological resources on the level of teachers' personal and professional development. It is shown that the main function of resourcefulness is related not to the development of isolated qualities, but to the level of organization of its structural-functional system.

The structuring factor of reflexive projecting is "conscious readiness for transformations". Constructive coping, as a resource, contributes to maintaining professional well-being and serves as a kind of protective barrier, shielding from adverse external influence. Constructive coping strategies include proactive, preventive, and reflexive overcoming of stressful situations (Mitina, Shchelina, 2021). In this context, proactivity acts not so much as a coping mechanism, but as a quality of personality. Both reflexive projecting and proactive behavior are interconnected with the conscious volitional actions of the individual. At the same time, dichotomous interrelations between resource components have not yet been experimentally studied, although they would allow not only to concretely explain the psychological mechanisms of meta-resourcefulness but also to enrich advanced teacher education programs.

The concept of resource-prognostic determination is the most comprehensive theoretical model capable of enriching both global scientific discourse and the informed

selection of diagnostic tools in fundamental and applied research.

Aim of the current study: To determine the specifics of interrelationships among indicators of resource complexes "reflexive projecting" and "constructive coping" (proactive behavior) as a system of psychological mechanisms of meta-resource determination of personal and professional development of future teachers.

Research objectives:

1. To identify the peculiarities of the formation of indicators of reflexive projecting and proactive behavior in students.
2. To analyze the interrelationships of the identified indicators.
3. To compare the levels of formation of reflectively-projective resource indicators and proactive behavior.
4. To determine the main predictors of student proactive behavior.

Materials and methods

Sample

The study analyzed data from 115 students enrolled in "Pedagogical Education" and "Psychological and Pedagogical Education" programs at the Arzamas Branch of Lobachevsky State University of Nizhny Novgorod. The participants' age ranged from 17 to 25 years ($M = 20,8$, $SD = 2,03$).

Procedure

The research was conducted in four stages: at the first stage, diagnostics were performed to assess the formation level of indicators for reflexive projecting and proactive behavior among students; at the second stage, interrelationships between the identified indicators were analyzed; at the third stage, levels of formation for reflectively-projective resource indicators and proactive behavior were compared; at the fourth stage, the main predictors of student proactive behavior were determined.

Statistical data processing was performed using descriptive statistics, correlation analysis, cluster analysis, and multiple regression analysis via IBM SPSS Statistics software (version 23) and Jamovi 2.3.28 with the snowCluster module.

Methods

A specifically developed methodological program for studying the following variables was applied in the research:

— Indicators of reflexive projecting as a resource: A.V. Karpov's Reflexivity Questionnaire; V.V. Stolin and S.R. Pantilev's Self-Attitude Inventory; T. Dembo–S.Ya. Rubinstein's Self-Esteem Assessment; J.B. Rotter's Level of Subjective Control adapted by E.F. Bazhin et al.; Personal Differential (the version

adapted at the V.M. Bekhterev Institute); E.Yu. Mandrikova's Self-Organization of Activity Inventory (SOAI);

— Features of proactive behavior using A.I. Yerzin's comprehensive "Proactive Behavior" methodology.

In accordance with the psychological structural-content model of the reflectively-projective resource, which was previously validated in our works (Mitina, Vostokova, 2025), selected scales from the aforementioned inventories were analyzed. These are the scales that statistically significantly determine its factor structure.

Results

Stage one of the study. The diagnostic results for indicators of reflexive projecting and proactive behavior in students are presented in Table 1.

Table 1
Expressiveness of indicators of reflexive projecting and proactive behavior (N = 115)

Parameters	M (SD)
Reflexive projecting	
The cognitive component	
1. Reflexivity	131,14 (12,24)
2. Self-interest	6,83 (0,98)
3. Self-understanding	3,39 (0,72)
The affective component	
4. Global self-attitude	19,57 (2,46)
5. Self-respect	10,4 (1,28)
6. Autosympathy	9,08 (1,92)
7. Self-acceptance	4,99 (0,77)
8. Self-management	4,72 (0,82)
9. Self-blame	3,84 (0,92)
10. Self-esteem	61,66 (7,4)
11. Level of ambition	75,60 (8,61)
12. Professional self-esteem	53,93 (6,92)
13. Level of professional ambition	73,63 (9,32)
The behavioral component	
Strength	10,17 (3,59)
Activity	10,23 (3,59)
General internality	21,62 (17,3)

Parameters	<i>M (SD)</i>
General self-organization	106,45 (21,92)
Planning	17,83 (4,93)
Purposefulness	28,51 (7,35)
Perseverance	20,66 (5,57)
Fixation	17,19 (4,05)
Self-organization	12,2 (3,03)
Focus on the present	10,05 (2,34)
Proactive behavior	
Proactivity Index	184,53 (27,79)
Mindfulness of actions	26,63 (4,86)
Forecasting of consequences	26,57 (3,66)
Internal locus of control	29,52 (4,36)
Spontaneity	23,64 (4,7)
Autonomy in decision-making	25,68 (5,32)
Metamotivation	28,40 (4,81)
Internal determination of behavior	24,10 (4,13)
Constructive proactivity	23,77 (4,61)
Destructive proactivity	16,60 (3,53)

According to the presented results, medium levels of formation for reflexive projecting components were identified in the majority of students. The communicative component is characterized by developed reflexivity and self-interest at the upper boundary of the average level, alongside pronounced self-understanding. The affective component is characterized by clearly expressed indicators of global self-attitude, self-respect, and self-leadership; less pronounced values of auto-sympathy and self-acceptance; non-expressed self-blame; medium (realistic) levels of formed general self-esteem, professional self-esteem, and levels of professional aspiration; and an optimal level of aspiration. The behavioral component of student reflexive projecting is determined by a medium level of general self-organization, planning, purposefulness, persistence, fixation, and orientation towards the present at the lower boundary of the high level, as well as medium positive values regarding the development of

volitional qualities, extraversion, and manifestations of externality within the domain of ambivalence.

Diagnostics of student proactive behavior revealed mean values for the proactivity index and all its factors. The highest scores were established on the “metamotivation” and “internal locus of control” scales (which confirms the diagnosed ambivalence of internality as an indicator of reflexive projecting). Destructive proactivity values are located at the upper limit of the lower threshold, while constructive proactivity is defined by medium indicators.

Stage two of the study. The interrelation between indicators of reflexive projecting and student proactive behavior was determined using a matrix of intercorrelations via Pearson’s linear correlation coefficient (see Appendix A). As a result of the analysis, statistically significant positive correlations between most indicators of reflexive projecting and proactive behavior were identified at a high level of significance ($p \leq 0,001$), with

the exception of the “destructive proactivity” scale. A negative correlation at a high level of significance ($p \leq 0,001$) was found between proactive behavior indicators and the “self-blame” indicator. Weaker correlations ($p \leq 0,05$) were identified between the “destructive proactivity” factor and such indicators of reflexive projecting as: “reflexivity” ($r = 0,222$), “general self-organization” ($r = 0,192$), “self-organization” ($r = 0,199$), “purposefulness” ($r = 0,188$), and “activity” ($r = 0,190$). Less pronounced correlations ($p \leq 0,05$) were observed between the indicators “forecasting consequences” and “self-acceptance” ($r = 0,223$), “forecasting consequences” and “orientation towards the present” ($r = 0,197$), and “spontaneity” and “orientation towards the present” ($r = 0,192$).

Stage three of the study. The results of cluster analysis performed by the k-means method allowed identifying three groups

of students corresponding to the levels of formation of reflexive projecting and proactive behavior indicators: high levels of reflectively-projective resource were diagnosed in students with high proactivity indicators, and vice versa (the figure presents standardized variables). The difference between the values of the three clusters is statistically significant, which is confirmed by the results of one-way analysis of variance (see Appendix B).

Thus, it was found that in our sample: students with a high (supra-situational) level of reflexive projecting development demonstrate the highest values of proactive behavior ($n = 17$; 14,8%); students with a medium level of reflexive projecting development exhibit multidirectional values of proactive behavior ($n = 72$; 62,6%); students with a low (intra-situational) level of reflexive projecting development show the lowest values of proactive behavior ($n = 26$;

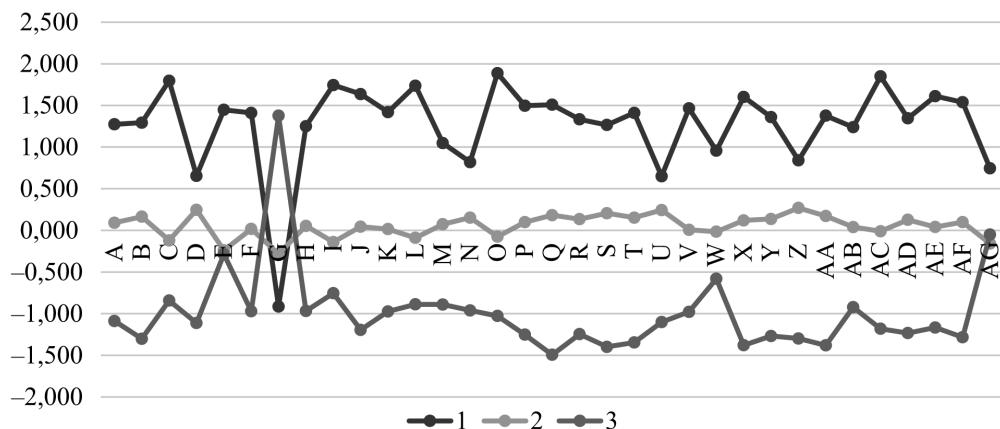


Fig. Plot of means across clusters of indicators of reflexive projecting and proactive behavior: 1 — cluster 1; 2 — cluster 2; 3 — cluster 3; A — global self-attitude; B — self-respect; C — autosympathy; D — self-interest; E — self-acceptance; F — self-management; G — self-blame; H — self-understanding; I — self-esteem; J — level of ambition; K — professional self-esteem; L — level of professional ambition; M — strength; N — activity; O — general internality; P — reflexivity; Q — general self-organization; R — planning; S — purposefulness; T — perseverance; U — fixation; V — self-organization; W — focus on the present; X — proactivity index; Y — mindfulness of actions; Z — forecasting of consequences; AA — internal locus of control; AB — spontaneity; AC — autonomy in decision-making; AD — metamotivation; AE — internal determination of behavior; AF — constructive proactivity; AG — destructive proactivity

22,6%). The smallest differences were identified between Cluster 2 (medium level) and Cluster 3 (low level) on the scales “self-acceptance”, “self-understanding”, and “destructive proactivity”.

Stage fourth of the study. The prediction of the influence of the reflectively-projective resource on student proactivity was studied using multiple regression analysis (step-wise method). Indicators of reflexive projecting served as independent variables, while the proactivity index served as the dependent variable. The obtained regression model is presented in Table 2.

As a result of the analysis, the following indicators emerged as predictors of proactivity: “general self-organization”, “self-respect”, “reflexivity”, and “level of aspiration”.

Thus, the analysis of statistical data demonstrated a significant relationship between the dependent variable (proactivity index) and the predictors (indicators of the reflectively-projective resource).

Discussion

Quantitative and qualitative analysis of the research results has proven the interrelation between proactivity and reflexive projecting as components of meta-resource determination, which confirms the hypothesis put forward in this work.

According to the obtained results, only a small portion of students (Group 1, $n = 17$; 14,8%) are capable of consciously

modeling, forecasting, and implementing an individual trajectory of professional development. They exhibit greater initiative, are able to critically evaluate their actions, choose behavioral strategies based on their own attitudes, views, beliefs, and values, guided by socially determined needs without relying on circumstances, and consciously select those behavior models that contribute to establishing permanent interpersonal interactions while stimulating creativity and intellectual development.

At the same time, a detailed analysis of the relationships between proactivity factors and indicators of reflexive projecting revealed that most students (Group 2, $n = 72$, 62,6%; Group 3, $n = 26$, 22,6%) demonstrate certain tendencies toward manipulative actions in the communication process as manifestations of destructive proactivity. This form of proactivity is, in turn, weakly correlated with the respondents' moderately developed abilities for analysis, planning, self-organization, activity management, and concentration on goals. It should be noted that students from these groups are similar in terms of formed self-acceptance; however, Group 3 demonstrates even less developed abilities for self-organization and anticipation, along with a predominantly external locus of control.

Multiple regression analysis proved that student proactivity depends on their capacity for reflection (the cognitive com-

Table 2

Regression model of the influence of reflexive projecting indicators on the proactive behavior of students (N = 115)

Dependent variable	R ²	Durbin-Watson	Predictors	β	p-level
Proactivity Index	0,803	1,904	General self-organization	0,409	0,000
			Self-respect	0,218	0,002
			Reflexivity	0,200	0,008
			Level of ambition	0,162	0,020

ponent of reflexive projecting), self-respect, and realistic aspiration levels (the affective component of reflexive projecting), as well as the level of self-organization development (the behavioral component of reflexive projecting). In other words, it depends on the ability to effectively and adequately manage one's potentials within a temporal context. This conclusion proves the direct interrelation and mutual influence of reflectively-projective resource components and constructive coping in the personal and professional development of future specialists. A proactive way of overcoming difficulties presupposes the ability to foresee the future, take into account its uncertainty and the diversity of possible scenarios for life events, which is ensured by the personality's reflexive and prognostic abilities.

Thus, at the procedurally conscious level, proactivity and reflexive projecting as resources ensure the teacher's self-determination in the process of their personal and professional development.

Conclusions

The results of the conducted research allowed us to draw the following main conclusions:

It is substantiated that meta-resource determination of future teachers' personal and professional development is ensured by a high level of organization and coherence within the structural-functional system of interconnected components: reflexive projecting and constructive proactivity.

A positive statistically significant correlation was revealed between indicators of reflexive projecting and constructive proactivity, alongside an absence of correlations (below the significance threshold) with destructive proactivity. This testifies to the interdependence of resource complexes.

It is shown that the predictors of constructive proactivity are indicators of re-

flexive projecting (general self-organization, self-respect, reflexivity, and level of aspiration).

It has been established that students with a high level of reflexive projecting demonstrate the highest indicators of proactive behavior ($n = 17$, 14,8%). Students with medium and low levels of reflexive projecting are characterized by multidirectional and low proactivity indicators.

The content of constructive and destructive prosocial behavior in relation to reflectively-projective characteristics has been specified. The identified differences determine the theoretical and technological substantiation for programs and methods aimed at forming and correcting reflexive projecting and constructive coping as resources for personal and professional teacher development.

Prospects for further research, considering the obtained data, are associated with creating a complex of psychological-pedagogical conditions (intrapsychological, inter-intrapsychological, and interpersonal) for actualizing developmental resources, and implementing convergent programs aimed at the purposeful and systematic formation of a complex integrative quality that determines the meta-resource conditioning of future teachers' personal and professional formation.

The research results make a significant contribution to psychological theory and educational practice; they allow expanding scientific understanding of the concept "meta-resource determination of personal and professional development," detailing and supplementing the psychological content and technological support for the professional training of student-teachers under the conditions of renewed education.

Limitations. Future research should consider expanding the sample size.

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Appendix

Appendix A. The matrix of intercorrelations of reflexive projecting and proactive behavior.

Appendix B. Cluster analysis results of reflexive projecting and proactive behavior.

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

Вклад авторов

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Assessment of academic stress: measurement invariance by sex

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Abstract

Context and relevance. In recent years, academic stress among high school students has been regarded as a significant risk factor for their well-being and academic achievement, while in the Russian context there is a noted shortage of modern, psychometrically validated methods for its assessment. **Objective.** The aim of this study is to validate the Russian version of the LASRS-2 for students in grade 11, including confirmation of its factor structure, assessment of reliability, and evaluation of convergent validity. **Hypothesis.** The Russian version of the LASRS-2 demonstrates validity, reliability, and measurement invariance by gender for students in grade 11. **Methods and materials.** The data from 976 eleventh graders were used, aged 16 to 18 years ($M = 17$, $SD = 0,35$), 75,7% females. For convergent validity testing, E. Diener's Life Satisfaction Scale and Physical Wellbeing Index were employed. Analysis was conducted using R (version 4.5.1) with the lavaan package. **Results.** Evidence of validity for the Russian version of the LASRS-2 was obtained, along with strict invariance, allowing comparison between male and female students. **Conclusion.** The Russian version of the LASRS-2 is a valid tool for measuring affective, cognitive, behavioral, and physiological academic stress among students in grade 11. The instrument can be utilized for research and monitoring purposes.

Keywords: academic stress, high school students, LASRS-2, psychometric properties, validity, measurement invariance

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Измерение учебного стресса: проверка измерительной инвариантности по полу

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Резюме

Контекст и актуальность. Учебный стресс старшеклассников рассматривается как существенный фактор риска для их благополучия и успеваемости, при этом в российской практике отмечается недостаток современных психометрически проверенных методов его диагностики. **Цель.** Валидизация русской версии Шкалы учебного стресса Лакаева-2 на выборке учащихся 11 классов, включающая подтверждение ее факторной структуры, оценку надежности и конвергентной валидности. **Гипотеза.** Русская версия Шкалы учебного стресса Лакаева-2 демонстрирует валидность, надежность и измерительную инвариантность по полу для учащихся 11 класса. **Методы и материалы.** Для анализа психометрических характеристик опросника использовались результаты, полученные от 976 одиннадцатиклассников в возрасте от 16 до 18 лет ($M = 17$, $SD = 0,35$), 75,7% — девушки. Для проверки конвергентной валидности использовалась Шкала удовлетворенности жизнью Э. Динера, а также Индекс субъективного физического благополучия. Анализ был выполнен при помощи R (версия 4.5.1), пакет lavaan. **Результаты.** Были получены свидетельства валидности русской версии Опросника учебного стресса и установлена строгая инвариантность, что позволяет использовать инструмент для сравнения девушек и юношей в 11 классе. **Выводы.** Опросник является валидным инструментом измерения аффективных, когнитивных, поведенческих и физиологических проявлений учебного стресса для учащихся 11 класса. Инструмент может быть использован в исследовательских и мониторинговых целях.

Ключевые слова: учебный стресс, старшеклассники, опросник LASRS-2, психометрические характеристики, валидность, измерительная инвариантность

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Introduction

Academic stress is a form of psychological stress that manifests in the educational environment. Although a moderate level

of arousal can be motivating, chronic and excessive academic stress often leads to reduced concentration, memory problems, and a decline in academic performance

(McArdle et al., 2014). Students experiencing high levels of stress may face burnout, which negatively affects their motivation to learn and their performance (Salmela-Aro, Upadaya, 2014). Prolonged academic stress is a significant risk factor for the development of various mental health problems, including anxiety disorders, depression, insomnia, and even suicidal ideation among adolescents (Liu et al., 2020). In Russia studying in the grade 11 is characterized by an intense pace, a large volume of material to be mastered, and constant competition among students driven by preparation for the Unified State Exam (USE) (Symaniuk et al., 2019). Because successful mastery of the curriculum is critical for future university admission, the period of preparation for the USE is considered the most stress-inducing and one that requires particular attention (Sagilyan, 2020). When addressing academic stress, it is also important to take sex-related characteristics into account, since female students display higher levels of academic stress and trait anxiety during schooling (Bao, Han, 2025). However, there is a shortage of validated Russian-language instruments for measuring academic stress, which limits opportunities for its investigation and for planning corresponding data-driven interventions. The present study aims to address this gap by presenting the results of the validation of the Russian version of the Lakaev Academic Stress Response Scale-2 (LASRS-2) for schoolchildren in a sample of eleventh-grade students, with particular attention to testing measurement invariance across male and female students.

In recent years, the topic of students' academic stress has been gaining increasing relevance in contemporary psychological science. Numerous studies indicate a substantial increase in the stress burden experienced by schoolchildren and uni-

versity students, associated with more complex curricula, intense competition, and heightened demands for academic achievement (Fomina, Filippova, Burmistrova-Savenkova, Morosanova, 2024; Muradymova, Bochaver, 2025; Semina, Fedorova, 2023; Symaniuk, Okonechnikova, Malova, 2019; Pavlenko, Bochaver, 2020; Barbayannis et al., 2022; Ibda et al., 2023; Lisnyj et al., 2023; Pascoe, Hetrick, Parker, 2020; Wuthrich, Jagiello, Azzi, 2020). Researchers note that academic stress can manifest at any stage of education; however, upper-secondary school students and first-year university students are the most vulnerable, owing to the need for self-determination, preparation for final assessments, and adaptation to new educational conditions (Putwain, Jansen in de Wal, van Alphen, 2023; Slimmen et al., 2022; Linden, Stuart, 2020; Graves et al., 2021; Córdova et al., 2023).

The assessment of academic stress is one of the pressing problems in educational psychology. Most current methods for diagnosing academic stress are aimed at ranking and identifying life situations capable of causing stress. Examples include the Perception of Academic Stress Scale (PAS; Bedewy, Gabriel, 2015), the College Student Stress Scale (CSSS; Feldt, 2008), the University Stress Scale (USS; Stallman, Hurst, 2016), the Academic Stress Scale (ASS; Oluwafemi, Agbolade, 2017), the Academic Stress Scale (ASS; Kohn, Frazer, 1986), the Student-life Stress Inventory (SSI-R; Gadzella et al., 2012), the Acculturative Stress Scale for International Students (ASSIS; Sandhu, Asrabadi, 1994), and the Academic Stress Inventory (ASI; Lin, Chen, 2009). These instruments make it possible to identify stress factors that can negatively affect students' emotional state. A focus on identifying stressors also predominates among adapted and newly developed

Russian-language instruments for assessing academic stress: the Perceived Stress Scale (PSS; Zolotareva, 2023), designed to assess perceived stress in adults; the Brief Questionnaire of Acute and Chronic Stress (OChS; Morosanova, Zinchenko, 2024); the Questionnaire of Crisis Events and Experiences for Students (Manukyan, 2011); and the Questionnaire of Everyday Stressors for Students (Buzina, Petrash, 2025). In recent years, instruments oriented toward adolescent samples have also been developed and validated: the Questionnaire of Everyday Stressors for Adolescents (Golovei, Galasheva, 2024), which assesses stress tension across nine domains of adolescents' lives, and the Russian-language version of the Perceived Stress Scale for Children (PSS-C; Kharlamenkova et al., 2024), designed to diagnose stress in adolescents aged 11 to 16. However, the aforementioned instruments measure the overall level of perceived stress or everyday stressors but do not allow differentiation of the various components of the stress response (affective, cognitive, behavioral, and physiological), which makes the validation of the multicomponent Lakaev Academic Stress Response Scale-2 (LASRS-2) particularly relevant.

All of the instruments described above are predominantly aimed at identifying factors of academic stress, while the characteristics of the stress response itself, as well as the degree of severity of this state, remain unexamined. In implementing high-quality response measures, it is important to understand not only the factors of academic stress but also its current level of severity. In particular, it may be informative to understand at which level — affective, behavioral, cognitive, or physiological — stress symptoms are most strongly expressed (Crosswell, Lockwood, 2020; Yaribeygi, 2017).

An instrument that makes this possible is the Russian version of the Lakaev Academic Stress Response Scale-2 (LASRS-2), developed to measure university students' responses to academic stress (Lakaev, 2022). In 2024, the instrument was modified and adapted for schoolchildren by researchers at the Institute of Education at HSE University (National Research University Higher School of Economics). The translation and back-translation were carried out by T.N. Kanonire and V.A. Manina. During adaptation for schoolchildren in grades 7–9, the following changes were made: item No. 2 from the original questionnaire (“I used alcohol, drugs, or socializing to avoid anxiety/stress”) was replaced with item 8 of the Russian-language version (“I hung out on my phone to relieve stress”), because the item concerning alcohol and drug use was deemed unacceptable for the adolescent sample and was replaced with socially acceptable behavior of a similar nature. Item No. 21 of the original version (“I was distracted in class”) was removed from the cognitive manifestations scale, since the scale already contained an item with a similar meaning for adolescents — “I found it difficult to concentrate during the lesson”. The order of the items was changed and grouped according to the specific scales, without additional random shuffling. It is this version that was used in the present study.

The aim of the present study is to validate the Russian version of the Lakaev Academic Stress Response Scale-2 (LASRS-2) in a sample of students in grade 11, including confirmation of its factor structure and gaining evidence of its reliability and convergent validity. Additionally, the measurement invariance of the instrument across sex is tested to make it possible to be confident that female and male students with an equal level of academic

stress will receive equal scores, i.e., that the assessment will be conducted fairly. Given the evidence of sex differences in the perceived level of stress (Khanekhesi, Basavarajappa, 2012; Bao, Han, 2025), testing measurement invariance appears particularly important and will allow for valid comparisons of the results of male and female students.

Materials and methods

Sample and procedure. The study involved 976 respondents aged 16 to 18 years ($M = 17$, $SD = 0,35$), of whom 24,3% were male and 75,7% were female. All respondents were grade 11 students from eight federal districts of the Russian Federation (Central, Northwestern, Southern, North Caucasian, Volga, Ural, Siberian, and Far Eastern). The study was conducted in 2025 among students who studied on an online educational platform for USE preparation. Participation in the study was voluntary. The sex ratio is attributable to the statistical distribution of users of the educational platform on which the study was conducted, where female students predominantly account for 60% of users. The dataset has been deposited in RusPsyDATA (Russian Repository of Research Data and Tools in Psychology and Education). The data collection process was carried out in accordance with the ethical standards established by the Russian Psychological Society.

Measures. The main instrument used was the Russian version of the Lakaev Academic Stress Response Scale-2 (LASRS-2) for schoolchildren. The Russian version of the instrument comprises 24 items and includes four scales: "Affective Reactions" ($k = 7$), "Behavioral Reactions" ($k = 6$), "Cognitive Manifestations" ($k = 6$), and "Physiological Reactions" ($k = 5$). Respondents were asked to rate

how often each of the listed experiences had occurred to them over the past two weeks, using the following response categories on a five-point Likert scale: "not at all", "once or twice", "about half of the time", "most of the time", and "all of the time". The original instrument allows for the calculation of scores by scales as well as building of an overall integral indicator of academic stress.

To assess construct validity, the Satisfaction With Life Scale (SWLS; Diener et al., 1985; adapted by E.N. Osin and D.A. Leontiev, 2020) was used, along with the Subjective Physical Well-Being Index for students from the Survey of Subjective Well-Being in School (Kanonire, Uglanova, Kulikova, 2022), which represents the sum of scores on two items: "Over the past week, how often did you feel full of energy?" and "How do you rate your health?", both rated on a five-point Likert scale.

Data analysis. At the preliminary stage, descriptive statistics were calculated for all items and scales, including the mean and standard deviation for the overall sample and for sex-based subsamples. The normality of the distribution of variables was assessed using visual analysis (Q–Q plots, histograms) and the formal Shapiro–Wilk statistical test.

It should be noted that, at the preliminary stage of adaptation, an exploratory factor analysis (EFA) was conducted, which confirmed the four-factor structure expected on the basis of the original model. At the next stage, confirmatory factor analysis (CFA; Brown, 2015) was used to test the fit of the empirical data to the theoretically expected factor structure of the questionnaire. Because of non-normally distributed responses, the robust maximum likelihood method (MLR) was used, which provides robust standard errors and corrected test statistics (Satorra, Bentler, 1994). Three

alternative models were tested and compared: 1) a one-factor model, in which all items serve as indicators of a single general latent factor, “academic stress”; 2) a four-factor model with correlated factors corresponding to the affective, behavioral, physiological, and cognitive manifestation scales; and 3) a second-order hierarchical model, in which the four first-order factors (scales) serve as indicators for a general second-order latent factor, “academic stress”. All of the above models were estimated separately for the full sample as well as for the male and female subsamples.

Model fit to the data was evaluated using a set of fit indices (Kline, 2010):

- CFI (Comparative Fit Index) and TLI (Tucker–Lewis Index): values $> 0,90$ are considered acceptable, and values $> 0,95$ are considered good.

- RMSEA (Root Mean Square Error of Approximation) with a 90% confidence interval: values $< 0,08$ indicate acceptable, and values $< 0,05$ indicate good approximation error.

- SRMR (Standardized Root Mean Square Residual): values $< 0,08$ are considered satisfactory.

To improve the fit of the theoretical model to the empirical data, an iterative process was used, involving analysis of modification indices, which makes it possible to identify unaccounted-for sources of covariation between the residuals of substantively related items. The subsequent addition of covariances between these residuals allows the model fit to be improved.

Reliability (internal consistency) is a necessary condition for measurement validity. In the present study, reliability was assessed using two coefficients: Cronbach’s α , traditional indicator calculated on the basis of the correlation between raw scores (Cronbach, 1951), and McDonald’s ω , an indicator calculated on the basis of standardized

factor loadings within the CFA framework (Viladrich et al., 2017). The ω coefficient is considered preferable for multidimensional scales, as it is less sensitive to violations of the tau-equivalence assumption. A value above 0,7 is considered satisfactory for both coefficients. High values indicate that respondents’ scores are robust to measurement error and that the indicators measure the same latent construct.

The convergent validity of the questionnaire was assessed using correlational analysis. In line with theoretical expectations, statistically significant negative correlations of moderate strength were expected between the academic stress scales and indicators of life satisfaction and subjective physical well-being.

Testing of the measurement invariance of the questionnaire across sex was carried out using multi-group confirmatory factor analysis (MG-CFA), following the step-by-step checklist proposed by van de Schoot et al. (2012). A series of nested models was sequentially evaluated, with constraints progressively imposed on the equality of parameters between the male and female groups:

- Model 1 — Configural invariance: tests the invariance of the factor structure (the number of factors and the pattern of loadings). In this model, all parameters (factor loadings, intercepts, residual variances) were freely estimated in each group. Adequate fit of this model is a necessary condition for proceeding with further analysis.

- Model 2 — Metric invariance: tests the equality of factor loadings between groups. Establishing metric invariance makes it possible to state that the relationship between the latent construct and its indicators is the same across groups, which provides grounds for comparing factor structures and correlations of latent variables.

- **Model 3 — Scalar invariance:** tests the equality of factor loadings and item intercepts. Its establishment is a necessary and sufficient condition for the valid comparison of latent construct means between groups.

- **Model 4 — Strict invariance:** tests the additional equality of item residual variances. This model assumes that the construct is measured with equal reliability at the level of each indicator in both groups.

Comparison of the nested models was carried out using the likelihood ratio test ($\Delta\chi^2$). However, given its sensitivity to large sample sizes ($N > 300$), changes in comparative fit indices (Chen, 2007) were used as the primary criteria: a decrease of $\Delta CFI \leq -0,010$ combined with an increase of $\Delta RMSEA \geq 0,015$ was considered evidence of a violation of invariance. If full metric or scalar invariance was not achieved, a search for partial measurement invariance (Byrne, Shavelson, Muthén, 1989) was planned, by sequentially releasing constraints on those parameters (loadings or intercepts) that contributed most to the change in the likelihood ratio test ($\Delta\chi^2$).

All calculations were performed in the R statistical environment (version 4.5.1) using the RStudio integrated development environment and the specialized lavaan package (Rossee, 2012).

Results

Descriptive statistics. Analysis of descriptive statistics (Appendix B) revealed systematic differences between the male and female groups. However, interpreting these differences as true group differences in the level of the latent construct requires prior evidence of the instrument's measurement invariance. Analysis of skewness and kurtosis indices, confirmed by the results of the Shapiro–Wilk test, indicates a deviation from normality in the distribution of most variables. Accordingly, the robust maximum likelihood method (MLR) was chosen for model parameterization in the CFA.

Confirmatory factor analysis. Before evaluating the main models, and in order to improve their fit to the data, covariances between the residuals of three pairs of items were added to the model on the basis of substantive analysis and modification indices: items 5 and 6 (a shared theme of emotional exhaustion), items 15 and 18 (manifestations of academic procrastination), and items 11 and 12 (social isolation as a coping strategy). Further analysis of modification indices did not reveal a need for additional changes that would fundamentally alter the model structure (e.g., cross-loadings).

Table 1

CFA model fit indices

Model		χ^2 (df)	CFI	TLI	RMSEA (CI 90%)	SRMR
Single factor	Full sample	1730 (249)	0,831	0,813	0,078 [0,075 — 0,081]	0,065
	Males	614 (249)	0,818	0,798	0,079 [0,072 — 0,086]	0,075
	Females	1443 (249)	0,818	0,799	0,081 [0,077 — 0,084]	0,069
Four-factors	Full sample	960 (243)	0,918	0,907	0,055 [0,052 — 0,058]	0,050
	Males	454 (243)	0,894	0,880	0,061 [0,053 — 0,068]	0,067
	Females	816 (243)	0,913	0,901	0,056 [0,053 — 0,061]	0,052
Second-order	Full sample	976 (245)	0,917	0,906	0,055 [0,052 — 0,059]	0,051
	Males	454 (245)	0,895	0,882	0,06 [0,052 — 0,068]	0,068
	Females	Did not converge				

Comparison of the alternative models (Table 1) provides unequivocal support for the four-factor structure of the questionnaire. The one-factor model demonstrated unsatisfactory fit to the data, which confirms the theoretical assumption that academic stress is a multicomponent construct.

The models comprising four factors showed good fit to the empirical data. At the same time, the second-order hierarchical model, which postulates the existence of a general latent factor, could not be identified in the female subsample, which is likely attributable to the high correlation between the first-order factors combined with the limited sample size. It should be noted that, although the fit indices of the four-factor model reach the threshold of acceptability, they do not reach the threshold of excellent fit, particularly in the male subsample. This may be explained both by the smaller size of this subsample and by substantive features of how academic stress manifests among male students.

In the samples where the hierarchical model could be estimated, its fit indices were practically identical to those of the simple four-factor model. Moreover, the likelihood ratio test did not reveal statistically

significant differences between these models for the male subsample ($\Delta\chi^2(2) = 1,08$, $p = 0,5843$), which indicates the presence of a general latent construct of “academic stress” underlying all four components, at least in this group. Thus, calculating an overall score for the questionnaire appears methodologically justified; however, for more fine-grained diagnostics, it is recommended to use scale-specific scores for the individual scales.

The figure presents all standardized estimated parameters (item loadings and correlations between factors) from the four correlated-factor model for the full sample. All parameters are statistically significant at the $p < 0,05$ level.

Analysis of factor loadings showed that the affective and cognitive manifestation factors are more homogeneous: loadings range from approximately 0,6 to 0,8, with a mean of 0,7. At the same time, the behavioral reactions factor shows a greater spread of loadings (from 0,36 to 0,62, mean = 0,53), which may be explained by a greater influence of the contextual characteristics of the items comprising this factor.

Internal consistency. The results of the reliability calculations for all scales are presented in Table 2.

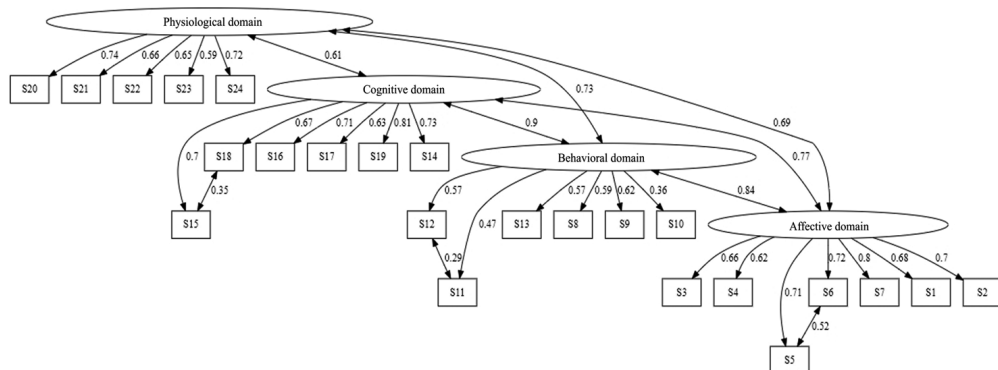


Fig. CFA model

Table 2

Internal consistency indices for LASRS–2

Scale	α Кронбаха	ω Макдональда
Academic stress (k = 24)	0,93	0,86
Affective domain (k = 7)	0,87	0,86
Behavioral domain (k = 6)	0,71	0,68
Cognitive domain (k = 6)	0,87	0,84
Physiological domain (k = 5)	0,80	0,81

Note: ω was taken from the single-factor model for the academic stress scale and from the four-factor model for the remaining scales.

Most of the obtained values exceed the generally accepted criterion of 0,70, indicating good internal consistency for all scales of the instrument. The McDonald's ω value for the behavioral reactions scale is somewhat below the generally accepted criterion, indicating its relatively lower reliability compared with the other scales.

Construct validity. Pearson correlation coefficients between the raw scores on the questionnaire's scales, as well as their correlations with the two external instruments, are presented in Table 3. All correlations are significant at the $p < 0,05$ level.

The observed pattern of correlations fully corresponds to theoretical expectations: the scales of the questionnaire under consideration show moderate negative associations with the subjective physical well-being index and the Diener Satisfaction With Life Scale, as well as, as expected,

high positive correlations among themselves, which provides evidence in favor of the instrument's convergent validity.

Measurement invariance. To test the measurement invariance of the questionnaire across sex, a series of nested models was sequentially evaluated (Table 4). Although the likelihood ratio test ($\Delta\chi^2$) shows statistically significant differences between all successive models ($p < 0,001$), which is expected given the large sample size, analysis of changes in comparative fit indices (ΔCFI and $\Delta RMSEA$) provides more substantively meaningful information. The deterioration in fit as constraints were progressively imposed did not exceed the established critical values ($\Delta CFI \leq -0,010$, $\Delta RMSEA \geq 0,015$). The most notable, yet still acceptable, deterioration was observed at the transition to scalar invariance ($\Delta CFI = -0,006$). On this basis, it can be

Table 3

Pearson correlations between academic stress scales, life satisfaction, and physical well-being in school

	1	2	3	4	5	6
1. Subjective physical well-being index	1					
2. Diener life satisfaction scale	0,49	1				
3. Academic stress	-0,63	-0,47	1			
4. Affective domain	-0,55	-0,37	0,88	1		
5. Behavioral domain	-0,54	-0,44	0,85	0,65	1	
6. Cognitive domain	-0,50	-0,41	0,85	0,64	0,67	1
7. Physiological domain	-0,53	-0,36	0,76	0,58	0,57	0,50

concluded that strict measurement invariance holds, which allows for valid comparisons of both latent means and variances between groups.

As an additional analysis, a procedure for establishing partial invariance was carried out in order to precisely identify potential sources of non-invariance. Analysis of the contribution of individual parameters to the change in χ^2 (Table 5) showed that, to

achieve full metric invariance, it was sufficient to release the constraint on the factor loading of only one item, item 23 ("I had no appetite"), and that, to achieve full scalar invariance, it was necessary to release the intercepts of seven items (7, 19, 4, 21, 17, 11, 9). This indicates that these items may have certain interpretive peculiarities with respect to students' sex, without violating the overall invariance of the instrument.

Table 4

CFA models for testing measurement invariance

Model	χ^2 (df)	P of test $\Delta\chi^2$	CFI	Δ CFI	RMSEA	Δ RMSEA
Model 1	1261 (486)		0,910		0,062	
Model 2	1302 (506)	< 0,001	0,908	−0,002	0,061	−0,001
Model 3	1378 (526)	< 0,001	0,902	−0,006	0,062	0,001
Model 4	1420 (550)	< 0,001	0,899	−0,003	0,062	0

Table 5

Identification of the most non-invariant items

Item	$\Delta\chi^2$ for releasing loading equality constraint	$\Delta\chi^2$ for releasing intercept equality constraint
1	0,00	3,43
2	0,21	6,76
3	2,31	1,71
4	0,00	8,33
5	0,11	2,17
6	0,68	1,36
7	3,87	21,91
8	0,08	1,44
9	2,04	4,87
10	0,21	5,71
11	0,34	2,95
12	0,34	0,11
13	0,11	2,72
14	0,40	4,12
15	0,08	1,02
16	0,15	0,18
17	0,04	2,33
18	0,33	4,70
19	0,02	14,34
20	14,69	0,81
21	7,36	5,41

Item	$\Delta\chi^2$ for releasing loading equality constraint	$\Delta\chi^2$ for releasing intercept equality constraint
22	4,60	0,58
23	17,32	0,25
24	1,47	0,02

Thus, the results of the analysis confirm that the academic stress questionnaire's measurement invariance across sex holds. Establishing invariance makes it possible to assert that the observed differences in respondents' answers reflect true differences in the level of the latent construct rather than being an artifact of measurement.

To quantify these differences, the parameters of the strict invariance model, in which all item parameters were constrained to be equal between groups, were analyzed. In this model, the distribution of the latent factors in the female group was fixed as the reference (mean = 0, variance = 1), while the distribution parameters in the male group were estimated freely. The estimated parameters for the male group are presented in Table 6.

Analysis of the model parameters shows that male students exhibit statistically significantly lower mean levels of the latent construct across all four factors ($p < 0,05$). The largest difference is observed for the affective reactions factor. With respect to variances, the analysis indicates lower variability among male students for the affective reactions component, and especially for the physiological reactions component. At

the same time, variability in the behavioral reactions and cognitive manifestations components is somewhat higher among male students than among female students.

Discussion

The aim of the present study was to examine the psychometric quality of the Russian version of the Academic Stress Questionnaire LASRS-2 for students in grade 11. The results of the study confirm the validity and reliability of the Russian version of the instrument.

The four-factor structure of the questionnaire was confirmed, consistent with the original version. The one-factor model demonstrated unsatisfactory fit to the data, which is consistent with the theoretical view of academic stress as a multicomponent construct. The results of testing the second-order hierarchical model indicate that calculating an overall score for the questionnaire is methodologically justified for male students, although the use of scales' scores is recommended for more precise diagnostics. It should be noted that the hierarchical model could not be identified in the female subsample, which is likely attributable to the high correlation between the

Table 6

Factor score distribution parameters for males under strict invariance model

Factor	Mean	Variance
Affective domain	–0,67	0,88
Behavioral domain	–0,54	1,09
Cognitive domain	–0,42	1,07
Physiological domain	–0,54	0,67

Note: parameters estimated relative to the female group, where mean = 0 and variance = 1.

first-order factors combined with the limited sample size. Future studies should test the hypothesis of whether an overall score can be calculated for female students using a sample that is more heterogeneous in age.

Analysis of internal consistency showed that most of the scales possess good reliability. The exception was the behavioral reactions scale, where the reliability value for one of the coefficients was somewhat below the generally accepted criterion. This is consistent with the factor analysis findings, where the behavioral reactions factor likewise showed the greatest spread of factor loadings, which may be explained by a greater influence of the contextual characteristics of the items comprising this factor. However, even in this case, the behavioral reactions scale can be used for research purposes. Future studies could focus on examining additional behavioral indicators of stress among upper-secondary school students.

The convergent validity of the questionnaire was confirmed: all scales show moderate negative associations with external criteria such as subjective physical well-being and life satisfaction. This is a theoretically expected result, since a high level of stress should be associated with a lower level of well-being (Goksu, 2023; Lian et al., 2023). In addition, the scales of the LASRS-2 Russian version show the expected strong positive correlations with one another, which confirms their relationship to a single academic stress construct.

The results of previous studies indicate the presence of sex differences in the level of academic stress (Khanehkeshi, Basavarajappa, 2012; Bao, Han, 2025), and therefore an important objective of the present work was to test measurement invariance across sex. The results showed that strict invariance holds, which allows the instrument to be used to compare the results of male and female students.

The study also examined sources of potential non-invariance, which may be useful for an in-depth investigation of the phenomenon of academic stress among upper-secondary school students. Several items were identified that may have a somewhat different interpretation among male and female students, although this does not affect the instrument's ability to assess them fairly. For example, item 7 is the item with the largest sex-related component ("I had so much schoolwork that I wanted to cry"), which is related to certain accepted social norms of behavior for male and female students.

Additionally, a comparison of academic stress indicators between female and male students was carried out across all scales. The results obtained show differences in all manifestations of academic stress in favor of male students: they display lower scores, which is consistent with the findings of other studies (e.g., Karkouli et al., 2024; Mahirah et al., 2025).

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Limitations. The main limitations of this study lie in the sampling domain. Future studies should examine the questionnaire's validity in a more age-diverse sample of girls and boys, covering at least the full span of upper secondary school. In addition, students enrolled in an exam-preparation platform may differ from the broader population of 11th-grade students in certain individual characteristics. Another important issue concerns the questionnaire's potential use for individual assessment: at present, such use is not possible, as it requires standardization and should be addressed in subsequent studies.

Conclusion

The results of the study presented in this article demonstrate that the Russian version of the Lakaev Academic Stress

Response Scale-2 is a valid and reliable instrument for assessing academic stress among students in grade 11. The questionnaire can be used for research and monitoring purposes, also comparing male and

female students. Although the calculation of an overall academic stress score is justified for male students, it is recommended that both female and male students' results be reported using scale scores.

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Appendix

Appendix A. Academic Stress Scale

Affective domain	
Item 1	I felt overwhelmed by schoolwork.
Item 2	There was so much going on that I couldn't think straight.
Item 3	I felt worried about coping with my studies.
Item 4	I felt angry that too much was being demanded of me.
Item 5	School left me emotionally drained.
Item 6	I felt stressed because of school.

Item 7	I had so much schoolwork that I wanted to cry.
Behavioral domain	
Item 8	I hung out on my phone to relieve stress.
Item 9	I wanted to sleep all the time.
Item 10	I skipped individual classes without a valid reason.
Item 11	I yelled at family members or friends.
Item 12	I withdrew from friends or family.
Item 13	I had major problems sleeping.
Cognitive domain	
Item 14	I found it difficult to concentrate during the lesson.
Item 15	I felt lazy when it came to schoolwork.
Item 16	My emotions got in the way of my studying.
Item 17	I found it difficult to recall material I had studied.
Item 18	I found excuses to put off completing an assignment.
Item 19	I had no energy to study.
Physiological domain	
Item 20	I couldn't breathe properly.
Item 21	I felt discomfort in my stomach.
Item 22	I had headaches.
Item 23	I had no appetite.
Item 24	I felt my heart pounding, even though I hadn't been exercising.

Appendix B. Descriptive Statistics for Items and Scales

Item / Scale	M (SD)			Skewness	Kurtosis
	Full sample	Males	Females		
1	3,31 (1,10)	3,02 (1,06)	3,41 (1,09)	−0,11	−0,71
2	2,67 (1,08)	2,4 (1,01)	2,76 (1,09)	0,49	−0,40
3	3,42 (1,24)	2,95 (1,23)	3,57 (1,21)	−0,23	−1,06
4	2,62 (1,34)	2,36 (1,28)	2,70 (1,34)	0,41	−1,01
5	3,47 (1,37)	3,05 (1,44)	3,60 (1,32)	−0,38	−1,11
6	3,07 (1,35)	2,57 (1,36)	3,23 (1,31)	0,01	−1,19
7	2,70 (1,40)	1,96 (1,25)	2,94 (1,36)	0,32	−1,18
8	3,36 (1,22)	3,13 (1,26)	3,44 (1,20)	−0,18	−0,91
9	3,66 (1,21)	3,26 (1,27)	3,79 (1,16)	−0,42	−0,93
10	2,45 (1,32)	2,41 (1,32)	2,46 (1,33)	0,67	−0,67
11	1,91 (1,01)	1,64 (0,89)	1,99 (1,03)	1,26	1,34
12	2,18 (1,16)	1,88 (1,06)	2,28 (1,18)	0,83	−0,14
13	2,75 (1,41)	2,53 (1,39)	2,82 (1,42)	0,29	−1,21
14	2,73 (1,15)	2,54 (1,14)	2,78 (1,14)	0,41	−0,59
15	3,11 (1,17)	2,93 (1,19)	3,16 (1,16)	0,15	−0,89

Item / Scale	M (SD)			Skewness	Kurtosis
	Full sample	Males	Females		
16	2,45 (1,27)	2,2 (1,27)	2,53 (1,26)	0,63	–0,64
17	2,69 (1,10)	2,42 (1,05)	2,78 (1,10)	0,55	–0,33
18	2,90 (1,23)	2,77 (1,17)	2,94 (1,25)	0,3	–0,92
19	3,15 (1,21)	2,73 (1,22)	3,29 (1,17)	0,06	–0,97
20	1,59 (0,96)	1,33 (0,76)	1,68 (1,00)	1,74	2,56
21	1,93 (1,10)	1,54 (0,88)	2,06 (1,13)	1,15	0,62
22	2,71 (1,18)	2,43 (1,11)	2,80 (1,18)	0,47	–0,65
23	2,01 (1,18)	1,74 (1,15)	2,10 (1,17)	1,01	0,05
24	2,02 (1,15)	1,68 (1,03)	2,13 (1,17)	1,05	0,30
Affective domain	21,26 (6,73)	18,31 (6,37)	22,21 (6,57)	0,05	–0,84
Behavioral domain	16,31 (4,72)	14,85 (4,72)	16,78 (4,62)	0,27	–0,22
Cognitive domain	17,03 (5,53)	15,59 (5,54)	17,5 (5,44)	0,34	–0,54
Physiological domain	10,27 (4,15)	8,71 (3,70)	10,76 (4,16)	0,94	0,35
Academic stress	64,88 (17,79)	57,46 (17,19)	67,25 (17,33)	0,22	–0,47

Appendix C. Russian Version of the Lakaev Academic Stress Response Scale for School Students

Instructions: Indicate how often each of the following happened to you over the past two weeks. Response categories: not at all, once or twice, about half of the time, most of the time, all of the time.

1. I felt overwhelmed by schoolwork.
2. There was so much going on that I couldn't think straight.
3. I felt worried about coping with my studies.
4. I felt angry that too much was being demanded of me.
5. School left me emotionally drained.
6. I felt stressed because of school.
7. I had so much schoolwork that I wanted to cry.
8. I hung out on my phone to relieve stress.
9. I wanted to sleep all the time.
10. I skipped individual classes without a valid reason.
11. I yelled at family members or friends.
12. I withdrew from friends or family.
13. I had major problems sleeping.
14. I found it difficult to concentrate during the lesson.
15. I felt lazy when it came to schoolwork.
16. My emotions got in the way of my studying.
17. I found it difficult to recall material I had studied.
18. I found excuses to put off completing an assignment.
19. I had no energy to study.
20. I couldn't breathe properly.
21. I felt discomfort in my stomach.
22. I had headaches.

23. I had no appetite.

24. I felt my heart pounding, even though I hadn't been exercising.

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Tatjana N. Kanonire — concept development; methodology development; writing — review and editing; supervision.

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Вклад авторов

Карпова А.Д. — разработка концепции исследования; планирование исследования; разработка методологии; проведение исследования; контроль за проведением исследования; курирование данных; написание и оформление рукописи.

Тарасов С.В. — формальный анализ; разработка методологии; валидация результатов; визуализация; написание черновика рукописи; написание рукописи — рецензирование и редактирование.

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The authors declare no conflict of interest.

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Written informed consent to participate in this study was obtained from all respondents. Participation in the study was voluntary.

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The impact of academic advising on students' psychological distress and resilience

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Abstract

Context and relevance. University students often face a high academic workload, competition, and the need to process large volumes of information in a short time. These factors, combined with personal insecurity and stress, contribute to the development of anxiety and psychological distress. Under such conditions, the role of academic advising increases, serving as a form of support that helps reduce emotional tension and improve students' psychological well-being. **Objective.** To examine the relationship between academic advising, psychological distress, and student resilience. **Hypothesis.** It is assumed that participation in an academic advising program reduces anxiety and stress levels and strengthens psychological resilience. **Materials and methods.** A cross-sectional correlational study was conducted among 73 pharmacy students (49 females and 24 males, mean age $19,2 \pm 0,81$ years). Advising was provided by faculty members with more than five years of experience in medical education. The study included two stages. At the first stage, students completed the Depression, Anxiety and Stress Scale (DASS-21) and the 10-item Connor–Davidson Resilience Scale (CD-RISC-10). At the second stage, students were re-assessed using the DASS-21, Perceived Advisor Support Scale (PASS), and a feedback questionnaire designed to evaluate the support received. Changes in emotional state were evaluated using DASS-21 (comparison of Stage I and Stage II), whereas the CD-RISC-10 and PASS scales were used to compare independent samples of first- and second-year students. **Results.** Mean DASS-21 scores significantly decreased from $38,69 \pm 7,77$ at the beginning of the semester to $32,37 \pm 6,56$ at the end ($t = 5,168$, $p < 0,001$), indicating reduced levels of depression, anxiety, and stress. For the CD-RISC-10 scale, the mean scores were $22,71 \pm 5,66$ for first-year students and $21,54 \pm 4,52$ for second-year students. For the PASS scale, the mean scores were $34,36 \pm 6,07$ and $31,43 \pm 5,91$, respectively. The reliability of the scales, assessed using Cronbach's alpha, ranged from 0,81 to 0,93. Pearson's correlation analysis revealed a negative relationship between perceived advisor support (PASS) and psychological distress ($r = -0,181$, $p < 0,05$), as well as between resilience and psychological distress ($r = -0,274$, $p < 0,05$). **Conclusion.** Academic advising has a positive impact on students' psychological well-being by

reducing distress levels and strengthening psychological resilience. The findings support the relevance of developing mentoring programs within higher education systems that aim to enhance students' emotional well-being and resilience.

Keywords: academic advisor, students, resilience, stress

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Влияние академического консультирования на психологический дистресс и жизнестойкость студентов

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Резюме

Контекст и актуальность. Опыт работы со студентами показывает, что в процессе обучения в вузе они нередко сталкиваются с высокой учебной нагрузкой, конкуренцией и необходимостью усвоения большого объема информации в сжатые сроки. В сочетании с личностной неуверенностью и стрессом эти факторы могут способствовать развитию тревожных состояний и психологического дистресса. В связи с этим возрастает значимость системы академической поддержки, осуществляемой академическими консультантами. Особую роль при этом играет академическое консультирование как форма поддержки, способствующая снижению эмоционального напряжения и улучшению психологического состояния студентов. **Цель.** Выявить взаимосвязи между академическим консультированием, уровнем психологического дистресса и жизнестойкостью студентов. **Гипотеза.** Предполагалось, что участие студентов в программе академического консультирования способствует снижению тревожности и стресса, а также укреплению психологической устойчивости. **Материалы и методика.** Проведено перекрестное корреляционное исследование среди 73 студентов фармацевтического факультета (49 девушек и 24 юноши, средний возраст — $19,2 \pm 0,81$ лет). Консультирование осуществляли преподаватели с опытом работы в медицинском образовании более пяти лет. Исследование включало два этапа. На первом этапе студенты заполнили шкалы: шкалу депрессии, тревоги и стресса (DASS-21) и 10-пунктовую шкалу жизнестойкости Коннора-Дэвидсона (CD-RISC-10). На втором этапе

студенты повторно прошли DASS-21, шкалу воспринимаемой поддержки академического консультанта (PASS) и анкету обратной связи для оценки полученной поддержки. Динамика эмоционального состояния оценивалась по шкале DASS-21 (сравнение данных I и II этапов), тогда как шкалы CD-RISC-10 и PASS использовались для сравнения независимых выборок студентов 1 и 2 курсов. **Результаты.** Средние показатели по шкале DASS-21 статистически значимо снизились от $38,69 \pm 7,77$ в начале семестра до $32,37 \pm 6,56$ к концу ($t = 5,168$, $p < 0,001$), что отражает уменьшение уровня депрессии, тревожности и стресса у студентов. По шкале CD-RISC-10 средние значения составили $22,71 \pm 5,66$ у студентов 1 курса и $21,54 \pm 4,52$ у студентов 2 курса. По шкале PASS — $34,36 \pm 6,07$ и $31,43 \pm 5,91$ соответственно. Надежность шкал, рассчитанная с использованием коэффициента Кронбаха, варьировала от 0,81 до 0,93. Корреляционный анализ Пирсона выявил отрицательную связь между поддержкой академического консультанта (PASS) и уровнем психологического дистресса ($r = -0,181$, $p < 0,05$), а также между жизнестойкостью и дистрессом ($r = -0,274$, $p < 0,05$). **Выводы.** Академическое консультирование оказывает положительное влияние на психологическое состояние студентов, снижая уровень дистресса и способствуя укреплению психологической устойчивости. Полученные данные подтверждают целесообразность развития программ наставничества в системе высшего образования, направленных на поддержку эмоционального благополучия и устойчивости студентов.

Ключевые слова: академический консультант, студенты, устойчивость, стресс

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Introduction

The period of university education (18–25 years) represents a critically important stage of personal and professional development. During this period, the transition to adulthood is accompanied by increased academic, social, and psychological demands (Mershenova et al., 2018; Krasilo, Repesciuc, 2025; Nurhaeni, 2022). These challenges are particularly pronounced among medical students, who face a high academic workload, information overload, and stringent requirements for self-regulation (Yupanqui-Lorenzo et al., 2025). This often results in increased academic stress, emotional burnout, and decreased

academic performance (Satova, Rymzhanova, 2020; Yupanqui-Lorenzo et al., 2025).

In response to the growing demands for student autonomy, academic advising, as an institutionalized form of pedagogical support, becomes particularly important. Its focus is on the unique and holistic personality of the student, who strives to realize their potential to the fullest, is open to new experiences, and is prepared to make responsible decisions in various life circumstances. This is achieved through support throughout the educational process and the promotion of students' emotional resilience (Baubekova et al., 2019;

Gluzman, Suprun, 2023; Zhuravleva, Talyshinskaya, 2022).

An academic advisor is a faculty member who supports students throughout their entire period of study. Their functions include advising on academic pathways, supporting professional self-determination, assisting in resolving organizational and personal difficulties, and developing self-regulation and self-organization skills (Gindes et al., 2023; Sokolova, 2013; Bassam, 2015). In the scientific literature, this role is often referred to as an academic advisor, mentor, or academic coach. However, the present study uses the term “academic advisor”, as it most accurately reflects the specific role of a faculty member who provides academic and psychological support to students (Goman et al., 2024; Zaher, 2024).

The present study aims to empirically examine the impact of academic advising on reducing perceived stress levels and developing resilience among medical students. The practical significance of the study lies in substantiating effective support strategies that contribute to students’ academic success and psychological well-being.

Materials and methods

The study was conducted during the fall–winter semester of the 2024–2025 academic year (September 2024–January 2025) at the NJSC “Astana Medical University” (Republic of Kazakhstan). The academic advisors were faculty members of the Faculty of Pharmacy with at least five years of experience in education who combined their teaching responsibilities with academic advising functions. The methodological framework of the advising process was based on the principles of academic mentoring, including an in-

dividualized approach, regular feedback, and assistance with students’ academic and personal adaptation.

The study included 73 students from the Faculty of Pharmacy: 34 first-year students (31 female and 3 male) and 39 second-year students (18 female and 21 male). The mean age of the participants was $19,2 \pm 0,81$ years. Age and gender were reported to describe the structure of the sample, as the primary objective of the study was to examine the relationships between distress, resilience, and perceived support. Empirical data were collected through an online questionnaire after obtaining informed consent. The inclusion criteria were enrollment at the beginning of the semester and voluntary agreement to participate. Participation was entirely voluntary, with the option to withdraw without consequences. The academic advisors worked with students throughout the entire semester and conducted regular individual and group meetings at least once every two weeks. A follow-up assessment was conducted three months after the beginning of the advising program, upon completion of the second interim assessment.

Data collection

and measurement instruments

Data were collected in two stages using standardized scales.

The first stage was conducted in autumn (September) 2024 and was aimed at determining the baseline levels of students’ emotional state and resilience. At this stage, the participants completed the following instruments:

The Depression Anxiety Stress Scales (DASS-21) (Szabo, Lovibond, 2022) — the scale consists of 21 items grouped into three subscales of 7 items each. Re-

sponses are recorded on a 4-point Likert scale ranging from 0 (“did not apply to me at all”) to 3 (“applied to me very much, or most of the time”). Examples of the items include: “I found it hard to wind down”, “I felt that I was using a lot of nervous energy”, and “I found myself getting agitated”. Scores are calculated by summing the items within each subscale. DASS-21 has high internal consistency and is widely used in studies assessing the severity of negative emotional states. The scale was administered twice, at the first and second stages, to assess changes in students’ emotional state.

The Connor–Davidson Resilience Scale (CD-RISC-10) (Gray et al., 2024; Xiaofan et al., 2023) — this scale is a shortened version of the original resilience scale and consists of 10 items rated on a 5-point Likert scale ranging from 0 (“not true at all”) to 4 (“true nearly all of the time”). The scale measures the ability to adapt to difficulties, recover from stressful situations, and maintain psychological resilience. Examples of items include: “I am able to adapt to change” and “I can deal with whatever comes my way”. Higher total scores indicate a higher level of resilience. The CD-RISC-10 was administered once and was used to compare first- and second-year students as independent samples.

The second stage was conducted in winter (January) 2025 after completion of the examination session. The aim was to identify changes in the level of psychological distress and to assess students’ perceptions of academic and emotional support provided by their academic advisor. At this stage, students completed the DASS-21 again and also completed the following instruments:

The Perceived Academic Advisor Support Scale (PASS) (Burt et al., 2013; Svardtal et al., 2020) — the scale consists of 27 items reflecting three components of the advising relationship: academic support, emotional support, and autonomy support. Responses are recorded on a 5-point Likert scale ranging from “strongly disagree” to “strongly agree”. Examples of the items include: “My advisor is attentive to my questions”, “My advisor provides options when I make academic decisions”, and “My advisor encourages independence”. Higher scores indicate greater perceived support. The PASS was used to compare the results of first- and second-year students.

A feedback questionnaire specifically developed for this study, consisting of five statements rated on a Likert scale, was used to assess students’ subjective perceptions of the importance of academic advising support.

Statistical analysis

Data were processed using Microsoft Excel. The results are presented as means and standard deviations ($M \pm SD$). Differences were assessed using Student’s t-test. For the DASS-21, paired measurements obtained from the same students at two time points were analyzed; therefore, a paired-samples t-test was used. The CD-RISC-10 and PASS scores were compared between students from different academic years; therefore, an independent-samples t-test was used.

Associations between variables were analyzed using the Pearson correlation coefficient. The reliability of the scales was assessed using Cronbach’s α coefficient, calculated in IBM SPSS Statistics. The normality of the data distribution was assessed using the Shapiro–Wilk test. The data were

normally distributed, which allowed the use of parametric statistical methods. Differences were considered statistically significant at $p < 0,05$.

Results

The table presents comparative data for the DASS-21, PASS, and CD-RISC-10 scales collected from first- and second-year students at two stages of the study — the autumn stage (Stage I, 2024) and the winter stage (Stage II, 2025). For the DASS-21, the analysis was conducted using paired samples because the scores of the same group of students were compared at two time points, allowing changes in emotional state following academic advising support to be assessed. For the CD-RISC-10 and PASS, independent samples of first- and second-year students were compared, which corresponded to the objective of identifying differences in resilience and perceptions of academic advising support.

The mean DASS-21 scores decreased significantly from $38,69 \pm 7,77$ at Stage I to $32,37 \pm 6,56$ at Stage II, indicating a reduction in levels of depression, anxiety, and stress among the students ($t = 5,168$, $p < 0,001$). Thus, the DASS-21 scores reflected the dynamics of students' emo-

tional state and made it possible to assess changes in their psychological well-being. The reliability coefficients of the DASS-21, calculated using Cronbach's α , were 0,81 at Stage I and 0,91 at Stage II (Cronbach's α is a measure of the internal consistency of a scale), indicating increased measurement reliability upon repeated testing.

For the CD-RISC-10, the mean score was $22,71 \pm 5,66$ among first-year students and $21,54 \pm 4,52$ among second-year students ($t = 2,921$, $p < 0,005$, $\alpha = 0,81$). This measure reflects the level of resilience as an individual psychological resource associated with the ability to cope effectively with stressful educational demands.

For the PASS, the mean scores were $34,36 \pm 6,07$ among first-year students and $31,43 \pm 5,91$ among second-year students ($t = 1,945$, $p < 0,05$, $\alpha = 0,93$). The PASS assesses students' perceptions of academic, emotional, and autonomy support provided by their academic advisor, thereby allowing the key psychological components of the advising interaction to be examined.

Correlation analysis revealed a negative correlation between academic advisor support (PASS) and psychological distress (DASS-21, Stage II), $r = -0,181$, $p < 0,05$ (Figure 1), as well as a negative correlation between resilience (CD-RISC-10, Stage

Table

Psychological distress, academic advisor support, and students' resilience

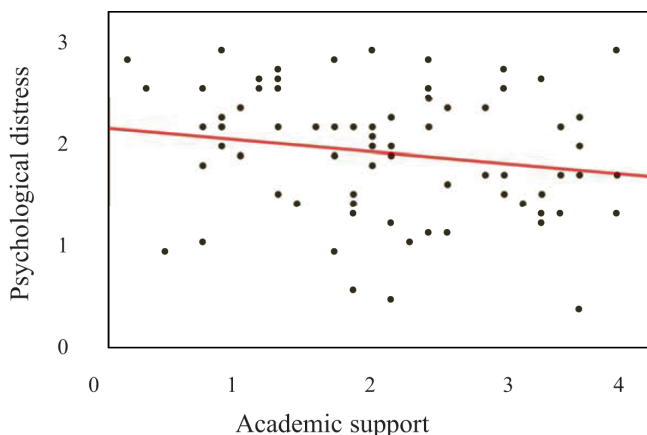
Questionnaire	Study stage	M $\pm$ SD	t	p	Cronbach's α
DASS-21	Stage I	$38,69 \pm 7,77$	5,168	< 0,001	0,81
	Stage II	$32,37 \pm 6,56$			0,91
CD-RISC-10	Year 1	$22,71 \pm 5,66$	2,921	< 0,005	0,81
	Year 2	$21,54 \pm 4,52$			
PASS	Year 1	$34,36 \pm 6,07$	1,945	< 0,05	0,93
	Year 2	$31,43 \pm 5,91$			

Note: * t-test: differences in DASS-21 scores were calculated between Stages I and II; differences in CD-RISC-10 and PASS scores were calculated between first- and second-year students.

l) and psychological distress (DASS-21, Stage II), $r = -0,274$, $p < 0,05$ (Figure 2).

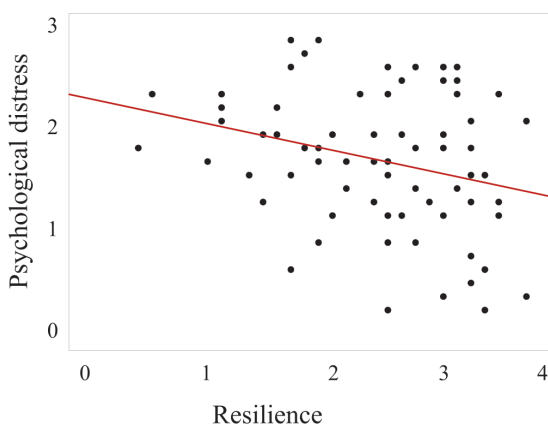
According to the results of the feedback questionnaire (Figure 3), 53 of 73 students (72,6%) reported that academic advising had a positive impact on their psychological well-being and educational process; 68 students (93,1%) reported that advisors helped them cope with academic and

personal difficulties; 47 students (64,4%) indicated that academic advising contributed to their personal growth, rather than providing academic support alone. In addition, 56 students (76,7%) reported that advisors contributed to improved group work, while 46 students (63,0%) indicated that academic advisors influenced their professional self-determination.



* Negative correlation: $r = -0,181$, $p < 0,05$.

Fig. 1. Correlation between academic advisor support (PASS) and students' psychological distress level (DASS-21, Stage II)



* Negative correlation: $r = -0,274$, $p < 0,05$.

Fig. 2. Correlation between resilience (CD-RISC-10) and psychological distress level (DASS-21, Stage II)

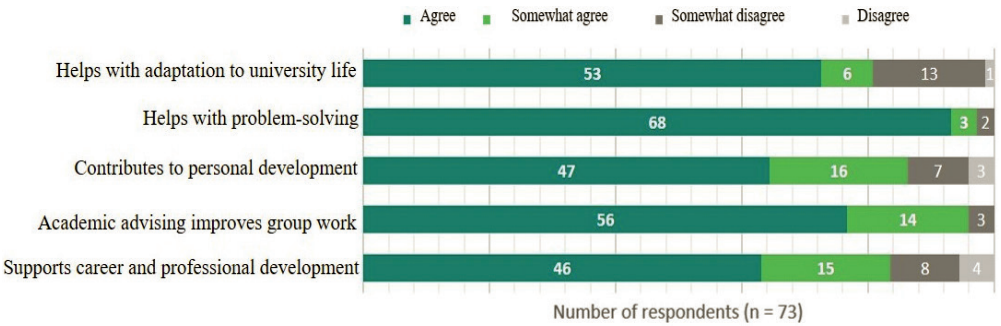


Fig. 3. Students' assessment of the importance of academic advising

Discussion

The present study aimed to identify the relationships between students' psychological state and the role of academic advising. The study analyzed the emotional and behavioral characteristics of students' engagement in the educational process, reflected in levels of anxiety, stress, and their subjective perception of the support they received. Psychological well-being was assessed using measures of distress (DASS-21) and resilience (CD-RISC-10), while the "psychological aspects of academic advising" referred to students' perceptions of academic, emotional, and autonomy support provided by their academic advisor (PASS). The literature indicates that high levels of stress among students are negatively associated with academic engagement and may increase the risk of poorer academic performance (Ogareva et al., 2020; Connor, Davidson, 2003). These findings are consistent with studies emphasizing the importance of resilience as a protective factor against psychological distress. In our study, the use of standardized scales made it possible to analyze key components of emotional state and perceived support. Despite the limitations of the

quantitative approach, the use of questionnaires made it possible to include a broad sample of students. However, the absence of a control group limits the precision of interpretation and does not allow the influence of external factors to be excluded. Therefore, the interpretation of the observed changes is correlational rather than causal. Future studies should include control groups to provide a more accurate assessment of the effects of academic advising (Vinogradov, Shatunova, 2023; Ulyanina, Nikiforova, 2024). The longitudinal design made it possible to track changes over time: by the end of the semester, reductions in anxiety and stress levels were observed according to the DASS-21, and differences were identified between first- and second-year students in terms of resilience and perceived academic advisor support. At the same time, the mean scores were higher among first-year students, which may indicate greater responsiveness to support and the importance of mentoring during the early stages of education. The CD-RISC-10 was used to assess students' resilience, which was considered a relatively stable personal characteristic. Academic advising demonstrated effective-

ness in supporting students: a negative correlation was identified between perceived support from the academic advisor (PASS) and the level of psychological distress (DASS-21, Stage II). In addition, a negative correlation was found between resilience (CD-RISC-10) and distress (DASS-21, Stage II), indicating a potential protective role of resilience (Awais et al., 2023; Gray et al., 2024). However, it should be noted that these relationships reflect associations rather than the effect of the academic advisor as an intervention; in this study, academic advising was considered a component of the natural educational process rather than an experimental intervention. Thus, this study focused on students' perceptions of psychological and academic support from their academic advisor, which contributes to reducing anxiety and stress symptoms and creates a more comfortable and safe educational environment in which students feel heard and motivated (Shamionov, Sharov, 2025; Rotenstein et al., 2016; Yazzie-Mintz et al., 2021). The findings highlight the role of academic advising as an important resource for

developing and strengthening students' psychological resilience.

Conclusion

The results obtained demonstrate a significant relationship between academic advising, the level of psychological distress, and students' resilience. Academic advising represents an important component of the system of psychological and pedagogical support, contributing to the reduction of emotional distress and the strengthening of students' psychological resilience, particularly in medical education programs.

Future research should include an analysis of individual differences in students' perceptions of advising support, the development and evaluation of an academic mentoring model aimed at fostering resilience, the use of qualitative methods to gain a deeper understanding of students' experiences, as well as the development and evaluation of the effectiveness of student support programs.

Individualized academic advising should be regarded as a resource that contributes to students' psychological well-being and strengthens their personal resources.

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The role of recreational therapy in anger control reactions among students in King Faisal University as a behavior intervention program

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Abstract

Context and relevance. The problems with anger management pose a major risk to the psychological health and academic performance of university students. **Objective.** This research aimed to evaluate the immediate effect of an 8-week recreational behavioral therapy program on anger reactions among undergraduate students at King Faisal University. **Methods and materials.** A quasi-experimental design was used to randomly allocate 40 students to experimental ($n = 20$; age = $20,55 \pm 1,19$) and control ($n = 20$; age = $20,77 \pm 1,49$; $p = 0,78$) groups. GPA (experimental: $3,45 \pm 0,14$; control: $3,43 \pm 0,15$; $p = 0,80$), and pre-test anger scores were found to be baseline equivalent ($p = 0,79$). The experimental group was provided with an 8-week program (two 40-minute sessions/week) that combines cognitive-behavioral skills such as cognitive restructuring, assertive communication, and time-out with cooperative sporting activities, expressive arts, and agility games. The control group did not receive any intervention. A validated scale of 20 items was used to measure anger and was based on PROMIS. Small sample size and non-normal data also necessitated the use of nonparametric tests. **Results.** The findings indicated that the experimental conditions were statistically significant in pre-post changes in all anger subscales ($p < 0,001$, $r = 0,84–0,97$) and were significantly lower than the control group at the post-test ($p < 0,001$, $r = 0,92–0,97$). No significant changes were observed in the control group ($p > 0,05$). **Conclusion.** Results indicate that recreational behavioral therapy created clinically significant decreases in anger expression in university students, as the experimental group had significantly lower anger scores compared to the controls at post-intervention. Its combination of evidence-based methods with participatory and culturally specific activities makes it a valuable approach for counseling centers at universities that aim to enhance students' emotional control and psychological well-being.

Keywords: recreational therapy, anger management, university students, behavioral intervention, PROMIS Anger Scale

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Роль рекреационной терапии в контроле гнева у студентов Университета короля Фейсала в рамках программы поведенческой коррекции

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Резюме

Контекст и актуальность. Проблемы с управлением гневом представляют собой серьезный риск для психологического здоровья и успеваемости студентов университетов. **Цель.** Целью данного исследования было оценить непосредственное влияние 8-недельной программы рекреационной поведенческой терапии на реакции гнева у студентов бакалавриата Университета имени короля Фейсала. **Методы и материалы.** Использовался квазиэкспериментальный дизайн, в рамках которого 40 студентов были случайным образом распределены в экспериментальную ($n = 20$; возраст = $20,55 \pm 1,19$) и контрольную ($n = 20$; возраст = $20,77 \pm 1,49$; $p = 0,78$) группы. Средний балл успеваемости (экспериментальная группа: $3,45 \pm 0,14$; контрольная группа: $3,43 \pm 0,15$; $p = 0,80$); показатели гнева до начала исследования оказались эквивалентными исходным значениям ($p = 0,79$). Экспериментальной группе была предоставлена 8-недельная программа (два 40-минутных занятия в неделю), которая сочетает развитие когнитивно-поведенческих навыков, таких как когнитивная реструктуризация, ассертивное общение и тайм-аут, с кооперативными спортивными мероприятиями, экспрессивными видами искусства и играми на ловкость. Контрольная группа не подвергалась никакому вмешательству. Для измерения гнева использовалась валидированная шкала из 20 пунктов, основанная на шкале гнева PROMIS. Небольшой размер выборки и ненормальное распределение данных также потребовали использования непараметрических тестов. **Результаты.** Результаты показали, что экспериментальные условия статистически значимо изменили показатели по всем субшкалам гнева до и после вмешательства ($p < 0,001$, $r = 0,84–0,97$) и были значительно ниже, чем в контрольной группе, после тестирования ($p < 0,001$, $r = 0,92–0,97$). В контрольной группе значительных изменений не наблюдалось ($p > 0,05$). **Заключение.** Результаты показывают, что рекреационная поведенческая терапия привела к клинически значимому снижению уровня гнева у студентов университета, при этом в экспериментальной группе после вмешательства наблюдались значительно более низкие показатели гнева по сравнению с контрольной группой. Сочетание научно обоснованных методов с интерактивными и культурно-специфическими мероприятиями позволяет применять этот метод в консультационных центрах университетов, стремящихся повысить эмоциональный контроль и психологическое благополучие студентов.

Ключевые слова: рекреационная терапия, управление гневом, студенты университета, поведенческая интервенция, шкала гнева PROMIS

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Introduction

Anger is a normal emotional response, but it becomes dysregulated among college students and causes far-reaching effects on academic achievement, social life, and mental health. Studies by Park and Kim (2022) and Barbayanis et al. (2022) show that students with high anger tend to view college stressors as more severe and more prevalent, support irrational beliefs, and use maladaptive anger expression patterns, which are associated with higher anxiety and depression. Anger management training and cognitive therapy have proven to be effective in the reduction of aggression and mental health outcomes, and meta-analyses have shown significant changes in anger and aggression with structured programs (Nauraliefia, Yudiarto, 2023). In particular, a mindful emotion awareness/cognitive reappraisal approach has proven to be more effective in regulating maladaptive anger (Bjureberg et al., 2022). Moreover, good anger management not only reduces the psychological burden but also improves interpersonal relationships and well-being, which is why it is crucial to consider the role of anger in college life (Park, Kim, 2022; Nauraliefia, Yudiarto, 2023).

Recent studies show worrying trends of expressing anger in institutions of higher learning. According to a study conducted by Najafi-Sharjabad et al. (2017), Aifan Isa and Al-Mukhtar found that moderate emotional regulation difficulties were common among students, which indicates the ubiquity of the

issues across genders and disciplines (Isa and Al-Mukhtar, 2024). Moreover, as stated by Saraçoğlu et al., the stressors at the university level contribute to the amplified anger levels, and thus the intervention should be applied to the participants to help them express anger healthily (Saraçoğlu et al., 2017). According to recent research, there is an alarming rate of anger management problems among college students, with about 30% of students reporting anger management difficulties and 15% exhibiting clinically significant problems, which may result in interpersonal violence and higher dropout rates (Rosdan et al., 2023). It has been established that anger is associated with delinquent behaviors, especially violent ones, and thus, it is assumed that the more a person is angry, the more likely they are to engage in criminal activities (Ariwkan, 2024). Also, Isa and Al-Mukhtar (2024) discovered that moderate emotional regulation problems were universal among students, which points to the universality of the problems in terms of gender and discipline. The university environment stressors, including academic stress and social issues, exacerbate anger levels, and interventions aimed at encouraging healthy anger expression are required (Alahakoon, Filippo, 2024). It is important to implement specific anger management measures to reduce such risks and create a less threatening educational environment (Bocharina, Astafieva, 2023).

Conventional anger management approaches in universities, mainly cognitive-behavioral

therapy (CBT) and psychoeducational interventions, have shown low effectiveness, which frequently leads to low levels of student participation and high turnover rates (Özer, Yalcin, 2020). Scholarly studies show that CBT is not only capable of alleviating social anxiety and aggression, but its use in anger management might not be entirely captivating to the students, which is why alternative treatments should be used (Bilge, Keskin, 2017; Nauraliefia, Yudiarto, 2023). As an example, psychodrama in anger management education has shown considerable progress in anger management, and more interactive and involving approaches may increase student engagement (Bilge, Keskin, 2017). Also, a meta-analysis showed that the effect size of anger management programs was large, and such programs may be effective in aggression reduction (Nauraliefia, Yudiarto, 2023). Thus, it is important to consider new approaches to motivate and engage students and enhance the results in anger management among university students (Fernandez et al., 2018).

This is founded on the recreation and well-being model (Wilensky et al., 2020), which demonstrates the effects of organized recreation that lead to psychological resilience and emotional regulation with reference to five mechanisms: (1) self-motivation, (2) experiential learning, (3) social support, (4) physical relaxation, and (5) cognitive reappraisal. This model is also additive to the explanation of cognitive behavioral therapy, wherein automatic emotional reactions (i.e., anger) can be changed to controlled reactions by cognitive restructuring and behavior training in a safe recreational setting. This is a foundation to learn why behavioral recreation programs are more productive compared to traditional interventions in the university setting, since they are more aligned with the needs of young people to learn and interact.

Recreational therapy is a worthy treatment tool for promoting mental health, especially in anger and anxiety management. This can be described as the methodical use of recreational activities to improve mental and physical health, as it involves using the embodied qualities of such activities as art, music, and physical activ-

ity to enable emotional processing and expression (Dedans, 2024; Kumar et al., 2023). Such activities can help not only to distract people in distress but also to create an entertaining and supportive atmosphere, encouraging them to adhere to treatment (Dedans, 2024). Moreover, recovery following a severe mental illness can be improved when personally meaningful leisure activities are incorporated to ensure the person feels connected to others and less isolated (Kumar et al., 2023). Altogether, recreational therapy is a holistic and strengths-based intervention, which can successfully resolve mental health issues and enhance quality of life (Trindade et al., 2025).

The combination of recreational therapy and behavioral intervention is becoming a more accepted and effective method of improving experiential learning and skills acquisition in people with disabilities, especially teenagers with autism. Behavior interventions are aimed at determining triggers and finding problem-solving methods that play a vital role in the management of various problems that these individuals encounter (Zhang, 2025; Peixoto et al., 2025). The Leisure and Well-Being Model demonstrates that recreational therapy creates a realistic setting where these skills can be applied, which leads to the development of emotions and social and cognitive life (Zhang, 2025; Scott et al., 2020). To exemplify, therapeutic recreation has been reported to ultimately result in the emotional regulation level and coping behaviors of adolescents with autism, which illustrates the effectiveness of integrating a behavioral approach and recreational activities (Zhang, 2025). Moreover, it has been clarified that complementary therapies, including aquatic therapy, play a crucial role in improving the functional status and overall quality of life of people with disabilities, which makes the significance of a holistic approach to treatment even more evident (Scott et al., 2020). This synergy not only helps in the solution of problems in behavior but also facilitates overall well-being with the help of experiential learning.

Although theoretical evidence is available concerning the consistency of integrated entertainment and behavioral anger management

strategies with the developmental needs of the young adult, little empirical evidence exists about the subject, even though the same concept has been theoretically established to be applicable to college students. According to a meta-analysis study, arousal-reducing exercises, such as mindfulness and meditation, can be efficient in reducing anger and aggression, but arousal-enhancing exercises, such as physical activity, have negligible effects on various groups of people (Kjervvik, Bushman, 2024). In another study, where the intervention of the implementation of cognitive-behavioral combined musical rhythms was performed, it was demonstrated that the expression of anger among nursing students was reduced by more than fifty percent, and the introduction of cognitive-behavioral techniques into an engaging activity could be effective in improving the results (Ekitli, Oezgur, 2021). Additionally, systematic reviews reveal the future of video games as an emerging method of anger management, and additional research is needed to understand the extent of the same (Marcelino et al., 2023). Collectively, these findings indicate the significance of the integrated strategies, which can include the standardized behavioral instruments with the leisure ones to control the process of anger management among college students.

Although traditional ways of cognitive-behavioral interventions proved to be effective in anger management, their implementation in university environments is usually characterized by low attendance and high dropout rates among students (Özer and Yalcin, 2020). Recent theoretical developments, including the Leisure and Well-Being Model (Wilensky et al., 2020), suggest that recreational experiences generate experiential settings that allow behavioral skills (e.g., cognitive restructuring, impulse control) to be trained in low-threat emotional but not overtly threatening conditions, which in turn improves skills acquisition and retention. It is based on the notion that structured leisure triggers five psychological processes: (1) intrinsic motivation, (2) embodied learning, (3) social support, (4) physiological regulation, and (5) cognitive reframing mechanisms, which

are specifically most characteristic of the developmental needs of young adults to feel autonomous and peer-connected.

Although the theoretical underpinnings of the issue are encouraging, empirical support of recreational-behavioral integration when it comes to anger management among university students is still scarce. The majority of available literature concentrates on either pure CBT protocols (Vural, Yaycui, 2023) or unstructured recreational activities (Kumar et al., 2023), but there have been few studies on how behavioral strategies could be systematically integrated into culturally appropriate leisure settings to induce anger-specific processes (identification of triggers, internal arousal regulation as well as external expression regulation).

This research paper will focus on the following research question based on the Leisure and Well-Being Model: To what extent does an 8-week recreational behavioral therapy program, which combines evidence-based behavioral strategies (cognitive restructuring, assertive communication, time-out) within cooperative sports, expressive arts and agility games, reduce anger triggers, internal anger and external anger expression among undergraduate students compared to a no-intervention control group?

We hypothesized that:

H1: The scores in all three dimensions of anger (triggers, internal, external) would exhibit statistically significant reductions between the pre- and post-intervention scores in the experimental group ($p < 0,001$, $r = 0,50$).

H2: The level of anger in the experimental group would significantly be lower than the level of anger in the control group on all the dimensions ($p < 0,001$, $r \geq 0,50$).

H3: There would be no significant changes in the control group at any of the times ($p > 0,05$).

Methods and materials

Participants and study design

The study program was conducted over eight weeks, with two sessions per week. Students at King Faisal University in Al-Ahsa were included in the program. Their academic records at university provided them with their socio-eco-

nomical status and other demographic information. The participants by socio-economic class were above average. A program was implemented on a sample of 40 students (randomly split into two groups): experimental (20 students, mean age $20,55 \pm 1,19$ years old) and control (20 students, mean age $20,77 \pm 1,49$ years old) groups. The groups were similar on the main baseline variables. The experimental group had an average grade point average (GPA) of 3,45 with a standard deviation of 0,14, and the control group had an average of 3,43 with a standard deviation of 0,15. Moreover, the pre-test scores of the anger scale revealed that the initial levels of anger were similar, with $75,10 \pm 4,38$ for the experimental group and $75,65 \pm 3,66$ for the control group. The t-tests were conducted independently between the groups, and there was no statistically significant difference between the groups in terms of age ($p = 0,78$), GPA ($p = 0,80$), or pre-test anger scores ($p = 0,79$), which ensures that there were no differences between the groups at the very beginning of the study.

Assessments

They were assessed at baseline, pre- and post-intervention, so that the effect of a recreational behavior pattern on the decrease of anger in King Faisal University students could be studied. Measurement tools were validated and provided to the researchers, who were trained in their use and administered them to participants. The agreement between the raters was high [statistical value $\geq 0,92$]. The anger scale was chosen as a major source of data gathering among the university students (see Appendices A and B to get more information). To calculate anger levels in the sample of university students, we employed the PROMIS Anger Scale (Elsayed, Hassan, 2023; Kaman et al., 2022) with certain modifications. The initial scale had twenty-two items that were spread across three dimensions: anger triggers, internal anger, and external anger. Seven items were allocated to each of the anger triggers and internal anger dimensions, and eight items to the external anger dimension. The

scale's validity was verified by submitting the scale to a panel of experts in special education and mental health, and their response was considered. Correlation coefficients were also found between the scores of each dimension of the scale, and the results ranged from 0,68 to 0,957 across all three dimensions. Correlation coefficients between the score of each dimension and the overall score were between 0,692 and 0,933. The consistency of the scale was determined by the two techniques: the split-half technique (based on the formula of Spearman-Brown, 0,924, 0,911, and 0,828) (dimension 1, dimension 2, and dimension 3, respectively) and the alpha coefficient of Cronbach (0,896, 0,884, and 0,921). The sample was then given the scale. Following the scale development process, the end version comprised twenty items that were spread into three major dimensions, namely anger-inducing factors, internal anger, and external anger dimensions. Seven items were in the anger-inducing factors dimension, six items were in the internal anger dimension, and seven items were in the external anger dimension. All items were rated on a five-point Likert scale as follows: "Strongly Apply" (5 points), "Apply" (4 points), "Sometimes" (3 points), "Do Not Apply" (2 points), and "Strongly Do Not Apply" (1 point) (see Appendix A). The researchers utilized a quasi-experimental methodology where they used a two-group design, one experimental group and one control group.

Testing procedures

Testing procedures were introduced systematically between February and April 2025 (second semester, 2024/2025 academic year) at King Faisal University, with the three-phase quasi-experimental protocol aimed at measuring the short-term impact of recreational behavioral intervention. To create the first and second equivalence, a baseline pre-test was conducted on the experimental and control groups to determine initial similarity in anger levels and demographic variables. Second, the 8-week intervention (two 40-minute sessions per week) was provided to the experimental group only, with

the combination of evidence-based behavioral strategies (cognitive restructuring, assertive communication, time-out procedures) implemented in the context of the culturally adjusted recreational activities (cooperative sports, expressive arts, agility games), whereas the control group was provided with no intervention during this time. The last test was the immediate post-test, which was done just after the end of the program, and it was the measure of the intermediate effect of anger expression in order to isolate the short-term effects of the intervention on anger expression by ruling out the effects of maturation and the test-retest effect. The reason why this phased design promoted internal validity was that the baseline homogeneity was assured before intervention, and that it was subsequently possible to compare within-group changes (pre-post) and between-group differences (experimental vs. control) at post-test.

Behavioral intervention program

The recreational behavioral therapy program was an 8-week, 16-session intervention program that was provided on two occasions (40 minutes per session) a week to the experimental group. It combined both evidence-based behavioral and cognitive interventions — including cognitive restructuring, assertive communication training, relaxation exercises, role-playing, and positive reinforcement — into a systematic recreational system. Every session was based on psychoeducational elements (e.g., anger trigger identification, disruptive negative thoughts) and the use of recreational activities that should be performed in the practice of anger regulation in real-life situations. These activities were cooperative sporting (e.g., modified tug-of-war, basketball, and football), agility (e.g., hoop-jumping drills), and expressive arts (e.g., drawing, clay sculpting), all explicitly related to the anger management goals such as emotional awareness, impulse control, teamwork, and sportsmanship. To give the adaptive behaviors a boost, behavioral interventions, such as the response cost (with regard to aggressive responses) and time-out (with regard to self-regulation), were integrated into the game rules and role-plays. The program was fidelized

by training facilitators and was manualized (see Appendix B).

Ethical considerations

All students were well informed of the intentions of the study, the benefits, and the risks of doing the research before it was started. Each of them later obtained informed consent in writing

Statistical analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS, version 26; IBM Corp., Armonk, NY, USA). Descriptive statistics (means, standard deviations, and frequencies) were calculated to summarize demographic characteristics and baseline anger scale scores. The normality of score distributions was tested using the Shapiro-Wilk test before conducting inferential analyses. Since the sample size was small ($n = 20$ per group) and normality assumptions were violated for some variables ($p < 0,05$), all hypothesis testing was conducted using nonparametric tests, which are recommended for small samples when distributional assumptions are not met. Within-group changes (pre-test vs. post-test) were analyzed using the Wilcoxon signed-rank test for both the experimental and control groups. Between-group differences in post-test scores were examined using the Mann-Whitney U test. Effect sizes were calculated to assess practical significance: for Wilcoxon and Mann-Whitney tests, $r = Z/N$ was used, where N is the total number of observations. Effect sizes were interpreted as follows: $r \geq 0,10$ (small), $r \geq 0,30$ (medium), and $r \geq 0,50$ (large). Cronbach's alpha was used to assess the internal consistency of the anger scale. Split-half reliability was calculated using the Spearman-Brown prophecy formula. Inter-rater agreement was assessed using the Intraclass Correlation Coefficient (ICC), with coefficients of 0,92 or higher indicating excellent agreement. All statistical tests were conducted at a significance level of 0,05 (two-tailed).

Results

Baseline socio-economic characteristics were examined to ensure equivalence between

the experimental and control groups before the intervention. Table 1 shows that chi-square tests of independence did not reveal statistically significant differences between the two groups in family monthly income ($\chi^2 = 0,32$, $df = 2$, $p = 0,852$), parental education level ($\chi^2 = 0,21$, $df = 2$, $p = 0,900$), or parental occupational status ($\chi^2 = 0,17$, $df = 2$, $p = 0,918$). These findings confirm that the groups were similar in terms of socio-economic background, which supports the internal validity of the quasi-experimental design.

Wilcoxon signed-rank tests (see Table 2) revealed significant changes in anger scores from pre-test to post-test across all subscales in the experimental group ($p < 0,001$), with very high effect sizes ($r = 0,84$ to $0,90$), which are a strong indication of the practical significance of the intervention.

Conversely, the control group did not show any statistically significant differences in any subscale ($p > 0,05$; see Table 3), and all effect sizes were small to medium ($r = 0,07$ to $0,41$), indicating that the observed trivial changes were probably due to natural variation or familiarity with the testing procedure.

Finally, the Mann-Whitney U test of the post-test scores between the two groups (Table 4) showed that the differences across all dimensions of anger were highly significant ($p < 0,001$), and the experimental group had significantly lower levels of anger with very

large effect sizes ($r = 0,92$ to $0,97$). Such results strongly support the conclusion that the recreational therapy program itself was responsible for the observed improvements.

The chi-square test statistics in Table 1 indicate successful randomization and baseline equality between the experimental and control groups across all socio-economic indicators. There were no statistically significant differences between the groups in family monthly income ($\chi^2 = 0,32$, $df = 2$, $p = 0,852$), parental education level ($\chi^2 = 0,21$, $df = 2$, $p = 0,900$), or parental occupational status ($\chi^2 = 0,17$, $df = 2$, $p = 0,918$), and the distribution patterns were almost identical across all categories (e.g., 60,0% vs. 55,0% in middle-income families). This methodological homogeneity is a critical factor in this demographic group, as it rules out socio-economic status as a potential confounding variable, thereby enhancing the internal validity of the quasi-experimental design.

Table 2 shows that Wilcoxon signed-rank tests revealed statistically significant reductions in anger scale scores between pre-test and post-test across all subscales in the experimental group ($p < 0,001$), with large effect sizes (r between $0,84$ and $0,90$), indicating both statistical and practical significance of the recreational therapy intervention. Figure 1 shows the mean anger scale scores before and after program implementation in the experimental group.

Table 1
Homogeneity of socio-economic characteristics between experimental and control groups

Socio-economic indicator	Category	Experimental group (n = 20)	Control group (n = 20)	χ^2	df	p-value
Family monthly income	Low (<5,000 SAR)	3 (15,0%)	4 (20,0%)	0,32	2	0,852
	Medium (5,000–15,000)	12 (60,0%)	11 (55,0%)			
	High (>15,000)	5 (25,0%)	5 (25,0%)			
Parental education level	Secondary or less	4 (20,0%)	5 (25,0%)	0,21	2	0,900
	Bachelor's	11 (55,0%)	10 (50,0%)			
	Master's+	5 (25,0%)	5 (25,0%)			
Parental occupation	Non-professional	5 (25,0%)	6 (30,0%)	0,17	2	0,918
	Professional	9 (45,0%)	8 (40,0%)			
	Executive	6 (30,0%)	6 (30,0%)			

Table 2

Wilcoxon signed-rank test results for experimental group (n = 20)

Variable	Pre			Post			Mean rank		Sum of ranks		Z	p-value	r
	Min	Max	Mean ± std. dev.	Min	Max	Mean ± std. dev.	Positive	Negative	Positive	Negative			
Anger triggers	23	29	25,90 ± 1,45	16	21	18,05 ± 1,39	15,8	14,2	316	284	3,78	< 0,001	0,84
Inner anger	19	25	21,65 ± 1,50	12	18	15,30 ± 1,26	16,5	13,5	330	270	3,92	< 0,001	0,87
External anger	24	31	27,55 ± 1,73	15	23	19,15 ± 1,95	16,0	14,0	320	280	3,85	< 0,001	0,86
Total anger scale	69	85	75,10 ± 4,38	49	62	52,50 ± 4,03	17,0	13,0	340	260	4,05	< 0,001	0,90

Note: r = effect size, Std = standard deviation; Sig = statistical significance.

The statistical data in Table 2 from the Wilcoxon signed-rank test for the experimental group show statistically and clinically significant effects of the 8-week recreational behavioral therapy program on all anger dimensions. The participants showed significant reductions in anger triggers (25,90 ± 1,45 to 18,05 ± 1,39; Z = 3,78, p < 0,001, r = 0,84), inner anger (21,65 ± 1,50 to 15,30 ± 1,26; Z = 3,92, p < 0,001, r = 0,87), and external anger (27,55 ± 1,73 to 19,15 ± 1,95; Z = 3,85, p < 0,001, r = 0,86). The overall effect sizes (r ≥ 0,84), which exceed the conventional

threshold for a large effect (r ≥ 0,50), indicate that the changes were both statistically and practically significant, reflecting a strong therapeutic effect. Moreover, the consistent direction of reductions across all subscales (with positive rank sums exceeding negative ranks) indicates a general downward shift in anger expression rather than random variation. This supports the inference that the recreational behavioral intervention effectively changed both the cognitive-emotional (triggers, inner anger) and behavioral (external anger) aspects of anger regulation in university students.

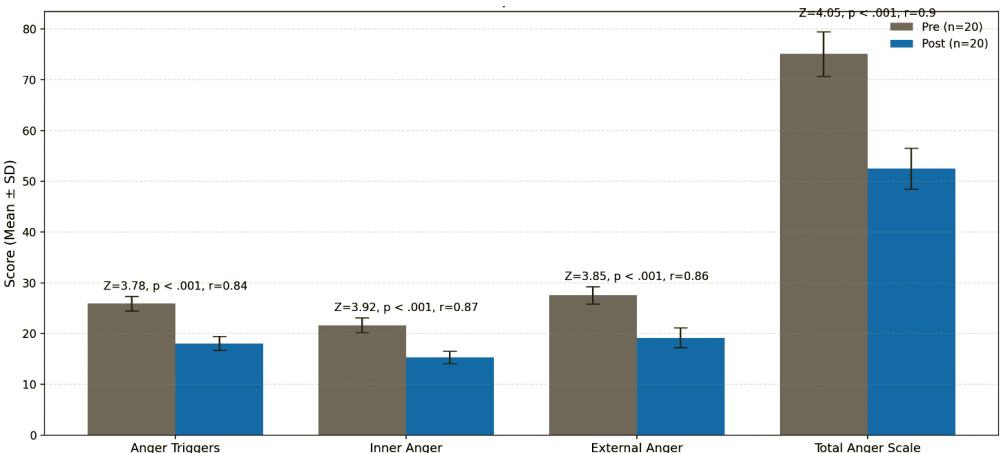


Fig. 1. Mean anger change measures at the end of an 8-week recreational behavioral therapy intervention: pre-test versus post-test changes in experimental group

Table 3 presents the results of the Wilcoxon signed-rank tests, which revealed no statistically significant changes in anger scale scores between pre-test and post-test in the control group across any of the subscales (all $p > 0,05$). Even though the overall anger score showed a slight but nonsignificant decrease ($p = 0,064$) with a medium effect size ($r = 0,41$), the differences in anger triggers ($r = 0,07$), inner anger ($r = 0,32$), and external anger ($r = 0,16$) were small and nonsignificant. Such results suggest that the slight variations in anger levels within the control group over time were likely due to natural variation or familiarity with the testing procedure, rather than any systematic intervention. Figure 2 shows the mean anger scale scores of the control group at pre-test and post-test.

The results of the Wilcoxon signed-rank test (Table 3) indicate that there are no statistically significant differences in the anger scores between the pre-test and post-test in all subscales ($p = 0,05$) and that the effect sizes are very small (anger triggers: $r = 0,07$; external anger: $r = 0,16$; inner anger: $r = 0,32$). Even though the total anger scale indicated a relatively small numerical decrease ($75,65 \pm 3,66$ to $69,40 \pm 3,84$) with the moderate effect size ($r = 0,41$), this was not statistically significant ($p = 0,064$), which is marginally below the conventional level of significance ($\alpha = 0,05$).

These results suggest that, with no intervention, the level of anger did not change significantly during the eight weeks of study, and the changes observed were probably due to random variation, the effect of familiarity with the tests, or the regression to the mean as opposed to a significant change in the intensity of anger.

The results of the Mann-Whitney U test, as shown in Table 4 of the post-test scores of the anger scales between the experimental and control groups, showed that there were statistically significant differences in the two groups in terms of all subscales ($p = 0,001$). The effect sizes of the experimental group were extremely large at post-test ($r = 0,92$ to $0,97$), and the anger scores showed a significant decrease compared to the control group, with strong evidence of the practical applicability of the recreational therapy program. The visual comparison of the mean scores at the end of the intervention is presented in Figure 3, making it clear that the performance of the experimental group is much better than the performance of the control group.

The Mann-Whitney U test results (Table 4) show that the differences between the groups in post-intervention anger ratings are highly significant, with the experimental group having significantly lower anger levels across all subscales than the control group

Table 3
Wilcoxon signed-rank test results for control group (n = 20)

Variable	Pre			Post			Mean rank		Sum of ranks		Z	p-value	r
	Min	Max	Mean $\pm$ std. dev.	Min	Max	Mean $\pm$ std. dev.	Positive	Negative	Positive	Negative			
Anger triggers	23	29	26,15 $\pm$ 1,42	21	27	23,90 $\pm$ 1,45	15,2	14,8	304	296	0,32	0,749	0,07
Inner anger	19	24	21,80 $\pm$ 1,24	18	22	19,95 $\pm$ 1,10	16,0	14,0	320	280	1,45	0,147	0,32
External anger	25	29	27,70 $\pm$ 1,13	23	29	25,55 $\pm$ 1,47	15,5	14,5	310	290	0,71	0,478	0,16
Total anger scale	67	82	75,65 $\pm$ 3,66	62	78	69,40 $\pm$ 3,84	16,5	13,5	330	270	1,85	0,064	0,41

Note: r = effect size, Std = standard deviation; Sig = statistical significance.

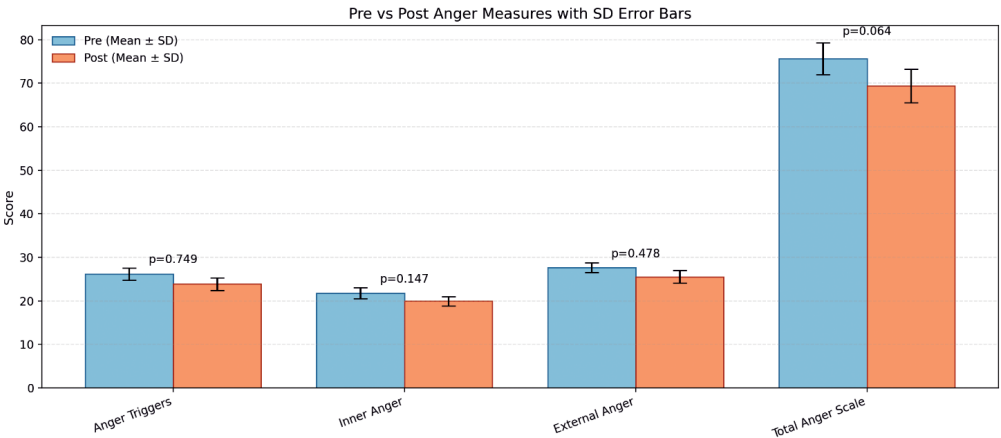


Fig. 2. This chart indicates the mean scores on the anger scale of the students in the university, before and after the introduction of the program to the control group

Table 4

Mann-Whitney U Test results comparing post-test scores between experimental and control groups

Variable	Group	n	Mean ± std. dev.	Mean rank	U	Z	p-value	r
Anger triggers	Experimental	20	18,05 ± 1,39	12,3	62,0	4,12	< 0,001	0,92
	Control	20	23,90 ± 1,45	28,7				
Inner anger	Experimental	20	15,30 ± 1,26	11,8	58,0	4,25	< 0,001	0,95
	Control	20	19,95 ± 1,10	29,2				
External anger	Experimental	20	19,15 ± 1,95	12,1	60,0	4,18	< 0,001	0,93
	Control	20	25,55 ± 1,47	28,9				
Total anger scale	Experimental	20	52,50 ± 4,03	11,5	52,0	4,36	< 0,001	0,97
	Control	20	69,40 ± 3,84	29,5				

($p < 0,001$). Specifically, the experimental group scored significantly lower on anger triggers ($18,05 \pm 1,39$ vs. $23,90 \pm 1,45$), inner anger ($15,30 \pm 1,26$ vs. $19,95 \pm 1,10$), external anger ($19,15 \pm 1,95$ vs. $25,55 \pm 1,47$), and total anger scale ($52,50 \pm 4,03$ vs. $69,40 \pm 3,84$). Importantly, these differences were associated with exceptionally large effect sizes ($r = 0,92\text{--}0,97$), which far surpass the conventional threshold for large effects ($r \geq 0,50$), suggesting not only statistical significance but also substantial practical meaning. The consistently lower mean scores of the experimental group compared to the

control group provide additional evidence of the intervention's effectiveness.

Discussion

This research aimed to evaluate the immediate effect of an 8-week recreational behavioral therapy program on anger reactions among undergraduate students at King Faisal University. The findings demonstrate a robust short-term effect: the experimental group exhibited statistically significant reductions across all anger dimensions (anger triggers, inner anger, external anger, and total anger scale) from pre- to post-intervention ($p < 0,001$, $r = 0,84\text{--}0,97$). Critically, at post-test,

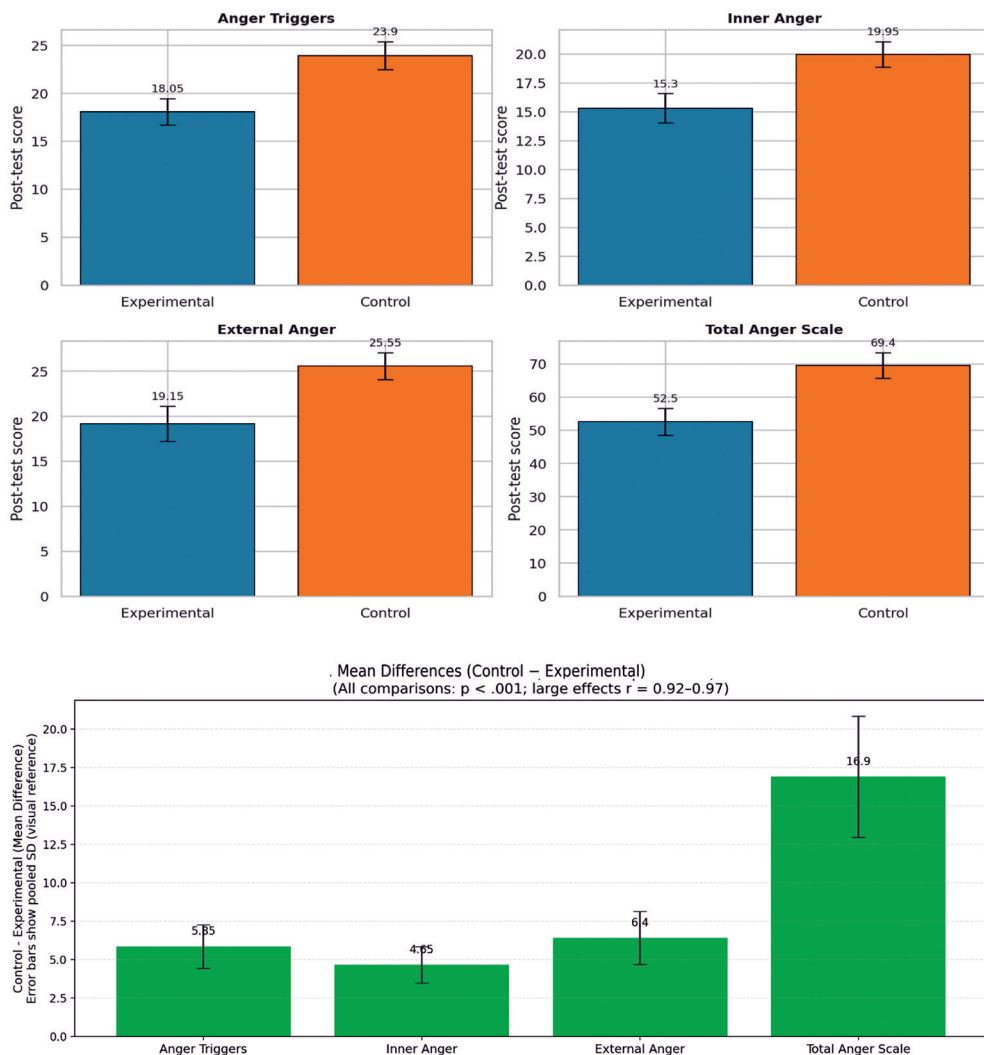


Fig. 3. Mean difference of anger measure in the control and experimental groups after recreational therapy intervention: $p < 0,001$; significant effects $r = 0,92-0,97$

the experimental group scored significantly lower than the control group on all subscales ($p < 0,001$, $r = 0,92-0,97$), confirming that these improvements were attributable to the intervention rather than extraneous variables such as maturation or test-retest effects. Conversely, the control group showed no statistically significant changes over

time ($p > 0,05$ across subscales), with negligible to small effect sizes ($r = 0,07-0,32$), reinforcing the internal validity of the observed intervention effects. The small decrease in overall anger ($p = 0,064$, $r = 0,41$) was not significant according to traditional standards and probably indicates natural variation, test-retest familiarity, or

regression-to-the-mean effects, as often seen in repeated psychological tests. More importantly, the evidence that the internal validity of the study is strong is the fact that the control group did not produce meaningful change, which would otherwise contribute to the dramatic changes in the experimental group being the result of the simple progression of time and consecutive exposure to the scale. Different studies have helped support the efficacy of recreational behavioral therapy programs in reducing anger reactions in students. On the same note, the study of children with intellectual disabilities demonstrated that a recreational program resulted in significant improvements in anger triggers and overall anger levels, which supported the beneficial effect of structured recreational activities (Elsayed, Hassan, 2023). Moreover, cognitive-behavioral therapy has demonstrated its usefulness in anger management in high school students as well, and the level of anger management has improved considerably after the intervention (Vural, Yayci, 2023). All of the findings highlight the possibilities of recreational and therapy programs to deal with anger problems in various populations (Herrera, Ortiz, 2023).

These findings are in line with the rest of the literature that shows the effects on university students. To take the example, Özdemir and Eryilmaz (2024) and Marcelino et al. (2023) achieved a significant decrease in anger and aggressive levels due to cognitive-behavioral program implementation and the implementation of multimodal strategies (anger management programs) with the inclusion of emotion regulation of the structured anger management program in interventions, respectively. Equally, Tomescu et al. (2024) reported the decrease in violence and aggression by means of supervised sports and recreational activities, which can be associated with the focus of the current program on cooperative games, expressive arts, and behavioral reinforcement. The study by Anjanappa and colleagues found that the level of anger, as well as problem-solving and communication skills, dropped significantly in adolescents undergoing an anger management course (Anjanappa et al., 2023). Likewise, a meta-analysis study by Nauraliefia and Yudiarto noted a significant effect size in the anger and aggres-

sion reduction by such programs (Mardani et al., 2024; Nauraliefia, Yudiarto, 2023). Moreover, a socio-emotional education program was also useful in minimizing attitudes towards school violence, showing great shifts in student attitudes and enhancing positive school coexistence (Jesus et al., 2023). The study conducted by Doğan and Çam (2020) revealed that an intervention grounded in the Roy Adaptation Model was much more effective in managing anger in adolescents and found that it was crucial to address emotional regulation.

The large effect sizes in the current research ($r > 0,90$) can be explained by the fact that the program includes the combination of evidence-based behavioral interventions (e.g., cognitive restructuring, assertive communication, time-out) with stimulating, culturally relevant recreational activities (e.g., team sports, art expression, agility games). The design probably boosted motivation, participation, and skill generalization, which is significant in maintaining emotional control gains (Álvarez-Santos et al., 2024; Elsayed and Hassan, 2023). Overall, the present results are strong quantitative data that a structured recreational behavioral therapy program can create clinically significant anger changes in university students. The sharp difference in the experimental and control groups, not only in statistical significance but also in practical effect, substantiates the point that the intervention was the active agent of change. As research by Herrera and Ortiz (2023) has shown, an academic stress level among students at a university was significantly reduced with the help of a recreation program, which makes it possible to assume that such programs will also be able to alter such emotional experiences as anger. Moreover, the article by Park and Kim (2022) created and tested an anger control group-based intervention with college students, which led to remarkable effects of anger expression and interpersonal problems, which also contributes to the idea that a structured intervention can bring meaningful changes in anger management. Besides, self-control methods applied to group counseling, investigated by Susilo and Lubis (2025), demonstrated a high anger reduction in adolescents, which indicated that the

same methods might be useful in university students. Taken together, these works demonstrate robust quantitative data that recreational and therapeutic intervention programs can have a substantial effect on anger management among university students, with evident differences between control and experimental groups providing strong evidence that the interventions under consideration are indeed a force for change.

Conclusions

This research aimed to evaluate the immediate effect of an 8-week recreational behavioral therapy program on anger reactions among undergraduate students at King Faisal University. According to the results, all parameters of anger showed statistically very significant and large effects from pre- to post-test in experimental group with a very large effect size ($r = 0,84-0,97$). However, on the post-test, experimental group was found to have significantly lower scores than the control group across all subscales ($p < 0,001$, $r = 0,92-0,97$), but no statistically significant time effects were observed in control group ($p > 0,05$ for all subscales). Such an enormous difference is a guarantee that whatever improvement was observed was only as a result of the intervention and not as a result of time, the multiple measurements, or any other confounding variable. The salient feature of the favorable results of the intervention was the combined program, which incorporated evidence-based behavioral methods, i.e., cognitive restructuring, the art of assertive communication training, positive reinforcement, role-playing, and response cost in the context of culturally significant recreation activities (e.g., cooperative sports, expressive arts, and agility games). This guaranteed greater involvement of students and enabled the actual practice and generalization of anger management skills in situations that were emotionally stimulating but not threatening. It is an excellent example of emotion management that is robust, feasible, and relatable to patients in universities by linking clinical endeavors in behavior changes with hobbies that are both entertaining and accessible. Recreational frameworks are an effective way of implementing behavioral skills training, and so redesign tra-

ditional anger management into an experiential, participatory social support process. The results have a tremendous implication regarding the practice and changes made by university counselling and student support services to implement the above recreational-behavioral programs as a mental health promotion tool. Further research needs to be directed at the extended sustainability of the effects and versatility of this model for other psychological problems, such as anxiety, stress, and emotional control in different environments and groups of students.

Limitations. Although the results of this study are strong, several limitations must be considered when interpreting the findings. First, only students from King Faisal University were included, which may limit the generalizability of the results to other university populations or cultural contexts. Future studies should include samples from a wider range of universities to enhance external validity. Second, the use of self-reported anger scale measures, although conventional, is vulnerable to biases such as social desirability, wherein participants may tend to underreport their anger levels. Future studies should consider incorporating objective physiological measures (e.g., heart rate variability) or behavioral observations to obtain a more comprehensive assessment. Lastly, the study evaluated the effectiveness of the program immediately after the intervention and at one follow-up point. The long-term sustainability of the anger management skills learned is uncertain. A longitudinal study with follow-up measures over six-month to one-year periods would be important to establish the sustainability of the intervention effects.

A limitation of this study is the use of an anger scale based on the PROMIS measure, which was developed to assess anger in general clinical samples rather than specifically in university students. Although validity and reliability were confirmed for the present sample (Cronbach's $\alpha = 0,896-0,921$), the generalizability of the findings may be influenced by the specific features of the university educational context. Future research should focus on developing a scale specifically tailored to assess anger in academic settings.

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Conflict of Interest

The author declares no conflict of interest.

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The impact of supervisor-student relationships on academic achievement of master's students: An empirical analysis based on structural equation modeling

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Abstract

Context and relevance. Exploring effective mechanisms to elevate post-graduate academic achievement is therefore universally important, with implications for educational policy, curriculum design, and mentorship practices across higher education ecosystems. **Objective.** This study investigated the influence of supervisor-student relationships (SSR) on master's students' academic achievements, examining the mediating role of learning engagement. **Hypothesis.** Learning engagement mediates the relationship between master's students' supervisor-student relationship and their academic achievements. **Methods and materials.** A structural equation model was constructed to analyze these relationships. A convenience sample of 213 master's students from diverse regions nationwide was collected using the Supervisor-Student Relationship Scale, Learning Engagement Scale, and Graduate Academic Achievement Scale. **Results.** The findings indicate that the model demonstrated a good fit, with positive correlations observed among supervisor-student relationships, learning engagement, and academic achievement. Specifically, learning engagement fully mediated the relationship between supervisor-student relationships and both objective academic performance and behavioral outcomes of academic achievement. **Conclusions.** This study provides valuable insights for students and supervisors to better understand and manage their relationships, and offers guidance for educators in refining teaching practices.

Keywords: master's student, supervisor-student relationship, academic achievement, learning engagement

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Влияние взаимоотношений «научный руководитель — студент» на академическую успеваемость магистрантов: эмпирический анализ на основе моделирования структурными уравнениями

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Резюме

Контекст и актуальность. Поиск эффективных путей повышения академической успеваемости магистрантов имеет большое значение для систем высшего образования во всем мире. Это касается образовательной политики, разработки учебных программ и практик наставничества.

Цель. Настоящее исследование было направлено на изучение влияния отношений в диаде «руководитель — студент» (SSR) на академическую успеваемость обучающихся в магистратуре, а также на анализ опосредующей роли учебной вовлеченности. **Гипотеза.** Учебная вовлеченность выступает в качестве медиатора во взаимосвязи между отношениями магистранта с научным руководителем и его академической успеваемостью. **Методы и материалы.** Для анализа взаимосвязей была построена модель структурных уравнений. Методом удобной выборки были собраны данные 213 магистрантов из различных регионов страны с использованием шкалы взаимоотношений «научный руководитель — студент», шкалы учебной вовлеченности и шкалы академической успеваемости магистрантов. **Результаты.** Результаты показали, что модель продемонстрировала хорошее соответствие данным, при этом были выявлены положительные корреляции между взаимоотношениями «научный руководитель — магистрант», учебной вовлеченностью и академической успеваемостью. В частности, учебная вовлеченность полностью опосредовала связь между отношениями с научным руководителем, с одной стороны, и объективной академической успеваемостью и поведенческими проявлениями академических достижений — с другой. **Выводы.** Данное исследование дает ценные рекомендации для магистрантов и научных руководителей, позволяя им лучше понимать и выстраивать свои взаимоотношения, а также предлагает ориентиры для преподавателей по совершенствованию педагогической практики.

Ключевые слова: магистранты, взаимоотношения «научный руководитель — студент», академическая успеваемость, учебная вовлеченность

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Introduction

Postgraduate education serves as a cornerstone of global higher education systems, pivotal to cultivating individuals with advanced professional expertise and innovative capabilities-capacities driving societal progress and scientific advancement. Globally, postgraduate enrollment has maintained a steady upward trend over the past decade, reflecting the growing recognition of advanced degrees as a catalyst for addressing complex global challenges, from technological innovation to public health crises. For instance, since 2010, the number of applicants for China's Master's Degree Entrance Examination has increased by an average of 257000 annually, reaching an unprecedented 4.74 million in 2023, while admissions totaled 760000. Amid this expansion, ensuring the quality of postgraduate education has emerged as a critical global concern.

Given such a substantial postgraduate cohort, the quality of this group warrants focused attention. Postgraduate academic achievement serves as a key indicator for evaluating postgraduates' academic performance and development, reflecting their capabilities in learning, research, and innovation. It encompasses students' learning outcomes, behaviors, and attitudes over a specific period, categorized into two dimensions: behavioral performance and objective accomplishments (Wang et al., 2011). Strong academic achievement not only enhances postgraduates' self-confidence and learning motivation but also facilitates the cultivation of a solid academic foundation and professional

competence, with significant implications for their future development and career planning (Harith et al., 2020). Furthermore, their academic achievements directly influence the quality of postgraduate education and the reputation of institutions. Despite its significance, many postgraduate programs worldwide struggle to consistently produce high-impact research outputs. Studies indicate that a considerable proportion of master's students across diverse contexts fail to generate impactful scholarly work during their studies (Xie, Li, 2017). Exploring effective mechanisms to elevate postgraduate academic achievement is therefore universally important, with implications for educational policy, curriculum design, and mentorship practices across higher education ecosystems. This research aims to contribute to this global discourse by identifying actionable strategies to strengthen scholarly performance among master's students, offering valuable insights for educators and policymakers worldwide.

The relationship between master's students and their supervisors is a significant factor impacting master's students' academic achievements. For master's students, amidst the diverse social activities of university life, the bond with their supervisors emerges as the most crucial interpersonal relationship. This relationship, known as the supervisor-student relationship (SSR), is a vital element for master's students to succeed in their academic careers (Gill, Burnard, 2008). Although previous research indicates that the supervisor-student relation-

ship is an important factor influencing master's students' academic achievements (Noy, Ray, 2012) and is significantly negatively correlated with academic procrastination (Wang et al., 2022), little in-depth research has explored how this relationship impacts academic performance or the underlying mechanisms. Consequently, this study investigates the relationship between the supervisor-student relationship and master's students' academic achievements.

Learning engagement is defined as a continuous, positive, and fulfilling state experienced by students during the learning process (Schaufeli et al., 2002). Basic Psychological Needs Theory suggests that within the campus environment, the quality of the supervisor-student relationship can directly or indirectly influence students' motivation and behavior. When students' need for relatedness is met, they exhibit higher levels of learning engagement, which in turn drives them to pursue higher-level goal orientations (Furrer, Skinner, 2003).

Komaraju (2010) found that, in research on the influence of the supervisor-student relationship on learning engagement in postgraduate education, specific aspects of student-teacher interactions — such as approachability, re-

spect, off-campus interactions, and career development support — play a significant role in predicting students' self-confidence, motivation, and achievements. Studies examining how postgraduate learning engagement affects academic achievements consistently find high levels of learning engagement to be closely associated with greater academic accomplishments. As Mercer (2020) noted, positive interpersonal relationships can enhance an individual's learning enthusiasm. Furthermore, low learning engagement was consistently associated with lower achievement (Saqr et al., 2023). Drawing on these findings, this study hypothesizes that postgraduate learning engagement may act as a mediating variable in the relationship between the supervisor-student relationship and postgraduates' academic achievements.

This research proposes the following hypotheses: H1: Master's students' supervisor-student relationship positively predicts their academic achievements. H2: Learning engagement mediates the relationship between master's students' supervisor-student relationship and their academic achievements. The model schematic is presented in Fig. 1, with gender and household registration type included as control variables.

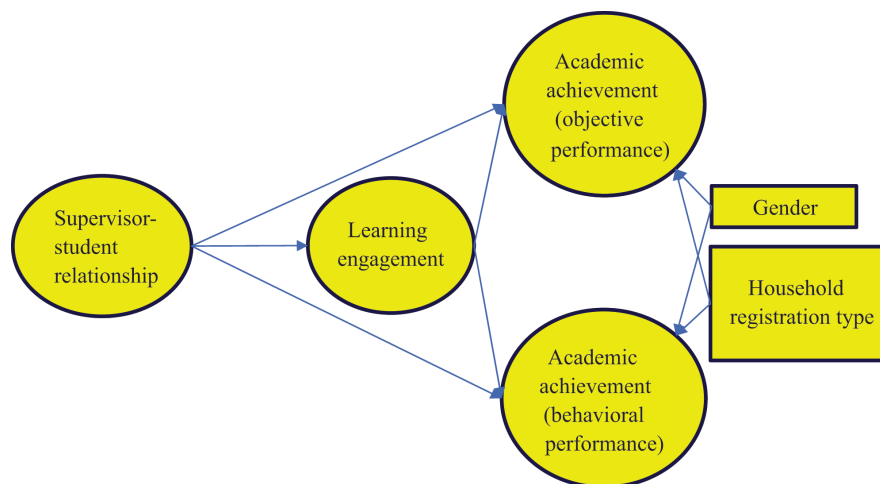


Fig. 1. Model of the relationships between supervisor-student relationship, learning engagement, and academic achievement

Methods

Research participants

This study employed a convenience sampling method, distributing questionnaires through the online platform Wenjuanxing. For clarity, this study focuses exclusively on master's students and does not include doctoral candidates. We differentiate between academic masters degrees (research-oriented programs, e.g., MA, MSc) and professional/masters degrees (practice-oriented programs, e.g., MBA, professional MEd).

Participants were graduate students from various universities. Household registration was coded as 1 = urban and 2 = rural. Gender was coded as 1 = male and 2 = female. Degree type was coded as 1 = academic and 2 = professional. Finally, a total of 213 valid participants were recruited from 65 universities across China, 89 were male (41,78%) and 124 were female (58,22%). Regarding degree type, 101 participants (47,42%) were pursuing academic degrees, while 112 (52,58%) were pursuing professional degrees.

Instruments

Supervisor-Student Relationship Scale

Initially developed by Pianta (1997), the Supervisor-Student Relationship Scale was designed for teachers to assess their relationships with students. Zou Hong et al. (2007) subsequently revised the scale, shortening it to 23 items and restructuring it into four dimensions: intimacy, conflict, support, and satisfaction. Additionally, it was adapted for student self-report, utilizing a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree" (scored 1 to 5). In the present study, the Cronbach's α reliability coefficients were 0,944 for the positive dimensions, 0,851 for the negative dimensions, and 0,942 for the overall scale.

Learning Engagement Scale

Initially designed by Schaufeli et al. (2002), the Learning Engagement Scale was later modified by Fang Laitan et al. (2008). This scale employs a 7-point rating system, with higher scores

indicating greater student engagement in learning. In the current study, the Cronbach's α reliability coefficient for this scale was 0,963.

Graduate Academic Achievement Scale

The Graduate Academic Achievement Scale was adapted from the College Student Academic Achievement Scale developed by Wang Yanfei et al. (2011). The original scale consisted of two parts: a 16-item behavioral performance scale (utilizing a 6-point rating system) and a 3-item objective academic achievement scale (utilizing a 5-point rating system). For the present study, the objective achievement scale was replaced with a custom-designed 9-item scale, deemed more suitable for evaluating graduate students' academic performance.

The nine objective indicators were: (1) average course ranking during graduate study; (2) receipt of faculty/university-level scholarships; (3) receipt of city/province-level scholarships; (4) receipt of national-level scholarships; (5) number of research projects led (as principal investigator); (6) number of research projects participated in (excluding leads); (7) number of papers published in SCI/SSCI journals; (8) number of papers published in EI/core journals; and (9) number of national patents obtained. Additionally, the behavioral performance section was restructured by combining its original three dimensions (learning performance, interpersonal promotion, and learning dedication) into two broader categories: learning behavior and interpersonal behavior. In the present study, the Cronbach's α reliability coefficient for the behavioral performance section was 0,941, and for the objective academic achievement section was 0,831.

Statistical methods

Data analysis was conducted using SPSS 26.0, and SPSS AMOS 26 was employed to test the structural equation model.

Ethical statement

This study was reviewed and approved by Guangdong Medical University. All participants were informed of the intended use of the results

and provided informed consent before completing the questionnaire. Participation was entirely voluntary, and all participant information was de-identified.

Results

Test for common method bias and validity evaluation

To assess common method bias, Harman’s single-factor test was employed through unrotated exploratory factor analysis on items from the three variables. Results revealed 11 factors with eigenvalues greater than 1, and the first common factor explained only 35,133% of the total variance, which is below the 40% threshold indicative of significant common method bias. Thus, common method bias was not a critical concern in this study.

Additionally, to evaluate the validity of the self-developed Graduate Academic Achievement Scale, the Kaiser-Meyer-Olkin (KMO) test and Bartlett’s test of sphericity were conducted. The KMO measure of sampling adequacy was 0,897, and Bartlett’s test of sphericity was significant ($p < 0,001$). These

results indicate that the self-developed scale exhibited good validity.

Descriptive statistics and correlation analysis

Before conducting model testing and controlling for variables, confirmatory factor analysis (CFA) was performed to validate the measurements. The study included four latent variables: supervisor-student relationship (SSR), learning engagement, and academic achievement (comprising objective performance and behavioral performance). Results showed that the Average Variance Extracted (AVE) for each factor was greater than 0,5, and the Composite Reliability (CR) was greater than 0,7, indicating good convergent validity. Additionally, the square roots of the AVE values were greater than the correlations between each factor and the others, demonstrating good discriminant validity. Detailed results of the CFA, including factor loadings, AVE, and CR values for each construct, are presented in Table 1.

A t-test revealed that male participants ($N = 89$) scored significantly higher than fe-

Table 1

Results of confirmatory factor analysis

	FL	AVE	CR
SSR		0,702	0,901
Intimacy	0,962		
Supportiveness	0,885		
Satisfaction	0,895		
Conflict	−0,547		
Learning engagement		0,797	0,922
Vigor	0,895		
Dedication	0,932		
Focus	0,888		
Objective performance		0,514	0,721
Academic performance	0,211		
Research achievement	0,864		
Scholarship attainment	0,866		
Behavioral performance		0,740	0,849
Learning behavior	0,952		
Interpersonal behavior	0,757		

male participants in supervisor-student relationship ($p = 0,015$), learning engagement ($p = 0,001$), and objective academic achievement ($p < 0,001$). However, no significant gender difference was found in behavioral academic achievement ($p = 0,317$). Regarding degree type, no significant differences were observed between participants with academic degrees ($N=101$) and those with professional degrees ($N=112$) in supervisor-student relationship ($p = 0,958$), learning engagement ($p = 0,106$), objective academic achievement ($p = 0,478$), or behavioral academic achievement ($p = 0,426$). For household registration type, participants with urban household registration ($N=105$) scored significantly higher than those with rural household registration ($N=108$) in supervisor-student relationship ($p = 0,017$), learning engagement ($p < 0,001$), objective academic achievement ($p < 0,001$), and behavioral academic achievement ($p < 0,001$). Detailed t-test results, including specific t-values and p-values for each factor across gender, degree type, and household registration type, are presented in Table 2.

Correlation analysis revealed significant relationships among the SSR, learning engagement, and academic achievement. Specifically, SSR was significantly positively correlated with learning engagement ($r = 0,586$, $p < 0,01$); learning engagement was significantly positively correlated with academic achievement ($r = 0,712$, $p < 0,01$); and SSR was also significantly positively correlated with academic achievement ($r = 0,520$, $p < 0,01$). Detailed correlations between the objective and behavioral performance dimensions of academic achievement with other variables, as well as the mean values and standard deviations for each variable, are presented in Table 3.

The structural equation modeling

Gender and household registration type were included as control variables. Using the Bootstrap method with 5000 resamples, parameters were estimated and hypotheses for the structural equation model were tested at a 95% confidence level. Results indicated good model fit after correction via Bollen-Stine resampling

Table 2

T-test results for gender, degree type, and household registration location on guidance relationship, learning engagement, and academic achievement

Factor	Gender		Degree type		Household registration	
	t	p	t	p	t	p
SSR	2.441	0.015	-0.052	0.958	-2.404	0.017
Learning engagement	3.353	0.001	1.625	0.106	-4.546	0.000
Objective performance	4.553	0.000	0.711	0.478	-2.709	0.000
Behavioral performance	1.002	0.317	0.833	0.426	-4.365	0.000

Table 3

Correlations among the supervisor-student relationship, learning engagement, and academic achievement in graduate students

	M ± SD	Supervisor-student relationship	Learning engagement	Objective performance	Behavioral performance
Supervisor-student relationship	90,08±15,83	1			
Learning engagement	79,87±21,77	0,586**	1		
Objective performance	14,50±4,890	0,187**	0,391**	1	
Behavioral performance	69,97±15,09	0,524**	0,673**	0,242**	1

*Note: * $p < 0,1$, ** $p < 0,01$, *** $p < 0,001$.

(2000 resamples, $p < 0,001$). The total effects of SSR on graduate students' academic achievement — measured by behavioral performance and objective performance — were 0,018 (95% CI [0,001, 0,052]) and 2,141 (95% CI [1,324, 3,259]), respectively. While the direct effects of SSR on objective performance and behavioral performance were non-significant, the indirect

effects were significant, suggesting that learning engagement fully mediates the relationship between SSR and both behavioral performance and objective performance. Key model fit indices indicated good fit: $\chi^2/df = 1,099$, GFI = 0,962, RMSEA = 0,022, CFI = 0,996, and TLI = 0,995. The model diagram, standardized coefficients, and mediation effect results are provided in Table 4.

Table 4

Mediation effect of learning engagement

Path	Effect size	95% Confidence interval		
		Lower	Upper	p
SSR → Learning engagement	2,012	1,265	3,096	<0,001
SSR → Objective performance	0,010	−0,021	0,021	0,641
SSR → Behavioral performance	0,827	−0,164	1,261	0,092
SSR → Learning engagement → Objective performance	0,021	0,007	0,053	<0,001
SSR → Learning engagement → Behavioral performance	1,664	1,047	2,770	<0,001

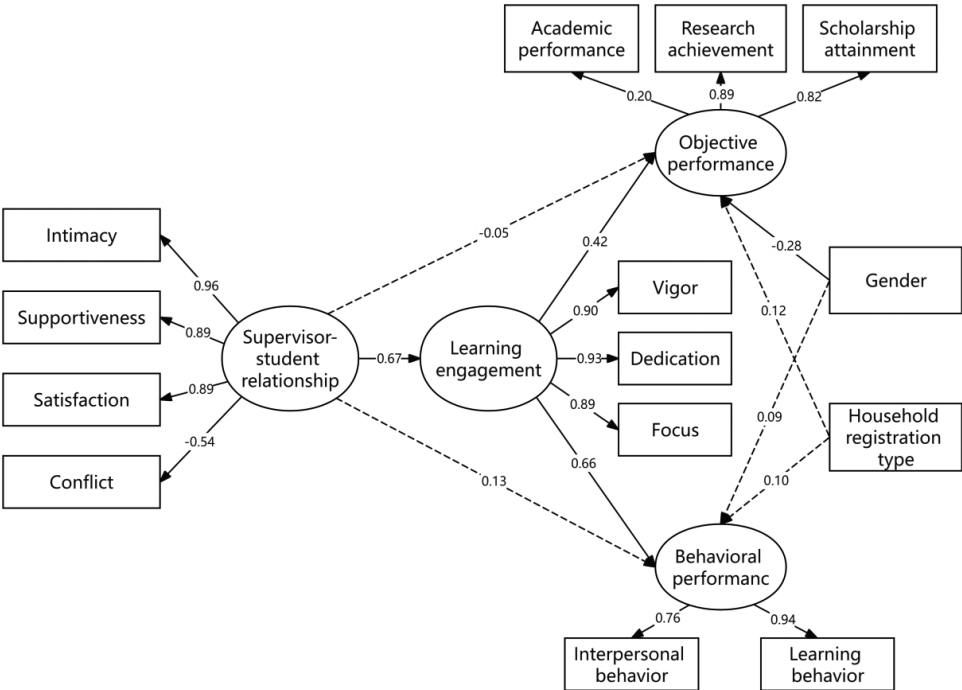


Fig. 2. Relationships between supervisor-student relationship, learning engagement, and academic achievement

Discussion

Results and suggestions

This study investigated the impact of the supervisor-student relationship (SSR) on graduate students' academic achievement and explored the mediating role of learning engagement. The results indicate that learning engagement fully mediates the relationship between SSR and both behavioral and objective academic performance.

Analysis of the relationships among SSR, learning engagement, and academic achievement revealed positive pairwise correlations, consistent with prior research. These findings enhance the understanding of the interrelationships among these variables, offering valuable implications for educators. Specifically, educators can refine teaching practices, strengthen supervisor-student relationships, and develop targeted support strategies to improve graduate students' academic performance.

A key finding from the structural equation model analysis is the full mediation of the relationship between SSR and both behavioral and objective academic performance by learning engagement. This study's distinction between behavioral and objective academic performance within the framework of academic achievement also represents a significant contribution, yielding several novel insights.

First, a positive SSR promotes higher levels of learning engagement, thereby enhancing students' academic performance across two key dimensions: objective performance (e.g., academic grades, research achievements, and scholarship attainment) and behavioral performance (including learning behaviors, social interactions, and interpersonal engagement). This indicates that the SSR primarily influences academic achievement through its impact on learning engagement.

Second, the SSR exerts a greater influence on students' behavioral performance than on their objective performance. This may be attributed to the critical role of supervisor feedback in guiding students' self-management — particularly in adjusting their learning strategies and interpersonal behaviors — as noted by Hattie and Timperley (2007). When the SSR is strained, this feedback

mechanism breaks down. Given that the supervisor relationship is often the most pivotal interpersonal bond during graduate studies, its deterioration can significantly hinder students' social and interpersonal adjustment. Furthermore, a strong SSR facilitates students' development of broader social networks, encompassing connections with peers, other faculty members, and the wider academic community.

Third, the SSR has a more pronounced effect on students' research performance and scholarship acquisition than on their formal exam scores. This could be because while students may not depend heavily on supervisors for course-specific exams, supervisors play a central role in guiding research activities (e.g., paper publication or patent filing), which directly influence scholarship opportunities.

The findings from the SEM analysis on graduate students' academic achievement offer several practical implications. First, from the supervisors' perspective, fostering a positive SSR is critical, as it can significantly boost students' academic motivation, interest, and overall engagement. According to Sidhu (2013), an exemplary supervisor should adopt a student-centered approach, offering confidence and respect while encouraging independent thinking and creativity. Effective communication and interpersonal skills lie at the core of this relationship. Emotional intelligence may also be a key factor in nurturing healthy SSRs (Gunasekera et al., 2021). Supervisor feedback is similarly highly significant: studies indicate that the effectiveness of supervisors' feedback to graduate students is shaped by differences in content, process, and expectations, with the most impactful strategies jointly enhancing the capabilities of both parties (Chugh et al., 2021). Most students also expect equitable sharing of responsibilities between supervisors and students in the design and execution of research projects (Althubaiti, Althubaiti, 2022). Additionally, interpersonal emotion regulation (IER) is pivotal in shaping supervisor-student interactions, and such interactions can be enhanced through effective IER practices (Han, Jin, 2025).

Second, students themselves play a pivotal role. Proactive engagement with supervisors is key to academic success. When fostering a positive SSR proves challenging, students should compensate by increasing their learning engagement to mitigate potential negative impacts on academic performance. Immersing themselves in their studies and actively participating in learning activities can help offset the challenges of a strained relationship.

From an institutional standpoint, students' sense of security, belonging, and recognition within the educational environment directly influences their learning engagement and academic outcomes. Institutions must prioritize fostering strong SSRs by emphasizing their importance and implementing proactive measures to enhance alignment and communication between students and supervisors. As Kuh and Hu (2001) note, increased student-supervisor interactions correlate with greater engagement in academic activities, leading to more focused efforts in knowledge acquisition. Additionally, Sanford's (1967) research highlights the importance of balancing support and challenge in student development: excessive challenges with insufficient support may induce excessive stress and frustration, while over-support with minimal challenges can breed complacency, reducing students' behavioral performance. Optimal student success thus requires institutions to strike a balance, providing appropriate support while maintaining rigorous academic expectations.

Finally, research underscores the critical role of family support in shaping students' attitudes toward learning. A supportive family environment encourages active participation in academic activities, fosters a positive educational outlook, and sets a strong behavioral example — factors strongly correlated with improved academic outcomes and behavioral

performance (Zhao et al., 2023; Chen et al., 2025; Zhao, Zhao, 2022).

Limitations and future directions

This study has several limitations. Although participants were recruited from universities across the country, the sample size was relatively small. Moreover, the study employed a cross-sectional design, while the formation and evolution of the supervisor–student relationship and students' learning motivation are processes that unfold over time. We examined only the mediating role of learning motivation in the relationship between supervisor–student relationship and academic achievement; however, the interplay among these three constructs may be more complex and may be influenced by additional variables not considered here. Future research should address these limitations by employing larger and more diverse samples and longitudinal designs to investigate temporal dynamics, test more comprehensive models, and thereby provide a deeper understanding of the mechanisms linking SSR and academic outcomes.

While supervisor-student relationships may vary across disciplinary contexts, this study did not include academic discipline as an analytical variable — even though relevant data were collected. The sample distribution across disciplines was markedly imbalanced (e.g., Medicine: 108; Science & Engineering: 71; Humanities & Social Sciences: 26; Arts: 7; Other: 1), which rendered meaningful group-wise comparisons and moderation analysis infeasible. Future research employing more balanced sampling strategies could explore the moderating role of academic discipline in the “supervisor–student relationship–academic achievement” pathway in greater depth, in turn providing more targeted, discipline-specific educational guidance.

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Contribution of the authors

Qiaofeng Deng — conceptualization; data curation; writing — original draft; formal analysis.

Meixi Gu — methodology; funding acquisition; writing — review & editing; project administration.

Longhu Qiu — investigation; data collection; visualization.

Yonglan Xu — validation; software; resources.

Qiaofeng Deng and Meixi Gu contributed equally to this work. All authors participated in the discussion of the results and approved the final text of the manuscript.

Информация об авторах

Цяофэн Дэн — концептуализация; обработка данных; написание черновика рукописи; формальный анализ.

Мэйси Гу — методология; привлечение финансирования; рецензирование и редактирование текста; управление проектом.

Лунху Цю — исследовательская работа; сбор данных; визуализация результатов.

Юнлань Сюй — валидация; программное обеспечение; ресурсы.

Цяофэн Дэн и Мэйси Гу внесли равный вклад в эту работу. Все авторы приняли участие в обсуждении результатов и одобрили окончательный текст рукописи.

Conflict of interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Конфликт интересов

Авторы сообщают об отсутствии каких-либо потенциальных конфликтов интересов, связанных с выполнением исследования, подготовкой рукописи и/или публикацией статьи.

Ethics statement

The study was reviewed and approved by Guangdong Medical University. All participants were informed of how the results would be used and signed an informed consent form before completing the questionnaire. Participation was entirely voluntary, and all participants received compensation. All participants' information was de-identified.

Декларация об этике

Настоящее исследование получило одобрение Гуандунского медицинского университета. Все участники были ознакомлены с порядком использования полученных результатов и дали письменное информированное согласие до заполнения опросника. Участие в исследовании носило исключительно добровольный характер, всем участникам была выплачена компенсация. Все данные об участниках были обезличены.

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Научная статья | Original paper

Attitude to psychological help and problematic experiences of Chinese students studying at Russian universities

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Abstract

Context and relevance. The problem addressed in this study lies in the contradiction between the objective need of Chinese students studying at Russian universities for psychological support during academic and sociocultural adaptation, and the presence of cultural, linguistic, and organizational barriers that hinder their access to professional help. Despite the growing recognition of the importance of psychological support for international students, the specific features of Chinese students' attitudes toward psychological help and the relationship between these attitudes and problematic experiences in the context of Russian universities remain insufficiently specified. This impedes the development of targeted support interventions that account for stigmatization, fear of "losing face", language difficulties, and the specifics of adaptation to the Russian educational environment. **Objective.** To comprehensively describe Chinese students' attitudes toward psychological help and examine the associations between IASMHS components (Psychological Openness, Help-Seeking Propensity, Indifference to Stigma), behavioral indicators of help-seeking, and problematic experiences arising during study at Russian universities. **Hypotheses.** (1) Chinese students exhibit culturally driven stigma and fear of "losing face" that reduce help-seeking. (2) The severity of problematic experiences intensifies negative attitudes and anxiety. (3) Adequate awareness of available psychological assistance fosters readiness to seek help. (4) Prior positive counseling experience increases repeated help-seeking. **Methods and materials.** This study (N = 80; age 20–33 years, M = 25,00, SD = 2,59) employed: (a) the IASMHS scale (Mackenzie) adapted by Vainshtein et al.; (b) an original questionnaire (behavioral aspects, demographics); (c) the 'Problematic Experiences' questionnaire (based on L.A. Regush et al.), adapted for cross-cultural specifics. **Results.** (1) Most participants showed moderately positive general attitudes to professional help (M = 85,95; SD = 12,52), yet stigma and fear of "losing face" persist among a significant portion of respondents. (2) The most pronounced problematic experiences were safety (M = 3,12; SD = 1,01), academic and administrative adaptation (M = 2,91; SD = 0,93), and worries about the future (M = 2,96; SD = 0,93; career and diploma recognition). (3) Spearman correlations showed that higher levels of problematic experiences were moderately negatively associated with Indifference to Stigma (IS) ($r = -0,25 \dots -0,33$; $p < 0,05$) and with the total IASMHS score ($r = -0,23 \dots -0,24$; $p < 0,05$); no associations with Psychological Openness or Help-Seeking Propensity were found ($p > 0,05$). (4) Aware-

ness of available services ($\phi = 0,868$; $p < 0,01$) strongly correlates with actual help-seeking, but no statistically significant link ($p = 0,144$) was found between positive counseling experience and future intentions to seek help again. **Conclusion.** Stigmatization and linguistic barriers remain key obstacles. Integrating Russian-Chinese information resources, ensuring confidentiality, and expanding individual face-to-face consultations may increase help-seeking rates. Recommendations include bilingual information provision, culturally sensitive support formats, mentoring support, and joint adaptation programs that take into account Confucian values and family expectations.

Keywords: Chinese students, help-seeking for mental health, stigma, loss of face, IASMHs, problematic experiences, acculturative stress, language barrier, bilingual counseling, university counseling services

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Отношение китайских студентов российских вузов к психологической помощи и их проблемные переживания

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Резюме

Контекст и актуальность. Проблема представленного здесь исследования заключается в противоречии между объективной потребностью китайских студентов, обучающихся в российских вузах, в психологической поддержке в период академической и социокультурной адаптации и наличием культурных, языковых и организационных барьеров, затрудняющих обращение за профессиональной помощью. Несмотря на рост значимости психологического сопровождения иностранных студентов, особенности отношения китайских студентов к психологической помощи и связь этого отношения с проблемными переживаниями в условиях российского вуза остаются недостаточно конкретизированными. Это затрудняет разработку адресных форм поддержки, учитывающих стигматизацию, страх «потери лица», языковые трудности и специфику адаптации к российской образовательной среде. **Цель.** Выявить особенности отношения китайских студентов, обучающихся в российских вузах, к психологической помощи и установить характер взаимосвязей между компонентами IASMHs

(Psychological Openness, Help-Seeking Propensity, Indifference to Stigma), поведенческими индикаторами обращения за помощью и проблемными переживаниями, возникающими в процессе обучения в российских вузах.

Гипотезы. (1) У китайских студентов преобладают культурно обусловленные стигматизирующие установки и страх «потери лица», снижающие готовность обращаться за помощью. (2) Выраженность проблемных переживаний усиливает негативные установки и тревогу. (3) Высокая информированность о возможностях психологической помощи способствует большей готовности обращаться к специалистам. (4) Положительный опыт обращения повышает повторную обращаемость. **Методы и материалы.** В исследовании ($N = 80$; возраст — 20–33 года, $M = 25,00$; $SD = 2,59$) использовали: а) опросник отношения к обращению за услугами в сфере психического здоровья IASMHS (адаптация Вайнштейна и др.); б) авторская анкета (поведенческие аспекты, социально-демографические данные); в) анкета «Проблемные переживания» (на основе методики Л.А. Ренгуш и др.), дополненная с учетом кросс-культурной специфики. **Результаты.** (1) Большинство респондентов демонстрируют умеренно-позитивное общее отношение к психологической помощи ($M = 85,95$; $SD = 12,52$), но высокий страх стигмы и «потери лица» сохраняется у значимой части. (2) Наиболее выраженные проблемные переживания приходится на безопасность ($M = 3,12$; $SD = 1,01$), академическую и административную адаптацию ($M = 2,91$; $SD = 0,93$) и беспокойство о будущем ($M = 2,96$; $SD = 0,93$; карьера, признание диплома). (3) Корреляционный анализ показал, что более высокий уровень проблемных переживаний умеренно отрицательно связан с безразличием к стигме (IS) ($r = -0,25 \dots -0,33$; $p < 0,05$) и снижает итоговый балл IASMHS ($r = -0,23 \dots -0,24$; $p < 0,05$); связи с «Психологической открытостью» и «Склонностью к поиску помощи» не выявлены ($p > 0,05$). (4) Осведомленность о возможностях консультаций ($\phi = 0,868$; $p < 0,01$) значимо повышает фактические обращения, но связь положительного опыта и готовности обращаться повторно оказалась статистически незначимой ($p = 0,144$). **Выводы.** Стигматизация и языковые барьеры остаются ключевыми преградами. Интеграция русско-китайских информационных ресурсов, гарантии анонимности и расширение индивидуальных очных консультаций повышают обращаемость. Рекомендации включают двуязычное информирование, культурно-сенситивные форматы помощи, кураторскую поддержку и совместные программы адаптации, учитывающие конфуцианские ценности и семейные ожидания.

Ключевые слова: китайские студенты, обращение за психологической помощью, стигма, потеря лица, IASMHS, проблемные переживания, аккультурационный стресс, языковой барьер, двуязычное консультирование, университетские психологические службы

Благодарности. Автор выражает признательность всем китайским студентам, принявшим участие в опросах и интервью в рамках данного исследования. Особая благодарность научному руководителю за ценные консультации при выборе методик.

Дополнительные данные. Доступные наборы данных (обезличенные опросные листы и сводные результаты) можно запросить у автора (Чэнь Яньхуэй) по адресу: 2477826038@qq.com

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Introduction

Over the past few decades, Russia has become a popular destination for Chinese students seeking higher education. However, living and studying in a different cultural environment presents a number of challenges: the language barrier, differences in educational traditions and norms of academic interaction, and variations in daily life and climate. All of this often leads to increased stress and a range of emotional difficulties, including anxiety, depression, and loneliness. The urgent need for psychological support is evident, but seeking help from professionals is often difficult. Researchers (Shi et al., 2020; Chen et al., 2013) emphasize that in Chinese culture, there remains a stigma surrounding mental health issues, and seeking help from a psychologist may be viewed as a “loss of face” — that is, an admission of one’s own “weakness”.

The research interest in this issue lies in determining the extent to which Chinese students are inclined to use the services of psychologists at Russian universities and how their distress manifests itself. According to some data (Smith, Khawaja, 2011), international students from China are more likely to experience acculturation stress and less likely to seek out counselors, preferring instead to turn to fellow countrymen for advice. As a result, hidden emotional conflicts accumulate, and the likelihood of a decline in academic performance and overall well-being increases.

The purpose of this study is to 1) provide a comprehensive description of Chinese students’ attitudes toward psychological counseling at Russian universities, 2) identify the nature of their distressing experiences, and 3) determine the extent to which levels of stress (related to adaptation, academics, and culture) influence their intention or reluctance to seek help. The study is based on a multi-component concept of attitudes

toward psychotherapy (IASMHS) and takes into account cultural characteristics in the spirit of the Confucian tradition, including the concept of “saving face”.

In the first part of the study, following the statement of the problem, a brief overview of key studies and approaches to attitudes toward psychological help from a cross-cultural perspective is presented, and the theoretical foundations of the concept of “problematic experiences” are analyzed. Next, the methodology and the process of collecting empirical data involving 80 Chinese students are described. Finally, the “Results and Discussion” section presents a correlation analysis between the components of attitudes toward counseling and the severity of stress-related experiences, as well as practical conclusions for improving university counseling services.

In recent years, Russian research on the sociocultural adaptation of international students has shifted its focus from describing barriers to comparative reviews and support practices. In particular, systemic differences in adaptation challenges and in the availability of support services at universities are noted; the need for institutional measures (navigating services, the work of academic advisors, digital communication channels) and regular monitoring of the well-being of international students is emphasized (Dyachenko, 2024). Practical support measures also include the use of social media as a tool for sociocultural integration, which can reduce stress and expand the scope of social interaction (Ovchinnikova, 2023). Along with this, the study describes typical adaptation challenges at Russian universities and a lack of information about the services available to international students (Ouheish Taha, 2022).

Recent reviews emphasize that emotional factors — such as loneliness, anxiety, and others — are key mediators of

academic and social adjustment (Undusk, 2021). A comparative analysis of domestic and international studies highlights a growing body of research on the phenomenon of loneliness among students and its connection to indicators of well-being and academic motivation, making the topic of psychological support significant from both methodological and practical perspectives (Nabieva, 2023). These findings align with the Russian context, where the emotional and social difficulties of international students are recognized on par with their academic challenges (Tikhonova, 2023).

Beyond ethnocultural specifics, modern university services are guided by the principles of accessibility and short-term counseling. This is reflected in the implementation of tiered support models and flexible service formats, which are designed to expand reach, reduce wait times, and maintain service quality amid growing demand. The publications demonstrate the feasibility and effectiveness of such approaches in a university setting and describe the organizational elements of implementation: initial screening, triage based on intensity levels, and variability in session duration (Marques, 2024).

Among the student population, regardless of ethnocultural differences, similar reasons for seeking help and barriers are consistently observed: the primary reasons for seeking help are anxiety, depressive symptoms, and academic stress, while the main barriers remain stigma, low awareness of available services, time constraints, and doubts about the accessibility and acceptability of the service. Moreover, it is precisely the perception of accessibility and quality that is statistically linked to actual service use. These findings are consistently supported by systematic reviews and large-scale surveys of the student population in recent years (Cerolini, 2023; Alvarez-Hernandez, 2024; Eisenberg, 2024).

These findings are corroborated by the national Healthy Minds Study 2023–2024: in a sample of $N = 104729$ students from 196 colleges and universities, high prevalence rates of depression and anxiety were recorded ($\text{PHQ-9} \geq 10$ in 38%, $\text{GAD-7} \geq 10$ in 34%), moderate actual utilization of services over the course of the year (counseling: 36%; among students who screened positive for depression/anxiety, 61% sought some form of help), as well as a significant role of stigma as a barrier to seeking help: 41% agree with the statement regarding “public” stigma, while 7% report experiencing personal stigma. At the same time, organizational and motivational barriers are evident: 24% report a lack of time, 22% cite financial reasons, and 14% do not know where to turn, even though a total of 76% report being aware of channels for accessing resources, and 19% prefer to cope on their own. This macro-level profile directly aligns with our data on the effects of awareness and stigmatization on help-seeking behavior and supports the emphasis on bilingual information provision and stigma reduction in university services (Eisenberg, 2024).

With regard to Chinese students studying abroad, recent publications highlight culturally-driven barriers to seeking help: fear of “losing face”, self-stigmatization, and a preference for informal sources of support. It has been shown that such attitudes reduce the intention to seek help from professionals, especially in the face of language difficulties and distrust of local services (Qin et al., 2023; Li et al., 2022). At the same time, the data indicate that increased awareness and the opportunity to receive counseling in one’s native language have a positive impact on attitudes and actual help-seeking behavior (Tan et al., 2021).

Recent studies (2021–2025) have identified the following key areas: (1) the importance of institutional accessibility and awareness of support services at the

university; (2) the central role of emotional states (including loneliness) in adaptation; (3) cultural barriers to seeking help among Chinese students and the potential of bilingual formats. This study builds on these findings by comparing attitudes toward psychological support and distress among Chinese students at Russian universities, taking into account awareness of services and the language factor.

This study tested the following hypotheses: (1) Chinese students are predominantly influenced by culturally conditioned stigmatizing attitudes and a fear of “losing face”, which reduce their willingness to seek help; (2) the severity of distressing experiences intensifies negative attitudes and anxiety; (3) high awareness of psychological support options contributes to a greater willingness to seek professional help; (4) a positive experience with seeking help increases the likelihood of seeking help again.

Thus, a review of the literature shows that Chinese students’ attitudes toward psychological support are shaped not only by individual attitudes but also by cultural norms, stigmatization, language barriers, and the challenges of adapting to the host educational environment. This determined the choice of methodological tools that allow for the simultaneous assessment of the components of attitudes toward psychological support, behavioral indicators of seeking help, and the severity of distressing experiences.

Materials and methods

The study was conducted as a cross-sectional survey, involving the administration of questionnaires and an analysis of the relationships between two sets of indicators: attitudes toward psychological help — measured using the IASMHS questionnaire scales (Mackenzie et al., 2004; adapted by Weinstein et al., 2015) — and an additional questionnaire developed by

the authors. The level of distress was assessed using a typology-based questionnaire (Regush et al., 2023). A total of 80 students from the People’s Republic of China (39 men and 41 women) aged 20 to 33 (mean age $M = 25,0$ years; $SD = 2,59$), who were enrolled in bachelor’s, master’s, and doctoral programs at various universities in St. Petersburg and Moscow.

The fields of study (based on self-reports in an open-ended question) were diverse; the broad distribution was as follows: art/music — 19 participants (23,8%), economics/social sciences/communications — 17 (21,2%), education/linguistics — 12 (15,0%), psychology — 11 (13,8%), technical/engineering — 6 (7,5%), IT/technology — 1 (1,3%), humanities (philosophy) — 1 (1,3%); the responses of 13 participants (16,3%) were too general to be reliably classified into the specified categories.

The length of stay in Russia ranged from less than half a year to more than two years (72,5% had lived in the country for more than two years). Breakdown by category: less than 6 months — 2 people (2,5%), 6–12 months — 7 (8,8%), 1–2 years — 13 (16,3%), more than 2 years — 58 (72,5%). This variable was recorded as an ordinal variable with 4 categories; consequently, the mean and standard deviation for length of stay were not calculated.

The first instrument was the Inventory of Attitudes toward Mental Health Services (IASMHS). An adapted version (Weinstein et al., 2015), translated into Chinese using the back-translation method, was used. The questionnaire was administered to participants in Chinese. It includes three main scales:

- Psychological Openness,
- Help-Seeking Propensity,
- Indifference to Stigma.

The total score reflects the overall attitude toward seeking psychological help. Responses are rated on a 5-point scale.

An original questionnaire was developed by the study's author to elicit details about actual experiences of seeking help (number of times, reasons, formats), willingness to seek help (1–5), and barriers (language, financial, fear of “losing face”). The questionnaire consisted of 15 questions. The questionnaire was administered in Chinese; the text was translated and back-translated by independent translators, with any discrepancies subsequently reconciled.

The “Challenging Experiences” methodology was used in a modified form: it was supplemented with sections devoted to social and cultural adaptation; communication and relationship issues; academic and administrative adaptation; health issues and adaptation to the climate; safety issues; issues related to the use of the Internet and technology; and anxiety about the future. The thematic blocks from the original version were retained as a foundation and supplemented with cross-culturally relevant questions identified following the pilot study. No comparable data were found in publications applying L.A. Regush's methodology to student samples; the available reports describe an adolescent sample, so a direct comparison with our modules is not yet possible (Regush et al., 2023).

Each item is rated on a 5-point scale (1 — “strongly disagree”, 5 — “strongly agree”).

The questionnaire was administered in Chinese; a back-translation procedure (Russian–Chinese–Russian) was used, followed by linguistic review by bilingual experts.

Preliminary data analysis (descriptive statistics, distribution checks) was performed using SPSS Statistics 26. The choice of nonparametric tests was due to the ordinal nature of the scales and the deviation of distributions from normality in a number of variables. Spearman's correlation was used for ordinal variables (the ex-

perience scales and IASMHs components), and the ϕ coefficient was used for binary variables. Comparisons between groups using ordinal criteria were performed using nonparametric methods. The effect of the binary factor “presence of a positive previous experience with seeking help” on the ordinal assessment of readiness to seek help again was tested using the Mann–Whitney U test (due to non-normal distributions and the ordinal nature of the scale).

All participants provided written informed consent in accordance with the university's approved procedures. The study adhered to the principles of anonymity and voluntary participation. Data were collected exclusively for research purposes without any medical interventions. All instruments were adapted to account for cultural and linguistic characteristics.

Given the study's objective, further analysis focused on identifying the most pronounced problematic experiences, assessing the components of attitudes toward psychological assistance, and examining the relationships among these groups of indicators.

Results

Based on the final “Index of Problematic Experiences” (the arithmetic mean of the seven thematic blocks), it was found that, among the blocks examined, students rated the following aspects most highly.

1) Safety concerns ($M = 3,12$; $SD = 1,01$), with fears of theft and fraud being the highest ($M = 3,20$, $SD = 1,37$).

2) Academic and administrative adjustment ($M = 2,91$; $SD = 0,93$). The most common difficulties were understanding lectures ($M = 3,24$; $SD = 1,32$) and interacting with administrative offices ($M = 2,81$; $SD = 1,28$).

3) Anxiety about the future ($M = 2,96$; $SD = 0,93$): concerns about one's career ($M = 3,54$; $SD = 1,29$) and doubts about

the recognition of one's degree ($M = 2,88$; $SD = 1,35$) predominate.

On the IASMHS questionnaire, the average total score (sum of the three scales) was 85,95 ($SD = 12,52$) on a scale ranging from 24 to 120. This corresponds to a moderately positive attitude toward seeking psychological help on the IASMHS scale.

Specifically:

— Psychological Openness (PO): $M = 25,71$, $SD = 5,74$;

— Help-Seeking Propensity (HSP): $M = 31,48$, $SD = 4,82$;

— Indifference to Stigma (IS): $M = 28,76$, $SD = 6,38$.

According to the authors' behavioral preferences questionnaire, some respondents indicated that they primarily seek to resolve difficulties on their own (qualitative responses). Additionally, on the scale measuring the importance of a specialist's proficiency in Chinese, the score was high: $M = 4,13$; $SD = 0,99$ (on a scale of 1 to 5), reflecting the perception that the counselor's language proficiency is an important factor in seeking psychological help. Willingness to seek help in the future: $M = 3,72$; $SD = 0,93$; distribution: 2 — 10,0%, 3 — 28,7%, 4 — 40,0%, 5 — 21,2%.

Correlation analysis showed that higher scores in the "Health and Climate", "Internet and Technology", "Anxiety about the Future", and "Safety" clusters are associated with less indifference to stigma. The

IASMHS total score is lower when "Internet and Technology", "Health and Climate", and "Future" are more pronounced, whereas no associations were found with "Psychological Openness" and "Help-Seeking Propensity" ($p > 0,05$).

Let's examine the results regarding the behavioral aspect: experience with and willingness to seek help when facing difficult emotions.

In total, 37,5% (30 people) had sought help from psychologists or psychotherapists at least once, with 61,3% of them having done so only once. The main reasons were academic stress (34%), personal problems (26%), and emotional distress (23%). About 80% considered it extremely or very important for a specialist to speak Chinese. "Most likely" to seek help — 40%; "Very likely" — 21,3%. Nearly 40% feel uncertain. Face-to-face individual counseling is the most preferred option ($M = 4,66$; $SD = 0,78$). Group sessions received low ratings ($M = 2,44$; $SD = 1,52$), as did peer support groups ($M = 2,74$; $SD = 1,50$). Online formats received average ratings, though text-based chats elicited polarized opinions — chat ($M = 2,75$; $SD = 1,53$). Factors motivating people to seek help: a guarantee of confidentiality (53,8%), the option to receive counseling in Chinese (43,8%), and positive past experiences (40,0%).

Main barriers: fear of judgment (32,5%), language barrier (30%), and

Spearman's rank correlation (r) between "Problematic experiences" blocks and IASMHS indicators (IS and total score) ($N = 80$)

Table

Problematic experiences block	«Indifference to Stigma» (IS), r ; p	Total IASMHS, r ; p
Health & climate problems	$r = -0,329$; $p = 0,003$	$r = -0,233$; $p = 0,037$
Internet & tech difficulties	$r = -0,327$; $p = 0,003$	$r = -0,244$; $p = 0,029$
Worries about the future	$r = -0,281$; $p = 0,010$	$r = -0,226$; $p = 0,044$
Safety problems	$r = -0,251$; $p = 0,024$	$r = -0,036$; $p = 0,751$
Problem experiences index (overall)	$r = -0,323$; $p = 0,003$	$r = -0,207$; $p = 0,065$

doubts about the professionals' competence (22,5%).

An analysis of the effect of "positive treatment experiences" on willingness to return (using the Mann–Whitney U test) revealed a trend ($p = 0,144$), while a statistically significant difference was found only in the level of comfort with consultations ($p = 0,006$), indicating that: people with positive experiences are less anxious about judgment and perceive the assistance as more "culturally acceptable".

The empirical data obtained require interpretation within a cross-cultural context, as the identified associations reflect not only individual differences but also the influence of linguistic, social, and cultural barriers to seeking psychological help.

Discussion

The results partially confirmed hypotheses (1)–(3): moderately negative associations were found between the severity of distressing experiences and indifference to stigma/overall attitude toward seeking help, and a significant association was demonstrated between awareness of counseling options and actual help-seeking ($\phi = 0,868$; $p < 0,01$); hypothesis (4) regarding the influence of positive experiences on repeat help-seeking did not receive statistically significant support ($p = 0,144$).

Our findings highlighting administrative barriers, language difficulties, and a lack of information are consistent with Russian reviews on the sociocultural adaptation of international students: navigating university services, the work of academic advisors, and transparent communication from universities remain key factors in reducing stress and increasing help-seeking (Dyachenko, 2024). Similar conclusions are presented in practice-oriented studies on typical difficulties at Russian universities and the role of information provision: a lack of knowledge about available services acts as an indepen-

dent barrier, even when there is a need for support (Ouheish Taha, 2022).

The findings confirm that Chinese students studying at Russian universities do indeed face the challenge of dual adaptation — both academic and cultural (Berry, 2007; Xu et al., 2017). At the same time, there remains a cultural stigma associated with seeking help from a psychologist (Shi et al., 2020), although the level of "Help-Seeking Propensity" is relatively high — 31,48 out of 40. This may indicate that some students are not opposed to the idea of psychotherapy in principle but fear "losing face" in the eyes of society, friends, or relatives (Esipov, 2022). In line with Eisen's Theory of Planned Behavior (1991), low "Indifference to Stigma" can act as a barrier even when there is a positive assessment of utility. The identified correlation ($r = -0,29$; $p = 0,003$) between the composite measure of distress and "Indifference to Stigma" (IS) is consistent with the finding that, in stressful situations, people are more vulnerable to the opinions of others and less willing to risk their reputation (Corrigan et al., 2015).

The data on the "Indifference to Stigma" (IS) component and the importance of confidentiality align with the findings of Russian studies on students' attitudes toward psychological support: expectations of judgment from others and trust in the format or channel of interaction with a specialist play a significant role (Esipov, Nesterova, 2022). This is also consistent with a model in which negative social norms and fears of "losing face" deter even those who generally view the benefits of counseling support positively.

The observed need for counseling in Chinese underscores the importance of establishing bilingual psychological support services (Chen et al., 2013). Furthermore, the issue of low awareness of university services ($\phi = 0,868$; $p < 0,01$) confirms that the mere availability of information can serve as a strong motivator for seeking

help (Semenova, 2021). In terms of service formats, our findings regarding the preference for in-person individual counseling and the importance of the counselor's native language are complemented by Russian observations on the effectiveness of digital channels, provided that anonymity and user-friendly navigation are ensured: some students prefer online services and counseling in secure environments (Semenova, 2021). At the same time, studies emphasize that social media and online communities can facilitate sociocultural integration and reduce the subjective stress of international students when properly moderated and linked to university services (Ovchinnikova, 2023).

It is necessary to improve the quality of the initial consultation, as a superficial, one-time meeting does not always build sufficient trust in the system (Fung et al., 2007).

Conclusions

The study's objective was achieved: the study identified the characteristics of Chinese students' attitudes toward psychological support while studying at Russian universities and established connections between specific components of these attitudes, behavioral indicators of seeking help, and distressing experiences. The results showed that respondents' overall attitude toward psychological support is moderately positive; however, it is accompanied by a pronounced sensitivity to stigma, fear of "losing face", language difficulties, and a lack of awareness regarding available forms of support.

The first hypothesis was partially confirmed: culturally-based barriers and fear of stigmatization were indeed identified, but they do not lead to an entirely negative attitude toward psychological help. The second hypothesis was also partially confirmed: more severe distress is associated with less indifference to stigma and

a lower IASMHs total score; however, no significant associations were found with psychological openness or the propensity to seek help. The third hypothesis was confirmed with regard to actual help-seeking behavior: awareness of counseling options is significantly associated with seeking psychological help. The fourth hypothesis was not statistically significantly confirmed regarding willingness to seek help again, although a positive experience was associated with a greater sense of comfort regarding counseling.

The recommendations include developing bilingual one-on-one counseling, creating anonymous online services, organizing information campaigns, and incorporating culturally sensitive elements (a combination of European and Chinese self-regulation practices). It is important to ensure complete confidentiality and work to reduce stigma.

Further research should focus on evaluating the effectiveness of the proposed measures, analyzing trends in the number of requests for assistance, and monitoring Chinese students' satisfaction with the counseling services. A preliminary analysis of gender differences in the experience of seeking psychological help did not reveal a statistically significant effect: 33,3% of men had such an experience, compared to 41,5% of women; $\chi^2(1) = 0,564$; $\phi = 0,084$; $p = 0,453$. Given the small effect size and sample size, it would be advisable to repeat the analysis using a larger sample. It would also be interesting to compare these findings with those of other groups of international students at Russian universities.

Limitations. The sample size ($n = 80$) limits the possibility of detailed analysis of individual subgroups (for example, according to different levels of Russian language proficiency). The study was conducted on the basis of self-reports, which can lead to subjective distortions.

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The author declares no conflict of interest.

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Basic psychological needs satisfaction: the role of peer social support on academic buoyancy

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Abstract

Context and relevance. University students frequently encounter academic demands, and their ability to cope with everyday academic challenges is known as academic buoyancy. This study is grounded in Self-Determination Theory (SDT), which posits that when students' basic psychological needs are satisfied through support from their social environment, such as peers, their academic outcomes improve. **Objective.** This study examined whether basic psychological need satisfaction mediates the relationship between peer social support and academic buoyancy. **Hypotheses.** Peer social support and basic psychological need satisfaction are positively correlated with academic buoyancy. Furthermore, basic psychological need satisfaction mediates the relationship between peer social support and academic buoyancy. **Methods and materials.** A quantitative cross-sectional survey was conducted with 372 students from a private university in Bandung (79% female). Data were collected using the Academic Buoyancy Scale (ABS), the Basic Needs Satisfaction in General Scale (BNSG-S), and the Peer Social Support Scale (PSSS). Mediation analysis was performed using Hayes PROCESS Macro Model 4. **Results.** Most students reported low academic buoyancy and low perceived peer support. Further mediation analysis revealed that basic psychological need satisfaction significantly mediated the relationship between peer social support and academic buoyancy. These findings indicate that peer support enhances students' feelings of autonomy, competence, and relatedness, which in turn strengthen their academic buoyancy. Conversely, lack of peer support may hinder this process, reducing students' capacity to manage academic stress. **Conclusion.** This study highlights the importance of fostering supportive peer environments to enhance academic buoyancy in university students. Future studies should explore contributions from additional social contexts, such as family and lecturers, to academic buoyancy.

Keywords: academic buoyancy, peer social support, basic psychological needs, students, self-determination theory

Supplemental data. The data used in this study were collected from university students in Bandung, Indonesia and are available from the corresponding author upon reasonable request.

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Удовлетворение базовых психологических потребностей: роль социальной поддержки сверстников в академической устойчивости

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Резюме

Контекст и актуальность. В процессе обучения в университетах студенты постоянно сталкиваются с различными академическими требованиями; способность преодолевать повседневные учебные трудности обозначается термином «академическая устойчивость». Настоящее исследование базируется на теории самодетерминации, согласно которой удовлетворенность базовых психологических потребностей студентов, обеспечиваемая поддержкой со стороны социального окружения (в частности, сверстников), положительно влияет на их академические результаты. **Цель.** В данной работе проверялось, опосредует ли удовлетворение базовых психологических потребностей взаимосвязь между социальной поддержкой сверстников и академической устойчивостью. **Гипотеза.** Социальная поддержка сверстников и удовлетворение базовых психологических потребностей положительно связаны с академической устойчивостью. Кроме того, удовлетворение базовых психологических потребностей опосредует взаимосвязь между социальной поддержкой сверстников и академической устойчивостью. **Методы и материалы.** Было проведено количественное кросс-секционное исследование с участием 372 студентов частного университета, расположенного в г. Бандунг (79% респондентов женского пола). Для сбора данных применялись шкала академической устойчивости (ABS), шкала удовлетворенности базовых потребностей в общем контексте (BNSG-S) и шкала социальной поддержки со стороны сверстников (PSSS). Обработка данных с целью проверки медиационной модели осуществлялась с использованием макроса PROCESS (модель 4) для SPSS, разработанного Э. Хейзлом. **Результаты.** Большинство респондентов продемонстрировали низкие показатели академической устойчивости и воспринимаемой поддержки со стороны сверстников. Результаты медиационного анализа показали, что удовлетворение базовых психологических потребностей выступает значимым медиатором во взаимосвязи между поддержкой сверстников и академической устойчивостью. Эти данные указывают на то, что поддержка сверстников способствует удовлетворению потребностей студентов в автономии, компетентности и социальной связанности, что, в свою очередь, повышает их академическую устойчивость. Напротив, дефицит поддержки со стороны сверстников может затруднять данный процесс, ослабляя способность студентов противостоять академическому стрессу. **Выводы.** Данное исследование подчеркивает важность создания поддерживающей среды сверстников для повышения академической устойчивости студентов университетов. В будущих исследованиях целесообразно изучить вклад других социальных контекстов, таких как семья и преподаватели, в академическую устойчивость.

Ключевые слова: академическая устойчивость, социальная поддержка сверстников, базовые психологические потребности, студенты, теория самодетерминации

Дополнительные данные. Данные, использованные в исследовании, были собраны у студентов университета в г. Бандунг (Индонезия) и доступны у автора по обоснованному запросу.

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Introduction

Education serves as a fundamental pillar for national development and societal progress. Higher education, in particular, plays a crucial role in enhancing students' academic knowledge and skills. Therefore, university students are considered essential contributors to a nation's advancement (Wijaya, 2022).

Throughout their academic journey, students are continuously confronted with various academic demands. These demands, as noted by Rohinsa (2024) constitute routine stressors in students' daily lives. Martin and Marsh (2009) refer to these recurring academic stressors as “*everyday hassles*”. Such hassles are defined as the accumulation of small, routine academic stressors (Martin, Marsh, 2008b). Examples include heavy workloads, challenging coursework, instructor feedback, poor grades, time-management difficulties, tight deadlines, and general boredom during learning activities (Rohinsa et al., 2019).

Although seemingly minor, these everyday hassles require effective management. When left unaddressed, they may diminish students' motivation and engagement in academic activities. As emphasized by Collie et al. (2017), students need the capacity to cope with these challenges, a quality referred to as academic buoyancy. Academic buoyancy is defined as an individual's ability to overcome everyday academic setbacks such as disappointing grades, strict deadlines, exam pressure, and demanding tasks (Martin, Marsh, 2008a).

Martin and Marsh (2008b) conceptualize academic buoyancy as a unidimensional con-

struct that reflects a combination of coping strategies and the ability to manage routine difficulties. Students with high academic buoyancy are able to effectively handle academic setbacks by employing problem-focused coping strategies. Rather than avoiding problems or responding emotionally, they actively seek concrete solutions and clear steps to overcome daily academic challenges. Problem-focused coping is essential for achieving optimal learning outcomes (Martin, Marsh, 2008b; Rohinsa, 2024).

Although academic buoyancy is vital for all students, empirical findings suggest that many students still struggle with it. A study by Bahrodin (2024) involving 200 students found that 24% had low academic buoyancy, 67% were in the moderate range, and only 9% reported high levels. These findings highlight the need to identify factors that contribute to students' academic buoyancy.

One crucial factor identified by Martin and Marsh (2008a) is peer social support, which plays a significant role in strengthening students' academic buoyancy. Recent studies increasingly emphasize the importance of peer support in helping students deal with academic challenges (Shkembi et al., 2024). Peer social support is considered vital because it fosters a sense of belonging and social stability within the educational environment (Saeed et al., 2023).

Generally, peer support refers to assistance provided by individuals who share similar experiences and life circumstances, enabling them to empathize with each other (Mead, MacNeil, 2004). According to Sarafino (1990), peer social support consists of five dimensions: 1) Emotion-

al support, including affection, empathy, care, and trust that foster inner calm (Pan, Ye, 2025); 2) Esteem support, including positive feedback or acknowledgment that enhances self-worth and motivation; 3) Instrumental support, referring to tangible aid in the form of resources, effort, or time that reduces material obstacles to academic progress (Mishra, 2020); 4) Informational support, including advice, guidance, or useful information to solve problems and improve learning strategies (Fandos-Herrera et al., 2023); and 5) Network support, which provides a sense of belonging to a social group with shared goals or interests.

The importance of peer support in enhancing academic buoyancy has been demonstrated in several studies. Zacher and Rudolph (2022) found that academic resilience decreases when students perceive lower levels of social support. Other research also shows that peer support influences students' ability to handle academic challenges. However, some studies report that peer social support does not always improve problem-solving skills (He et al., 2023). Furthermore, how peer support contributes to academic outcomes remains underexplored (Putri, 2024).

Several previous studies indicate that students who feel supported and accepted by their peers are likely to have stronger intrinsic motivation to face everyday academic challenges (Vasconcellos et al., 2020). Intrinsic motivation is a psychological mechanism that explains how

peer support enhances academic buoyancy. It involves the internal processes that energize, direct, and sustain individuals' efforts to overcome obstacles (Stone et al., 2009).

Self-Determination Theory (SDT) explains this intrinsic motivational process (Ryan, Deci, 2023). The theory states that individuals act autonomously and are intrinsically motivated when their basic psychological needs, autonomy, competence, and relatedness are satisfied. These needs are fulfilled through support from social environments, including peers (Ryan, Deci, 2000). Peer support helps satisfy these basic psychological needs (Vasconcellos et al., 2020), which in turn enhances students' academic performance (He et al., 2023; Rohinsa et al., 2021).

Based on this framework, the present study hypothesizes that peer social support affects academic buoyancy and that basic psychological need satisfaction serves as the psychological mediator explaining this relationship. Specifically, the study examines whether basic psychological need satisfaction mediates the relationship between peer social support and academic buoyancy. The proposed model is illustrated in Figure 1.

Materials and methods

The research employed a cross-sectional design; a choice made for its efficiency in data collection. A total of 372 students participated in this study. This sample size was considered

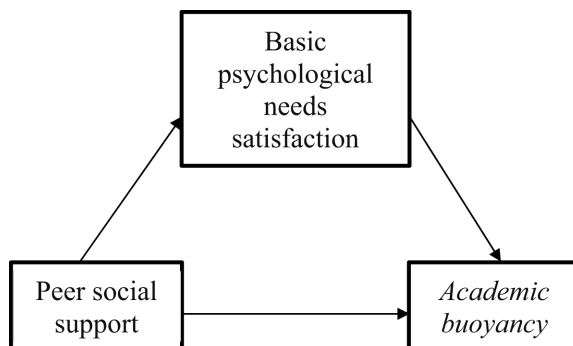


Fig. 1. The hypothesized model of the mediating role of basic psychological needs satisfaction between peer social support and academic buoyancy

adequate for mediation analysis using Hayes' PROCESS Macro and exceeded the minimum sample size recommended for detecting indirect effects in mediation models (Hayes, 2018). Participants were recruited using quota sampling until the predetermined quota was achieved.

The study utilized three main instruments to measure the variables:

1. Academic Buoyancy Scale (ABS): This scale measures students' self-assessment of their ability to cope with academic everyday hassles. It consists of 4 self-assessment items (e.g., "I can overcome learning obstacles"). The ABS uses a four-point Likert scale with options ranging from Disagree to Strongly Agree. The Indonesian version of the ABS has shown good reliability, with a construct reliability (CR) of 0,823 and a variance extracted (VE) of 0,54 (Rohinsa, Sitompul, 2021).

2. Basic Need Satisfaction in General Scale (BNSG-S): Developed based on Ryan, R.M., and Deci, E.L. (2023) theory, this scale assesses students' perceptions of their sense of autonomy, relatedness, and competence. The instrument has 17 items across three dimensions (e.g., "In general, I feel I have the freedom to express my ideas and opinions"). It also uses a four-point Likert scale. The original questionnaire was translated into Indonesian by the first author and verified by a language expert to ensure linguistic clarity and conceptual equivalence. Its internal consistency, measured by Cronbach's Alpha, was 0,77, which is considered respectable and reliable.

3. Peer Social Support Scale (PSSS): This 39-item scale, developed by Ansari Nahrudin et al. (2024) based on (Sarafino, 1990) theory of peer social support, uses a four-point response scale from Strongly Disagree to Strongly Agree. Its validity was tested using the Content Validity Index (CVI), showing that most items had CVI scores between 0,71 and 0,96. The reliability of the PSSS was high, with a coefficient of 0,956.

To test the study's hypothesis, a mediation statistical analysis was performed using the Hayes Process Macro Model 4 (Hayes, 2018). The model hypothesized that peer social support would influence the fulfillment of basic

psychological needs (path a), which would, in turn, influence academic buoyancy (path b). The indirect effect was calculated by multiplying path a and path b. The direct effect (c') represents the influence of peer social support on academic buoyancy while controlling for the fulfillment of basic psychological needs. The combined indirect and direct effects are referred to as the total effect. The fulfillment of basic psychological needs is considered a full mediator if the direct effect is not significant, and a partial mediator if the direct effect is significant (Hayes, 2018).

Results

A total of 372 students from a private university in Bandung participated in the study, comprising 78 males (21,0%) and 294 females (79,0%). Many respondents were between 20 and 21 years old, with the highest proportion (32,8%) being 21 years old. A significant portion of the participants (40,9%) were in their 8th semester. The demographic data of the study's respondents are presented in Table 1.

Table 1
Research participants description table

Demographics	N	Percentage
Gender		
Male	78	21,0%
Female	294	79%
Age		
20	80	21,5%
21	122	32,8%
22	64	17,2%
Semester		
4	78	21,0%
6	74	19,9%
8	152	40,9%
N = 372		

To categorize the generalized indicators, the mean score (see Table 2) served as the boundary criterion. Scores exceeding the mean were categorized as "high", while scores falling below the mean were categorized as "low".

Regarding academic buoyancy, a significant portion of respondents (63,7%) reported having

low academic buoyancy, while only 36,3% rated their buoyancy as high. This indicates that most students in the sample struggle to effectively cope with everyday hassles.

Basic Psychological Needs: The majority of respondents (62,3%) perceived that their basic psychological needs were inadequately fulfilled. In contrast, only 37,6% felt these needs were met. This finding suggests a widespread sense of lacking autonomy, competence, and relatedness among the students.

Peer Social Support: The data shows a near-even split in the perception of peer support. A slight majority of respondents (51,9%) felt that their peers provided low support, while 48,1% perceived high support. This highlights that a substantial number of students do not feel adequately supported by their peers. The descriptive analysis of the study's variables is presented in Table 2.

The study aimed to examine the mediating role of basic psychological need satisfaction in the relationship between peer social support and academic buoyancy. Mediation was tested using Hayes PROCESS Macro Model 4.

1. Effect of peer social support on basic psychological need satisfaction (path a)

The analysis revealed that peer social support had a significant positive effect on basic psychological need satisfaction ($a = 0,24$; standard error (SE) = 0,05; $p \leq 0,01$).

This indicates that higher perceived peer support is associated with greater satisfaction

of basic psychological needs. Conversely, lower peer support is associated with diminished need satisfaction.

2. Effect of basic psychological need satisfaction on academic buoyancy (path b)

Basic psychological need satisfaction demonstrated a significant positive effect on academic buoyancy ($b = 0,83$; standard error (SE) = 0,09; $p \leq 0,01$).

This suggests that students whose basic psychological needs are fulfilled are more capable of managing academic challenges and stressors.

3. Direct effect of peer social support on academic buoyancy (path c')

After controlling for basic psychological need satisfaction, the direct effect of peer social support on academic buoyancy was no longer statistically significant ($c' = 0,043$; standard error (SE) = 0,08; $p > 0,05$).

This indicates that peer social support does not directly influence academic buoyancy once basic psychological need satisfaction is taken into account.

4. Indirect effect (mediation effect)

The mediation analysis using bootstrapping indicated a fully mediated effect. The indirect effect of peer social support on academic buoyancy through basic psychological need satisfaction was significant (indirect effect = 0,24, 95% CI [0,12, 0,36]).

Because the confidence interval excludes zero, the indirect effect is statistically significant.

Table 2

Descriptive statistics

Variables	Mean	Standard deviation	n	Percentage
Academic buoyancy	12,07	2,00		
High			135	36,3%
Low			237	63,7%
Basic psychological needs	34,02	18,01		
Satisfied			140	37,6%
Not satisfied			232	62,3%
Peer social support	125,77	17,44		
High			180	48,1%
Low			192	51,9%
N = 372				

These findings support the study's hypothesis that basic psychological need satisfaction mediates the relationship between peer social support and academic buoyancy. In other words, peer support enhances feelings of autonomy, competence, and relatedness, which in turn strengthen students' academic buoyancy.

The results clarify that peer support does not directly produce academic buoyancy; rather, it exerts its influence through the psychological mechanism of basic psychological need satisfaction.

A visual representation of the mediation model is presented in Figure 2.

Discussion

This study aimed to examine the relationship between peer support and academic buoyancy, with basic psychological need satisfaction serving as a mediating variable. Based on the mediation analysis using Hayes PROCESS Macro Model 4, the findings revealed that basic psychological need satisfaction fully mediates the relationship between peer social support and academic buoyancy. This means that when students perceive themselves as receiving emotional support, instrumental support, informational support, and network support from their peers, these perceptions enhance their satisfaction of basic psychological needs. When these needs for competence, autonomy, and relatedness are fulfilled, students are better able to manage everyday academic hassles, or what is conceptualized as academic buoyancy.

The statistical results demonstrated that a large proportion of students perceived low peer social support. This indicates that many students felt they received limited emotional empathy, affirmation, tangible help, informational guidance, and relational belonging from their peers. The study also found that most students reported low levels of basic psychological needs, suggesting that relatively few students perceived themselves as competent in achieving academic goals (competence), autonomous in regulating their academic actions (autonomy), or connected to individuals in their academic environment (relatedness). As supported by Jang et al. (2016), individuals' perceptions of environmental support significantly influence the satisfaction of their basic psychological needs. Connell and Wellborn (1991) argued that through ongoing interactions within their social environment, individuals form internal perceptions of themselves, perceiving themselves as competent, autonomous, and connected.

Additionally, the findings revealed that most students experienced low academic buoyancy, meaning many were unable to manage their everyday academic hassles effectively. The mediation model further showed that when students feel unsupported by their peers, their satisfaction with basic psychological needs decreases. As a result, they feel less competent, less autonomous in addressing academic challenges, and less connected to their academic community. These diminished perceptions ultimately lower their capacity to regulate daily stress and reduce their academic buoyancy.

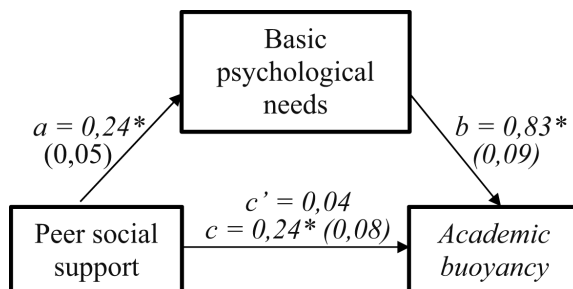


Fig. 2. The statistical mediation model of basic psychological need satisfaction on the relationship between peer social support and academic buoyancy

These results align with previous research demonstrating that peers serve as an important source of emotional, informational, and psychological support in educational settings (Wentzel, 1998; Christie et al., 2024). When students lack peer support, they may feel isolated and more susceptible to academic stress, which undermines their confidence and problem-solving abilities (Vasconcellos et al., 2020). Conversely, students who receive adequate peer support are better equipped to navigate academic challenges (Zhang et al., 2024).

The findings also highlight the importance of students feeling competent, autonomous, and connected in order to develop strong academic buoyancy. This is consistent with research by He et al. (2023), which shows that basic psychological need satisfaction enhances problem-solving abilities. As posited by Self-Determination Theory, individuals are driven by three basic psychological needs, autonomy, competence, and relatedness, which are essential for intrinsic motivation, persistence, and adaptive functioning (Ryan, Deci, 2023; Yang et al., 2025). These needs are satisfied only through supportive interactions within one's environment (Ryan, Deci, 2023). While past research has emphasized the role of teachers and parents in fulfilling these needs (Bin et al., 2023), the present findings underscore that peer social support is equally important in meeting students' basic psychological needs.

By confirming the study's hypothesis, the results demonstrate the significant role of peer social support in fulfilling students' basic psychological needs. Once these needs are satisfied, students are able to develop stronger intrinsic motivation and, consequently, better cope with daily academic challenges, reflecting higher academic buoyancy.

The theoretical implication of this study is that institutions should integrate peer support strategies into educational policies. Given that peer support plays a vital role in satisfying basic psychological needs and subsequently strengthening academic buoyancy, universities should develop programs that foster positive peer interactions, such as mentoring systems and collaborative learning projects. As shown by the findings, peer

support is crucial for students' academic success, and policymakers should embed peer-support dimensions within pedagogical practices to maximize student outcomes.

However, despite evidence supporting the benefits of peer social support for academic development, some studies highlight potential negative effects, particularly in environments with low academic motivation or where negative peer pressure is prevalent (Wu et al., 2022). This suggests that while peer networks can be beneficial, they must be structured carefully to avoid reinforcing counterproductive behaviors such as anti-academic attitudes or unmet psychological needs.

Additionally, previous research indicates that socioeconomic background, cultural expectations, and institutional resources can significantly influence the effectiveness of peer support mechanisms (Vietze et al., 2020). Therefore, future research should explore these contextual factors to identify best practices for fostering peer social support in diverse educational environments.

Conclusions

The findings of this study indicate that basic psychological need satisfaction serves as a mediating factor in the relationship between peer social support and academic buoyancy. Students' inability to effectively manage everyday academic hassles appears to stem from insufficient peer support, specifically, limited emotional support, esteem-based appreciation, tangible assistance, informational guidance, and relational connection. The absence of these five forms of peer support diminishes students' satisfaction with their basic psychological needs. When these needs remain unmet, students are less capable of handling daily academic challenges in an adaptive manner, ultimately resulting in lower academic buoyancy.

This study emphasizes the importance for students to recognize that peers constitute a crucial element in their academic journey, particularly in developing their academic buoyancy. The results demonstrate that inadequate peer support undermines basic psychological need satisfaction, which subsequently impairs

academic resilience. Therefore, students are encouraged to cultivate interactions that provide emotional support, affirmations, practical help, and informational resources in order to strengthen their sense of competence, relatedness, and autonomy, resources essential for navigating everyday academic stressors.

Future research should further investigate additional contextual factors, such as family and teachers, that may also contribute to academic

buoyancy. These three contexts are essential to examine collectively in order to better understand their roles in fulfilling basic psychological needs and supporting students' academic resilience. Moreover, future studies should explore broader contextual variables, including socio-economic background, cultural expectations, and institutional resources, to identify the most effective strategies for enhancing peer social support within diverse learning environments.

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Conflict of interest

The authors declare no conflict of interest.

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Ethical review and approval were waived for this study, as it did not involve any intervention and was considered low risk.

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Exploring students' well-being: insights from Indonesian fast-track postgraduate program

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Abstract

Context and relevance. Pursuing a postgraduate degree in a fast-track program presents significant challenges to students' well-being. **Objective.** This study aims to explore the well-being of Indonesian postgraduate students in fast-track programs, focusing on their psychological challenges, coping strategies, and the role of coping self-efficacy (CSE) in predicting well-being. **Methods and materials.** The mixed-methods approach combines quantitative data from an e-survey with qualitative data from focus group discussions. The study involved 180 PMDSU awardees who completed the questionnaire, while 24 participants were selected for focus group discussions. The participants, aged 21–32 ($M = 25,28$; $SD = 1,94$; 42,2% of male and 57,8% of female participants), were from various Indonesian universities. **Results.** The results integrate quantitative findings with qualitative insights into challenges, support systems, and coping strategies among fast-track scholarship awardees. The multiple regression analyses revealed that obtaining social support coping (GS) and stopping unpleasant emotional and thought coping (SE) were significant predictors of various aspects of well-being. Specifically, GS strongly predicted life satisfaction ($\beta = 0,430$; $p < 0,001$) and positive affect ($\beta = 0,344$; $p < 0,001$), and was negatively associated with negative affect ($\beta = -0,244$; $p = 0,007$). SE significantly enhanced positive affect ($\beta = 0,468$; $p < 0,001$), reduced negative affect ($\beta = -0,562$; $p < 0,001$), and increased balance affect ($\beta = 0,568$; $p < 0,001$). Sex significantly predicted negative affect ($\beta = 0,254$; $p < 0,001$) and balance affect ($\beta = -0,182$, $p = 0,001$), with females reporting higher negative affect and lower balance affect. No significant effect was found for satisfaction with life or positive affect. **Conclusions.** The study concludes that awardees face diverse challenges and perceive their coping strategies as effective in overcoming difficulties, achieving academic success, and maintaining well-being. The findings highlight the critical role of emotional regulation and seeking social support as coping strategies in maintaining well-being.

Keywords: well-being, postgraduate students' challenges, Indonesia, fast-track program

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Изучение благополучия студентов: результаты исследования индонезийской ускоренной программы магистратуры

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Резюме

Контекст и актуальность. Получение магистерской степени по ускоренной программе представляет собой серьезное испытание для благополучия студентов. **Цель.** В данном исследовании изучается благополучие индонезийских магистрантов ускоренных программ: рассматриваются их психологические проблемы, стратегии преодоления стресса и роль самоэффективности совладания как предиктора благополучия. **Методы и материалы.** Исследование выполнено в смешанном дизайне: количественные данные собраны с помощью онлайн-анкетирования, качественные — в ходе фокус-групповых интервью. В опросе участвовали 180 стипендиатов программы Министерства образования, науки и технологий Индонезии «Образование от магистра к доктору для выдающихся бакалавров» (PMDSU), 24 из которых также были приглашены для участия в фокус-группах. Средний возраст участников составил 25,28 года ($SD = 1,94$) в диапазоне от 21 до 32 лет; процент мужчин — 42,2%, женщин — 57,8%. Участники представляли разные университеты Индонезии. **Результаты.** Результаты объединяют количественные данные и качественные наблюдения о трудностях, системах поддержки и стратегиях совладания у стипендиатов ускоренных программ. Множественный регрессионный анализ показал, что стратегия получения социальной поддержки и стратегия подавления неприятных эмоций и мыслей являются значимыми предикторами различных аспектов благополучия. Социальная поддержка оказалась

сильным предиктором удовлетворенности жизнью ($\beta = 0,430$; $p < 0,001$) и положительного аффекта ($\beta = 0,344$; $p < 0,001$), однако отрицательно коррелировала с отрицательным аффектом ($\beta = -0,244$; $p = 0,007$). Подавление неприятных эмоций и мыслей значимо повышало положительный аффект ($\beta = 0,468$; $p < 0,001$), снижало отрицательный аффект ($\beta = -0,562$; $p < 0,001$) и усиливало сбалансированный аффект ($\beta = 0,568$; $p < 0,001$). Пол участников значимо предсказывал отрицательный аффект ($\beta = 0,254$; $p < 0,001$) и сбалансированный аффект ($\beta = -0,182$; $p = 0,001$): у девушек уровень отрицательного аффекта был выше, а сбалансированного — ниже. Значимого влияния на удовлетворенность жизнью или положительный аффект выявлено не было. **Выводы.** Исследование показало, что стипендиаты сталкиваются с разнообразными трудностями, однако оценивают свои стратегии совладания как эффективные — как для преодоления проблем и достижения академических успехов, так и для поддержания психологического благополучия. Полученные результаты подчеркивают ключевую роль эмоциональной регуляции и поиска социальной поддержки в сохранении благополучия.

Ключевые слова: благополучие, трудности магистрантов, Индонезия, ускоренная программа

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Introduction

In 2013, the Indonesian Ministry of Education, Culture, Research, and Technology launched a fast-track doctoral scholarship program called PMDSU, which allows top bachelor's graduates to bypass a master's degree and directly pursue a PhD (Diktiristek, 2023). The program accelerated postgraduate education to increase the quality of Indonesia's human resources and global competitiveness (Diktiristek, 2023; Rizal et al., 2020). It also fosters a strong academic environment under the guidance of distinguished supervisors with proven research and teaching credentials (Diktiristek, 2023).

Participating in an accelerated postgraduate program presents significant challenges that can impact students' well-being. The intense

and competitive environment, along with role conflicts between work, family, and study, adds to the pressure (Hendriani, 2017; Lemée et al., 2020). These demands often lead to psychological problems, including stress and depression, insomnia, and perceived stress, which are common among doctoral students (Chunhong et al., 2025; Lemée et al., 2020). Additional barriers stem from the high standards for writing research reports and publishing scientific articles (Shamsi, Osam, 2022), the demand for research excellence (McDowall, Ramos, 2024), limited resources, and difficulties in the mentoring process (Roos et al., 2021).

The transactional model of stress and coping explains that individuals experience stress not solely due to external demands, but through

a process of cognitive appraisal involving perceived threat and perceived coping resources (Lazarus, Folkman, 1984). In this context, coping self-efficacy (CSE), one's belief in their ability to manage stressors, plays a critical role in determining how individuals regulate their emotions and maintain subjective well-being. For instance, Kaya and Odacı (2024) found that CSE significantly contributes to higher levels of life satisfaction and emotional well-being. Similarly, Ngooi et al. (2022) observed that increases in CSE led to measurable improvements in subjective well-being among individuals with acute psychological distress. The mechanism behind this relationship appears to involve emotion regulation: individuals with high CSE tend to engage in more adaptive emotion regulation strategies such as reappraisal and acceptance, which reduce psychological distress and promote positive affect (Luberto et al., 2014; Rosenbaum et al., 2022). Furthermore, Saeed et al. (2024) highlight that CSE has effects on well-being. Taken together, these findings suggest that CSE facilitates subjective well-being not only by influencing how individuals appraise stress, but also by promoting effective emotional responses through adaptive coping strategies.

Policymakers should prioritise the mental health of fast-track doctoral students to ensure their well-being and sustained contributions to scientific advancement. Addressing these concerns is crucial, as mental health directly impacts research quality and productivity (Zhang et al., 2022), attrition rates (Stevens et al., 2023), and influences the nation's academic and research landscape (Levecque et al., 2017). This study explores the challenges and coping mechanisms of fast-track scholars in Indonesia, particularly those in the PMDSU program. It fills a gap in the literature, which has largely overlooked the unique pressures of such programs (Lemée et al., 2020).

This study combines quantitative e-surveys and qualitative focus group discussions to examine the well-being of fast-track scholarship awardees. It identifies challenges, coping strategies, and well-being predictors to inform policies that enhance mental health, support academic

success, and strengthen the competitiveness of Indonesian higher education.

The PMDSU scholarship program quickly tracks top bachelor's degree graduates in PhD programs to strengthen Indonesia's human resources and global competitiveness. However, the program's accelerated nature creates psychological challenges due to heightened competition and academic pressure. This study fills a gap in the literature by examining the unique experiences of fast-track scholars in Indonesia and identifying their specific challenges and coping mechanisms. The findings offer practical recommendations for improving academic and mental health outcomes, ultimately enhancing the quality of Indonesian higher education. Therefore, this study aims to explore the well-being of Indonesian postgraduate students in fast-track programs, focusing on their psychological challenges, coping strategies, and the role of coping self-efficacy (CSE) in predicting well-being.

Materials and methods

This study employed a mixed-methods approach with convergent design, combining quantitative surveys and qualitative focus group discussions (FGDs). The quantitative data were collected through an e-survey platform.

Participants

This study involved 180 PMDSU scholarship awardees from various universities aged 21–32 years ($M = 25.3$; $SD = 1.94$). Of the participants, 42.2% were male and 57.8% were female. Additionally, 24 participants joined focus group discussions, which were divided into four groups: one for alumni and three for awardees from different cohorts.

Data collection procedures

The quantitative data were collected online via the Jotform.com platform. The scholarship manager distributed the questionnaire link via email to all awardees, and participation was voluntary, allowing respondents to withdraw at any time. Qualitative data were gathered through face-to-face focus group discussions (FGDs). Before the FGDs, the facilitators attended a briefing session

to ensure a smooth and consistent discussion process. This session provided detailed instructions on how to use the FGD guide and manage discussions. Each FGD was led by a psychologist and observed by a designated observer.

Instruments

The quantitative data were collected via three measurement instruments adapted for Indonesia. This study adopted the concept of subjective well-being and used the “Satisfaction with Life Scale” (SWLS) and the “Positive and Negative Experience Scale” (SPANES) to define and assess well-being. The SWLS assesses individuals’ overall life satisfaction ($\alpha = 0,828$) (Akhtar, 2019). The SPANES measures the frequency of positive and negative emotions over the past four weeks ($\alpha = 0,853–0,861$) (Akhtar, 2019). The “Coping Self-Efficacy Scale” (CSES) evaluates three factors: problem-focused coping, regulation of unpleasant emotions and thoughts, and seeking support from friends and family (26 items; $\alpha = 0,769–0,920$) (Nurhidayah, 2021).

The FGD guidelines were developed, reviewed, and conducted by professional psychologists. The discussions focused on (1) the academic and nonacademic challenges commonly faced by awardees, (2) the psychosocial support received by awardees, and (3) strategies for overcoming these challenges.

Data analysis

Quantitative data from the e-survey were analysed via descriptive statistics to assess group differences. To further examine participant characteristics, additional analyses compared mean scores by gender, age group, and marital status. Normality tests were conducted for each variable; parametric tests (t-test, ANOVA) were used when normality was met, otherwise non-parametric tests (Mann–Whitney U, Kruskal–Wallis) were applied. Correlation analysis was conducted to examine the relationships among predictor variables. Since the majority of the variables did not meet the assumption of normality, Spearman’s rank correlation was employed. Significant correlations identified through this analysis informed subsequent multiple regres-

sion analyses to determine the predictors of the dependent variables. Multiple regression analysis was conducted after ensuring the following key assumptions: linearity, homoscedasticity, normality of the error distribution, independence of the error terms, and absence of multicollinearity. SPSS 25.0 was used for statistical analysis.

Qualitative data from the FGDs were analysed via thematic analysis to identify emerging themes aligned with the study’s objectives. Thematic analysis followed six steps (Braun, Clarke, 2006): (1) transcription, (2) keyword selection, (3) coding, (4) theme development, (5) conceptualisation, and (6) conceptual model development. This process involves structuring data into meaningful patterns, often guided by existing theories. The mixed method analysis was systematically conducted using a joint display, performed after the separate analyses of quantitative and qualitative data to visually integrate and compare the findings (Creswell, Inoue, 2024).

Results

This study examines predictors of subjective well-being on the basis of two components: life satisfaction (cognitive) and positive and negative affect (affective). The analysis tested sociodemographic factors (gender, marital status, and age group) and coping self-efficacy as potential predictors. The following section presents the study’s findings.

Quantitative insights

The participants’ characteristics are summarised in Table 1. The descriptive statistics indicate that female participants had higher mean scores for life satisfaction, negative affect, and social support coping. In contrast, males scored higher on positive affect, affect balance, problem-focused coping, and emotion regulation coping. Compared with married participants, unmarried participants had higher mean scores across all variables. The participants aged 21–24 had the highest scores on all the coping self-efficacy components. Those aged 25–28 years reported the lowest scores for life satisfaction and negative affect but shared the highest affect balance score with those aged 21–24.

A t-test and one-way ANOVA were conducted to examine group differences in subjective well-being and coping self-efficacy. No significant differences were found based on age or marital status. However, significant differences emerged between males and females regarding negative affect ($p = 0,001$) and affect balance ($p = 0,009$). All SWLS and CSES dimensions were significantly correlated. The results of the bivariate analysis are detailed in Table 2.

Multiple linear regression examined how coping self-efficacy factors predict subjective

well-being components — life satisfaction (cognitive) and positive and negative affect (affective). The regression model was significant for life satisfaction ($p < 0,001$; $R^2 = 0,273$), positive affect ($p < 0,001$; $R^2 = 0,465$), negative affect ($p < 0,001$; $R^2 = 0,468$), and affect balance ($p < 0,001$; $R^2 = 0,545$). Social support coping was the only significant predictor across all the well-being components. Emotional regulation, coping, and sex were additional predictors of negative affect and affect balance. The detailed results are presented in Table 3.

Table 1

Descriptive statistics and group comparisons of participant characteristics

Variables mean (SD)	Gender		Age group			Marital status	
	Male	Female	21–24	25–28	29–32	Not married	Married
n (%)	76 (42,2)	104 (57,8)	71 (39,4)	96 (53,3)	13 (7,2)	153 (85)	27 (15)
SWL**	20,4 (6,6)	21,3 (6,3)	21,5 (6,0)	19,2 (6,2)	21,0 (9,9)	21,2 (6,4)	19,1 (6,4)
	$p = 0,386$		$p = 0,611$			$p = 0,113$	
PA	21,9 (4,0)	21,3 (4,7)	21,8 (4,5)	21,4 (4,2)	20,9 (5,7)	21,5 (4,6)	21,6 (3,1)
	$p = 0,392$		$p = 0,776$			$p = 0,575$	
NA	15,1 (4,6)	17,8 (5,0)	16,79 (5,1)	16,4 (4,8)	17,6 (6,3)	16,8 (5,1)	15,9 (4,3)
	$p = 0,001^*$		$p = 0,714$			$p = 0,429$	
AffectB	6,7 (8,0)	3,5 (8,8)	5,0 (8,9)	5,0 (8,0)	3,3 (11,4)	4,8 (8,9)	5,6 (6,8)
	$p = 0,009^*$		$p = 0,804$			$p = 0,832$	
PF	83,8 (23,0)	82,2 (22,9)	85,9 (20,7)	81,97 (22,1)	71,4 (35,7)	83,2 (22,4)	80,6 (25,2)
	$p = 0,465$		$p = 0,366$			$p = 0,738$	
SE	61,5 (17,6)	60,4 (18,0)	62,9 (17,9)	60,6 (15,9)	51,1 (26,4)	61,0 (17,6)	59,7 (19,2)
	$p = 0,567$		$p = 0,249$			$p = 0,808$	
GS	31,07 (10,7)	32,0 (10,9)	33,21 (10,9)	30,9 (10,1)	2,4 (14,4)	31,7 (10,9)	30,9 (10,3)
	$p = 0,617$		$p = 0,242$			$p = 0,681$	

Note. SWL = satisfaction with life; PA = positive affect; NA = negative affect; AffectB = affect balance; PF = problem-focused coping; SE = stop unpleasant emotional and thoughts coping; GS = get social support coping; SD = standard deviation. * $p < 0,05$; ** met the assumption of normality. Therefore, group comparisons were conducted using t-tests and ANOVA.

Table 2

Intercorrelations among the study variables

Variables	1	2	3	4	5	6	7
Satisfaction with life	1						
Positive affect	0,628*	1					
Negative affect	–0,440*	–0,656*	1				
Affect balance	0,552*	0,872*	–0,935*	1			

Variables	1	2	3	4	5	6	7
Problem-focused coping	0,388*	0,626*	−0,551*	0,630*	1		
Stopping unpleasant emotions and thoughts	0,369*	0,621*	−0,601*	0,662*	0,901*	1	
Getting social support	0,486*	0,613*	−0,542*	0,622*	0,756*	0,723*	1

Note. * $p < 0,05$.

Table 3

Results of multiple regression analysis on predictors of well-being

Dependent variable: satisfaction with life						
	B	Std. error	β	t	p value	Statistics
(Constant)	11,447	2,912		3,931	<0,001	R = 0,523 R ² = 0,273 F (6, 173) = 10,839 <i>p</i> < 0,001
PF	−0,007	0,046	−0,024	−0,145	0,885	
SE	0,045	0,054	0,124	0,824	0,411	
GS	0,255	0,062	0,430	4,145	<0,001	
Dependent variable: positive affect						
	B	Std. error	β	t	p value	Statistics
(Constant)	11,438	1,715		6,667	<0,001	R = 0,682 R ² = 0,465 F (6, 173) = 25,056 <i>p</i> < 0,001
PF	−0,016	0,027	−0,081	−0,578	0,564	
SE	0,116	0,032	0,468	3,628	<0,001	
GS	0,140	0,036	0,344	3,864	<0,001	
Dependent variable: negative affect						
	B	Std. error	β	t	p value	Statistics
(Constant)	25,795	1,948		13,241	<0,001	R = 0,684 R ² = 0,468 F (6, 173) = 25,318 <i>p</i> < 0,001
Sex	2,578	0,568	0,254	4,537	<0,001	
PF	0,030	0,031	0,134	0,965	0,336	
SE	−0,159	0,036	−0,562	−4,364	<0,001	
GS	−0,113	0,041	−0,244	−2,748	0,007	
Dependent variable: balance affect						
	B	Std. error	β	t	p value	Statistics
(Constant)	−14,357	3,087		−4,651	<0,001	R = 0,738 R ² = 0,545 F (6, 173) = 35,548 <i>p</i> < 0,001
Sex	−3,178	0,900	−0,182	−3,530	0,001	
PF	−0,045	0,048	−0,120	−0,930	0,354	
SE	0,275	0,058	0,568	4,770	<0,001	
GS	0,254	0,065	0,319	3,882	<0,001	

Note. PF = problem-focused coping; SE = stopping unpleasant emotional and thought coping; GS = getting social support coping.

Qualitative insights

Three main points related to awardees — challenging times for students, coping strategies, and psychosocial support — have been identified through thematic analysis. The following is a description of the three main findings.

Challenges for students

PMDSU awardees face various challenges while pursuing their studies. These challenges arise from complex, competitive conditions and role conflicts between work, family, and academics. Researchers have classified them into seven categories.

Research process. Problems that arise in the research process start from the availability of infrastructure that can support research, the conditions of the COVID-19 pandemic that impact the continuity of research, and the disbursement of research funds.

“The research funding is available; however, the disbursement timeline does not align with the research implementation schedule. Consequently, my team and I, along with our supervisor, must seek alternative funding sources to ensure that the research proceeds according to our planned publication timeline. The primary challenge we face is the institutional demand for increased publications, yet the existing funding and disbursement schedule do not adequately accommodate the financial requirements for publication.” (Al, M, Batch 6)

Learning process. In the learning process, the problems faced by scholarship awardees are related to their ability to master learning materials and basic supporting skills. For example, a lack of English proficiency impacts research publications.

“When I started my master’s program, there was a lot I had to relearn. I took 24 credits, and at that time, classes were conducted online. Additionally, I had to undergo a special matriculation program for several months alongside undergraduate students to study field geology, as I did not have a background in that field.” (H, M, Batch 6).

Student and supervisor relations are often affected by the demanding schedules of supervisors, differences in interests and expectations, and the diverse characteristics of the supervisor team. Additionally, students are frequently assigned nonacademic responsibilities by their supervisors, limiting the time available for their research.

“My supervisor is extremely busy, making it difficult to meet with them. This has disrupted the progress of my research and dissertation. It is particularly challenging because I must learn from them, as there is no other faculty member with expertise

in the methodology required for my study.” (R, F, Batch 4).

Scholarship program management. The fast-track scholarship program varied in administrative rules across universities, while unclear and unevenly distributed information from the central organiser added to the challenges.

“I request that the fast-track scholarship program have a centralised information centre to ensure that announcements or notifications are not relayed informally by word of mouth or through WhatsApp messages. Not everyone may receive or read the information on the same day, and there is a risk that important messages could be buried under other updates, leading to potential miscommunication.” (Jo, M, Batch 5).

Perceived expectations. Scholarship awardees felt discomfort with the “excellent scholar” label, as it created high expectations and pressure.

“We will eventually become young doctorate holders, and high social expectations will undoubtedly be placed upon us. It’s as if people will say, ‘You’re a young doctor, how come you cannot do this? How come you cannot do that?’” (Mr, F, Batch 6)

Interpersonal relationships included difficulty in balancing family and student roles. Their demanding schedules often lead to isolation, limited self-actualisation, and a competitive rather than supportive peer environment.

“There is a lack of strong relationships among fellow scholarship awardees. As a result, if one of us underperforms or suddenly disappears from academic activities or campus life, we are unable to support each other effectively.” (Jo, M, Batch 5).

Self-management (intrapersonal). Fast-track scholarship awardees require strong self-management skills to navigate academic demands. However, difficulties in managing time, energy, and emotions negatively impact their academic progress, productivity, and self-perception.

“... but I personally still struggle to determine which tasks should be prioritised and

how to manage my time effectively.” (Ar, M, Batch 5).

Coping strategies

In facing various challenges and demands during the study period, PMDSU scholarship awardees adopted various coping strategies. Researchers have identified four primary strategies most commonly employed in addressing problems.

Problem-focused coping involves strategies aimed at directly addressing challenges. The awardees employed various approaches, including coordinating with the university, focusing on achievable tasks, understanding and communicating with their supervisor, planning and managing energy, and seeking relevant information to support problem solving.

“Therefore, I focus more on taking action rather than overthinking things that become a burden. It’s fine to think, but it should be solution-oriented.” (F, M, Batch 6).

Emotion-focused coping involves strategies aimed at managing emotional responses to stressors through emotional expression, spiritual practices, acceptance of one’s circumstances, and self-encouragement.

“I adopt a ‘*nothing to lose*’ mindset, allowing myself to be more at peace. When something bad happens, I am more accepting because I approach it with sincerity. I feel more at ease and willing to accept unexpected or unfavourable situations.” (E, M, Batch 5).

Support involves seeking support and assistance from others by being open and asking for help from various sources.

“A peer group is extremely important to me. Fortunately, I have a friend with the same supervisor, which has been incredibly helpful—especially when my motivation drops, such as after a journal rejection, a postponed conference, or research delays due to COVID-19. These challenges can feel overwhelming, but having a supportive peer group in the faculty allows me to share experiences and stay motivated.” (R, F, Batch 4).

Maladaptive coping refers to strategies that neither resolve stressors nor effectively manage emotions. This included avoidance behaviours, such as withdrawing without notice or discontinuing studies, and ineffective emotional regulation strategies, such as self-harm or excessive emotional expression on social media.

“Because of the constant requests for revisions and other demands, I became so frustrated that I lost control of my emotions. I went to the bathroom and vented my anger by punching the wall until my hand bled — I was just that upset” (T, M, alumni).

Psychosocial support

There are four sources of psychosocial support obtained by students: supervisors, colleagues, family and partners, and program managers.

Supervisor support played a crucial role for the awardees, including open discussions and recognition of their achievements.

“My supervisor is someone who highly values and expresses appreciation. I believe that words of appreciation serve as a key factor in reigniting motivation and enthusiasm.” (S, F, Batch 4).

Colleagues provided valuable support by acting as discussion partners and providing space to share concerns. They offer encouragement, appreciation, and mutual understanding to help navigate academic challenges.

“Among peers in the same study program, there is a strong culture of mutual support. For instance, when I struggle to access books or journal articles, I can seek assistance from my classmates, who are always willing to help. Additionally, having senior students provides an extra source of encouragement. They often offer motivational words such as ‘*Stay motivated, you can do it!*’ which further inspires us.” (F, M, Batch 6)

Families and partners provide support through prayer, encouragement, and appreciation.

“The social support I receive from my par-
ents is often through prayers. For example,
my parents would say, ‘I pray for the best
for you,’ which provides me with a sense
of encouragement and emotional support.”
(F, M, Batch 6)

Program managers provide psychosocial
support through policies and program imple-
mentation that facilitate the success of fast-track
scholarship awardees.

“In this mathematics program, the laborato-
ry is considered relatively accessible since
we use software that can be monitored
remotely. Additionally, I find the program
administrators to be cooperative, and the
university provides adequate facilities to

support our learning and research needs”.
(S, F, Batch 4).

Mixed-method analysis

The integration of quantitative and qualita-
tive findings provided a more comprehensive
understanding of students’ well-being. Quanti-
tative results highlighted the role of social sup-
port coping (GS), emotion regulation coping
(SE), and problem-focused coping. Qualitative
themes confirmed, expanded, and in some
cases contradicted these findings. Overall,
the integration produced one confirmed, one
discordant, and one expanded result. Table 4
presents the joint display of these integrated
findings.

Table 4

Joint display depicting predictors of well-being

Quantitative	Qualitative	Mixed-meta inferences
Getting social support coping (GS) was the strongest predictors of cognitive and affect domain of well-being: life satisfaction ($\beta = 0,430$; $p < 0,001$) positive affect ($\beta = 0,344$; $p < 0,001$) negative affect ($\beta = -0,244$; $p = 0,007$).	Psychosocial support: Participants emphasized the importance of receiving support from various sources such as peers, family, and supervisors in sustaining motivation and well-being. “A peer group is extremely important to me. Fortunately, I have a friend with the same supervisor, which has been incredibly helpful — especially when my motivation drops.” (R, F, Batch 4) “The social support I receive from my parents is often through prayers, which provides me with a sense of encouragement and emotional support.” (F, M, Batch 6)	Confirmed. Both data strands highlight the central role of social support in sustaining well-being. Supervisors, peers, families, and program managers function as critical buffers, reinforcing GS coping as a consistent predictor of SWB.
Stopping unpleasant emotional and thought coping (SE) predicts only affect domain of well-being: positive affect ($\beta = 0,468$; $p < 0,001$) negative affect ($\beta = -0,562$; $p < 0,001$) balance affect ($\beta = 0,568$; $p < 0,001$).	Emotion-focused coping: Participants described that adopting a positive mindset and reframing their thoughts allowed them to feel calmer and more accepting of difficulties. “I adopt a ‘nothing to lose’ mindset, allowing myself to be more at peace. When something bad happens, I am more accepting because I approach it with sincerity.” (E, M, Batch 5) Maladaptive coping: Participants shared experiences where failure to control emotions led to negative coping expressions and deep frustration. “Because of the constant requests for revisions, I became so frustrated that I vented my anger by punching the wall until my hand bled.” (T, M, alumni)	Expanded. Quantitative findings show SE predicts emotional balance, while qualitative data reveal both adaptive (acceptance, spirituality) and maladaptive (self-harm) strategies. This nuance expands understanding of how SE operates in real-life contexts.

Quantitative	Qualitative	Mixed-meta inferences
Problem-focused coping (PF) was not a significant predictor of well-being.	Problem-focused coping: Participants reported relying by directly addressing the problem through concrete problem-solving to overcome academic challenges. <i>"Therefore, I focus more on taking action rather than overthinking things that become a burden. It's fine to think, but it should be solution-oriented."</i> (F, M, Batch 6)	Discordant. Although many students reported using PF coping (planning, problem-solving), it did not emerge as a significant predictor in regression analysis. Suggests that PF strategies alone may not translate into measurable improvements in SWB without emotional regulation and social support.

Discussion

This study explored the challenges that PMDSU awardees face in a fast-track doctorate program, their coping strategies, and how sociodemographic factors and coping self-efficacy (CSE) influence well-being. The findings reveal a complex interplay between these challenges, coping strategies, and well-being. Doctoral students often experience high attrition rates and significant stress, with personal, academic, and career development difficulties contributing to delays (Berry et al., 2023; Stevens et al., 2023). This study identified key challenges in research processes, supervisor relationships, program structures, and self-management. Financial struggles also impact students' academic performance (Bomer et al., 2021). Supervisory feedback plays a crucial role in doctoral progress (Carless et al., 2024; Yang, 2023), yet students face challenges related to high expectations and demanding schedules (Can, Walker, 2011). Effective self-regulation enhances learning, performance, motivation (Li et al., 2023; Theobald, 2021), and well-being (Rodríguez et al., 2022), but some fast-track students struggle with self-management and prioritising tasks.

Furthermore, the qualitative insight identified various coping strategies used by awardees, categorised into problem-focused, emotion-focused, support-seeking, and maladaptive coping strategies. Problem-focused coping involves addressing issues directly, making problem-solving plans, and seeking social support (Lazarus, Folkman, 1984). It also includes active coping, planning, restraint, and engaging in alterna-

tive activities. Active coping entails organising tasks and seeking peer discussions, whereas emotion-focused strategies involve leisure activities and religious coping (Qidwai et al., 2009). Additionally, psychosocial support from supervisors, peers, and families plays a significant role in fostering persistence and well-being (Byrom et al., 2022; Chaudhry et al., 2024).

Earning a PhD requires high levels of well-being, as poor well-being can negatively impact academic progress, professional development, research productivity, and personal life (Schmidt, Hansson, 2018). Maintaining well-being is crucial for awardees to complete their studies successfully.

SWB, which includes life satisfaction, positive emotions, and minimal distress, plays a vital role in doctoral success (Diener et al., 2018). While academic and career satisfaction contribute to SWB, stress necessitates effective coping strategies. This study revealed gender differences in negative affect and affect balance, with no differences in other variables. Research suggests that men report greater life satisfaction than women do (Blanchflower, Bryson, 2024; Montgomery, 2022), although the findings remain inconsistent. Although no gender differences emerged in positive affect, women reported greater negative affect, which is consistent with global trends (Blanchflower, Bryson, 2024). These disparities may stem from gender inequality, social expectations, and cultural norms (Batz-Barbarich et al., 2018).

The findings also indicate that coping self-efficacy (CSE) is positively correlated with life

satisfaction and positive affect but negatively correlated with negative affect and affect balance. Getting social support (GS) was a strong predictor of both the cognitive and affective components of SWB, highlighting the importance of close relationships. Meanwhile, stopping unpleasant emotional and thought coping (SE) was a predictor only for affective components of SWB.

The qualitative insight provides nuanced illustrations of the coping strategies employed by participants to sustain their well-being in the demanding context of a fast-track doctoral program. Emotion regulation strategies — such as acceptance of one's circumstances, spiritual practices, emotional expression, and self-encouragement — were frequently described as effective means to alleviate distress and foster positive emotions. Equally important, the breadth of social support underpinning GS coping was evident across multiple sources: supervisors offered open discussions and recognition of achievements; colleagues provided encouragement, appreciation, and mutual understanding to navigate academic challenges; families and partners contributed through prayers, motivation, and affirmation; and program managers facilitated academic progress through supportive policies and program implementation. Together, these strategies demonstrate how both SE and GS are enacted in daily academic life, reinforcing their significance in maintaining well-being.

These results are consistent with previous research showing that higher coping self-efficacy is associated with greater subjective well-being (Saeed et al., 2024). Additionally, research conducted in France underscores the critical role of familial support in fostering subjective well-being (Leung et al., 2020). Moreover, poor well-being has been shown to adversely affect research productivity, personal life, and elevate mental health risks (Larivière, 2012). Given the widespread mental distress among doctoral students, it is crucial to implement interventions aimed at assisting those with low subjective well-being to safeguard both their mental health and academic performance.

The findings of this study extend Lazarus's transactional model of stress and coping by pro-

viding empirical evidence that effective coping not only mitigates the negative impact of stress but also serves as a predictor of subjective well-being. This suggests that when individuals possess strong coping self-efficacy, they are more likely to regulate emotions effectively, utilize adaptive coping strategies, and consequently maintain higher levels of well-being despite experiencing stress.

Conclusions

This study examined the well-being of Indonesian fast-track scholarship awardees, highlighting the academic, interpersonal, and institutional challenges they face. The findings emphasise the critical role of coping strategies, particularly social support, in sustaining their well-being and academic performance despite these difficulties.

Coping self-efficacy, especially the ability to seek social support, emerged as a consistent predictor of both cognitive and affective well-being. Qualitative findings reinforced the importance of supervisory support, peer networks, and self-regulation in navigating the demands of the program.

These results underscore the need for institutional policies that promote mental health and enhance support systems in accelerated doctoral pathways. Future research should consider broader samples for other fast-track programs, longitudinal designs, and institutional factors influencing well-being.

Future research should explore longitudinal patterns of well-being across program stages, include larger and more diverse samples, and investigate the role of institutional culture and structural barriers. Additionally, it may be useful to design and test targeted psychological interventions tailored to fast-track students' specific needs.

Limitations of this study include potential issues in generalizability due to the sample being limited to PMDSU awardees from specific universities and cohorts, and the reliance on self-report data. Limited access to participants due to the intense academic schedule and program distribution may also have constrained data diversity.

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The role of high school background and daily reflective practices in developing emotional intelligence and existential competence among Indonesian university students

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Abstract

This study examines the relationship between high school background (general, vocational, and Islamic schools) and daily reflective practices in predicting emotional intelligence (EI) and existential competence (EC) among Indonesian university students. A cross-sectional survey was conducted with 754 participants using validated instruments measuring EI, EC, and reflective practices. Multivariate analysis (MANCOVA) revealed that high school type did not significantly predict EI or EC. In contrast, daily reflective practices showed a strong and significant effect on both EI and EC. These findings indicate that individual engagement in reflective routines plays a more important role than formal educational background in developing emotional and meaning-oriented competencies. The study highlights the importance of behavioral and reflective processes in supporting students' psychological development within a socio-cultural context.

Keywords: emotional intelligence, existential competence, reflective practices, meaning-making, educational background, Indonesia

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Роль школьного образовательного фона и повседневных рефлексивных практик в развитии эмоционального интеллекта и экзистенциальной компетентности у студентов университетов Индонезии

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Резюме

В данном исследовании рассматривается взаимосвязь между типом образовательного учреждения (общеобразовательные, профессиональные и исламские школы) и повседневными рефлексивными практиками в прогнозировании индивидуального развития эмоционального интеллекта (ЭИ) и экзистенциальной компетентности (ЭК) у студентов индонезийских университетов. Исследование выполнено в рамках кросс-секционного дизайна с участием 754 респондентов. Для оценки эмоционального интеллекта, экзистенциальной компетентности и рефлексивных практик применялись апробированные психодиагностические методики. Результаты многомерного ковариационного анализа (MANCOVA) показали, что тип школы не оказывает значимого влияния на уровень изучаемых показателей. Вместе с тем был выявлен сильный и статистически значимый эффект рефлексивных практик в отношении обоих показателей. Полученные данные свидетельствуют о том, что индивидуальная вовлеченность в рефлексивные практики играет более значимую роль в развитии эмоциональных и смыслообразующих качеств личности, чем формальное школьное образование. Исследование подчеркивает важность поведенческих и рефлексивных процессов в психологическом развитии студентов с учетом социокультурного контекста.

Ключевые слова: эмоциональный интеллект, экзистенциальная компетентность, рефлексивные практики, смыслообразование, образовательный фон, Индонезия

Финансирование. Настоящее исследование выполнено при финансовой поддержке стипендиальной программы Beasiswa Pendidikan Indonesia (BPI), администрируемой Центром финансирования образовательных услуг (PPAPT) в сотрудничестве с Агентством управления образовательным фондом (LPDP) Министерства финансов Республики Индонезия.

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Introduction

Emotional intelligence and existential competence constitute two essential dimensions of human development that support academic achievement, psychological adjustment, and social integration. Emotional intelligence (EI), defined by Goleman (1995) as the capacity to perceive, understand, and regulate emotions in oneself and others, has been shown to contribute to communication effectiveness, stress tolerance, and interpersonal competence (Pankratova, Nikolaeva, 2022). Existential competence (EC), in this study, refers to an individual's capacity to construct meaning, develop self-reflection, integrate value-oriented reasoning into everyday life, and regulate inner experiences, contributing to ethical discernment and a coherent sense of life purpose (Zohar, 2000; Ozhiganova, 2023).

A growing body of research indicates that both EI and EC are shaped by complex interactions between external and internal factors. External influences include supportive school environments, pedagogical approaches that emphasize reflection and mindfulness, and curricula that integrate value-oriented content (Bordunos et al., 2024; Vorobyeva et al., 2024). Internal factors involve emotion-regulation skills, self-directed learning, and reflective capacities, which are often cultivated through regular reflective routines (Eid, 2024; Poskakalova, 2023). Empirical studies demonstrate that daily practices involving focused attention, contemplation, and structured self-reflection enhance emotional stability, intrinsic motivation, and ethical awareness, thereby strengthening both EI and EC (Poskakalova, 2023; Sujadi, Sulistiyo, 2025).

Although institutional value-oriented exposure and individually enacted reflective practices are conceptually related, they represent distinct psychological constructs. Institutional exposure reflects structured learning environments, formalized content, and organized behavioral expecta-

tions, whereas reflective practices refer to lived, experiential engagement with meaning-making, personal evaluation, and value-oriented behavior. This distinction is particularly relevant in educational contexts where students are exposed to structured normative content yet differ substantially in the extent to which such exposure is internalized into personal routines. Daily reflective activities — such as repeated self-evaluation, focused attention exercises, and habitual contemplation — function as mechanisms of emotional regulation and cognitive integration, providing a behavioral pathway through which value-oriented learning may influence EI and EC.

Despite this theoretical connection, empirical studies disentangling institutional educational exposure from individually enacted reflective practices remain limited, particularly in Indonesia's culturally diverse education system. While different types of senior high schools (SMA, SMK, and MA) are designed with varying emphases on general and value-oriented education (Marhaeni Kurdaningsih, Turmudhi, 2020), it remains unclear whether such institutional differences directly foster EI or EC once students transition into university settings. Moreover, most prior studies on EI, existential development, and reflective processes originate from Western or Russian contexts, leaving a significant gap in understanding how these constructs manifest within Indonesia's socio-cultural environment (Razak et al., 2024).

To address these gaps, the present study investigates the extent to which high school background (SMA, SMK, and MA) relates to university students' EI and EC, and whether daily reflective practices serve as a more salient predictor of these competencies than formal schooling. The study also examines reflective routines as behavioral indicators of meaning-making, ethical reflection, and emotional regulation. Through this approach, the study offers an empirically grounded perspective on the

development of EI and existential competence in Indonesia and contributes recommendations for holistic character-education initiatives at both secondary and tertiary levels.

Materials and methods

A cross-sectional quantitative design was used to examine the relationships among high school background, daily reflective practices, and students' emotional intelligence (EI) and existential competence (EC). The sample consisted of 754 undergraduates from Universitas Dharmas Indonesia (UNDHARI), selected through simple random sampling. Data collection took place in September 2024 using structured, self-administered questionnaires distributed during scheduled academic activities.

Daily reflective practices were assessed using a 20-item scale rated on a 4-point Likert format (1 = never to 4 = always), producing total scores between 20 and 80. Following established cut-off criteria, scores of 20–49 indicated low engagement, 50–74 medium engagement, and 75–80 high engagement in daily reflective routines. Emotional intelligence (EI) and existential competence (EC) were measured using validated 30-item instruments with the same 4-point response format, yielding composite scores from 30 to 120. Scores of 30–74, 75–112, and 113–120 were classified as low, medium, and high levels of EI and EC, respectively. The construct of existential competence in this study is operationalized based on dimensions of meaning-making, self-reflection, and value-oriented reasoning, while maintaining the original measurement structure and psychometric properties of the instrument.

Reliability testing demonstrated excellent internal consistency across all scales, indicating strong measurement stability. To analyze group differences, a multivariate analysis of covariance (MANCOVA) was performed using Jamovi 2.3. High school type (general/SMA, MA, and vocational/SMK) served as the independent variable, while EI and EC were the dependent variables. Daily reflective practice scores were entered as a continuous covariate to distinguish individually enacted behavioral routines from formal educa-

tional exposure. Age and gender were included as statistical controls.

Before conducting the analysis, core assumptions were examined, including multivariate normality, homogeneity of covariance matrices (Box's M), and equality of error variances (Levene's test). Given minor deviations from normality and covariance homogeneity, Pillai's Trace was used as the primary multivariate test statistic due to its robustness under assumption violations.

Results

1. Data description

The study involved 754 undergraduate students aged 20–24 years from Universitas Dharmas Indonesia. The sample consisted of 552 females (73,2%) and 202 males (26,8%), reflecting the typical gender distribution in education and health-related programs in Indonesian universities. Students were distributed across major fields of study, including Education, Health Sciences, Economics and Business, and Computer Studies. In terms of secondary education background, participants were graduates of general senior high schools (SMA), vocational schools (SMK), and MA, representing the diversity of Indonesia's educational pathways and varying degrees of institutional educational exposure. Fig. 1 illustrates the regional distribution of participants.

Fig. 2 displays the distribution of students based on the type of senior high school they attended prior to university enrollment. Among the respondents, 45,8% (approximately 345 students) graduated from general senior high schools (SMA), 34,5% (around 260 students) from MA, and 19,8% (approximately 149 students) from vocational senior high schools (SMK). These figures reflect a predominance of students with general and value-oriented educational backgrounds, while graduates from vocational schools were comparatively fewer.

Fig. 3 presents the distribution of students' engagement in daily reflective practices, based on responses to 20 questionnaire items. The majority, 76,5% (approximately 577 students), demonstrated a 'Moderate' level of engagement. Meanwhile, 19,0% (about 143 students) were categorized as having 'Low' engagement, and only 4,5% (approx-

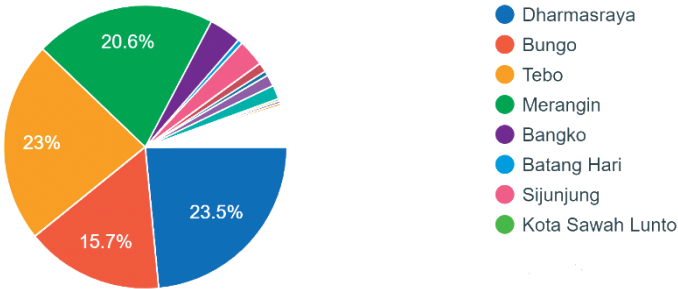


Fig. 1. Distribution of respondents' area of origin

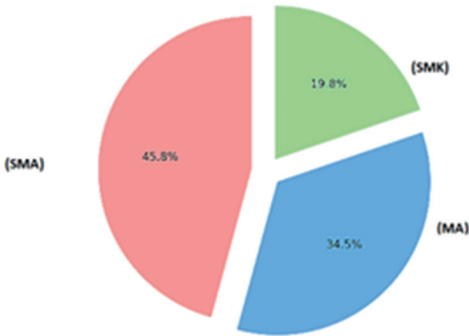


Fig. 2. Distribution of respondents' senior high school type

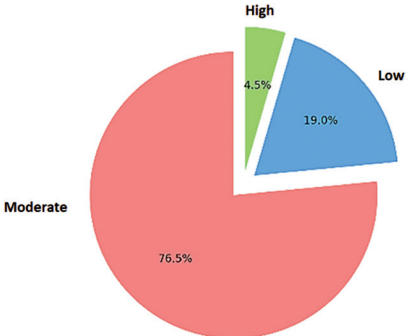


Fig. 3. Distribution of reflective practice engagement

imately 34 students) reported a 'High' level. These findings indicate that most students moderately engage in reflective practices in their daily lives.

Fig. 4 shows the distribution of emotional intelligence (EI) levels. Based on responses to 30 questionnaire items, 73,2% (approximately 552 students) demonstrated a 'Moderate' level of EI,

17,5% (approximately 132 students) showed 'Low' EI, and 9,3% (approximately 70 students) were classified in the 'High' category. These results suggest that most students possess a moderate capacity for emotional regulation, although a smaller proportion may require further development in emotional self-regulation and self-awareness.

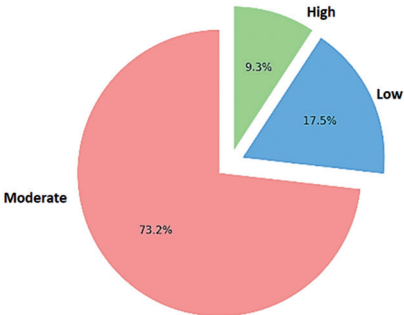


Fig. 4. Distribution of emotional intelligence

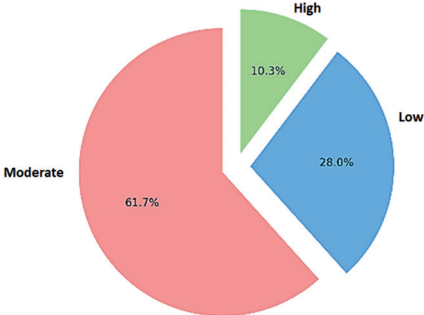


Fig. 5. Distribution of existential competence

Fig. 5 presents the distribution of existential competence (EC). Among the 754 respondents, 61,7% (approximately 465 students) were classified in the 'Moderate' category, 28,0% (approximately 211 students) in the 'Low' category, and 10,3% (approximately 78 students) in the 'High' category. While the majority exhibit moderate levels of existential competence, a substantial proportion demonstrates lower EC levels, suggesting the need for further development, particularly in areas related to meaning-making, self-reflection, and value-oriented reasoning in daily life.

The correlation analysis demonstrated strong, positive, and statistically significant relationships among daily reflective practices, emotional intelligence, and existential competence. The Pearson correlation coefficient between daily reflective practices and emotional intelligence was 0,716, indicating that students who engage more consistently in reflective routines tend to report higher capacities for recognizing, understanding, and managing their own emotions as well as the emotions of others. The correlation between daily reflective practices and existential competence was also substantial at 0,593, suggesting that regular engagement in reflective activities is meaningfully associated with an individual's capacity for meaning-making, ethical reasoning, and self-reflection. Furthermore, emotional intelligence and existential competence were strongly related, with a correlation coefficient of 0,696, reflecting considerable conceptual and functional overlap while confirming that these remain distinct constructs.

The consistency of these results was further supported by the Spearman and Kendall coefficients. Spearman's rho for daily reflective practices and emotional intelligence was 0,660, and Kendall's tau was 0,509, both of which were highly significant. Similar patterns appeared for the other variable pairs. These results confirm that the associations remain stable even when using rank-based methods that do not assume linear relationships or interval-scaled data. Such agreement across Pearson, Spearman, and Kendall coefficients suggests that the observed relationships are not solely due to measurement effects but instead reflect meaningful patterns in the data.

The narrow confidence intervals for these correlations add further confidence in the reliability of the estimates, considering the large sample size of 754 students. Overall, these correlation results provide solid empirical evidence to justify including daily reflective practices as a central predictor in subsequent multivariate analyses of emotional intelligence and existential competence among university students.

2. Data reliability estimation

To ensure the reliability of instruments used to measure high school type, reflective practices, emotional intelligence, and existential competence, internal consistency analyses were conducted based on responses from 754 students. Reliability was assessed using Cronbach's α and McDonald's ω . The results are presented in Table 1.

Table 1

Scale reliability statistics

Variables	Cronbach's α	McDonald's ω
Reflective Practices	0,884	0,883
Emotional Intelligence	0,943	0,944
Existential Competence	0,948	0,948

Cronbach's α coefficients were 0,884 for the Reflective Practices scale, 0,943 for the Emotional Intelligence scale, and 0,948 for the Existential Competence scale; corresponding McDonald's ω coefficients were 0,883, 0,944, and 0,948, respectively. All reliability estimates exceed the commonly accepted threshold of 0,70, demonstrating excellent internal consistency and confirming the robustness of the instruments.

3. MANCOVA test

A Multivariate Analysis of Covariance (MANCOVA) was conducted to examine the effects of high school type (SMA, MA, SMK) and continuous reflective practice scores on emotional intelligence (EI) and existential

competence (EC), controlling for age and gender. Assumption checks revealed significant heterogeneity of covariance matrices, Box's $M = 16,30$, $p = 0,012$, and departure from multivariate normality, Shapiro–Wilk $W = 0,943$, $p < 0,001$. Accordingly, Pillai's Trace was used for robust inference. The multivariate tests indicated no significant effect of high school type on the combined dependent variables, Pillai's Trace = 0,005, $F(4, 1500) = 0,915$, $p = 0,454$, partial $\eta^2 = 0,003$. In contrast, reflective practices demonstrated a strong multivariate effect, Pillai's Trace = 0,534, $F(2, 749) = 428,69$, $p < 0,001$, partial $\eta^2 = 0,53$.

Follow-up univariate ANCOVAs decomposed the multivariate effect of reflective practices. Reflective practices significantly predicted EI, $F(1, 750) = 225,47$, $p < 0,001$, partial $\eta^2 = 0,23$, and EC, $F(1, 750) = 310,82$, $p < 0,001$, partial $\eta^2 = 0,29$. Bonferroni-adjusted post hoc contrasts among high school types revealed no significant pairwise differences on either EI or EC (all $p > 0,10$). The results indicate that daily reflective practices account for 23% of variance in EI and 29% of variance in EC, underscoring their critical role in developing emotional and meaning-oriented competencies among Indonesian university students. Conversely, the type of secondary schooling exhibits negligible influence when reflective practices and demographic covariates are controlled. These findings highlight the primacy of individual engagement in reflective routines over formal educational background in shaping EI and EC. Pillai's Trace was employed as a robust alternative given its resistance to assumption violations. The results are presented in Table 2.

Table 2

Pillai's Trace MANCOVA Test

	Value	F	df1	df2	p
Senior high school type	0,005	0,915	4	1500	0,454
Reflective practices	0,534	428,69	2	749	<0,001

The results show no significant effect of senior high school type on emotional intelli-

gence or existential competence ($p = 0,454$). In contrast, reflective practices had a strong and significant effect ($p < 0,001$), confirming their critical role in developing both EI and EC. These findings underscore the limited influence of formal educational background and the substantial impact of daily reflective engagement.

Discussion

The present study produced two major findings that provide insight into the development of emotional intelligence and existential competence among Indonesian university students. First, the type of high school attended (general (SMA), vocational (SMK), or MA) did not significantly influence students' levels of emotional intelligence (EI) or existential competence (EC). Second, daily reflective practices emerged as a strong and consistent predictor of both EI and EC, even after demographic variables were controlled. These findings highlight an important conceptual distinction between institutional educational exposure and the lived behavioral dimension of reflective engagement.

The absence of an effect of high school background suggests that formal schooling, including value-oriented education in MA settings, may not directly shape students' affective or existential competencies. Emotional intelligence, as defined by Goleman (1995), reflects abilities such as emotional regulation, empathy, and self-awareness competencies that typically develop through interpersonal experiences, family dynamics, and social interactions rather than through formal academic instruction (Bar-On, 2006; Boyatzis et al., 2000; Hoffman, 2009). Similar conclusions have been observed across cultural contexts, including Russian and European studies, which note that emotionally supportive environments and authentic social engagement contribute more strongly to EI than curriculum-based approaches (Anand et al., 2023; Drigas et al., 2023).

A comparable pattern is evident for existential competence. Although MA includes structured value-oriented content, these components

often emphasize formal knowledge rather than reflective or experiential engagement. Research indicates that existential competence develops more effectively through continuous self-reflection, ethical engagement, and meaning-oriented participation in daily life rather than through formal content alone (Carr, 2018; Kavar, 2015). The present findings therefore support the idea that institutional exposure does not automatically translate into higher EC unless individuals internalize value frameworks through sustained reflective routines beyond the classroom (Arti et al., 2024; Idris et al., 2023).

In contrast, daily reflective practices were found to be a robust predictor of both emotional intelligence and existential competence. This aligns with theoretical perspectives on reflective engagement, which emphasize that structured practices of attention, contemplation, and self-evaluation create opportunities for individuals to observe emotions, cultivate self-regulation, and frame life experiences within a coherent sense of meaning and purpose (Tirri, 2023; Zohar, 2000). Reflective practices are also associated with emotional resilience, empathy, gratitude, and perspective-taking skills directly related to components of EI (Andrei, 2023; Arti et al., 2024). At the same time, these practices reinforce meaning-making processes, ethical reasoning, and value orientation that underpin EC, as reflected in instruments such as SISRI-24 (Zaini, Hakim, 2023). Studies across diverse cultural contexts similarly show that regular reflective routines promote emotional balance and clarity of purpose, supporting the broader applicability of the present findings (Howard-Snyder, McKaughan, 2022; Aprilianti, 2024).

Importantly, the results also clarify the distinction between institutional exposure and reflective practice. Institutional exposure typically represents structured learning environments, formalized content, and normative expectations, whereas reflective practice refers to the lived behavioral enactment of meaning-making, self-evaluation, and value-oriented action. Although this study did not directly measure institutional adherence as a psychological construct, the strong effect of daily

reflective practices demonstrates that behavioral engagement may be a more sensitive indicator of students' affective and existential development than formal exposure. This also explains why MA graduates did not automatically score higher in EC or EI: while they may have received more structured value-oriented instruction, their ongoing reflective routines appear more decisive in shaping developmental outcomes during university.

The Indonesian socio-cultural context is crucial for interpreting these findings. Daily reflective routines are widely embedded in social and cultural practices, and many students are introduced to structured forms of reflection and value-oriented behavior from an early age. Thus, variation in reflective practice is influenced not only by individual commitment but also by family expectations, peer environments, and community norms. This may help explain why reflective practices remain a strong predictor of EI and EC even after controlling for school type.

Despite relying on self-report instruments, which may introduce common-method bias, cross-checking with multiple correlation coefficients indicated consistent and stable patterns. Future research may employ mixed-method or longitudinal designs to explore how students' reflective routines evolve across developmental stages and how these routines interact with other psychosocial factors. Structural equation modeling may further clarify the pathways through which reflective practice supports emotional intelligence and existential competence.

Overall, the findings suggest that while formal schooling does not significantly shape students' emotional intelligence or existential competence, engagement in reflective practices plays a central developmental role. For Indonesian educators and policymakers, these results underscore the importance of complementing curricular content with programs that encourage continuous reflection, ethical engagement, and self-regulation. Such efforts could better support the holistic formation of students, enabling them to develop emotional resilience, moral sensitivity, and a

deeper sense of meaning in their academic and personal lives.

Conclusions

This study examined the relative contributions of high school background and daily reflective engagement to the emotional intelligence and existential competence of Indonesian university students. The findings demonstrate that the type of high school (whether SMA, SMK, or MA) did not significantly predict students' emotional or existential competence, suggesting that institutional differences in curricular orientation do not automatically foster affective or meaning-oriented development. Instead, competencies such as emotional regulation, empathy, and meaning-making appear to be shaped more profoundly by interpersonal interactions, family environments, and community-based socio-cultural experiences than by formal instructional structures.

In contrast, daily reflective engagement emerged as a consistent positive predictor of both emotional intelligence and existential competence. Students who regularly engaged in structured reflective routines exhibited higher levels of emotional balance, ethical awareness, and clarity of purpose. These results highlight an important distinction between formal instruction and lived reflective practice, which functions as an experiential process that supports holistic psychological development.

Implications

The findings underscore the limited impact of formal schooling on the development of emotional and existential competencies and emphasize the central role of reflective engagement in shaping these capacities. For educational institutions in Indonesia, this suggests the need to supplement curricular instruction with programs

that promote reflection, ethical engagement, and emotional self-regulation. Initiatives such as mindfulness workshops, structured reflection sessions, service-learning projects, and dialogue-based activities may provide meaningful opportunities for students to cultivate the dimensions of emotional intelligence and existential competence that formal curricula alone are unlikely to develop. Strengthening campus environments that encourage empathy, contemplation, and prosocial behavior can further enhance students' holistic growth and preparedness for academic and personal challenges.

Limitations and future research

This study has several limitations. Its cross-sectional design restricts causal interpretation, and the use of self-report questionnaires may introduce response bias. The sample was drawn from a single Indonesian region, which may limit generalizability to students from other socio-cultural contexts. Moreover, although daily reflective practices were measured, other relevant factors (such as personality traits, family background, or peer influence) were not included and may account for additional variance in emotional intelligence and existential competence.

Future studies should employ longitudinal or experimental designs to clarify causal pathways between reflective practices and both competencies. Expanding sampling across multiple regions and educational institutions would improve generalizability, while qualitative methods could offer richer insight into how individuals internalize reflective routines. In addition, examining potential mediators such as family environment, peer networks, or personality dimensions could deepen understanding of the mechanisms linking reflective engagement with emotional and existential development.

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The authors declare no conflict of interest.

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The study was conducted with official permission from Universitas Dharma Indonesia, the site of data collection. Participation was voluntary, and informed consent was obtained from all participants prior to their involvement. The research adhered to internationally accepted ethical standards for studies involving human participants, including ensuring confidentiality, anonymity, and the right to withdraw without penalty. As the institution does not have a formal ethics review board, no approval number was issued.

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Constructivist or instrumentalist? Exploring how pre-service teachers' beliefs shape the integration of mathematical values and SDGs

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Abstract

Context and relevance. As global challenges intensify, mathematics education faces growing demands to cultivate both abstract reasoning and value orientations aligned with the Sustainable Development Goals (SDGs). Pre-service teachers' epistemological beliefs play a critical role in shaping how these elements are incorporated into instructional materials. **Objective.** This study examines how Indonesian pre-service mathematics teachers' belief orientations — constructivist, Platonist, or instrumentalist — influence their integration of mathematical values (usefulness, creativity, transformation) and SDG themes in teaching resources. **Methods and materials.** A qualitative design engaged 37 final-year pre-service teachers (15 male, 22 female; aged 20–24) from an Indonesian state university. Data from written reflections and semi-structured interviews were analyzed through theory-driven descriptive coding, with rigor ensured via triangulation, member checking, and audit trails. **Results.** Analysis revealed distinct pedagogical patterns: constructivist-oriented teachers developed materials emphasizing creativity and contextual SDG integration, while Platonist approaches prioritized conceptual rigor and instrumentalist designs focused on procedural applications — both showing comparatively limited depth in value integration. **Conclusions.** The findings demonstrate how epistemological beliefs shape SDG implementation, suggesting teacher education programs would benefit from systematically addressing belief systems to prepare educators for creating mathematics instruction that balances conceptual mastery, creative reasoning, and global citizenship.

Keywords: mathematical beliefs, pre-service teachers, teaching materials, Sustainable Development Goals (SDGs), value

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Конструктивизм или инструментализм? Как убеждения будущих учителей влияют на интеграцию математических ценностей и целей устойчивого развития

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Резюме

Контекст и актуальность. В условиях усиления глобальных проблем математическое образование сталкивается с растущей необходимостью развивать у учащихся как абстрактное мышление, так и ценностные установки, соответствующие целям устойчивого развития (ЦУР). Убеждения будущих учителей о природе знания (эпистемологические убеждения) во многом определяют то, как эти аспекты включаются в учебные материалы. **Цель.** Изучить, как убеждения индонезийских будущих учителей математики (конструктивистские, платонистские или инструменталистские) влияют на то, как они интегрируют математические ценности (полезность, креативность, трансформацию) и темы целей устойчивого развития в учебные материалы. **Методы и материалы.** В качественном исследовании участвовали 37 студентов выпускного курса (15 юношей и 22 девушки в возрасте 20–24 лет) одного из государственных университетов Индонезии. Для анализа данных письменных рефлексивных отчетов и полуструктурированных интервью применялось теоретически обоснованное дескриптивное кодирование; надежность результатов обеспечивалась за счет метода триангуляции, проверки участниками и ведения аудиторского следа. **Результаты.** В результате анализа были выявлены четкие педагогические закономерности: учителя с конструктивистскими убеждениями создавали учебные материалы, в которых акцент делался на креативность и контекстуальное включение тем ЦУР; платонистский подход отдавал приоритет концептуальной строгости, а инструменталистский — процедурным применениям. При этом оба последних подхода демонстрировали сравнительно меньшую глубину интеграции ценностей. **Выводы.** Результаты показывают, как эпистемологические убеждения влияют на внедрение ЦУР, и позволяют предположить, что было бы полезно систематически анализировать эти убеждения в рамках педагогических программ, чтобы готовить учителей к планированию уроков математики, в которых сочетаются концептуальное освоение материала, творческое мышление и воспитание в них идей мирового гражданства.

Ключевые слова: математические убеждения, будущие учителя, учебные материалы, цели устойчивого развития (ЦУР), ценность

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Introduction

Mathematics education in the era of globalization plays a crucial role in equipping young learners to engage with complex global challenges (Chronaki, Yolcu, 2021). Advances in technology and information have shifted educational goals from mere knowledge transmission to applying mathematical concepts to real-world problems, including integrating Sustainable Development Goals (SDGs) into curricula (McDiarmid, Zhao, 2023). The 2030 Agenda for Sustainable Development emphasizes issues like poverty, gender equity, and climate change, and embedding SDGs in math education fosters critical thinking and problem-solving within authentic contexts (Persaud, Dagher, 2021). However, research remains scarce on how pre-service teachers' motivations and beliefs influence the design of SDG-focused teaching materials despite evidence linking such curricula to enhanced student engagement with global issues (Alsina, Vásquez, 2024; Li et al., 2024).

Existing studies have explored SDG integration across educational levels and regions, revealing mixed findings regarding teachers' knowledge and practices. For example, Tesfamichael and Enge (2024) found active engagement with sustainable development in Norway's primary to secondary curricula, whereas Altıntaş et al. (2024) reported limited awareness among math teachers about sustainability concepts. Calls for reform in mathematics education emphasize moving beyond exam preparation towards fostering sustainability literacy and active participation (Shimizu, Vithal, 2023). Central to these efforts is the recognition that teachers' mathematical beliefs — defined as personal and contextual views on the nature of mathematics and its teaching (Novikasari, Dede, 2021) — profoundly shape instructional choices and resource development (Novikasari et al., 2024). However, how these beliefs intersect with SDG integration in teaching materials remains underexplored.

Mathematical values — usefulness, creativity, and transformation — mediate how pre-service teachers design instructional tools, shaping their pedagogical orientations (Novikasari et al., 2024).

Grounded in Ernest et al. (2016) typology of mathematical beliefs (constructivism, Platonism, instrumentalism), this study examines how these belief systems influence pre-service teachers' integration of SDGs and mathematical values into their materials. Usefulness, reflecting the pragmatic dimension of mathematics, emphasizes real-world problem-solving (e.g., applying linear equations to household budgets), aligning with Skovsmose's (2023) "mathematics-as-action". Creativity fosters innovative approaches through open-ended tasks (e.g., modeling climate change geometrically), resonating with (Haim, Aschauer, 2024) "divergent mathematical practices". Transformation extends further, using mathematics to critique societal issues (e.g., visualizing income inequality) via Freirean critical pedagogy (Thanheiser, Mamolo, 2024). By revealing how epistemological beliefs shape value-driven SDG integration, the findings aim to advance teacher education and policy for globally responsive mathematics instruction.

Mathematical beliefs in education

Mathematical beliefs refer to teachers' views about the nature of mathematics, how it should be taught, and its purpose, which significantly shape instructional practices (Ernest et al., 2016; Philipp, 2007). These beliefs are commonly grouped into three main perspectives: constructivist, platonist, and instrumentalist. The constructivist approach emphasizes that students actively construct mathematical knowledge by engaging in their environment and reflecting on their experiences (Novikasari, Dede, 2021). Teachers with this belief encourage learners to independently explore concepts, solve real-world problems, and develop meaningful solutions. In contrast, Platonism regards mathematics as an abstract, non-physical entity accessible through logic and deductive reasoning, with teachers focusing on teaching core principles logically and sequentially (Goldin et al., 2016).

The instrumentalist perspective, meanwhile, sees mathematics primarily as a practical tool for problem-solving. Teachers who adopt this view prioritize efficient techniques and methods

that efficiently produce useful results (Thompson, 1992). Research shows that these differing beliefs influence teaching approaches and students' ability to understand and apply mathematics in real-life contexts (Hidayat, Novikasari, 2023; Krasilo, Repesciuc, 2025). Recognizing these belief systems helps explain why some educators emphasize creativity and exploration while others focus more on logic or practical skills. Ultimately, these philosophical orientations shape how mathematics is taught and learned in classrooms.

Integrating SDGs and mathematical values in mathematics education

The integration of Sustainable Development Goals (SDGs) into mathematics education is increasingly important for fostering responsible, real-world learning that addresses global challenges (Persaud, Dagher, 2021). The SDGs, especially those related to quality education, economic growth, and sustainability, align closely with key mathematical skills such as problem-solving and critical thinking. Embedding these goals in math teaching helps students connect concepts to societal issues, making learning more relevant and impactful (Filho et al., 2024).

Teaching materials are central to this integration, reflecting content and pedagogical values (Potari, 2018). Constructivist-based materials promote creativity, utility, and transformation by contextualizing math in real-life situations, while Platonist and Instrumentalist approaches focus more on logical structures or efficient problem-solving (Thompson, 1992). This study explores how pre-service teachers' mathematical beliefs influence the incorporation of SDGs and mathematical values in junior high school teaching materials. It examines three key aspects: the identification of teachers' mathematical beliefs, the extent of SDG integration, and the reflection of mathematical values in the materials they develop.

Materials and methods

Participants

This qualitative study involved 37 pre-service teachers ($M = 22,1$ years; $SD = 1,3$) enrolled in a teacher education program at a state university in Indonesia. The participants, consisting of

15 males and 22 females aged between 20 and 24, were selected through purposive sampling based on their active engagement in coursework related to mathematics pedagogy. Inclusion criteria included enrollment in the program's final year and willingness to participate in the study. Participants were ensured of confidentiality and anonymity by ethical research standards.

Procedures

Data were collected through written reflections and semi-structured interviews focused on participants' experiences, beliefs, and perceptions regarding SDGs-responsive mathematics instruction. The written reflections were submitted during coursework activities on designing SDG-aligned teaching materials, while the interviews were conducted individually, each lasting approximately 30–45 minutes. All interviews were audio-recorded with participants' consent and later transcribed verbatim for analysis.

Data analysis

The data were analyzed manually using a theory-driven qualitative approach, with descriptive coding as the initial step to identify key statements and recurring patterns (Bingham, 2023). Codes were systematically grouped into three broader categories aligned with the study's framework: (1) mathematical beliefs (constructivist, Platonist, or instrumentalist orientations), (2) SDG integration depth (evaluating contextualization versus superficial inclusion), and (3) mathematical values—usefulness (real-world application), creativity (novel problem-solving), and transformation (societal critical thinking). This process emphasized categorization over thematic development, interpreting participants' experiences through the lens of student-responsive pedagogy (Qureshi, Ünlü, 2020).

To ensure rigor, the analysis was conducted without qualitative software, relying instead on triangulation of written reflections and interview transcripts. Credibility was strengthened through member checks, where participants reviewed preliminary interpretations for accuracy (Bingham, 2023), and an audit trail documented all analytic decisions. This approach balanced theo-

retical fidelity with methodological transparency, capturing nuanced relationships between beliefs, SDG integration, and pedagogical values.

Results

This study aims to explore how mathematical beliefs held by pre-service teachers influence the Sustainable Development Goals/SDGs and mathematical values in the development of junior high school mathematics teaching materials. The results of this study are presented based on three main aspects: (1) identification of mathematical beliefs of pre-service teachers, (2) analysis of SDGs integration in the developed teaching materials, and (3) analysis of mathematical values reflected in the teaching materials.

Identification of mathematical beliefs of pre-service teachers

Based on interview data, pre-service mathematics teachers’ beliefs were categorized into three perspectives: constructivist, platonist, and instrumentalist. Those with constructivist beliefs viewed mathematics as a human activity shaped by social interaction and contextual experience, emphasizing creativity and exploration in learning. They believed teaching materials should promote critical thinking and real-world applications rather than mere knowledge transmission (BNR: “students can internalize math concepts if the materials are creatively developed based on their

environment and needs”). In contrast, platonist-oriented teachers perceived mathematics as an exact, universal science of abstract structures and immutable truths, prioritizing conceptual understanding and logical rigor. They saw materials as tools to reinforce formal structures and theoretical coherence to support mastery of fundamental principles (DZA: “poor teaching strategies can reduce student interest”, underscoring the need for appropriate methods and materials).

Meanwhile, instrumentalist teachers considered mathematics a practical tool for solving real-world problems through procedures and calculations, emphasizing procedural fluency and clarity. They viewed teaching materials as essential for developing efficiency in problem-solving. They believed difficulties often stemmed from a lack of interest or inappropriate resources (NUK: “mathematics is a science of operations related to numbers — addition, subtraction, division, or multiplication”). Overall, these belief systems significantly shaped how pre-service teachers conceptualized the role of teaching materials: constructivists emphasized inquiry and engagement, platonists focused on logical structure and deep understanding, and instrumentalists prioritized practicality and application. These findings align with Ernest et al. (2016) typology and highlight the influence of belief systems on the design and use of mathematics teaching resources to foster meaningful learning.

Table 1
Summary of pre-service teachers’ mathematical beliefs and their influence on teaching approaches

Mathematical belief orientation	View of mathematics	Teaching orientation	Design of teaching materials
Constructivist	Socially constructed, contextual	Emphasizes student-centered, inquiry-based learning with real-world relevance.	Focuses on creativity, critical thinking, and contextual relevance; materials designed to engage and motivate.
Platonist	Abstract, logical structures	Prioritizes conceptual mastery, logical reasoning, and structured understanding.	Teaching materials are designed to build foundational understanding and address student difficulties systematically.
Instrumentalist	Procedural tools	Emphasizes procedural fluency and practical application of mathematics.	Materials focus on clarity, accuracy, and real-life applicability to enhance student confidence and skill.

Table 1 summarizes how pre-service mathematics teachers' underlying beliefs shape their perceptions of mathematics and influence how they design and utilize teaching materials. These beliefs inform contrasting views of mathematics — ranging from a socially constructed, contextual discipline to a fixed body of abstract knowledge or a practical tool for solving routine problems. Consequently, the role of teaching materials is also interpreted differently. For some, especially those with constructivist orientations, materials are essential for fostering conceptual understanding and active engagement. In contrast, pre-service teachers with Platonist or instrumentalist views may regard teaching materials primarily as structured aids or procedural tools that support the delivery of content and the development of computational fluency.

**Analysis of SDGs integration
in teaching materials**

The analysis of teaching materials developed by 37 pre-service teachers revealed that the integration of Sustainable Development Goals (SDGs) varied significantly according to their mathematical belief orientations: Constructivist, Platonist, and Instrumentalist. Constructivist-oriented participants prioritized student engagement through real-life modeling and contextual problem-solving, embedding SDGs such as Decent Work and Economic Growth (SDG 8) creatively and meaningfully. For example, BNR's material

employed algebraic tools to help students understand profit-making in everyday transactions, emphasizing relevance and active learning. Meanwhile, Platonist-oriented participants demonstrated a conceptually focused integration of mathematics and SDGs, linking abstract mathematical concepts to social issues with greater emphasis on conceptual rigor. FIP's use of statistical analysis to illustrate consumer behavior at a food festival highlighted this group's emphasis on conceptual depth, with SDG 8 reflected in 80% of Platonist-oriented teaching materials.

In contrast, Instrumentalist-oriented participants adopted a more procedural and pragmatic approach. While their materials addressed SDG 8 and SDG 9, the focus was mainly on efficiency and algorithmic processes, often lacking critical engagement with broader socio-cultural contexts. NUK's example, which involved linear equations in calculating the cost of rice and sugar, illustrated how real-world problems were incorporated without a deeper exploration of their implications. This group showed a more limited contextual integration of SDGs, with 40% of materials categorized as other/general materials without deeper SDG-related contextualization. These findings underscore the pivotal role of epistemological beliefs in shaping how future teachers conceptualize and translate global goals into pedagogical practice.

Table 2 shows that the proportion of teaching materials reflecting different SDG categories

Table 2

Distribution of SDG integration across mathematical belief groups

Mathematical belief	SDG integrated	Percentage	Example focus
Constructivist	SDG 8 (decent work and economic growth)	63%	Algebraic modeling of profit in daily transactions (e.g., selling eggs)
	SDG 2 (zero hunger)	18%	Nutritional planning and food supply chains
	SDG 3 (good health and well-being)	9%	Health statistics and daily habits
	SDG 9 (industry, innovation, and infrastructure)	9%	Innovation-related cost modeling
Platonist	SDG 8	80%	Statistical analysis of consumer behavior
	SDG 3	10%	Health-based data interpretation
	SDG 9	10%	Analysis of industry-related production trends

Mathematical belief	SDG integrated	Percentage	Example focus
Instrumentalist	SDG 8	30%	Linear equations for pricing calculations
	SDG 9	30%	Function modeling in logistics or infrastructure settings
	Other/general	40%	Basic mathematical procedures without deeper integration of SDG-related context

Note. Percentages indicate the proportion of teaching materials within each mathematical belief orientation that reflected the respective SDG category.

varied across mathematical belief orientations. Among constructivist-oriented materials, SDG 8 was reflected in 63% of the materials, followed by SDG 2 (18%), SDG 3 (9%), and SDG 9 (9%). Among Platonist-oriented materials, SDG 8 was reflected in 80% of the materials, while SDG 3 and SDG 9 were each reflected in 10%. Among instrumentalist-oriented materials, SDG 8 and SDG 9 were each reflected in 30% of the materials, while 40% were categorized as other/general materials without deeper SDG-related contextualization. These patterns suggest that constructivist-oriented materials incorporated a broader range of SDG contexts, whereas Platonist-oriented materials were more concentrated on SDG 8, and instrumentalist-oriented materials showed a more limited integration of SDG-related contexts.

Analysis of mathematical values
in teaching materials

Data were analyzed manually using a theory-driven qualitative approach, beginning with

descriptive coding to identify key statements and recurring patterns in the teaching materials. These were categorized according to the reflective mathematics values framework by Novikasari et al. (2024), which includes usefulness, creativity, and transformation. The analysis showed that pre-service teachers' epistemological beliefs significantly influenced how these values were embedded in their instructional designs, particularly in relation to the Sustainable Development Goals (SDGs). For example, the teaching material compiled by BNR demonstrates the value of creativity, as shown in Figure below. This figure is included in the material to encourage students to pose different and thought-provoking questions during the learning process.

Constructivist-oriented participants demonstrated integration across all three reflective values, with creativity (38%) and transformation (43%) more prominently represented than usefulness (19%). Their materials encouraged inquiry-based learning and contextual applications

Setelah melakukan pengamatan silakan mengajukan pertanyaan terkait hal yang diamati atau materi. Berikut ini contoh pertanyaan yang baik untuk diajarkan. 1. Bagaimana cara membandingkan bilangan yang tersusun dari banyak angka? 2. Bagaimanakah pentingnya memahami nilai tempat untuk membandingkan bilangan bulat? Silakan ajukan pertanyaan lainnya yang menurut kalian penting.	Translation After making observations, formulate questions about the observed phenomena or materials. Consider questions such as: 1. What strategies are most effective for comparing multi-digit numbers? 2. How does understanding place value facilitate integer comparison? What additional questions would further investigate this concept?
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Fig. Creativity values in teaching materials with constructivist beliefs

linked to SDG 8. Platonist participants focused more on transformation (63%) through conceptual precision, while instrumentalist teachers showed greater emphasis on usefulness (33%) and transformation (67%), often employing real-life analogies for procedural learning. Despite these differences, transformation was the most frequently coded value across all three belief orientations, suggesting a shared emphasis on fostering adaptable, socially responsive mathematical thinking.

The distribution presented in Table 3 illustrates how the frequency of coded segments related to usefulness, creativity, and transformation varied across belief orientations. These percentages indicate the relative prominence of each value within the coded data and are used to support the interpretation of thematic patterns rather than to make statistical generalizations. In this qualitative analysis, the numerical representations convey the relative weight of codes within each belief orientation (Bingham, 2023).

Discussion

This study offers a nuanced view of how pre-service teachers' mathematical belief systems shape the development of teaching materials that integrate both the Sustainable Development Goals (SDGs) and core mathematical values. Through a theory-driven qualitative approach and descriptive coding, the findings demonstrate that epistemological beliefs — whether constructivist, Platonist, or instrumentalist — significantly influence pedagogical decisions. These results affirm prior research that highlights the central role of belief orientations in shaping how teachers conceptualize mathematics and its so-

cial purpose (Ernest et al., 2016; Philipp, 2007; Rezat et al., 2021).

Constructivist-oriented pre-service teachers demonstrated a broader and more contextually varied integration of SDGs, particularly in relation to economic development (SDG 8), zero hunger (SDG 2), good health (SDG 3), and innovation (SDG 9). Their teaching materials emphasized real-world problems, student inquiry, and open-ended tasks — practices aligned with global frameworks that promote critical thinking and learner agency (Awaji et al., 2024; Tesfamichael, Enge, 2024). These results align with prior findings that constructivist beliefs often foster more meaningful, context-driven instruction (Meletiou-Mavrotheris, Paparistodemou, 2024).

Platonist-oriented pre-service teachers also demonstrated SDG integration, though with a greater focus on conceptual rigor and internal mathematical structures. Their materials employed abstract reasoning and formal representations, often linking mathematical concepts to real-world issues without extensive contextual diversity. This reflects the Platonist view that mathematics is discovered through deductive reasoning and exists independently of human experience (Ernest et al., 2016; Thompson, 1992). While less student-centered, this approach reinforced the precision and universality of mathematics.

In contrast, instrumentalist participants adopted a more utilitarian approach, embedding SDGs into tasks that prioritized efficiency and procedural fluency. Although transformation as a value appeared in their materials, creativity was less evident, suggesting a limited pedagogical vision. These findings echo concerns in the literature that instrumentalist beliefs may constrain

Table 3

Integration of mathematical values in teaching materials reviewed from differences in mathematical beliefs

Belief orientation	Usefulness (%)	Creativity (%)	Transformation (%)
Constructivist	19%	38%	43%
Platonist	28%	9%	63%
Instrumentalist	33%	0%	67%

Note. Percentages represent the relative frequency of coded segments for each mathematical value within each mathematical belief orientation.

mathematics instruction to rote procedures, undermining opportunities for deeper understanding or social relevance (Santos-Trigo, 2024).

The integration of core mathematical values — usefulness, creativity, and transformation — varied across belief orientations. Constructivist teachers promoted creativity through problem-based learning and exploration; Platonist teachers emphasized transformation through conceptual depth; and instrumentalist teachers emphasized transformation through practical and procedural applications. These patterns support the importance of embedding reflective belief exploration in teacher education programs to cultivate value-driven and socially responsive mathematics pedagogy (Novikasari et al., 2024). Future research should explore how these beliefs evolve over time and influence classroom practice.

Conclusions

This qualitative study reveals how pre-service teachers' mathematical beliefs shape their integration of Sustainable Development Goals (SDGs) and core values in instructional materials, with three characteristic approaches emerging. Instrumentalist-oriented teachers emphasized transformation through social analysis

and practical usefulness while showing no coded evidence of creativity. Platonist approaches balanced strong transformative and utilitarian focuses with limited creativity in structured contexts, whereas constructivist educators demonstrated the integration of all three values — applying mathematics authentically, encouraging creative exploration, and critically examining real-world issues — with creativity and transformation more prominently represented than usefulness. These patterns illustrate how epistemological orientations serve as both lenses and filters for pedagogical decision-making, particularly in determining whether materials develop merely functional mathematical skills or additionally cultivate innovative thinking and social consciousness essential for addressing global challenges through mathematics education.

Limitations. This study provides valuable insights into how pre-service teachers' mathematical beliefs influence value-oriented teaching materials. Still, its reliance on self-produced documents and interviews may not fully reflect classroom practices. Moreover, categorizing beliefs into three fixed types offers clarity but may oversimplify individual belief systems' nuanced and dynamic nature.

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Ifada Novikasari — conceptualized the study and developed its core ideas; led the annotation, writing, and overall design of the manuscript; coordinated the research planning; supervised the research process to ensure quality and coherence; and oversaw the visualization and presentation of the research findings.

M. Hizbul Muflihini — contributed to the analysis and interpretation of the results; participated in developing the discussion of the findings; and assisted in refining the presentation of the research outcomes.

Fauzi Fauzi — contributed to the data collection process, supported data organization and validation, and assisted in preparing the tables and visual presentation of the research results.

Lily Rahmawati — conducted data collection and performed detailed data analysis to support the study's findings.

Rohmad Rohmad — contributed to data collection, assisted in reviewing and interpreting the findings, and supported manuscript revision to improve its clarity and consistency.

All authors actively participated in discussing the results, contributed to revising the manuscript, and approved the final version for publication.

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Ифада Новикасари — разработала концепцию исследования и его ключевые идеи; руководила аннотированием, написанием и общей структурой рукописи; координировала планирование исследования; осуществляла научное руководство исследовательским процессом, обеспечивая его качество и логическую согласованность; а также курировала визуализацию и представление результатов исследования.

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The moderating role of innovative work behavior in enhancing teacher performance

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Abstract

Teacher performance in addition to reflecting teacher professionalism, also greatly determines the future of students. To support teacher performance, at least three components are needed to make schools a learning organization. They are transformative leadership, an inclusive work environment, and a progressive learning process, which are firmly embedded in teacher motivation, making teaching not just a routine but a mobilization of all abilities in the form of innovative work behavior to participate in organizing quality learning. The study examines the moderating effect of innovative work behavior on the relationship between work motivation and participation, and its influence on teacher performance. It is hypothesized that work motivation, participation, and innovative work behavior positively affect teacher performance, and that innovative work behavior moderates the relationship between motivation and participation. The study employs a quantitative approach with an ex post facto design. Data were collected from 317 junior high school teachers in Temanggung Regency, Indonesia, through proportional random sampling techniques. The Partial Least Squares Structural Equation Modeling (PLS-SEM) technique was applied to analyze the relationship between variables. The results of the study indicate that transformative principal leadership has been proven to strengthen work motivation, encourage participation, and increase teachers' innovative work behavior. Strengthening work motivation can be achieved by improving teacher morale, acknowledging teacher performance, creating a conducive work environment, and presenting awards — both financial and non-financial — to teachers who excel and are dedicated to student success and school progress. Increasing participation can be achieved by involving teachers in formulating school policies, developing school curricula and activities, fostering an inclusive and collaborative culture, and providing opportunities for teachers to take the initiative. Coaching and promoting innovative work behavior can be achieved by creating an adaptive and creative learning environment that encourages a progressive learning process, fostering various innovations and new ideas in learning.

Keywords: innovative work behavior, participation, quality of learning, teacher performance, work motivation

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Модерирующая роль инновационного рабочего поведения в повышении эффективности работы учителей

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Резюме

Результативность учителя не только отражает его профессионализм, но и в значительной степени определяет будущее учеников. Для повышения эффективности работы учителей необходимо создать в школах условия обучающей организации, для чего требуется как минимум три компонента: трансформационное лидерство, инклюзивная среда и прогрессивный учебный процесс. Все они глубоко связаны с мотивацией учителей и превращают преподавание из рутины в мобилизацию всех способностей — инновационное поведение, направленное на организацию качественного обучения. В исследовании рассматривается модерирующее влияние инновационного рабочего поведения на взаимосвязь между трудовой мотивацией и активностью учителя в организационной жизни школы, а также его влияние на результативность работы учителей. Выдвигается гипотеза о том, что трудовая мотивация, активность учителя в организационной жизни школы и инновационное рабочее поведение положительно влияют на результативность учителей, а инновационное рабочее поведение выступает модератором во взаимосвязи между мотивацией и участием. В исследовании используется количественный подход с дизайном *ex post facto*. Эмпирические данные были собраны на выборке из 317 учителей средних школ округа Теманггунг (Индонезия) с применением метода пропорциональной случайной выборки. Обработка данных и оценка взаимосвязей между исследуемыми переменными осуществлялись с использованием метода моделирования структурными уравнениями наименьших квадратов (PLS-SEM). Результаты исследования показывают, что трансформационное лидерство директора школы доказанно усиливает трудовую мотивацию педагогов, стимулирует их вовлеченность и способствует росту инновационного поведения. Укрепление трудовой мотивации может быть обеспечено за счет повышения морального духа учителей, признания их профессиональных заслуг, создания благоприятной рабочей среды, а также системы поощрений (материальных и нематериальных) для педагогов, демонстрирующих высокие результаты и ориентированных на успех учащихся и развитие

образовательной организации. Повышение уровня вовлеченности может быть достигнуто за счет привлечения учителей к разработке школьной политики, развитию учебных программ и мероприятий, формирования инклюзивной и коллаборативной культуры, а также предоставления учителям возможности проявлять инициативу. Развитие и поощрение инновационного рабочего поведения может быть обеспечено путем создания адаптивной и творческой образовательной среды, которая стимулирует прогрессивный процесс обучения, способствуя появлению различных инноваций и новых идей в преподавании.

Ключевые слова: инновационное рабочее поведение, вовлеченность, качество обучения, результативность учителей, трудовая мотивация

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Introduction

Education is a key to sustainable development (Nousheen et al., 2020). Quality education is expected to produce superior human resources (Saini et al., 2023). Creating superior human resources is challenging because various factors, including educational resources, influence it. Educational resources are divided into two parts: primary resources, in this case, human resources, and supporting resources, which include budgets and infrastructure facilities. Additionally, it is influenced by the education implementation system (Glover, Levacic, 2015). These four educational resources are interrelated and mutually supportive of one another. However, upon further analysis, human resources are the primary and strategic components. Human resources are the main drivers in the implementation of education. Their performance can objectively assess the quality of human resources. Teachers have a strategic role as the spearhead that determines the success of the educational process. Teacher performance is one of the main dimensions in implementing quality education. Teachers perform well if they carry out their duties and functions professional-

ly. Teacher performance is evident in classroom management (Bailey, Michaels, 2019). Teacher performance can be observed through various stages of the learning process, including planning, execution, and assessment (Octaviarnis et al., 2021). Teachers' performance in carrying out their duties is reflected in their roles and functions in the learning process as educators, teachers, and trainers (Suhayat et al., 2023).

International studies also highlight the importance of paying attention to teacher quality as a significant factor in learning success (Siami, 2025; Baharuddin et al., 2025). In Indonesian education, the quality of learning, supported by teacher performance, remains low. Data from the education report card indicate that the quality of learning remains low (Ministry of Education and Culture, 2024). Based on the results of the 2021–2024 education report card, the average national score for learning quality is below 63,00, placing it in the medium category. The learning quality score from 2021 to 2024 shows an increase. However, the increase at the junior high school level is the lowest compared to the elementary and high school levels. A low quality of learning can lead to poor student learning out-

comes (Beatty et al., 2021). Therefore, the quality of learning, particularly in junior high schools, requires special attention to improve.

This phenomenon suggests that teacher performance remains low, necessitating a close analysis of related and influential aspects to enhance performance. In education, teacher performance is influenced by various factors, including ability, motivation, work environment, facilities, leadership, and opportunities provided by the organization (McShane, Glinow, 2010). At the same time, Atatsi et al. (2019) stated that the work environment, leadership, innovative work behaviors, and intrinsic motivation influence performance. Motivation is the driving force that inspires or motivates someone to behave in a specific way toward a particular goal. Robbins, and Judge (2012) define motivation as a process that explains the intensity, direction, and persistence of effort to achieve a goal. McDonald (1959) describes motivation as a change in energy within a person characterized by the emergence of feelings and preceded by a response to the presence of a goal. Based on this view, it can be elaborated that motivation is reflected in the response and behavior of the stimulus provided.

According to Maslow, the motivation that drives a person to do something is tiered, including physiological needs, the need for safety, the need for belonging and love, the need for self-esteem, and the need for self-actualization (Bandhu et al., 2024). According to the behavioral psychology school, specifically in the form of incentive theory, it is argued that external stimuli in the form of rewards and punishments can trigger physiological needs and safety needs, thereby motivating people to respond with various behaviors to secure these two needs (Liu et al., 2025; Urhahne, Wijnia, 2023). In the context of education, stimulus in the form of salary and bonuses to fulfill physiological needs as well as stimulus to remain a teacher, ensure job security, and avoid dismissal generates motivation and responses to demonstrate various behaviors as a good teacher.

Meanwhile, the three needs that are higher up — the need for belonging and love, the need for self-esteem, and the need for self-actualization — are included in the theory of intrinsic

motivation, where stimuli in the form of personal values and interests generate motivation and responses to engage in certain behaviors or activities that are personally interesting or satisfying (Coscioni et al., 2023; Murayama, Keyserlingk, 2025). In the context of education, the stimulus in the form of the principle of lifelong learning and interest in the world of education generates motivation and response to continue carrying out various behaviors or activities to improve knowledge and skills as a professional teacher because it is based on a sense of belonging and love, self-esteem, and self-actualization. Regardless of external or internal motivation, what is certain is that work motivation is a predictor that influences teacher performance. Motivated and goal-oriented teachers tend to be more responsible and perform better (Alhempri et al., 2024). In addition, Galeazzo et al. (2024) further investigated the relationship between inspirational motivation and an organization's performance, specifically in the context of a school.

A school's performance is greatly influenced by the desire and participation of teachers to mobilize all their abilities in educating students (Sabu, Manoj, 2020). Participation is a person's involvement, whether through energy, thoughts, mentality, even emotions and feelings, as a form of responsibility by contributing to efforts to achieve predetermined goals (Liu et al., 2025). Participation itself grows from three value beliefs: achievement value, intrinsic value, and utility value. Achievement value motivates someone to participate effectively in a task because it relates to their identity and self-esteem. Intrinsic value encourages someone to volunteer to participate, even making sacrifices, because it relates to the enjoyment gained from completing a task. Utility value motivates someone to participate in a task to achieve current and future goals in social, educational, professional, or everyday contexts (Urhahne, Wijnia, 2023).

Low teacher performance is also caused by less empowered teacher participation, according to empirical findings (Sudargini, 2021). While participation is closely related to performance (Berdicchia, Masino, 2019; Stor, 2024). Low teacher performance is also attributed to

low self-efficacy and low involvement in work, which serve as obstacles to the development of innovative work behaviors (Putri, Rini, 2021). On the other hand, it was found that there was a lack of appreciation from superiors; awards from superiors were instrumental in triggering and encouraging teachers to be creative and accomplished (Silver et al., 2021). The right award for teachers can increase motivation to improve the quality of education and their performance.

Furthermore, Alateeg and Alhammadi (2024) state that work engagement is a crucial factor influencing innovative work behaviors. Sari et al. (2021) emphasize that employees who are emotionally and intellectually committed to their jobs are more likely to actively participate in creative and innovative endeavors. The contribution of innovative work behavior is crucial to the successful delivery of high-quality services. It influences and directly enhances performance (Jankelová et al., 2021; Pham et al., 2024). Teachers with innovative work behaviors tend to be proactive in finding solutions, applying new ideas, and developing creative learning methods that have a positive impact on the learning process. According to open innovation theory, innovation is greatly supported by cooperative efforts and the exchange of knowledge relevant to education (West, Bogers, 2016).

Innovative work behavior is essential for organizational success and can improve the quality of education and the work environment (Bawuro et al., 2020). Factors such as self-efficacy, empowering leadership, and well-being play crucial roles in enhancing innovative behavior, which in turn can improve teacher motivation and teaching practices. Innovative work behavior in teachers has a significant impact on teacher performance, motivation, job satisfaction, student outcomes, and academic performance. Recent research also emphasizes that innovative work behavior fosters teachers' job satisfaction individual job performance (Eken et al., 2024). Self-efficacy, leadership, organizational climate, and teaching motivation are essential in fostering innovative work behavior.

By integrating multiple factors influencing teacher performance, it is expected that a more comprehensive performance enhancement can

be achieved. Numerous empirical studies have explored the direct influence of work motivation, participation, and innovative work behavior on teacher performance. However, a significant gap remains in terms of how creative work behaviors moderate these relationships. Therefore, exploring further how innovative work behaviors, participation, and work motivation can influence and catalyze improvements in teacher performance is essential. Filling this gap is necessary, as it can provide valuable insights into strategies that schools and policymakers can adopt to enhance teacher performance. By understanding the roles of participation, work motivation, and innovative work behaviors, schools can strengthen these areas to improve teacher performance.

The novelty of this study lies in its examination of innovative work behavior as a moderating variable that strengthens the influence of work motivation and participation on teacher performance. Previous studies have mostly treated innovative work behavior as an independent or mediating variable, but this study explores its moderating role, which has rarely been investigated in educational settings, particularly among junior high school teachers in Indonesia. Furthermore, by integrating social exchange theory and open innovation theory, this study provides a new conceptual framework for understanding how teachers' innovative behaviors enhance the effects of motivation and participation on performance. Thus, this research contributes to theory by extending existing models of teacher performance and offering evidence-based recommendations for improving school management and teacher development policies.

Social exchange theory states that, based on subjective cost-benefit analysis, resources are exchanged (Blau, 2017; Cropanzano et al., 2017). Social exchange theory posits that, based on a subjective cost-benefit analysis, resources are exchanged, affecting a person's psychological aspects, such as motivation and participation, which can ultimately enhance and improve performance. Further analysis based on humanistic psychology and social psychology suggests that humans need to develop their potential, gain appreciation, and achieve self-actualization (Maslow, 1970; Rogers, 1961). Therefore, partici-

pation is seen not only as physical involvement, but also as self-expression and an internal drive to contribute that is closely related to motivation, a sense of belonging, and psychological satisfaction in work. Teacher participation reflects the socio-psychological process of communication, cooperation, and collaboration with colleagues and the principal. In addition, a person's work motivation is supported by innovative work behavior that is sensitive to change, continually develops knowledge, generates new ideas, and applies them to enhance their performance further. For this reason, psychological and social aspects, especially based on social exchange theory, were taken into account in developing the questionnaire indicators in this study. The theoretical framework is described in the theoretical model as follows.

This study presents four hypotheses. The third and fourth hypotheses serve as the core focus of this study. The third hypothesis states that when teachers are more innovative, their motivation has a substantial impact on their performance. The fourth hypothesis examines how innovative work behaviors can intensify the influence of participation on teacher performance. The hypotheses in this study highlight teacher performance improvement strategies and introduce a new perspective on teacher performance that empirically links work motivation, participation, and innovative work behaviors. Therefore, this broadens the scope of work motivation and participation in enhancing teacher performance. Figure 2 presents the proposed research model.

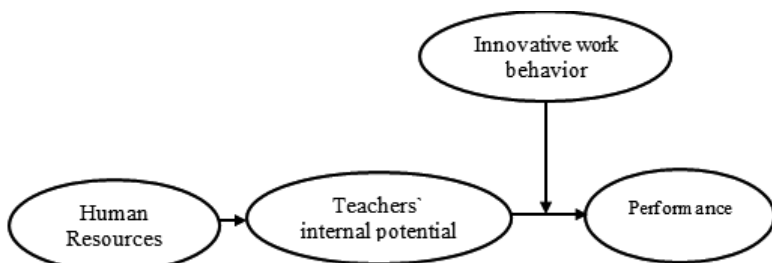


Fig. 1. Theoretical framework

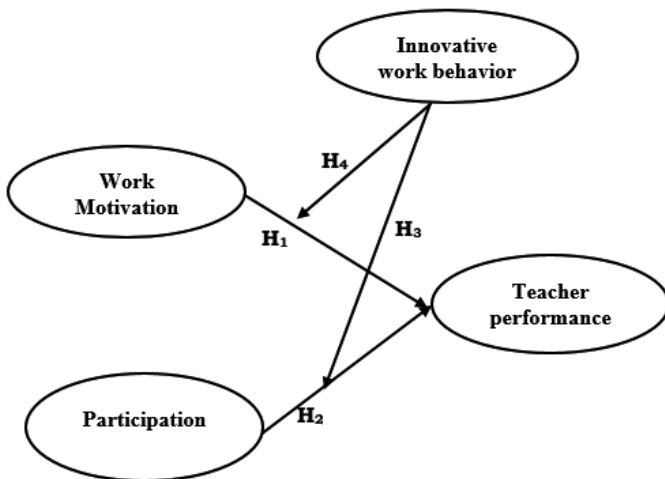


Fig. 2. The proposed research model

Materials and methods

This is a quantitative study using an ex post facto method. It revealed data on events that have occurred and existed in the respondents without giving treatment or manipulating the variables studied.

Sample size and data collection procedures

The population of this study included all teachers from State Junior High Schools in Temanggung Regency, comprising 1517 individuals across 42 schools in 20 sub-districts. A proportional random sampling method was employed, and the sample of 316 respondents was calculated using the Slovin formula with a 5% margin of error. The data collection technique was non-test. The instruments used were a questionnaire, which consists of 4 instruments to measure teacher performance, participation, work motivation, and innovative work behavior. The instruments were arranged using a 5-point Likert scale.

Data analysis

This study employed the PLS-SEM approach to develop the SEM model and analyze the data using outer and inner model analysis (Legate et al., 2023). The purpose of the outer model is to assess construct validity, ensuring that the indicators accurately represent the intended latent variable (Edeh et al., 2023). The constructs of work motivation (WM) and participation (P) are exogenous variables. Work motivation refers to the change in energy to perform or not perform work, derived from internal and external factors, as measured by stimulus, response, and behavioral indicators. Participation is active, involving both mental, emotional, and physical engagement, with indicators of utilizing all abilities and skills, and taking the initiative. Innovative work behavior (IWB) is a moderating variable. Innovative work behavior is characterized by proactive and creative actions demonstrated by a person at work, including identifying opportunities, generating new ideas, and applying newly acquired knowledge. Teacher performance (TP) is an endogenous variable. Teacher performance is the

result of the teacher's work in fulfilling their duties and functions. In terms of appearance, his/her actions and work achievements can be observed through indicators such as planning the teaching and learning process, implementing the process, creating optimal learning conditions, and assessing learning outcomes. Teacher performance is then assessed based on self-evaluation. In the context of this research, teacher performance was only measured using a questionnaire instrument.

The outer model analysis in Smart PLS focuses on three key components: outer loadings, construct validity and reliability, and discriminant validity. For hypothesis testing, the inner model analysis employs various methods, including R-squared, Q-squared, and t-statistics.

Results

Descriptive analysis

The demographic details of 316 respondents provided a comprehensive picture of the junior high school teacher population in Temanggung Regency. The gender distribution was relatively even, with 41% of respondents male and 59% female. The majority of the age distribution was among individuals aged 51–60 years (28,5%), followed by those aged 31–40 years (25,7%). The most extensive work experience was in the range of less than 5 years (24,2%), followed by a working period of 16–25 years (23,3%) and 26–35 years (21,1%). In addition, the respondents' educational background was a diploma (0,9%), S1 (90,5%), and S2 (8,6%).

Measurement model

The evaluation of the outer or measurement model encompasses three core elements: outer loadings, construct validity, reliability, and discriminant validity. The SmartPLS 4 results present the outer loading coefficients for each variable, as shown in Table 1.

Table 1 shows that all indicators exhibited outer loading values exceeding 0,7, indicating that they met the required criteria and were suitable for use in this study.

Construct validity and reliability were assessed through Cronbach's Alpha and Com-

Table 1

Outer loading value

Latent variables	Manifest variables	Loading factor	Annotation
Work motivation	WM1	0,876	valid
	WM2	0,925	valid
	WM3	0,902	valid
Participation	P1	0,887	valid
	P2	0,945	valid
	P3	0,910	valid
Innovative work behavior	IWB1	0,939	valid
	IWB2	0,921	valid
	IWB3	0,948	valid
Teacher performance	TP1	0,844	valid
	TP2	0,914	valid
	TP3	0,903	valid
	TP4	0,869	valid

Table 2

Cronbach's Alpha and composite reliability values

Variables	Cronbach's Alpha	Composite reliability (rho_a)	Composite reliability (rho_c)
Teacher performance	0,889	0,908	0,924
Work motivation	0,854	0,863	0,911
Innovative work behavior	0,885	0,918	0,928
Participation	0,852	0,852	0,911

posite reliability. The data in Table 2 provide Cronbach's Alpha values, which ranged from 0,852 to 0,889. Composite reliability (CR) values greater than 0,700 indicate the reliability and internal consistency of the proposed model.

Discriminant validity was calculated by the Heterotrait-Monotrait Ratio (HTMT) (Hair et al., 2020; Edeh et al., 2023). The recommended HTMT value is less than 0,9, indicating an approximate correlation between the factors, as shown in Table 3. The HTMT values ranged from 0,732 to 0,891. This val-

ue is below 0,90, indicating that the entire construct met the criteria for discriminant validity.

Structural model

The structural or inner model is a component of SEM that examines and evaluates the relationships between latent constructs. It aims to validate the causal links between exogenous (independent) latent variables and endogenous (dependent) latent variables, as outlined in the proposed hypothesis (Hair et al., 2020).

Table 3

Heterotrait-Monotrait Ratio

Variables	Teacher performance	Work motivation	Innovative work behavior
Work motivation	0,732		
Participation	0,763	0,891	
Innovative work behavior	0,766	0,840	0,853

Structural model testing can determine whether the relationships between variables show significance that aligns with the established hypothesis. Structural model testing was carried out using R^2 and Q^2 . The model goodness-of-fit test, also known as an alignment test, was assessed by the R-squared value. There are three classifications for interpreting R-square values: values of 0,75 are categorized as strong, 0,50 as moderate, and 0,25 as weak (Legate et al., 2023).

Table 4 presents the results of the analysis, indicating that the TP variable had an adjusted R-squared value of 0,695, suggesting that WM, P, and IWB variables collectively account for 69,5% of the variability in TP.

Q^2 is a metric used to evaluate the predictive accuracy of the constructed structural model. This value reflects how closely the model's predicted outcomes align with the actual values in structural testing. The interpretation of the value of Q^2 is as follows: if $Q^2 > 0$, then the model has the predictive ability of endogenous variables; if $Q^2 = 0$, then the model has no predictive ability; and if $Q^2 < 0$, then the model's prediction is worse than the average (Legate et al., 2023; Lisboa, 2017). The analysis results, as presented in

Table 5 using Smart PLS, show that the Q^2 value for the TP variable is 0,469, indicating strong predictive power of the exogenous variables regarding TP, with the level of prediction relevance classified as high.

Hypothesis testing

The first hypothesis (H1) suggests that WM positively and significantly affects TP. The analysis confirmed this, showing a positive impact ($\beta = 0,394$, $p = 0,00 < 0,05$). Similarly, the study also supports the second hypothesis (H2), demonstrating that P has a positive and significant influence on TP ($\beta = 0,223$, $p = 0,043 < 0,001$).

The role of IWB moderation was assessed in H3 and H4. The Smart-PLS 4 analysis showed that IWB significantly moderated the relationship between WM and TP, with a coefficient of $\beta = 0,544$ and a p-value of $0,000 < 0,05$, thereby supporting hypothesis H3. However, the fourth hypothesis, which posited that IWB moderated the effect of participation on TP, was not supported, as indicated by a coefficient of $\beta = 0,031$ and a p-value of 0,685 ($> 0,05$). The outcomes of hypothesis testing and structural model analysis are detailed in Table 6 and illustrated in Figure 3.

Table 4

R-square value

Variables	R-square	Adjusted R-square	Prediction model
Teacher performance	0,702	0,695	Moderate

Table 5

Q-square value

Variables	SSO	SSE	$Q^2 (=1-SSE/SSO)$
Teacher performance	1264,000	671,592	0,469

Table 6

Hypothesis testing results

	Path	β	t-value	p-value	Remarks
H1	Work motivation > Teacher performance	0,394	3,923	0,000	Supported
H2	Participation > Teacher performance	0,223	2,036	0,043	Supported
H3	Innovative work behavior x Work motivation > Teacher performance	0,544	12,898	0,000	Supported
H4	Innovative work behavior x Participation > Teacher performance	0,031	1,406	0,685	Not supported

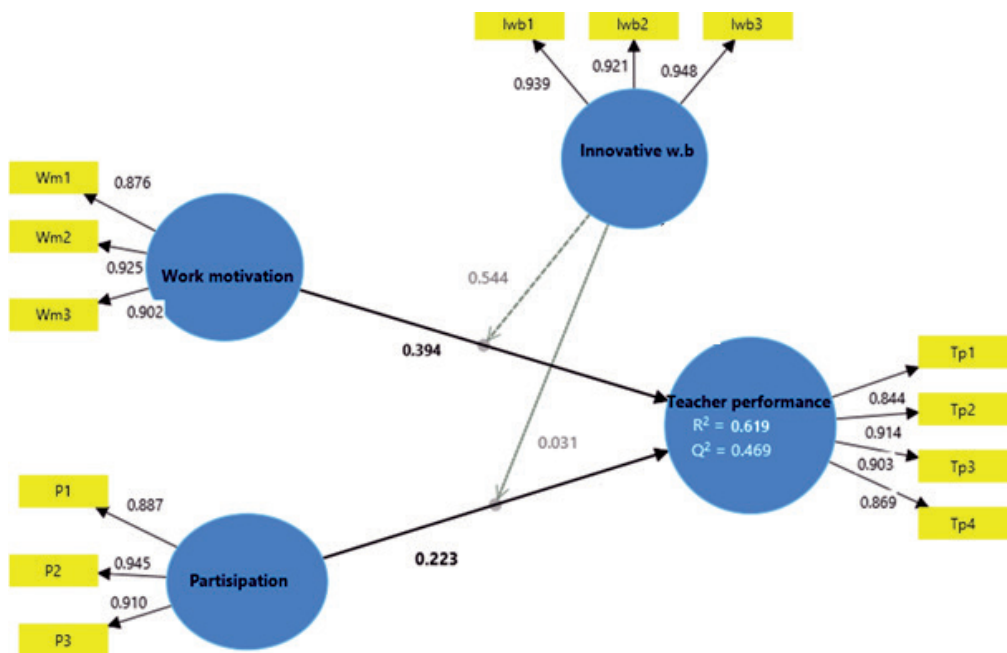


Fig. 3. Structural model results

Discussion

Empirical results showed that WM positively impacted TP, indicated by an influence coefficient of 0,394 and a p-value of 0,000, which fell below the 0,05 significance level. Increased WM was associated with improved TP. Suppose you look deeper into the indicators of WM, namely stimulus, response, and behavior. In that case, the higher the teachers’ responses and working behavior to the existing stimulus, the more their performance can be improved. The results of this study were consistent with prior research, which found a direct effect of WM on TP (Chien et al., 2020; Pham et al., 2024; Supartini et al., 2025).

Strong motivation is essential in supporting learning success, not only for students to achieve academic success but also for teachers as lifelong learners to continue improving their mastery of content, pedagogical skills, and authority in exemplifying commendable behavior. WM is a catalyst that influences teachers’ actions and behaviors in performing their respon-

sibilities. Teachers with strong WM are generally more enthusiastic, creative, and innovative when planning lessons. They are also more motivated to enhance the quality of education, develop effective learning materials, and foster positive relationships with students and peers. Thus, WM significantly affects performance.

Teachers’ WM is influenced by several factors, including the self, which contains information about self-efficacy, values, expectations, and attribution patterns, and facilitates social comparison; goals, which provide standards for self-evaluation of progress; behavioral processes such as activity selection, effort, persistence, regulation, and achievement, which are closely related to the actions and outcomes of the modeled actions; and environmental processes, including feedback, opportunities for self-evaluation, and rewards (Murayama, Keyserlingk, 2025; Urhahne, Wijnia, 2023). In the context of education in Indonesia, most teachers have a moderate or middle level of motiva-

tion between the controlled level of motivation in the form of employment status and social security and financial benefits that can meet physiological needs and safety needs; and the autonomous level of motivation that comes from more intrinsic beliefs and values including responsibility and attention to teaching, intellectual stimulation, and self-evaluation to meet the needs of belonging and love, self-esteem, and self-actualization (Irnidayanti et al., 2020; Irnidayanti, Fadhillah, 2023).

The findings of this study revealed that participation has a positive influence on TP, as evidenced by an influence coefficient of 0,223 and a P-value of 0,043, which is below the 0,05 significance threshold. Greater participation in TP is likely to enhance performance, whereas lower teacher participation tends to result in reduced performance. On the contrary, the lower the teacher's participation, the lower the performance. The participation indicators used in this study included abilities and skills, as well as taking initiative. The higher a teacher utilizes their abilities and skills and takes the initiative, the more likely their performance will improve. These results align with previous research, which suggests that participation has a direct impact on performance (Sabu, Manoj, 2020; Stor, 2024).

The research findings, which reveal that participation positively affects TP, are relevant to social exchange theory, which states that resources are exchanged based on a subjective cost-benefit analysis (Blau, 2017; Cropanzano et al., 2017). A person who feels involved in a job strives to do well. A person who participates highly tends to have the initiative to do the job well. Judging from the social benefit analysis, an individual who actively participates gains good judgment and prestige from their friends, which in turn leads to improved performance. The economic benefit analysis shows that active participation can impact career development.

Teacher participation involves utilizing their abilities and skills to engage in various school activities, collaborating with colleagues, and doing their best for students and the school. In terms of learning, teachers who utilize all their

abilities and skills strive to find ways to apply their knowledge and skills in the learning process, incorporating information technology into classroom learning. Such efforts directly relate to the TP indicator, which focuses on creating an optimal learning atmosphere and implementing the teaching and learning process. Teachers who actively participate take the initiative in various things, such as taking the initiative to take part in training, enjoying searching for new information to improve the learning process, proposing new ideas related to improving the quality of education, taking the initiative to invite colleagues to discuss learning innovations, and taking the initiative to design more effective learning strategies. Teachers who participate highly tend to utilize all their abilities and skills, taking the initiative to improve their capabilities, enhance the quality of learning, and design effective learning strategies that ultimately improve their performance.

Empirical findings showed that innovative work behaviors are not statistically significant in strengthening the influence of participation on TP, with a P value of 0,685 > 0,05 and a t-statistic of 1,406 < 1,96. IWB associated with TP and P were found not to affect the outcome. The theory of planned behavior can explain the empirical findings of this study, revealing that individual behavior, including IWB, is highly dependent on intention, attitudes toward these behaviors, subjective norms, and perceptions of control (Ajzen, 2020). In a highly participatory work environment, individuals may feel innovative behaviors are unnecessary if job goals can be achieved through existing methods. School environments that have already supported participation cause teachers to focus on in-role behavior rather than generating new ideas. These findings align with previous research (Cani Is, Veld, 2019; Wijayana et al., 2022).

Based on social exchange theory, P provides individuals with the opportunity to receive rewards and benefits, both from a social and economic perspective, thereby strengthening performance. However, these empirical findings indicate that IWB does not enhance the relationship between

participation and performance. This may be due to the innovation not being aligned with the needs of the organization or the education system, and the complexity of the innovation process. IWB carried out by teachers may be less relevant or less supported by the organizational environment. In addition, IWB requires significant time, resources, and managerial support. It is crucial to understand that if the organizational culture is not supportive, IWB can become an additional burden, which may divert attention and focus from primary tasks relevant to performance, highlighting the need for change.

IWB are proactive and creative actions that individuals demonstrate to generate new ideas, solutions, and practices. Empirical data showed that the direct effect coefficient of work motivation on TP was only 0,394. However, when work motivation is mediated by IWB, its impact on TP rises significantly to 0,544. IWB appears to enhance performance outcomes further, indicating that high work motivation alone may not optimally improve TP unless accompanied by strong IWB. Strong work motivation supported by IWB improves TP.

Teachers with IWB tend to be eager to discover opportunities, discover ideas, and apply new ideas or knowledge. This IWB foster strong work motivation, which is manifested in the exploration of innovative and interactive learning methods, resulting in innovative ways to overcome challenges in the learning process and creating an engaging learning environment. On the other hand, strong work motivation can be hampered by various obstacles such as limited infrastructure, a strict curriculum, and a lack of support from colleagues. However, IWB can help students find solutions to overcome these obstacles, thus maintaining optimal motivational impact on performance. Furthermore, strong work motivation, supported by IWB, can accelerate skill development and technological mastery, leading to sustainable performance improvements.

Performance intersects with activities that require innovation and the ability to master information technology, which depend highly on IWB. Even if a person's motivation is high, if it is not

supported by IWB, their performance tends to be ordinary. Teachers who exhibit IWB tend to have a desire to find opportunities, generate ideas, and apply their new knowledge or insights. With IWB, strong work motivation is manifested in exploring innovative and interactive learning methods, devising creative solutions to overcome challenges in the learning process, and fostering an enjoyable learning atmosphere. Through the application of open innovation theory, IWB enhances the effect of work motivation on TP (Chesbrough, Appleyard, 2007; West, Bogers, 2016). Teachers who are motivated to learn and apply new knowledge and ideas tend to improve their performance. The findings on the moderating effect of IWB align with those of previous research (Zyl et al., 2021; Lee, Kim, 2024). In the context of Indonesian education, the IWB comprises six domains of effective teaching behavior that can be observed in classroom practice, including a safe and stimulating learning climate, efficient classroom organization, clear instructions, engaging teaching, differentiated learning, and the use of learning strategies (Irnidayanti et al., 2020; Kholifah et al., 2024). Furthermore, Junusi et al. (2023) found that IWB and proactive behavior significantly mediated the relationship between employee engagement and employee performance.

Conclusions

The results of this study demonstrate that work motivation, participation, and innovative work behavior have a significantly positive impact on teacher performance. Increased work motivation, greater participation, and higher innovative work behavior are associated with improved teacher performance. Innovative work behavior amplifies the effect of work motivation on teacher performance, indicating that high work motivation, when combined with innovative work behavior, can further enhance teacher performance. The empirical findings suggest that a person's work motivation is supported by innovative work behaviors that are responsive to change, continually develop knowledge, generate new ideas, and apply them to enhance their performance. Strong work motivation supported by innovative work

behavior is a guarantee that teacher performance is high. Likewise, on the other hand, strong work motivation that is not supported by highly innovative work behavior does not necessarily produce good performance.

This study offers valuable insights for educational leaders and policymakers on how to enhance teacher performance by strengthening work motivation, promoting greater participation, and fostering and supporting innovative work behaviors. Strengthening motivation can be achieved through programs that improve continuous work motivation, such as encouraging teacher morale, offering appreciation for teacher performance, and providing moral support and non-financial rewards. Increasing participation can involve teachers in formulating school policies, developing curriculum and activities, encouraging collaboration, and allowing teachers to take the initiative. Fostering and promoting innovative work behaviors can be achieved by creating an adaptive and creative environment that fosters innovation and the generation of new ideas in learning.

Limitations and future research

In this research, teacher performance is seen from the results of the teacher's work in carrying out his duties and functions as shown

in his appearance, actions, and work achievements as seen from the indicators of planning the teaching and learning process, implementing, creating optimal classroom conditions, and assessing learning outcomes. The limitation of this study is that teacher performance is only assessed based on self-assessment techniques, where teachers complete questionnaires. Future research in evaluating teacher performance can develop more comprehensive indicators.

Participation in this study was examined using social exchange theory, which relies on bottom-up participation. The data showing a low level of participation (questionnaire data values are not optimal) indicates that not every teacher has a strong awareness of fulfilling their primary responsibilities. Therefore, to strengthen participation, urgent and important intervention from leaders, both the principal and the education office, is necessary. Further research needs to examine the existence of interventions or elaboration so that the emergence of participation can also be top-down, with the presence of organizational roles, so that participation emerges more optimally. Furthermore, it is necessary to examine whether the presence of organizational roles and IWB will strengthen the influence of participation on performance.

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The authors declare that they have no conflict of interest.

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Problem-solving as a bridge: mediating the relationship between creativity and student burnout

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Abstract

Context and relevance. Burnout is a common concern among university students. While cognitive-behavioral coping strategies such as creativity and problem-solving may shape how students manage academic stress, limited research has examined their roles in relation to student burnout. **Objective.** This study aimed to investigate the relationships among creativity, problem-solving, and burnout in a sample of Iranian undergraduate students. **Hypothesis.** It was hypothesized that higher levels of creativity and problem-solving would be associated with lower levels of student burnout. **Methods and materials.** A cross-sectional study was conducted with 193 undergraduate students (73,1% female, 26,9% male) aged 18–25 years ($M = 21,2$, $SD = 1,5$) from a university in southern Iran. Participants completed the Maslach Burnout Inventory–Student Survey (MBI-SS), the Abedi–Schumacher Creativity Test, and the Social Problem-Solving Inventory (SPSI). Data were analyzed using correlation and regression analyses, followed by an exploratory mediation analysis to examine potential indirect associations. **Results.** Creativity and problem-solving were both negatively correlated with student burnout. However, in the regression analysis, problem-solving demonstrated the strongest unique association with burnout, whereas creativity was no longer independently associated with burnout. Exploratory mediation analysis further suggested that problem-solving may mediate the association between creativity and burnout. **Conclusions.** Problem-solving appears to be strongly associated with lower levels of student burnout, and creativity may contribute indirectly through its relationship with problem-solving. These findings may inform the development of academic support strategies aimed at enhancing students' coping resources. Further research is needed to explore these associations over time.

Keywords: academic performance, burnout, coping, creativity, problem-solving, undergraduate students

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Решение проблем как связующее звено: опосредующая роль решения проблем во взаимосвязи между креативностью и академическим выгоранием студентов

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Резюме

Контекст и актуальность. Синдром выгорания представляет собой широко распространенную проблему в студенческой среде. Несмотря на то, что когнитивно-поведенческие копинг-стратегии, включая креативность и решение проблем, потенциально способны влиять на то, как студенты преодолевают академический стресс, их роль в контексте студенческого выгорания остается недостаточно исследованной. **Цель.** Целью данного исследования было изучение взаимосвязей между креативностью, решением проблем и выгоранием на выборке иранских студентов бакалавриата. **Гипотеза.** Существуют взаимосвязи между креативностью, решением проблем и уровнем выгорания у студентов университетов. **Методы и материалы.** В исследовании приняли участие 193 студента бакалавриата (73,1% девушек, 26,9% юношей) в возрасте от 18 до 25 лет ($M = 21,2$; $SD = 1,5$) из университета на юге Ирана. Участники заполнили опросник выгорания Маслаха для студентов (MBI-SS), тест креативности Абеди–Шумахера и опросник социального решения проблем (SPSI). Анализ данных проводился с помощью корреляционного и регрессионного анализа, а также медиационного анализа для выявления возможных косвенных взаимосвязей. **Результаты.** Креативность и способность решать проблемы были отрицательно связаны с выгоранием студентов. Регрессионный анализ показал, что именно решение проблем вносит наибольший вклад в вариативность показателей выгорания. Результаты медиационного анализа позволяют предположить, что решение проблем может выступать связующим звеном между креативностью и выгоранием. **Выводы.** Решение проблем, по-видимому, тесно связано с более низким уровнем студенческого выгорания, а креативность может вносить косвенный вклад через свою взаимосвязь с решением проблем. Полученные результаты могут быть использованы для разработки стратегий академической поддержки, направленных на укрепление совладающих ресурсов студентов. Для изучения данных взаимосвязей в динамике необходимы дальнейшие исследования.

Ключевые слова: академическая успеваемость, выгорание, совладание, креативность, решение проблем, студенты бакалавриата

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Introduction

Burnout among university students has become an increasingly significant concern and a prominent focus of academic research, prompting scholars to investigate its underlying causes and identify effective strategies for mitigation (Liu et al., 2023). Evidence shows that moderate levels of burnout are common among university students worldwide, with its detrimental effects on engagement and academic performance observed across diverse cultural contexts (Rosales-Ricardo et al., 2021; Schaufeli et al., 2002). In Iran, for instance, a scoping review of Iranian studies revealed that burnout is widespread among medical students, a trend attributed to the educational challenges they face and occasional dissatisfaction or misalignment with the academic environment. This highlights the importance of identifying factors that may help reduce burnout among university students (Sayadinia et al., 2023).

Although the precise nature of the relationship between burnout and stress remains debated, a connection between them is widely acknowledged (Parker, Tavella, 2022). Reflecting this connection, the burnout framework — originally developed to address workplace stress — has also been applied to academic settings. Students face a variety of similar stressors, such as coursework demands and deadlines, which contribute to academic stress. When prolonged or unmanageable, this stress can lead to student burnout (Jagodics, Szabó, 2023; Gao, 2023). In academic contexts, burnout typically manifests as emotional exhaustion, depersonalization, academic decline, and a

diminished sense of academic efficacy (El Barusi, Kurniawati, 2024; Schaufeli et al., 2002). These symptoms are evident in students' fatigue, disengagement from coursework, emotional distress, and reduced confidence in their academic abilities (Amelia, 2022).

Burnout is widely recognized as a serious concern among university students, with well-documented effects on academic performance (Madigan, Curran, 2021). Building on this, recent research has begun to clarify the psychological, behavioral, and social factors that may help mitigate its impact. For example, greater social support has been associated with lower levels of student burnout (Ye, Huang, Liu, 2021). A recent systematic review and meta-analysis also identified emotional regulation, positive thinking, and coping strategies as key protective factors (Madigan, Kim, Glandorf, 2023).

Coping refers to the cognitive and behavioral efforts individuals employ to manage internal or external stressors perceived as overwhelming (Dubow et al., 2024). It plays a central role in students' adjustment to academic challenges (Silva-Lorente et al., 2024). Student burnout has been negatively associated with adaptive coping strategies and positively associated with maladaptive ones (Vizoso et al., 2019). Although findings on the effectiveness of specific student coping strategies remain mixed (Xu, Wang, 2022), research highlights the potential value of certain cognitive-behavioral mechanisms — such as problem-solving, seeking help, positive reframing, acceptance, and creativity — in reducing stress and burnout (Lau et al., 2021;

Kashirskaya, Belova, Kharkhurin, 2024). Further research is needed to clarify the role of these strategies across diverse educational and cultural contexts.

Although coping strategies have been linked to academic success (Lisnyj et al., 2023; Tripathi, 2025), their relationship with student burnout has received limited attention (Kulikowski, 2021). Among these strategies, problem-solving and creativity were prioritized in this study due to their growing importance in educational settings. These skills are widely recognized for fostering innovation, academic progress, and professional development, and experts advocate for their integration into curricula to enhance learning outcomes (Martz, Hughes, Braun, 2017). While research directly linking these skills to burnout is still emerging, existing evidence suggests that problem-solving may mitigate burnout by helping students address the underlying sources of stress (Lau et al., 2021), and that creativity may serve as a personal coping resource supporting stress management (Kashirskaya et al., 2024).

Creativity and problem-solving, although related, serve different purposes and involve distinct cognitive processes. Creativity refers to the generation of original and diverse ideas, often drawing on multiple perspectives. However, creative ideas do not automatically translate into effective solutions. Their practical value emerges when they are organized and evaluated through problem-solving processes. In educational contexts, this interaction becomes evident when students face complex or open-ended tasks that require both imaginative thinking and structured reasoning. In this way, problem-solving provides the framework that helps transform creative ideas into feasible, goal-directed outcomes (Zhan, He, Zhong, 2024).

Given these distinctions, the interaction between problem-solving and creativity in the context of student burnout remains underexplored. The potential for conflict between goal-oriented problem-solving and the open-ended nature of creativity raises important questions about how these strategies might combine to affect burnout. While both skills independently contribute to reducing stress, their interaction could have

nuanced effects on students' experiences of burnout. Thus, this study aims to explore the complex relationships among problem-solving, creativity, and burnout, aiming to uncover how their combination may influence students' well-being. By doing so, we hope to provide insights that can guide the development of more targeted and effective interventions to mitigate burnout and promote student resilience.

Theoretical framework. This study adopts the emerging burnout–cognitive functioning theory as its guiding framework. Traditionally, burnout research has emphasized organizational and situational stressors, often neglecting the role of individual cognitive capacities. According to this theory, however, burnout is not only an emotional and psychological condition but is also closely linked to impairments in cognitive capacities such as attention, working memory, and problem-solving. The theory proposes a bidirectional relationship: cognitive abilities influence burnout levels, and burnout, in turn, affects cognitive functioning. Within this framework, cognitive ability is viewed as a personal resource that supports stress management, emotional regulation, and performance under pressure (Kulikowski, 2021).

Current study. Building on the burnout–cognitive functioning theory, which highlights the dynamic interplay between cognitive abilities and burnout, this study examined the association between creativity, problem-solving skills, and burnout among Iranian undergraduate students in rehabilitation sciences — a field that integrates clinical training with interdisciplinary and patient-centered practices (Beamish et al., 2024). Additionally, it explored the extent to which these cognitive-behavioral traits, along with contextual variables such as gender and living arrangements, predict levels of burnout.

Materials and methods

We employed a cross-sectional design to examine the relationships among the study variables within a defined population at a single point in time. Using statistical software, we determined that a sample size of approximately 180 participants would provide reliable estimates for a cor-

relation coefficient of 0,20, which was chosen as a conservative estimate of correlation strength, in accordance with Cohen's criteria for small effect sizes (Cohen, 1998). A significance level (α) of 0,05 and a statistical power ($1 - \beta$) of 0,80 were specified, ensuring that the study was adequately powered to detect the hypothesized correlation.

This study was conducted at the School of Rehabilitation Sciences, affiliated with Shiraz University of Medical Sciences (SUMS), a prestigious medical university in Shiraz, a prominent city in southern Iran. Established in 1946, SUMS is one of the oldest public medical universities in the country. It plays a central role in medical education, research, and healthcare provision across Fars Province, operating under the supervision of the Ministry of Health, Treatment, and Medical Education. With over 10000 students enrolled across 17 schools and more than 200 academic programs, the university provides an academically rigorous environment that may influence students' experiences of stress and burnout.

Participants. The study sample comprised 193 participants, including 141 females (73,1%) and 52 males (26,9%). The mean age was 21,2 years ($SD = 1,5$; range 18–25). Most participants were from low to medium socioeconomic backgrounds. The inclusion criteria encompassed Persian-speaking undergraduate students majoring in occupational therapy, physical therapy, speech therapy, audiology, or orthotics and prosthetics. While this sampling frame may not fully represent the entire Iranian student population, it is important to note that students at SUMS come from a wide range of regions across the country and possess diverse ethnic and socioeconomic backgrounds. All participants had successfully passed the National Entrance Exam (NEE), the primary admissions criterion for public universities in Iran. This exam, administered annually by the National Organization of Educational Testing (NOET), selects candidates from a broad pool of high school graduates aspiring to enter higher education (NOET, 2025), thus enhancing the representativeness of the sample.

Instruments. The participants completed three validated Persian questionnaires: the Maslach Burnout Inventory–Student Survey

(MBI-SS), the Abedi–Schumacher Creativity Test (A-S CT), and the Social Problem-Solving Inventory (SPSI), along with a brief demographic checklist covering gender, academic program, and living arrangements.

The MBI-SS is an adaptation of the original Maslach Burnout Inventory (Maslach, Jackson, Leiter, 1996) tailored for students (Schaufeli et al., 2002). It measures student burnout across three dimensions: exhaustion, cynicism, and academic efficacy. The scale includes 15 items rated on a 7-point Likert scale ranging from “never” (1) to “always” (7), with total scores ranging from 15 to 105. Higher scores indicate greater burnout. The Persian version demonstrated strong psychometric properties (Rostami et al., 2014).

The A-S CT is a multiple-choice test developed and validated in Iran to assess creativity (Abedi, 1993). It consists of 60 items across four subscales: Fluency, Flexibility, Originality, and Elaboration. Each item offers three response options scored from 1 (least creative) to 3 (most creative), with total scores ranging from 60 to 180. Higher scores reflect greater creativity. The test showed well-established measurement quality (Daemi, Moghimi Barforoosh, 2004).

The SPSI, developed by D'Zurilla et al. (2002), is a self-report measure of problem-solving abilities across five dimensions: positive and negative problem orientation, rational problem solving, impulsive/careless style, and avoidance style. The short form used in this study consists of 25 items rated on a 5-point Likert scale from “completely incorrect” (1) to “completely correct” (5), yielding total scores between 25 and 125. Higher scores indicate stronger problem-solving skills. The Persian version demonstrated solid psychometric properties (Mokhberi, Dortaj, Dare Kordi, 2011).

Procedure. The research received approval from the Research Ethics Committees of Shiraz School of Rehabilitation Sciences, affiliated with Shiraz University of Medical Sciences, Shiraz, Iran (Approval ID: IR.SUMS.REHAB.REC.1398.036). Data were collected over a three-month period through non-random convenience sampling, during which the research team

engaged with students on campus. Researchers recruited participants using a sampling frame obtained from the registrar's office. This framework includes undergraduate students from programs such as occupational therapy, physical therapy, speech therapy, audiology, and orthotics and prosthetics. At the time the data were gathered, there were a total of 345 students in these departments collectively. From this particular group, 193 students opted to join voluntarily, resulting in a response rate of 55,94%.

Data collection was conducted by three trained undergraduate research assistants. They coordinated with course instructors to obtain permission to administer the questionnaires at the end of class sessions. Before participating, students received a standardized explanation of the study procedures and provided informed consent.

Data analysis. Data analysis was conducted using IBM SPSS Version 27, with a significance level set at $p < 0,05$. Descriptive statistics (frequencies, means, and standard deviations) were used to summarize the data. Inferential analyses included Pearson correlation, analysis of variance (ANOVA), and independent-sample t-tests. Standard multiple regression analysis was employed to examine the relationship between a continuous dependent variable (student burnout) and multiple independent variables: problem-solving (continuous), creativity (continuous), gender (dummy), and living arrangements (dummy). Gender and living arrangements were included in the analysis due to their potential influence on burnout. All predictors were entered simultaneously to assess their individual contributions and to estimate the proportion of variance (R^2) in burnout scores explained by the model. Assumptions of regression — including multicollinearity, outliers, normality, linearity, homoscedasticity, and independence of residuals — were assessed using SPSS REGRESSION and EXPLORE procedures; no violations were detected.

Although mediation analysis was not specified a priori, it was undertaken as an exploratory analysis after the primary analyses revealed an apparent discrepancy. Creativity

was significantly associated with burnout in the bivariate correlation analysis but was no longer a significant predictor after adjustment for the other variables in the multiple regression model. This pattern was consistent with the possibility of an indirect association, prompting a formal test of mediation using the Sobel test (Preacher, Hayes, 2004). This technique assesses whether a mediator significantly transmits the effect of an independent variable on a dependent variable. Examining problem-solving and creativity as potential mediators offered a more nuanced understanding of their influence on student burnout, particularly given their distinct yet complementary roles in cognitive adaptation and goal attainment.

Results

The Kolmogorov–Smirnov tests indicated that continuous quantitative data, such as total scores for student burnout, creativity, and problem-solving, were normally distributed. The independent-sample t-test showed no significant gender differences in the mean scores of student burnout [males ($48,7 \pm 16,3$), females ($49,3 \pm 13,9$), $p = 0,840$]; creativity [males ($137,3 \pm 13,7$), females ($135,8 \pm 14,3$), $p = 0,523$]; and problem-solving [males ($88,5 \pm 14,2$), females ($84,9 \pm 9,3$), $p = 0,089$]. Table 1 shows the main demographic characteristics of the participants. ANOVA analysis showed no significant differences in the mean scores of burnout, creativity, and problem-solving among the students in five rehabilitation sciences programs.

Table 2 presents the means, standard deviations, and bivariate correlations (using Pearson correlation coefficient) for each measure. All the variables were significantly correlated with each other.

The dependent variable was regressed on the independent variables. Table 3 presents the regression results of independent variables on burnout, including the unstandardized regression coefficients (B), standardized regression coefficients (Beta), 95% confidence intervals for B, and part correlations. The overall regression model was statistically significant, $F(4, 188) = 17,3$, $p < 0,001$, explaining 27% of the variance in student burnout ($R^2 = 0,27$).

Table 1

General characteristics of the participants regarding their levels of creativity, problem-solving, and burnout (N = 193)

Variables	N (%)	Creativity [†]	p-value	Problem-solving [†]	p-value	Student burnout [†]	p-value
Academic program							
OT	65 (33,7)	138,46	0,464 [‡]	86,78	0,651 [‡]	50,54	0,488 [‡]
PT	43 (22,3)	135,28		86,14		50,23	
ST	42 (21,8)	133,64		83,67		49,31	
AD	21 (10,9)	137,71		87,00		44,86	
OP	22 (11,4)	135,05		85,95		46,36	
Marital status							
Married	22 (11,4)	132,26	0,173 [‡]	86,23	0,877 [‡]	47,36	0,552 [‡]
Single	171 (88,6)	136,73		85,85		49,33	
Living arrangement							
On-campus	138 (71,5)	135,70	0,410 [‡]	85,14	0,128 [‡]	50,72	0,015 [‡]
Off-campus	55 (28,5)	137,56		87,76		45,07	
Year of study							
Year 1	41 (21,2)	134,54	0,479	86,54	0,070 [‡]	45,85	0,179 [‡]
Year 2	55 (28,5)	138,22		88,31		49,25	
Year 3	41 (21,2)	134,39		85,98		47,90	
Year 4	56 (29,0)	136,88		82,98		52,23	

Note: [†] — Mean; [‡] — ANOVA test; [‡] — Independent Samples T Test; OT — Occupational therapy; PT — Physical therapy; ST — Speech therapy; AD — Audiology; OP — Orthotics and Prosthetics. On-Campus: Refers to students living in dormitories or any residential facilities provided by the university. Off-Campus: Refers to students living outside university-provided housing, whether with parents, in their own apartments, or with peers.

Table 2

Means, standard deviations, and bivariate correlations between the measures

Measures	M	SD	1	2	3
1. Problem-solving	85,9	10,7	—		
2. Creativity	136,2	14,1	0,414*	—	
3. Student burnout	49,1	14,6	−0,494*	−0,273*	—

Note: * $P < 0,01$.

Table 3

Predictors of student burnout when regressed on independent variables

Variables	B	Beta	Part correlation	95% CI for B	p-value
Problem-solving	−0,621	−0,458	−0,411	[−0,806; −0,435]	< 0,001
Creativity	−0,082	−0,079	−0,072	[−0,221; 0,058]	0,250
Gender	2,270	0,069	0,068	[−1,820; 6,360]	0,275
Living arrangements	−4,051	−0,126	−0,125	[−8,046; −0,056]	0,047

The Beta column allows us to compare the contributions of each independent variable. As illustrated in Table 3, the largest Beta coefficient is −0,458, which corresponds

to problem-solving. This suggests that this variable has the most substantial and distinct impact on explaining the dependent variable. Unexpectedly, creativity did not significantly influence burnout, and gender was also identified as an insignificant predictor. In contrast, living arrangements were found to be a significant predictor. Because the “living arrangements” variable was identified as a predictor of student burnout, an additional analysis was conducted using an independent-samples *t*-test. The results indicated a significant difference in burnout levels between students living on-campus and those living off-campus, with higher levels of burnout observed among students residing on-campus ($M = 50,7$, $SD = 15,3$) compared to those living off-campus ($M = 49,1$, $SD = 11,9$), $p = 0,007$.

When squared, a part correlation indicates the contribution of an independent variable to the total R^2 . In our study, the problem-solving measure had a part correlation coefficient of $-0,411$ (see Table 3). If we square this (multiply it by itself), we obtain $0,17$, indicating that problem-solving uniquely explains 17% of the variance in total burnout. For the independent variable of living arrangements, the value is $-0,125$, which when squared gives us $0,015$, indicating a unique contribution of 1,5% to the explanation of variance in student burnout.

To further investigate the unexpected non-significant effect of creativity on student burnout, we examined whether either problem-solving or living arrangements mediated this relationship. A simple mediation model was applied. Although living arrangements

emerged as a significant predictor of burnout in the regression analysis, they did not meet the conditions for mediation. In contrast, problem-solving fulfilled the criteria for mediation between creativity and burnout. According to Preacher and Hayes (2004), establishing mediation involves four steps: (1) the independent variable (creativity) significantly predicts the mediator (problem-solving); (2) the independent variable significantly predicts the dependent variable (burnout) in the absence of the mediator; (3) the mediator significantly predicts the dependent variable while controlling for the independent variable; and (4) the effect of the independent variable on the dependent variable is reduced (partial mediation) or becomes statistically non-significant (complete mediation) when the mediator is included in the model. The data relevant to the simple mediation model described above are presented in Table 4, which provides the necessary statistics for testing mediation. The mediation pathway is also illustrated in Figure for further clarification. The total effect of creativity on burnout ($'c'$) is statistically significant, indicating that higher creativity is associated with lower burnout. Creativity also significantly predicts problem-solving ability ($'a'$), which in turn negatively affects burnout while controlling for creativity ($'b'$). The direct effect of creativity on burnout after accounting for problem-solving ($'c''$) is not significant, indicating that problem-solving fully mediates the relationship between creativity and burnout. In other words, creativity's effect on burnout operates indirectly through problem-solving ability.

Table 4

The mediating effect of problem-solving on the relationship between creativity and burnout

Data needed for mediation analysis	Unstandardized regression coefficient	Standard error	t	p-value
c	-0,282	0,072	-3,927	< 0,001
a	0,316	0,050	6,29	< 0,001
b	-0,669	0,085	-7,858	< 0,001
c'	-0,085	0,071	-1,199	0,232

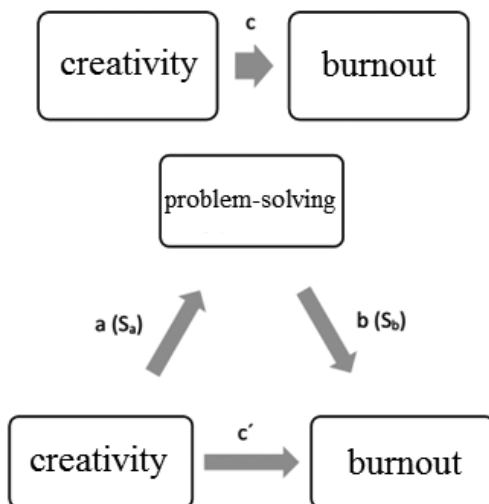


Fig. a = raw (unstandardized) regression coefficient for the association between the independent variable (creativity) and the mediator (problem-solving). S_a = standard error of a. b = raw (unstandardized) regression coefficient for the association between the mediator and the dependent variable (burnout) when creativity is also a predictor of burnout. S_b = standard error of b. c = the total effects of the independent variable on the dependent variable. c' = the effect of the independent variable on the dependent variable, while controlling for the effect of the mediator variable

Discussion

This study examined how creativity and problem-solving skills, as forms of cognitive-behavioral coping, relate to burnout among undergraduate students. Both were negatively associated with burnout, indicating that students with stronger coping capacities reported lower burnout levels. These findings align with the burnout–cognitive functioning theory, which highlights the role of cognitive resources in managing burnout. In the regression analysis, only problem-solving emerged as a significant predictor of burnout. Mediation analysis revealed that problem-solving completely mediated the relationship between creativity and burnout, suggesting that creativity may be associated with lower burnout indirectly through its association with stronger problem-solving ability.

The correlational findings are consistent with those of a study conducted among Iranian university students, which also reported a negative association between problem-solving skills and

burnout (Khoshgoftar et al., 2023). Similarly, our results support previous research indicating a correlational link between higher creativity and lower burnout, suggesting that creative thinking may contribute to more effective coping in academic settings (Kashirskaia et al., 2024).

Although creativity was negatively correlated with burnout, its lack of significance in the regression model suggests that its influence may be indirect or context-dependent. One possible explanation is that the effect of creativity on burnout may be mediated by stress levels, given the well-established connection between stress and burnout. In support of this possibility, An et al. (2012) identified a significant negative correlation between creativity and stress among students. However, evidence remains inconclusive regarding how stressors affect creativity. Research suggests that the relationship between stress and creative performance depends on both the intensity and nature of the stressor. For example, evaluative stress tends

to follow a curvilinear pattern — low levels may enhance creativity, while high levels suppress it. In contrast, uncontrollable stressors typically show a linear negative effect, with creativity declining as stress increases (Byron, Khazanchi, Nazarian, 2010). In some contexts, high stress may even stimulate creative achievement, pointing to a potential non-linear relationship between creativity and stress (Kassymova et al., 2019). These findings underscore the complex and multifaceted relationships among stress, creativity, and burnout, and suggest that individual variation in stress exposure may help explain the inconsistent association between creativity and burnout observed in this study.

The mediation analysis highlights the interconnected nature of creativity and problem-solving as cognitive-behavioral coping strategies, particularly in their contribution to reducing student burnout. This relationship underpins the concept of creative problem-solving, which involves reorganizing existing knowledge to address new, context-specific challenges (Yang et al., 2022). The analysis revealed that the effect of creativity on burnout was fully mediated by problem-solving ability. This finding suggests that while creativity alone may not directly protect against burnout, it can enhance problem-solving skills — which, in turn, play a pivotal role in mitigating burnout. According to our study, students with higher levels of creativity may develop stronger problem-solving abilities. It is this enhanced problem-solving capacity — not creativity itself — that contributes to a reduction in burnout. One possible explanation is that our study participants did not experience burnout at a level that required a high degree of creativity for coping. This interpretation is supported by the relatively low mean burnout score of 49.1 on the MBI-SS, which is significantly below the maximum possible score of 105, indicating moderate rather than severe levels of burnout. Consequently, students in our sample may have relied more on problem-solving strategies — identified as significant in the regression model — rather than on creative approaches. Relevant evidence comes from Forgeard (2025), who reported that creativity is often seen as a pre-existing coping

resource, with individuals relying on established creative outlets to navigate challenges, rather than experiencing an immediate surge in creativity in response to stress. This interpretation may also reflect the cross-sectional nature of our study, which captured data at a single point in time and may not fully represent the dynamic or evolving role of creativity during prolonged or acute stress episodes. These findings underscore the importance of considering a broader range of factors that influence student burnout and stress resilience, including personality traits, environmental conditions, and institutional support systems. Future research should aim to disentangle these elements to develop a more comprehensive understanding of the multifaceted nature of student burnout and the role of creativity within this context.

Although problem-solving fully mediated the link between creativity and burnout, our measure assessed only students' perceived problem-solving ability. This subjective confidence may not necessarily correspond to actual performance on objective or situational decision-making tasks. Self-report instruments tend to capture meta-cognitive beliefs, whereas real problem-solving involves observable cognitive processes that may respond differently to stress and creativity. Clarifying the alignment between perceived and actual abilities would help determine whether the mediating role identified here reflects genuine cognitive performance or primarily students' confidence in managing challenges.

Our findings indicated that gender did not emerge as a significant predictor of burnout. Furthermore, no significant gender differences in burnout levels were observed, which contrasts with the results of some studies suggesting that male students experience higher levels of burnout than their female counterparts (Liu et al., 2023). One possible explanation for our results is that both male and female students in our study encounter similar academic pressures, including rigorous coursework, clinical training, and performance expectations, which may equalize their experiences of burnout. Additionally, gender differences in burnout may vary across cultural contexts, as societal expect-

tations and educational structures can influence how students perceive and manage academic stress. Future research should further examine the role of gender in student burnout, particularly within different academic and cultural contexts.

One noteworthy finding is the impact of living arrangements on burnout. The analysis revealed that students residing on campus experienced higher levels of burnout compared to those living off campus. This result aligns with our theoretical framework, which proposed that on-campus living conditions may impose greater social demands on students, including communal living stress, peer expectations, and reduced privacy. These factors may contribute to increased burnout by adding additional emotional and cognitive strain. Furthermore, our findings support previous research indicating that students who live in dormitories face challenges related to homesickness, finances, the academic environment, academic performance, and social interactions, making their experience more stressful than anticipated (Nghiem et al., 2021). These results underscore the importance of considering environmental factors, particularly living arrangements, when exploring burnout in academic settings.

Conclusions

This study investigated the relationships among creativity, problem-solving, and burnout in university students. The findings showed that problem-solving was strongly associated with lower burnout, and creativity appeared to play an indirect role by enhancing problem-solving skills. These results support the hypothesis that cognitive-behavioral coping strategies are linked to burnout and highlight their relevance to student well-being. Given the growing concern around academic stress, the findings offer insights into

how specific cognitive strategies may help mitigate burnout. Future research should explore these associations longitudinally and across diverse educational settings to guide more effective student support and mental health initiatives.

Limitations. The sample was drawn from a single university, which may restrict generalizability, and voluntary participation may have introduced self-selection bias. The cross-sectional design precludes causal inferences, and all variables were measured using self-report instruments, which are susceptible to response bias. Furthermore, the study did not assess specific stressors or their intensity, restricting the contextual interpretation of the results. An important additional limitation concerns the measurement of problem-solving. This study relied exclusively on a self-report scale that assesses perceived problem-solving ability, which may not accurately reflect actual performance on behavioral or situational decision-making tasks. Therefore, the mediating effect observed here reflects students' subjective confidence rather than objectively demonstrated problem-solving skills. Incorporating performance-based or scenario-driven measures in future research would help clarify the relationship between actual problem-solving ability, creativity, and burnout. Additionally, the Abeidi-Schumacher Creativity Test assesses self-perceived creative tendencies rather than actual creative performance. Consequently, it remains unclear whether the observed associations would generalize to objective measures of creativity. Future research should incorporate behavioral assessments, such as divergent thinking tasks or evaluations of creative products, to determine whether these relationships are replicated using performance-based measures of creativity.

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Contribution of the authors

All authors contributed to the conception and design of the study. Data analysis was conducted by Derakhshanrad, S.A. All authors contributed to the interpretation of the data. Derakhshanrad, S.A. prepared the initial draft of the manuscript. All authors have reviewed, approved, and consented to the submission, and they are responsible for ensuring its accuracy and integrity in accordance with ICMJE criteria.

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Perception of school failure/success by parents and their children

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Abstract

Context and relevance. School failure/success is one of the key issues of state educational policy, significantly affecting both academic and personal development of children. Despite numerous studies devoted to the factors of school failure/success, little is known about how children and their parents perceive this experience and what meaning they attach to it. In this study, school failure/success is examined through J. Hattie's framework — from students' characteristics to features of the school and family. **Objective.** To explore how parents and their children perceive and describe school failure/success, and to identify the key aspects that are meaningful for them. **Research question.** How do parents perceive and describe their children's school failure/success? How do children perceive and describe their school failure/success? **Methods and materials.** The study uses a qualitative design and analyzes in-depth semi-structured interviews with parents ($n = 22$) and their 5th-grade children ($n = 22$) from the Nizhny Novgorod region within the project "Longitudinal Study of Factors Influencing School Failure". **Results.** School failure/success is viewed through three main components — the child (academic performance, cognitive abilities, and motivation), the family (parental involvement and support), and the school (school climate and teacher practices). Parents and children emphasize the importance of a positive school climate characterized by a friendly and organized atmosphere and opportunities for development. Such climate is supported by teacher practices based on respect and clear expectations. Families contribute to school success through maternal involvement and support. Children demonstrate success through responsibility, interest, intrinsic motivation, and cognitive abilities. **Conclusions.** The study demonstrates the complex nature of school failure/success. Addressing it requires joint support for students from schools, teachers, and parents, based on an individual approach.

Keywords: school failure/success, academic performance, cognitive abilities, motivation, parental involvement, parental support, school climate, teacher practices

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Восприятие школьной (не)успешности родителями и их детьми

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Резюме

Контекст и актуальность. Школьная (не)успешность — это одна из ключевых проблем государственной образовательной политики, которая оказывает значительное влияние на академическое и личностное развитие детей. Несмотря на большое количество работ, посвященных факторам школьной (не)успешности, на данный момент мы мало понимаем, как дети и их родители воспринимают этот опыт и какое значение они ему придают. В данном исследовании школьная (не)успешность рассматривается через призму рамки Дж. Хэтти — от особенностей учеников до характеристик школы и семьи. **Цель** исследования — выявление и описание восприятия школьной (не)успешности родителями и их детьми, а также ключевых аспектов, имеющих для них значение. **Исследовательские вопросы.** Как родители воспринимают и описывают школьную (не)успешность своих детей? Как дети воспринимают и описывают свою школьную (не)успешность? **Методы и материалы.** Исследование имеет качественный дизайн и включает в себя анализ глубинных полуструктурированных интервью с родителями ($n = 22$) и их детьми 5-х классов ($n = 22$) из Нижегородской области в рамках проекта «Лонгитюдное исследование факторов, влияющих на школьную неуспешность». **Результаты.** Школьная (не)успешность рассматривается через 3 компонента — дети (их успеваемость, когнитивные способности и мотивация), семья (родительская вовлеченность и поддержка) и школа (школьный климат и учительские практики). Для успешного обучения родители и дети отмечают важность школьного климата с дружеской и организованной атмосферой и возможностями для развития. Такой климат должен поддерживаться учительскими практиками — уважительным отношением к ученикам и ясным объяснением материала. Семья поддерживает школьную успешность с помощью материнской вовлеченности и поощрения. Такие детские характеристики, как

ответственность и интерес, внутренняя мотивация и когнитивные способности, поддерживают успешность. **Выводы.** Исследование показывает, что проблема школьной (не)успешности носит комплексный характер. Для ее решения необходима совместная поддержка учащихся со стороны школы, учителей и родителей, основанная на индивидуальном подходе. **Ключевые слова:** школьная (не)успешность, успеваемость, когнитивные способности, мотивация, родительская вовлеченность, родительская поддержка, школьный климат, учительские практики

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Introduction

School failure/success is one of the key topics of educational policy (Ovakimyan et al., 2023). The challenge of improving the quality of education includes identifying effective means and methods for preventing and overcoming school failure (Isaev, Kosaretsky, Mikhailova, 2018). The causes of school failure are commonly viewed as the responsibility of the student themselves (Hernandez-Ortiz, Precht, Cudina, 2021; Vinogradov, Shatunova, 2023).

However, research conducted over the past 10 years has highlighted the need for a more comprehensive examination of this issue, taking socioeconomic and motivational factors into account alongside students' intellectual characteristics (Hernandez-Ortiz, Precht, Cudina, 2021; Costa et al., 2024; Tebbouche, 2023; Fatykhova, Shakirova, 2023).

School failure/success as a multifactorial phenomenon

Contemporary theoretical approaches emphasize that school failure/success is a complex issue whose causes may lie not

only within the individual student but also in a range of other factors (Fernández-Mellizo, Martínez-García, 2017; Costa et al., 2024; Şiţoiu, Pânişoară, 2024). Hattie (2023) identifies 12 major factors influencing educational achievement, including student characteristics, home and family, school and society, classroom organization and climate, teachers, curriculum, and deliberate teaching.

In our study, we focused on three factors — school, family, and children — because these aspects are directly related to school failure/success and can be reflected in the experiences of parents and children (Costa et al., 2024). At the same time, other factors are either indirectly incorporated into the selected categories (e.g., the school factor includes teacher practices, which Hattie identifies as a separate category) or fall beyond the scope of the participants' perceptions.

School

Research shows that school climate affects not only students' academic outcomes but is also associated with various

aspects of their engagement and behavior (Bochaver, Korneev, Khlomov, 2023; Ruzek et al., 2016; Yang et al., 2022). An organized and calm atmosphere, opportunities for learning, effective use of instructional time, and a school-wide focus on academic achievement are considered key factors positively associated with student success (Hattie, 2023).

Another factor is teacher practices, including teachers' self-efficacy and enthusiasm, emotional support and teacher-student relationships, as well as teachers' classroom management (Lazarides et al., 2021). Teachers' enthusiasm and self-efficacy are highly important for students' perceptions of teaching quality (Lazarides et al., 2021). Emotionally supportive relationships characterized by trust, respectful communication, and teacher fairness toward students increase students' intrinsic motivation and enjoyment of learning (Ruzek et al., 2016). Effective classroom management by teachers has a positive effect on students' motivation (Kunter, Baumert, Koller, 2007) and academic achievement (Fauth, 2014).

Family

Given the importance of emotional well-being and intrinsic motivation for school success, particular attention is paid to social support, including parental support, whose role is crucial in shaping students' perceptions of their own school success (Goshin, Mertsalova, 2018; Agnafors, Barmark, Sydsj , 2021).

Within the family context, socioeconomic status (SES) is commonly considered one of the key factors shaping students' academic achievement. Other factors include parental involvement, parents' strategies and attitudes toward children's development and upbringing, parental roles, and related parental stress (Bochaver et al., 2024; Savenysheva et al., 2019; Nunes et al., 2023; Fan, 2001).

Students experiencing difficulties in their studies report that their parents are less likely to find time to talk with them, behave more authoritatively, and are less willing to discuss personal, school-related, or everyday problems with them. They also report that their fathers show little interest in their school performance, do not expect them to receive good grades, do not praise them for their achievements, and are less likely to help them with schoolwork (Domagała-Zysk, 2006).

Children

According to Hattie (2023), students themselves make the greatest contribution to educational achievement: their skills when they enter the classroom, their willingness and readiness to learn, their motivation, and their interest in engaging in the learning process. Particular attention should be paid to students' skills and willingness to learn (motivation, self-efficacy, and emotional state), as these factors have a strong positive relationship with educational achievement (Ruzek et al., 2016). Conversely, unwillingness to learn (boredom, anger, and anxiety) is negatively associated with educational achievement.

Thus, positive emotions (e.g., enjoyment) contribute to well-being, which is an integral component of school well-being, whereas negative emotions impair it (Obermeier et al., 2022). School well-being, in turn, is closely related to intrinsic motivation and, consequently, to positive cognitive outcomes, such as higher academic achievement (Kleinkorres, Stang, McElvany, 2020).

Systemic perspective

As the literature review demonstrates, school failure/success is a relatively well-studied phenomenon. However, some studies pay insufficient attention to family characteristics, including parents' attitudes toward overcoming their child's school failure/success and parental involvement in their child's education (Kosaretsky, Mert-

salova, Senina, 2021). Our study, based on John Hattie's approach, considers school failure/success from a broader perspective. There are also studies that examine parents' and teachers' perceptions of overcoming school failure/success, while children remain outside the scope of such research (Ovakimyan et al., 2023). Taken together, these approaches allow school failure/success to be viewed as a multifactorial phenomenon. It is shaped through the interaction of three components — children, family, and school (in the present study, the teacher is considered part of the school).

Although many studies demonstrate the contribution of these three components to academic failure/success, we have limited understanding of how parents and their children perceive these components. It is precisely the way parents and children perceive these factors that determines how they explain the causes of school failure/success.

Importance of studying perceptions of school failure/success

Since school failure/success may be perceived differently depending on participants' experiences and degree of involvement — for example, by students themselves and their parents — it is important to examine not only statistical data but also individual experiences, which are highly relevant in this context (Ovakimyan et al., 2023). Focusing on the subjective experiences of students and their parents makes it possible to apply a phenomenological approach, which allows researchers to understand how participants themselves describe school failure/success in the context of their interactions with school.

The aim of this study is to examine parents' and their children's perceptions of school failure/success and to identify the key aspects that are meaningful to them. To achieve this aim, the following research questions were formulated:

1. How do parents perceive and describe their children's school failure/success?

2. How do children perceive and describe their own school failure/success?

Since the aim of the study is to identify how parents and their children perceive school failure/success, it is important to examine their subjective experiences and interpret them. Therefore, a qualitative phenomenological design was selected for this study, allowing us to explore participants' perceptions of school failure/success.

Materials and methods

Design. The study employed a qualitative phenomenological design (Vagle, 2018) involving semi-structured interviews with parents and their children. The phenomenological approach made it possible to focus on the lived experiences of parents and children in the context of their perceptions of school failure/success, based on the factors identified by J. Hattie (Hattie, 2023).

Participants. The sample included 22 parents (mean age = 38 years) and 22 children (9 girls). All children were fifth-grade students attending public schools in the Nizhny Novgorod Region. The parents and children were selected from a sample of more than 2000 participants who took part in a longitudinal study during the first wave of data collection in 2022 (Akhmedjanova, 2025) and agreed to participate in the second wave in 2023.

Instruments. The parent interview guide included 23 questions covering topics such as children's adjustment to fifth grade, school climate, health, motivation, self-regulation, parental support for autonomy, and parental support practices. The parent interviews lasted between 30 and 60 minutes and were audio-recorded.

The child interview guide covered the same topics as the parent interviews. The child interviews lasted between 20 and 40 minutes and were also audio-recorded.

Data collection procedure. The data were collected as part of a longitudinal

project investigating factors associated with school failure/success. The study received approval from the Ethics Committee of HSE University. Data were collected in autumn 2023 from students attending public schools in urban and rural areas of the Nizhny Novgorod Region and their parents. The interviews were conducted by three trained research interns. In most cases, both mothers and children were interviewed on the same day. In only three cases were children interviewed on different days because they were either ill or absent.

Data collection was conducted online at a time convenient for parents and their children using Zoom or Yandex.Telemost. Parents were informed about the purpose of the study and provided informed consent, while children provided verbal assent to participate before the interviews began.

Data analysis. The data were analyzed using thematic analysis (Braun, Clarke, 2021). First, the interview audio recordings were transcribed using Pisek (n.d.), an audio-to-text transcription service, and the research interns checked the transcripts to ensure their accuracy. The first author, a PhD student at the Institute of Education, then coded the interviews using a coding scheme developed through a combination of inductive and deductive approaches. The coding procedures included: (1) identifying inductive codes based on the factors identified by J. Hattie; (2) identifying meaningful units in the interview transcripts; (3) coding and refining the codes; (4) narrowing down the codes; and (5) interpreting and identifying meanings.

Perceptions of school failure/success were examined across three themes: (1) children; (2) family; and (3) school.

Results

The thematic analysis of the interviews identified three main themes through which parents and children described school failure/success: the child, the family, and the school. These themes included more spe-

cific factors such as children's academic performance, cognitive abilities, and motivation; parental involvement and support; as well as school climate and teacher practices.

These findings indicate that school failure/success is a multifactorial phenomenon shaped by the interaction of child, family, and school characteristics.

Academic performance

The analysis of the interviews showed that, according to parents and children, one of the main factors associated with school success is the child's academic performance in individual subjects, including academic performance, the causes of failure/success, and the child's social environment.

Russian language was the most salient subject, eliciting concern in cases of failure and joy in cases of success: "He tries, he really does. Of course, he is happy when he gets a four in Russian; he runs up to me and says, 'Mom, I got a 4'" (Mother 22).

Mathematics was perceived by parents and children as both the main indicator of success and the most difficult subject: "The most difficult one for us is mathematics, so that's the subject where [we have to help]" (Mother 20).

English was described as a difficult subject for children and a source of helplessness for parents. The mother of one child who "just can't get the hang of" English explained that she had studied German and therefore "can't help with pronunciation" (Mother 12). Thus, performance in a foreign language may be situational and may depend on the availability of support.

Some parents noted that children become more independent with age: "In second and third grade, she did very poorly; if they were assigned poems, [...] she would immediately have a tantrum: 'I won't learn it, I'm scared,' [...] now she reads it twice and immediately recites it much better" (Mother 6). However, this "rapid growth" (Mother 6) contributed to overcoming ear-

lier difficulties. Her child also emphasized the difference between her past and present perception of the curriculum: "...fourth grade was more difficult, there were all these difficult topics..." (Child 6).

The child's environment at school and at home has a substantial influence on academic performance: "Classmates who get bad grades [...] hit you, make it difficult to copy..." (Child 5). Active parental involvement in learning can often compensate for such difficulties: "Son, let's sit down and work through it," [...] and things got a little better; they started to understand each other with the teacher" (Mother 8). Such cases demonstrate that parents can act as mediators between teachers and children.

Comparing a child with other students, siblings, or with their own previous performance is an important factor in how academic success is perceived. Such comparisons can be a source of additional motivation: "She started doing much better in fifth grade than in fourth..." (Mother 6). At the same time, children may sometimes take an undesirable example from others: "She looks at [...] the others running poorly, [and thinks], 'Why should I run and try? I'll run just like them,' [...] and, as a result, of course, her grades get worse..." (Mother 5).

Cognitive abilities

Memory and information processing are basic cognitive processes. When a child has a "very good memory" (Mother 2), they can quickly complete oral assignments and demonstrate confident understanding of the subject matter. Children also described their own abilities: "I just read it and recited it" (Child 5).

Poor memory makes it difficult to memorize material quickly: "...he won't be able to remember it immediately, [...] so he needs to repeat it again" (Mother 11). Children added that they ask the teacher to explain something again if they have not remembered it: "...I can ask again, 'Could you explain it?' She explains it again" (Child 16).

Children also differed in how they perceived and processed information, for example, through visual imagery: "...if I get bored in class, I don't get distracted, [...] I imagine pictures in my head, I just listen and remember" (Child 10). Some children described predominantly auditory processing: "...she learns particularly well by listening, [...] she can retell some of the things the teacher explained" (Mother 9). These observations demonstrate that different strategies can help children remember information.

Successful acquisition of material may also be related to practice, when children consolidate their knowledge by completing tasks: "...when they explain a topic to us, I go to the board and try to write it down, well, solve an example..." (Child 18).

However, not all children can easily apply theoretical knowledge in practice: "...he had difficulties with grammar in this respect; he could learn the rules, but he rarely knew how to apply them" (Mother 22). Children themselves acknowledged difficulties when solving problems, particularly in understanding the wording of the tasks: "...sometimes she doesn't understand the meaning, [...] sometimes the wording of the problem isn't completely clear..." (Child 21). These difficulties may be associated with insufficient concentration or problems understanding task formulations.

Some children reported being able to find solutions independently by relying on partial understanding of the situation and adult support: "Well, my parents usually help me if I have difficulties; I can, well, figure it out myself..." (Child 14). Even with insufficient knowledge, children may use contextual information and prior experience to overcome learning difficulties.

Motivation

Three main themes were identified in the section on motivation: intrinsic motivation, extrinsic motivation, and motivational difficulties.

Intrinsic motivation was manifested in students' interest, including their desire to learn and attend school: "...when new subjects started, like history and geography, he said it was interesting, [...] he really gets into it and understands it" (Mother 2). The child himself also described how such interest motivated him not simply to study a subject but to explore it more deeply: "...we had new biology lessons, and in that lesson we looked through a microscope; I really liked it" (Child 2). Thus, the child demonstrated initiative and awareness in pursuing learning goals, which may contribute to the development of sustained intrinsic motivation and increase engagement in the educational process.

Extrinsic motivation was evident when children studied in order to receive praise or avoid punishment. Other motivating factors included attending extracurricular activities: "...he really wants to go to football practice, so he does his homework before football" (Mother 1); receiving new things: "If you finish the term with good grades, I'll order whatever you need from Wildberries" (Mother 5); spending time with family: "...we can go somewhere together" (Mother 17); and grades: "...right now my child is focused on getting good grades" (Mother 20). Children also expressed a desire to obtain good school certificates and pass examinations: "...if you get a three or a two, your certificate will be different" (Child 6).

In several interviews, children's motivation was either reduced or absent: "...and we also have a heavy workload [...] outside of school..." (Mother 19). One student confirmed that a high workload could lead to a lack of interest in a subject, explaining that "we have a lot to memorize in history" (Child 2).

When a child has low academic performance, their motivation may also decline. However, this can be compensated for by interest that emerges during the learning process: "...my child is not doing very well

academically, so [...] I can't say that she is [...] interested in everything. If you get her interested during the lesson, she can actually come home and immediately share her impressions" (Mother 20).

Parental involvement and support

Parental involvement is an important factor in school failure/success. It includes intensive involvement, monitoring, advice, and support for the development of independence.

Excessive parental involvement may create dependence: "At least Mom finds out everything, does everything, tells you everything, prepares everything, and so on, so why do we need independence if everything is done for me?" (Mother 2). Children confirmed this dependence: "How do you do your biology retellings? — Mom, too; Mom reminds me" (Child 20).

Some parents supported the development of independence followed by parental monitoring. They initially taught the child how to complete a task and then expected the child to do it independently: "...I tell her, 'I'll show you, and then you do it yourself,' [...] I show her, explain, and tell her how it's better to do it..." (Mother 5). Thus, parents teach children how to complete particular tasks and then monitor and check their work: "No, he does it himself; we just check" (Mother 14). Children themselves recognized the presence of such monitoring: "Does Mom keep track of what you have been assigned and how you did it? — Yes, yes, she does" (Child 22). This approach may contribute to the development of confidence and help children solve problems independently, fostering autonomy and responsibility for their learning.

Parental support was manifested through goals and expectations, emotional support, joint activities, and concern for health. High expectations fostered a sense of responsibility: "...Why are you scolding me for getting a four?" — 'I'm not scolding

you; I just know you can do more. Why don't you want to?" (Mother 2).

Emotional support reduced anxiety and motivated children: "...I always tell him that I believe in him, [...] that he can handle it, even if there is some kind of problem" (Mother 3). For children, such support was important: "...when I talk about what's bothering me, I feel kind of better, because Mom says, 'It's okay, you can fix it; then go talk to your math teacher'" (Child 9). Thus, emotional support helps children overcome anxiety and maintain confidence while also directing their efforts toward further goals.

Working together involved jointly searching for solutions to problems, which helped children cope with academic tasks more quickly and reduced stress: "...we try to find a solution together, [...] to correct each other so we don't argue..." (Mother 12). This also extended to completing homework: "...if we're going somewhere, [...] we recite a poem [...] or sing the songs they were assigned, the whole family" (Mother 19). Children likewise confirmed that such interaction positively affected their school success: "...were there any assignments that were difficult to complete? — Uh-huh. — And what did you do in that case? — I asked my mom" (Child 17).

Concern for children's health supported motivation and helped them recover from academic demands: "We put the homework aside and let the child rest, [...] my child's health is my number one priority" (Mother 3). Children noted that parental care helped them feel better during the learning process: "When people take care of me? That's the best thing" (Child 13).

School climate

School climate was associated with school failure/success through interpersonal relationships, interactions with teachers, emotional support, and adaptation to the class following the transition to secondary school. Friendly relationships and peer

support contributed to engagement and motivation, whereas conflicts and pressure from teachers could cause stress.

Parents noted that when the class was friendly, children interacted with everyone: "...the class is friendly, everyone is together, and he interacts with everyone..." (Mother 1). Such relationships could help children deal with schoolwork: "...they call him, ask how to do the homework, and just talk..." (Mother 2). For children, friendly relationships created a comfortable environment for learning: "...we are friends with our classmates, we talk, and we help each other if we don't understand something" (Child 2).

Despite the friendly atmosphere in the class, conflicts sometimes occurred. However, parents noted that these conflicts "never turn into anything more serious, [...] they try to apologize right away" (Mother 10). Children confirmed that serious conflicts were rare and that they generally resolved minor disagreements themselves: "We just talk and resolve the issue with words" (Child 17). Thus, children learn to manage conflicts independently, while adults become involved in more complex situations to maintain a safe atmosphere.

During the process of adapting to the class, friendly relationships and teacher support were important. Parents noted that a cohesive group and a friendly atmosphere created the necessary conditions for adjustment: "...that's why they have such a friendly, close-knit group, and therefore the adjustment is going quite smoothly" (Mother 18). Children emphasized that communication with classmates and having friends played a key role: "...what helped you adapt easily to fifth grade? — Communicating with my classmates" (Child 1).

Teacher practices

Teacher support and assistance were among the key teacher practices contributing to school success. Parents described teachers as taking on a role not only as ed-

ucators but also as a “classroom mother”: “...she acts like a class mom, [...] if there are any problems — come to me, write, call, tell me, and we’ll solve everything” (Mother 10). This created a sense of security for parents, who felt confident that their child would not be left alone with their problems.

Parents considered an individualized approach important because “...some children [...] are capable, and each child needs their own approach” (Mother 3). In their view, such an approach could motivate children more strongly. Children emphasized the importance of individualized support because it led to more effective learning: “...I ask if I can improve it to a five, and they let me — I sometimes do it during the lesson” (Child 10).

Parents noted that teacher feedback increased the significance of lessons for children: “...even with mathematics — he is interested in a new topic, he understood it well, especially if the teacher acknowledged him in some way; he talks about it” (Mother 13). In cases of academic difficulties, praise and encouragement helped motivate students: “English — the teacher praises them, [...] the children improved, they all caught up” (Mother 3). For children, the connection between praise and academic performance was quite direct: “And why do you only want to get excellent grades? — The teachers are happy and praise me...” (Child 6).

Strict discipline at school could complicate the learning process and reduce school motivation: “...they just can’t find common ground with her, [...] she has these assumptions that the child doesn’t study by himself, that we do his homework for him...” (Mother 4). Another mother reported that a teacher openly stated: “...your child will not pass the exams” (Mother 11). Such attitudes may demotivate children and increase parental stress.

Children perceived such attitudes negatively, which also affected their school success: “...why is it that what comes easily

to you is easy, while what is difficult is difficult? Is it somehow related to your preferences? — Yes, because we have so much to memorize in history” (Child 2). Rigid practices may reduce children’s learning motivation and contribute to negative attitudes toward education.

However, teacher collaboration with parents could have a positive effect on children’s school success. Parents noted that teachers actively maintained communication with them: “...I think that the teachers [...] — any dialogue, we come in, talk, and the problem gets resolved...” (Mother 3). Such communication allowed parents to remain informed about the situation and involved in their child’s learning process, helping to create a more supportive environment for school success.

In addition to teachers’ interpersonal skills, their competence and professionalism played an important role. Parents noted that stronger teachers laid the foundation for learning: “...while she is teaching you mathematics and geometry, you have to pay attention, remember, and listen to what she says, [...] she simply won’t start a new topic until she has drilled this one into them...” (Mother 5). This enabled children to acquire structured knowledge, feel supported, and develop academically. Children themselves confirmed this: “[I like] sitting in lessons because teachers give us new knowledge; you learn something new...” (Child 1).

Discussion

This study examined how parents and their children perceive school failure/success. The interview findings demonstrated the multifaceted nature of school failure/success and highlighted the role of three factors — students, family, and school — which is consistent with John Hattie’s multifactorial approach (Hattie, 2023).

The findings indicate that these perceptions include both factors that parents and children can influence, such as children’s

academic performance and cognitive abilities, and factors over which they have less control, such as school climate and parental involvement. The importance of children's academic performance and cognitive abilities may stem from what these factors signal to parents and children: the extent to which students are able to cope with the curriculum and the role of their own abilities in this process. Moreover, cognitive abilities and grades are factors that children and parents can influence and for which they can observe tangible outcomes — for example, when they work through mathematics problems with a parent or begin taking additional English lessons. In contrast, school climate and parental involvement may be shaped by external circumstances (Ruzek et al., 2016; Savenysheva et al., 2019) that neither parents nor children can readily influence. For example, one mother reported that she had to work extensively, which limited her ability to be involved in her child's school life.

Our findings help to further specify how factors associated with school failure/success are perceived. Participants confirmed the importance of child-related factors, particularly cognitive abilities and motivation, as key factors associated with school failure/success. This finding is consistent with Hattie's conclusions (Hattie, 2023) and those of other researchers (Costa et al., 2024).

However, the findings also revealed different ways and strategies of learning among children, including visual and auditory processing and independent practice. This helps to further elaborate on parents' and children's perceptions of students' cognitive abilities and their relationship to school failure/success. In addition, the study identified the importance of external factors, such as strict teacher requirements, changes in the curriculum, school absences, and adaptation to a new class. Children confirmed the significance of these factors through their own experiences: friendly relationships and

peer support contributed to school success, whereas low expectations or a lack of trust from teachers could reduce motivation and confidence (Hattie, 2023).

The findings also confirm the importance of parental involvement, including advice, monitoring, and emotional support, which is consistent with previous research (Fan, 2001; Savenysheva et al., 2019). At the same time, excessive parental assistance may foster dependence and slow the development of children's independence. An important contribution of the present study is the identification of the role of joint parent–child work, or “working as a team,” which contributes not only to successful completion of academic tasks but also to reduced anxiety. Children confirmed the importance of such collaboration, noting that completing tasks together helps them better understand the material and cope with difficulties.

Adaptation to secondary school and to a new class emerged as an independent factor influencing students' academic achievement and emotional well-being. This finding is consistent with Ruzek et al. (2016), who highlighted the relationship between school climate, academic achievement, and student engagement. Hattie (2023) also emphasizes the importance of a calm atmosphere and opportunities for successful learning. Our findings further specify this relationship by showing that collaboration between parents and teachers provides additional support for children and contributes to their school success.

Previous studies have also highlighted teacher practices, including emotional support, teacher–student relationships, and classroom management, as factors contributing to school success (Hattie, 2023). The present findings extend this multifactorial perspective on school failure/success and emphasize the importance of interactions among school-, family-, and student-related factors.

Overall, parents' and children's perceptions of school failure/success constitute a complex phenomenon in which factors that can be influenced interact with factors that are more difficult to influence. Our findings highlight the need for a systemic approach to supporting students that takes into account individual child characteristics, effective collaboration with teachers, and informed parental involvement.

Because the findings are based on the subjective perceptions of parents and children from the Nizhny Novgorod Region, future research should collect questionnaire data both in the Nizhny Novgorod Region and in other regions to further assess perceptions of school failure/success. It would also be valuable to compare parents' and children's responses and to complement qualitative data with children's performance on standardized tests.

Conclusions

This study examined how parents and their children perceive school failure/success, making it possible to identify the multifaceted nature of this phenomenon. School failure/success comprises three main components: the student, the family, and the school.

Children are a key component of school success through their cognitive abilities, motivation, self-regulation skills, and ways of processing and acquiring information. Intrinsic motivation, initiative, and the use of different learning strategies contribute to more effective learning, whereas reduced interest and a high workload can negatively affect academic performance.

The family supports children through parental involvement and support. Teaching and guidance, emotional support, working as a team, and concern for children's health can contribute to school success. However, excessive monitoring and assistance may hinder the development of children's independence.

School climate and teacher practices are associated with school failure/success. A friendly and supportive atmosphere at school and in the classroom contributes to children's engagement and motivation. An individualized approach and teacher feedback can strengthen this effect. In contrast, strict and unfair demands may negatively affect school success.

Overall, perceptions of school failure/success are multifactorial, which is consistent with findings from international research. Our findings help describe the specific features of this phenomenon in the Russian educational context based on the subjective experiences of parents and children.

The findings emphasize the importance of a systemic approach to supporting students that takes into account individual child characteristics, effective collaboration with teachers, and informed parental involvement.

Limitations. This study has several limitations. The sample included only students from the Nizhny Novgorod region, which limits the generalizability of the findings to other regions of the Russian Federation; therefore, the results should be considered preliminary and require confirmation using larger and more diverse samples and quantitative methods. The participation of only mothers in the interviews does not allow for consideration of fathers' perspectives on school success or underachievement. As data collection was conducted online and, in most cases, mothers and children were interviewed on the same day, the influence of participants' responses on one another cannot be ruled out. In addition, responses may have been affected by social desirability bias. Finally, the data rely on subjective perceptions and do not include direct observation of the learning process, which limits verification of the actual educational context.

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Diana R. Akhmedjanova — data collection and analysis; description of research results; writing and design of the manuscript.

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

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Conflict of interest

The authors declare no conflict of interest.

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The role of resilience in the framework of responsible parenting

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Abstract

Context and relevance. Families face a multitude of social risks and internal structural changes, which increases the burden on parents and diminishes their emotional resources. Effective coping with difficulties is possible through resilience. Alongside the “traditional” type of parenting, non-normative (alternative) types are emerging — namely, “responsible parenting” — which remains insufficiently studied due to its novelty and the conceptual and methodological ambiguity surrounding it, particularly in relation to parental resilience. This underscores the relevance of the problem. **Objective.** The aim of the article is to present a theoretical model of responsible parenting, developed by the authors based on an analysis of Russian and international research. **Hypothesis.** The theoretical hypothesis posits that responsible parenting may be conceptualized as a model incorporating components of resilience and components of parenting. **Methods and materials.** The research materials comprised scientific articles from the Web of Science (core collection) and ScienceDirect databases, as well as from the Psycjournals.ru and Google Scholar collections, selected using the keywords “parental resilience” and related terms across two time periods: 2005–2015 (17 works) and 2016–2024/25 (17 works). The theoretical methods employed included comparative and critical analysis of existing approaches, identification of contradictions, synthesis, modeling, and systematization of concepts. **Results.** The results showed that “responsible parenting” can be conceptualized as an active agentive stance of parents and represented as a framework comprising both components of parental resilience and components of parenting. The agentive stance of the parent may include cognitive and affective components. **Conclusions.** It was shown that resilience, as an integral three-component personal competence, can be characterized as either active or reactive. Responsible parenting is conceptualized as an active agentive stance of parents toward the upbringing and development of the child; it includes both parenting components and components of parental resilience. The study of these components opens up potential directions for psychological support for families with children and for expanding research on the variability of family upbringing practices.

Keywords: responsible parenting, resilience, parent-child relationship, family, agentive stance of parents

Supplemental data. Datasets are available at <https://ruspsydata.mgppu.ru/>, upon request from the author.

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Роль жизнестойкости в структуре «ответственного родительства»

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Резюме

Контекст и актуальность. Семьи сталкиваются с большим числом социальных рисков и с внутренними структурными изменениями, что усиливает нагрузку на родителей, снижая их эмоциональные ресурсы. Эффективно справляться с трудностями возможно благодаря жизнестойкости. Наряду с «традиционным» типом родительства появляются немодальные (нетрадиционные) типы, а именно: «ответственное родительство», которое изучено недостаточно ввиду новизны и неопределенности в методологическом и терминологическом аспекте, особенно в связи с жизнестойкостью родителей, что подчеркивает актуальность проблемы. **Целью** статьи является знакомство с теоретической моделью ответственного типа родительства, разработанного нами на основании анализа отечественных и зарубежных исследований. **Гипотеза.** Теоретическая гипотеза состоит в том, что ответственное родительство можно представить в виде схемы, включающей компоненты жизнестойкости и компоненты родительства. **Методы и материалы.** Материалами исследования выступили научные статьи в базах Web of Science (основная коллекция) и Sciencedirect, коллекциях Psyjournals.ru и Google Scholar, отобранные по ключевым словам «родительская жизнестойкость» и близким к ним за два периода — 2005–2015 гг. (17 работ) и 2016–2024/25 гг. (17 работ). Использовались теоретические методы: сопоставительный и критический анализ существующих подходов, выявление противоречий, синтез, моделирование и систематизации концепций. **Результаты.** Результаты показали, что «ответственное родительство» может быть представлено как активная «деятельностная позиция» родителей и рассмотрено в виде схемы, включающей компоненты жизнестойкости родителя и компоненты родительства. «Деятельностная позиция» родителя может включать в себя когнитивный и аффективный компонент. **Выводы.** Показано, что жизнестойкость как интегральная трехкомпонентная личностная компетенция может характеризоваться как активная или реактивная. Ответственное родительство рассмотрено как активная «деятельностная позиция» родителей по отношению к воспитанию и развитию ребенка; включает в себя компоненты родительства и компоненты родительской жизнестойкости, изучение которых открывает возможные направления психологической помощи семьям с детьми и расширение исследований по вариативности практик семейного воспитания.

Ключевые слова: ответственное родительство, жизнестойкость, детско-родительские отношения, семья, «деятельностная позиция» родителей

Дополнительные данные. Наборы данных доступны по адресу: <https://ruspsydata.mgppu.ru/> при условии запроса у автора.

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Introduction

Families face a multitude of challenges, including economic hardship, pandemics and military-political crises, information overload, and high demands on parental competence, which increases the burden on parents and reduces their emotional resources. Effective coping with difficulties is possible thanks to personal resilience, which helps overcome the challenges of uncertainty (Kornilova, 2013). As an example, we can consider the sharp increase in psychological research on resilience due to the COVID-19 pandemic. According to D.A. Leontiev, the most important component of resilience during that period was “risk acceptance” (Rasskazova, Leontiev, and Lebedeva, 2020).

Psychological studies of social entropy show that systemic uncertainty in the life of individuals and society becomes a background situation (Odintsova, 2012). According to D.A. Leontiev, one of the “frontiers of psychological defense against impending changes” can be resilience, which includes hardiness but is interpreted much more broadly. Resilience is considered in the context of psychological resources of sustainability as an aspect of self-regulation and social relations constructed and regulated by cultural elites¹, while hardiness is considered a complex personal construct. We believe this issue to be particularly relevant, especially in the context of growing social risks.

The purpose of this article is to present a theoretical model of a non-modal (non-traditional) type of parenting, responsible

parenting, developed based on an analysis of domestic and international research on parenting, parental resilience, and family resilience. We preface this by drawing on Vygotsky’s cultural-historical framework, which pertains to the post-non-classical type of scientific rationality (according to Yu.P. Zinchenko et al.). This framework allows us to integrate certain ideas and concepts from other areas of psychology while conceptualizing them within the cultural-historical approach and A.N. Leontiev’s activity theory. The theoretical hypothesis is that responsible parenting can be represented as a framework that includes both resilience and parenting components. We also propose incorporating into the framework our own working concept of a parental “activity position”. An experimental study of some elements of this model is reflected in empirical research in our other publications (Ivanova, Shapovalenko, 2025).

In this paper, we will attempt to address the following objectives:

- 1) Analyze the problem of resilience in light of domestic and international research: analyze the structure of resilience, according to the works of D.A. Leontiev, R.V. Ovcharova, and others;
- 2) Analyze the problem of parenting and its modern types and components;
- 3) Present a framework for “responsible parenting” that incorporates the components of resilience, parenting, and the parent’s “active stance”. To conduct a theoretical and methodological analysis, articles with research results were selected from the Web of Science (main collection) and

¹ Leontiev, D.A. (2018). Life position of the individual: from theory to operationalization. *Professional online publication “Psychological Newspaper.”* URL: <https://psy.su/feed/7109/> (date of access: 20.05.2025).

ScienceDirect databases, Psycjournals.ru, and Google Scholar collections using the keywords “parental resilience” and similar terms. This article includes the most relevant data for our study, selected for two periods — 2005–2015 (17 works) and 2016–2024/25 (17 works) — revealing the stated goal of the article. Theoretical methods were used (comparative and critical analysis of existing approaches, identification of contradictions, modeling, and systematization of concepts).

Analysis of domestic and foreign approaches to the problem of resilience

Resilience is studied in the context of various schools of philosophical thought: existentialism, humanism, irrationalism, hermeneutics, and positivism, primarily as a construct that promotes self-development, creativity, and active empathy in connection with cognitive activity, motivation, will, and consciousness (Konyukhova, Konyukhova, 2013). Psychological research provides a much broader perspective on the issue of personal resilience.

Resilience, as well as the introduction of the term “hardiness” in the 1980s by S. Maddi and D. Khoshaba in the United States, was conducted primarily in foreign psychology. Subsequently, the term “resilience” became more widespread. Initial studies focused on at-risk children who were able to survive difficult life circumstances (Liu, Wang, Lü, 2013; Maddi, Khoshaba, 1994). Later, the scientific base expanded to include studies of adult resilience, particularly in the context of stress and resilience research.

Resilience is considered from two perspectives: 1) in the context of overcoming stress and traumatic experiences, PTSD, and adaptation to the environment (works of A.N. Fominova, K. Homa, K.E. White,

etc.); and 2) “outside of stress”, within the framework of personality theory, in the context of the value-semantic approach (works of L.A. Alexandrova, D.A. Leontiev, M.V. Loginova, A.A. Klimov, T.V. Nalivaiko, M.A. Odintsova, E.I. Rasskazova, D.A. Tsiring, etc.) (Ivanova, Shapovalenko, 2023).

Many domestic studies of resilience are related to age-related crises, the adaptation of people with disabilities, chronic and incurable diseases, and the work of people in helping professions (Konyukhova, Konyukhova, 2013, etc.). But the majority of domestic works (Leontyev, 2016, 2024; Loginova, Odintsova, 2009; Nalivaiko, 2010; and others) are devoted to the study of resilience in terms of meaning-making, intrinsic motivation, and other existential variables. Resilience is a system of beliefs about oneself, the world, and one’s relationships with the world (Leontiev, Rasskazova, 2024). D.A. Leontiev and E.I. Rasskazova define resilience as a measure of an individual’s ability to withstand a stressful situation while maintaining internal balance and without reducing performance. R.V. Ovcharova characterizes resilience as a combination of personality traits and skills that allows one to transform difficulties into opportunities (Ovcharova, 2019).

Interest in the issue of resilience is reflected in the volume of research conducted by both Russian and international authors (Khorosheva, 2011; Homa, 2012; O’Sullivan et al., 2013). A more detailed analysis of these studies is presented in a summary table in the repository of psychological research. We will focus on research on resilience in early and middle adulthood, the most favorable period for parenting. Research on resilience during this period is associated with its stabilization and cognitive adaptation (Fominova, 2012). Fur-

thermore, this group of studies is the most extensive and focuses on resilience in relation to:

- Professional genesis of the individual (Vanakova, Plotnikova, 2014; Fominova, 2012; Homa, 2012): Resilience influences the success of professional activity; it is a protective factor in the activities of people in helping professions and high-risk professions;

- with personality traits (constructive aggression, perfectionism, optimism and positive thinking, humor, self-image, locus of control, anxiety, empathy, self-esteem, creativity, emotional intelligence, etc.) (Vanakova, Plotnikova, 2014; Fominova, 2012; Khorosheva, 2011; Homa, 2012; Wright, 2007);

- with personal values and meaning-making, the meaning of life, and social interests (Klimov, 2011, etc.);

- with the characteristics of individuality, temperament, flexibility, and laterality (Loginova, Odintsova, 2009; Liu et al., 2013; Wright, 2007), where it was revealed that the psychophysiological characteristics of a person create a predisposition to having a high level of resilience and can be interpreted as innate endurance, but it remains important for a person to understand their characteristics and the desire to improve, “to overcome oneself”, despite the fact that some people are less resilient; most of them have an innate potential that can be developed (Wright, 2007);

- With gender, social, ethnic, and economic differences (education level, income level, age, race/nationality, and religion), resilience improves the quality of life (Homa, 2012; Wright, 2007, etc.). It develops through broadening one's horizons or filling in missing knowledge (Wright, 2007), especially during postgraduate education and advanced training, which is noted by researchers as a global trend in people's

desire for continuous education throughout their lives — lifelong learning.

Clearly, research on parental resilience is extremely limited, despite the fact that this age period is most typical for forming a family and finding one's footing in the new role of parent. The studies reviewed show that resilient individuals are typically characterized by optimism, flexibility, creativity, developed emotional intelligence, social skills, etc.; however, whether (and how) these qualities play a role in parenting as adults remains understudied.

Analysis of the structure of resilience

S. Maddi's structural model of resilience was accepted in the psychological community. According to it, resilience consists of three attitudes or components: involvement (commitment); control; and risk acceptance (challenge). A person who is resilient views potentially stressful events as significant and interesting (involvement), sees themselves as capable of changing these events (control), and uses change as an opportunity for growth (risk acceptance) (Leontiev, Rasskazova, 2024; Maddi, Khoshaba, 1994).

The first component, “involvement” (“commitment”), is a characteristic of oneself and the surrounding world and gives strength and motivates a person to self-fulfillment, leadership, and a healthy way of thinking and behavior (Aleksandrova, 2005). The second component, “control”, motivates the search for ways to influence the results of stressful changes, as opposed to falling into a state of helplessness and passivity, even if this influence is not absolute and success is not guaranteed; that is, the person initiates behavior (Aleksandrova, 2005). The third component, designated as “challenge” by L.A. Aleksandrova and “risk acceptance” by D.A. Le-

ontiev, helps a person remain open to the environment and society. This is a person's conviction that everything that happens to him contributes to his development due to the knowledge gained from experience, both positive and negative (Leontiev, Rasskazova, 2024). Resilience includes such basic values as cooperation, credibility, and creativity (Alexandrova, 2005).

Furthermore, researchers distinguish two types of resilience: the first type is active resilience, which is a continued search for opportunities to improve certain personal competencies and opportunities for personal development. The second type, reactive resilience, is characteristic of mature individuals who have already achieved much in life and value stability and tranquility (Ghimbulut, Opre, 2013; Obrist, 2012). Here, some parallels can be drawn with functional systems theory and the concepts of activity and reactivity (Alexandrov, 2003): active resilience, as with active responding (when a chain initiated by neuronal firing is disrupted by the introduction of a goal), promotes the search for new behaviors, creativity, and the retention of a distant goal. Reactive resilience can be a response to unexpected stressful circumstances, i.e., an immediate reaction. An analysis of resilience research allows us to note its "dual" nature, in connection with which it can be assumed that resilience operates as two different systems depending on the social situation, or these are two levels of one phenomenon as a result of secondary systemogenesis (the superstructure of a new system over the primary one) (Alexandrov, 2003).

Psychological analysis expands the concept of resilience, highlighting a resilient attitude and resilient behavior (Fominova, 2012) and two sides of resilience: psychological and activity-based (Nalivaiko, 2010). It can be said that a resilient

attitude and resilient behavior, according to A.N. Fominova, are related to the psychological and activity-based sides of resilience, according to T.V. Nalivaiko, and both are related to the active and reactive resilience identified by B. Obrist, O. Ghimbulut, and A. Opre (Ghimbulut, Opre, 2013; Obrist, 2012). The multi-level construct of resilience is also confirmed by other studies (Homa, 2012). Research into the components of resilience and in terms of its types (active and reactive), in our opinion, is more informative and can be useful in developing a theory of resilience, as well as in practical application, for example, in creating resilience training.

"Active" resilience implies the creation of new meanings and constructive activity, including in parenting (Nalivaiko, 2010). Resilience can also be associated with parents' proactive approach to raising and developing their child, their involvement in the child's life, their commitment to using a nonviolent parenting style, and their desire for harmonious marital relationships (Ivanova, Shapovalenko, 2025).

Analysis of the problem of parenting and resilience in the responsible parenting model. Discussion of the results

Psychologists study parenting from the perspective of social challenges (competition among family, parenting, and career values; adaptation difficulties; erosion of stereotypes and models of raising children in the family) and the variability of family education practices. Holistic models of parenting have been described as "natural parenting", "alpha parenting", "intensive parenting", "positive parenting", or "conscious (responsible) parenting", or two classes of parenting: 1) traditional (classical) or modal parenting and 2) modern (alternative) or non-modal parenting (Yanak, 2022).

Non-modal parenting is analyzed through family structure, the emergence of parenting, parental social practices, models of raising and caring for children, demographic security, acceptability, and demand (Prokhorova, 2019; Yanak, 2022, etc.).

Researchers of non-modal parenting highlight some trends (Ovcharova, 2008; Prokhorova, 2019; Yanak, 2022):

positive (involved fatherhood, various parenting models (responsible parenting, etc.))

negative (overparenting, same-sex parenting, negative parenting models (deviant, etc.))

Responsible parenting appears in this classification as one of the models of raising and caring for children, where parent-child relationships are built on the basis of cooperation, and partnerships contribute to increased awareness in raising children, which is confirmed by a number of works (Ovcharova, 2008; Prokhorova, 2019; Yanak, 2022, etc.).

Parenting, as a distinct function, develops gradually and develops throughout an adult's life: it is systemically determined, multifaceted, complexly structured, possesses a multi-level structure of factors, and is dynamic (Ovcharova, 2008; Yanak, 2022). The concept of parenting is typically understood as a set of characteristics of parents (mothers and fathers), including their parenting style, parental attitudes and expectations, values, feelings and positions, parental responsibility, and certain personality traits of the parents themselves (R.V. Ovcharova, E.G. Eidemiller, et al.).

We understand “responsible parenting” not only as an awareness and understanding of the importance and significance of a parent's role in raising and caring for a child but also as an active, proactive stance of parents toward the child's upbringing and

development; involvement in the child's life; a commitment to a nonviolent upbringing; a desire for harmonious marital relationships; and the commitment of specific actions and efforts to achieve these goals, accepting responsibility for their implementation. The construct of “parental stance” has been explored by various authors, including N.S. Sokolova, who writes about parents' internal stance as the foundation for parental maturity (Sokolova, 2024).

G.S. Kocharyan, drawing on A.N. Leontiev's activity theory, clarifies that activity itself has a complex, hierarchically organized structure, which in the behavioral plane is represented by both affective and cognitive components (Kocharyan, Kocharyan, 1994). When discussing the activity-based position in the context of responsible parenting, it is important to take this into account. For example, some studies describe the negative impact on children's EB of excessive parental focus on them; the desire to bring the child to the “norm” of development or to advanced development; the simultaneous avoidance of contact with them, “emotional distance” (works by L.A. Nikolaeva, S.N. Mayorova-Scheglova, and V.S. Masalova); and conditional acceptance of the child and complete regulation of his life (work by Yu.A. Starostina) (cited from Mayorova and Scheglova, 2018). That is, the affective component of the parent's activity falls away, and only the cognitive component remains, which leads to a reduced form of activity — behavior and a set of specific actions.

It seems that modern parents are seeking to avoid or escape from close, intimate, emotional connection with their children through excessive intellectualization of parenting and digitalization. In our view, the same pattern of reduced activity operates in negative parenting trends, where the cognitive component is lost, leaving

only the affective component (often negatively charged, for example, the works of L.A. Nikolaeva, S.N. Mayorova-Shcheglova). For example, when family members are distancing themselves from each other in an analog world — marital conflicts, emotional rejection, etc.

One might think that parenting qualitatively varies depending on the balance of these components of the parents' active position — cognitive and affective. It is likely that the balance of these components of the active position creates the conditions for the development of responsible parenting. We have attempted to reflect this in the

diagram presented in the figure, drawing on the concepts of R.V. Ovcharova, E.G. Eidemiller, and V.V. Yustitskis on the components of parenting (Ovcharova, 2003; Eidemiller, Yustitskis, 2008) in connection with the components of resilience developed by D.A. Leontiev.

The presented diagram (Fig.) includes the most important, in our opinion, components that could theoretically be associated with resilience.

The “settings and expectations” component of spouses' relationships with each other as parents is associated with parents' desire for a harmonious marital relationship

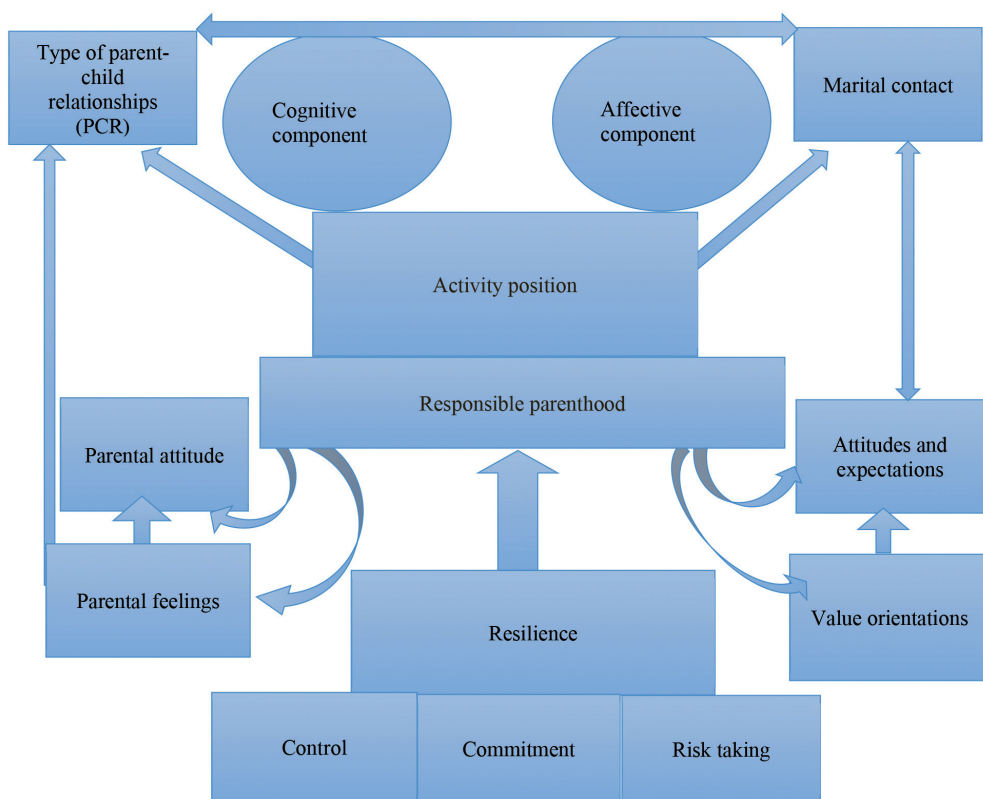


Fig. Diagram of responsible parenting and resilience

and marital satisfaction (Ovcharova, 2003) and is designated in the diagram as “marital contact”. It can be hypothesized that high resilience will facilitate more constructive resolution of conflicts, facilitating the “distribution” of responsibility (challenge, control) and the enjoyment of fulfilling assumed functions and roles (commitment).

The “value orientations” component is diverse, specific to each family and each parent, and can serve as a foundation for shaping parental attitudes and expectations (Fig.). Its understanding is based on an analysis of semantic structures, ontological concepts, and socio-psychological and individual phenomena, which can be revealed through an assessment of parental resilience. Well-developed value orientations, coupled with a strong sense of resilience, can provide support to parents in times of frustration or trauma, enabling them to discover new meaning in the event (Maddi, Khoshaba, 1994). Parents often face situations that require high sensitivity and flexibility, calling for quick decisions that utilize personal resources and self-regulation processes. Parenting crises are associated with burnout, which can develop due to declining self-esteem and the perceived importance of parenting, among other areas of life. The “commitment” component of resilience can play both a positive and negative role in parental burnout. For example, the desire to be an “ideal mother” (according to D.W. Winnicott), which can manifest itself in specific behaviors and attitudes and disguise itself as “parental commitment”, can lead to disrupted parenting styles and parental burnout. Parental burnout is associated with the degree of family dysfunction and the level of family anxiety (Eidemiller, Yustitskis, 2008). Highly resilient parents have greater resources for building harmonious interactions; their resilient beliefs allow the family system to

remain stable, overcome difficulties, and accept risks, which becomes an important resource (Khorosheva, 2011).

The “parental feelings” component emotionally colors and is linked to the “parental attitude” component (Fig.) (Ovcharova, 2003). Parental love is the highest expression of parental feelings, which develops throughout a person’s life. In our opinion, when combined with high resilience, parental love not only creates favorable conditions for the child’s development and a secure attachment but also influences the type of parenting used: it provides reasonable freedom while demonstrating an optimal level of care and responsibility for the child. Parental feelings and attitudes influence parenting styles (parent-child relationships) (Fig.), which has been studied in much greater detail than the influence of parental resilience (O’Sullivan et al., etc.).

The few studies of parental resilience show that fathers with high levels of resilience are actively involved in raising their children and continue to add “romantic notes” to their relationships with their spouses after living together for more than 10 years (Homa, 2012). Parental resilience mitigates the effects of stigma in cases of low rates of socialization of a child with developmental disabilities. In addition, family resilience reduces the likelihood of behavioral problems in children. A model of parental resilience has been developed (Ivanova, Shapovalenko, 2023).

The conducted theoretical analysis allows us to say that resilience as an integral personal competence can be associated with a special area of adult activity — responsible parenting, the type of parent-child relationships, and the construction of family relationships (in the diagram, “marital contact”) (Ivanova, Shapovalenko, 2025; Ovcharova, 2019; Eidemiller, Yustitskis, 2008).

Conclusion

Based on the analysis, the presented theoretical framework suggests a connection between resilience as an integral personality trait and responsible parenting as a specific area of adult activity. Empirical testing of the presented theoretical framework offers opportunities for further research and can contribute to the development of evidence-based practices in childhood studies, opening up new perspectives for psychoprophylactic work with children and parents aimed at identifying and strengthening parental resilience.

The analysis allowed us to formulate the following theoretical conclusions:

1. We understand resilience as an integral, three-component personal competency that can be characterized as proactive or reactive. Resilience is divided into a

resilient attitude and resilient behavior and two aspects of resilience — psychological and action-oriented.

2. We understand responsible parenting as an active, proactive stance of parents toward the upbringing and development of their child. Parenting can be qualitatively different depending on the balance of the “components” of parents’ active position — cognitive and affective — which may be a promising area for further research.

3. Responsible parenting includes the following components of parenting: spouses’ value orientations (family values); parental attitudes and expectations; parental attitudes; parental feelings; and components of parental resilience — involvement, control, and risk acceptance.

Limitations. Limited access to data.

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A review of foreign research on the development of professional identity of students

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Abstract

Context and relevance. Factors facilitating and hindering the development of professional identity are examined, including sociocultural contexts, institutional support, and digital socialization. Recent international research demonstrates a growing tendency to conceptualize professional identity as a dynamic, context-dependent, and socially mediated process. Within this framework, professional identity is understood as the result of continuous interactions among individual, educational, and sociocultural factors reflecting personal adaptation to changing professional and digital environments. The hybrid educational environment — combining traditional face-to-face instruction with digital tools and online platforms — plays a particularly important role in professional identity development. At the same time, the key foundations of sustainable professional identity formation remain a supportive academic environment, structured career guidance systems, and a sense of social inclusion within professional communities. The article presents a review of contemporary international studies on the development of professional identity among university students published between 2022 and 2025. Based on the analysis of sources available in major scientific databases (ResearchGate, Sci-Hub, Scopus, Web of Science, Academia.edu, Google Scholar, and other academic resources), two key research directions are identified: the influence of the educational environment on professional identity formation and the role of digital technologies and social media in this process. **Objective.** To analyze contemporary international research (2022–2025) on professional identity development, identifying key research directions, influencing factors, and conceptual approaches to professional identity formation. **Methods and materials.** The review was conducted using systematic analysis and synthesis of scientific literature and empirical studies. The analysis was based on international publications from 2022–2025 indexed in major academic databases. Inclusion criteria were: English-language articles published in peer-reviewed journals; empirical and review studies focused on professional identity formation among higher education students. **Results.** As a result of a systematic analysis of international and Russian-language sources indexed in Scopus, Web of Science, ResearchGate, Google Scholar, Academia.edu, and other scholarly book and electronic databases, 51 publications were identified as the most relevant, including 33 empirical studies and 18 theoretical and review papers. The analysis revealed two key research directions: 1) the influence of the educational environment and career counseling, and 2) the role of digital technologies and social media in the process of professional identity formation. **Conclusions.** The review demonstrates that professional identity development among university students

is shaped by the interaction of educational, sociocultural, and digital factors. Supportive educational environments, career counseling programs, and mentoring practices contribute to conscious professional choice and the strengthening of professional self-concept. At the same time, digital technologies — while expanding opportunities for self-presentation and professional expression — also generate risks related to social pressure, unrealistic expectations, and digital vulnerability. The negative effects of digital environments are predominantly examined in relation to general self-perception and psychological well-being, whereas their impact on professional self-determination remains insufficiently explored. Therefore, a promising direction for future research is the comparative analysis of professional identity formation mechanisms in digital and traditional educational environments, which may help to more precisely identify conditions, risks, and mediating factors influencing the integrity and sustainability of professional identity among future specialists. The findings of this review may be applied in student career counseling programs, the development of soft skills courses, and the design of educational strategies aimed at fostering professional identity.

Keywords: professional identity, university students, career counseling, educational environment, digital technologies, social media

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Обзор зарубежных исследований развития профессиональной идентичности студенческой молодежи

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Резюме

Контекст и актуальность. Современные зарубежные исследования демонстрируют тенденции к пониманию профессиональной идентичности как динамического, контекстно-зависимого и социально опосредованного процесса. В рамках этого подхода профессиональная идентичность рассматривается как результат непрерывных взаимодействий между индивидуальными, образовательными и социокультурными факторами, отражающими адаптацию личности к изменяющимся условиям профессиональной и цифровой среды. Особое значение в формировании профессиональной идентичности приобретает гибридная образовательная среда, объединяющая традиционные формы очного обучения с цифровыми инструментами и онлайн-платформами. При этом базовы-

ми элементами устойчивого развития профессиональной идентичности остаются поддерживающая академическая среда, наличие системы карьерного сопровождения и чувство социальной включенности в профессиональное сообщество. В статье представлен обзор современных зарубежных исследований, посвященных развитию профессиональной идентичности студенческой молодежи, опубликованных в 2022–2025 годах в «ResearchGate», «Sci-Hub», «Scopus», «Web of Science», «Academia.edu», «Google Scholar» и других научных источниках. **Цель.** Выделить ключевые направления, факторы и подходы развития профессиональной идентичности в современных зарубежных исследованиях. **Методы и материалы.** Для проведения обзора были использованы методы систематического анализа и синтеза научной литературы и эмпирических статей. Исследование основано на изучении отечественных и зарубежных публикаций за 2022–2025 годы, доступных в научных базах данных. Критерии включения: статьи, опубликованные в рецензируемых журналах, эмпирические и обзорные исследования, посвященные формированию профессиональной идентичности студентов учебных заведений. **Результаты.** В ходе систематического анализа зарубежных и отечественных источников, представленных в базах данных «Scopus», «Web of Science», «ResearchGate», «Google Scholar», «Academia.edu» и других научных книжных и электронных источниках, выделена 51 наиболее релевантная публикация, из которых 33 — эмпирические исследования, 18 — теоретико-обзорные работы. Определены два ключевых направления изучения: влияние образовательной среды и карьерного консультирования, а также роль цифровых технологий и социальных сетей в процессе формирования профессиональной идентичности. **Выводы.** Анализ современных зарубежных исследований показывает, что развитие профессиональной идентичности студенческой молодежи обусловлено взаимодействием образовательных, социокультурных и цифровых факторов. Поддерживающая образовательная среда, программы карьерного консультирования и менторства способствуют осознанному профессиональному выбору и укреплению профессионального «Я», тогда как цифровые технологии, расширяя возможности самопрезентации и профессионального самовыражения, одновременно создают риски социального давления, нереалистичных ожиданий и цифровой уязвимости. Установлено, что негативные эффекты цифровой среды преимущественно рассматриваются в контексте общего самовосприятия и психологического благополучия, в то время как их влияние на процессы профессионального самоопределения обучающихся остается недостаточно изученным. В этой связи перспективным направлением дальнейших исследований является сравнительный анализ механизмов формирования профессиональной идентичности в цифровой и традиционной образовательной среде, что позволит более точно выявить условия, риски и медиаторы, определяющие целостность и устойчивость профессиональной идентичности будущих специалистов. Результаты данного обзора могут быть использованы в программах профессионального консультирования студентов, при разработке курсов «soft skills» и формировании образовательных стратегий, направленных на развитие профессиональной идентичности.

Ключевые слова: профессиональная идентичность, студенческая молодежь, карьерное консультирование, образовательная среда, цифровые технологии, социальные сети

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Introduction

The development of professional identity is an important aspect of the psychosocial development of university students, particularly during the transition from higher education to professional practice. E. Erikson emphasized that identity develops through crises and their resolution (Erikson, 1968), while the sociocultural environment adds a new layer to these crises (Andreeva, 2011; Kholmogorova, Lepeshcheva, 2015; Sokolova, 2015; Soldatova, 2024; Belinskaya, 2024), including crises associated with virtual self-expression, social comparison, instability of professional roles, and labor-market uncertainty.

Professional identity developed during higher education helps students define life orientations and strengthens confidence in the future, whereas uncertainty about professional identity may intensify anxiety. As a component of overall identity, it develops through awareness of professional goals, values, and social roles (Leontiev, 2000; Marcia, 1980).

Among the classical approaches to identity research is J. Marcia's model of stages of personal development (Marcia, 1980), which emphasizes the processes of exploration and commitment that are particularly important for students choosing a professional path. Professional identity is considered part of social identity, based on membership in professional groups and involvement in their value-normative space. The social identity theory of H. Tajfel and J. Turner (Tajfel, Turner, 1979) emphasizes group membership as a source of self-categorization, the

development of a positive self-image, and identification with group norms and values within the structure of identity.

Under conditions of globalization, organizational change, remote forms of employment, and digitalization, identification with educational and professional contexts becomes increasingly important as a resource for adaptation. At the same time, the digital environment is becoming a significant space for the development of students' professional identity, influencing self-presentation, social comparison, and professional self-determination (Van Dick, 2004; Lexis, Weaver, Julien, 2023; Song, 2023).

In recent years, international research has focused on professional identity formation in a range of educational and professional contexts, including medical, engineering, and technology-oriented programs, as well as on factors of students' professional socialization: practical experience, mentoring, reflection, acquisition of professional roles, and involvement in professional communities (Panagiotou et al., 2025; Young, Dawes, Senadji, 2022).

F. Oguz's study shows that the professional identity of library and information science professionals is assessed through knowledge of the profession, professional values, roles, attitudes toward the profession, and perceptions of it; these components are important for analyzing the professional development of students and recent graduates in educational settings (Oguz, 2025).

The relevance of the topic is also associated with growing difficulties in profes-

sional adaptation, which makes it necessary to analyze factors that support a stable identity among young people. Young adulthood is an important stage of professional identity formation and is characterized by increased sensitivity to the process of professional self-determination. This process is significantly influenced by educational level, socioeconomic conditions, characteristics of the immediate social environment, and the degree of involvement in meaningful professional activity. Because of these age-related characteristics, professional identity in young people requires analysis as a distinct phenomenon rather than being treated in the same way as in other age groups (Bryzgalin, Aleksandrova, Pryazhnikov, 2024).

Educational environment and career counseling in professional identity development

The problem of professional identity was addressed in the work of leading Russian specialists of the twentieth century. In particular, E.A. Klimov viewed professional self-determination as a long-term process of personal development associated with an individual's integration into professional and social space. According to E.A. Klimov, this process shapes attitudes toward work, ideas about the profession and one's own capabilities, and a system of professional preferences. Professional self-determination includes both changes in the individual's consciousness and self-awareness and actual changes in social status (Klimov, 1996).

In contemporary research, professional identity is understood in terms of an individual's developing conception of the self as a professional, which makes it possible to "think, act, and feel" in accordance with professional norms and to experience competence and satisfaction in performing professional tasks (Caza, Creary, 2016;

Jarvis-Selinger, Pratt, Regehr, 2012). A well-developed professional identity helps students form a meaningful professional self-perception that facilitates the transition to professional practice and supports stability within it (Reissner, Armitage-Chan, 2024).

Professional identity has been linked to motivation, self-efficacy, professional commitment, and students' readiness to move from education into professional practice (Canrinus et al., 2012; Jackson, 2016; Jensen, Jetten, 2016).

An empirical study by E.N. Korchagin and A.V. Lobanova shows that among students in psychological and pedagogical programs, the level of professional identity increases at later stages of study and is associated with academic motivation, involvement in educational and professional activities, and practical experience (Korchagin, Lobanova, 2025).

Professional identity is a dynamic process that develops over time through the reinterpretation of experience. This reinterpretation may be conscious or unconscious, influencing behavior and determining whether identity formation is explicit or implicit (Sternszus et al., 2024). Within this process, education represents a foundational phase of development in which students begin to form a conception of the profession that is gradually integrated into the structure of professional identity. The internalization of professional values and ethics helps professionals consistently follow the principles and responsibilities of their profession and justify their actions and decisions in ways that benefit society and "advance" the profession (Pierson, Goulding, Campbell-Meier, 2020). The educational environment creates conditions for professional development; however, the development of a stable professional identity also depends on how students make sense of their own experience, professional goals, and future role.

Narrative approach and reflective skills in the educational environment

Within the narrative approach, identity is viewed as a meaningful story about the self that connects past experience, the present, and representations of the future (McAdams, 2001). In educational settings, the narrative approach supports reflection on professional experience and the development of students' professional identity through engagement with practitioners' stories and reflection on professional roles, required skills, and one's own place in the chosen profession (Tomori, Ogunseiju, 2024).

Russian studies interpret professional identity as the result of active professional self-determination associated with reflection, value- and meaning-based interpretation of one's professional path, and readiness to assume a professional role (Avdovina, 2017; Pryazhnikov, 2019), as well as an integral personal evaluation of one's own process of professional self-development (Kucherenko, 2021).

Important resources for professional identity formation include reflection, adaptability, professional mobility, and the ability to build social and professional connections that support professional development and job satisfaction (Bryzgalin, Aleksandrova, Pryazhnikov, 2024). Narrative interpretation of professional experience allows students to relate their own ideas about a profession to its values, requirements, professional role, and their place in the professional community; however, this process does not develop in isolation but through interaction with teachers, mentors, and the professional environment.

Social support and mentoring in the educational environment

Social representations of professions, their social significance, and career pros-

pects play an important role in professional self-determination. E.A. Klimov emphasized that occupational activity is associated with a person's social status and that the spontaneous devaluation of some professions and promotion of others can hinder career guidance for young people (Klimov, 2004).

Research on career development tools highlights professional connections as catalysts of professional identity development (Lexis, Weaver, Julien, 2023). Perceived social support contributes to the formation of career expectations among vocational college students. Analysis of data from 1,497 participants showed that social support is a significant factor positively influencing career expectations; self-efficacy and professional identity act as mediators, forming a chain of mediation between social support and career expectations (Sun, Zheng, Chen et al., 2024).

A study conducted in midwifery education emphasizes mentoring and trust from experienced professionals as important factors in students' professional identity development. A "sense of collective strength", described by one participant as the "strength of the maternity ward", developed through trust and an awareness of shared professional responsibility (Panagiotou et al., 2025).

Emotional engagement, including interest and enthusiasm, strengthens professional identification but requires support to overcome confusion (Jiang et al., 2021).

In contrast, "microaggressions" from colleagues can hinder the professional socialization of resident physicians by reducing their sense of belonging to the professional community and increasing doubts about their own competence. Safe channels for discussing such situations and training in constructive response strategies are important for reducing these risks (Boyle et al., 2025).

The educational and social conditions of professional development discussed above are complemented by the influence of the digital environment, which expands opportunities for interaction with professional communities, professional self-presentation, and the acquisition of professional roles.

The role of digital technologies and social media in professional identity development

Social media have radically transformed the context of professional socialization: they have expanded opportunities for public self-presentation and professional interaction, accelerated knowledge exchange, and made digital presence an integral part of everyday life. As a result, educational practice increasingly incorporates models for the responsible integration of social media into learning, including the development of digital literacy, adherence to ethical and privacy standards, and the formation of deliberate strategies for professional self-presentation (Machado et al., 2024).

Russian studies by G.M. Belinskaya and E.V. Frantova show that patterns of social media activity differ substantially by age and reflect the specific characteristics of identity development. These differences in the motives and functions of online interaction shape virtual self-presentation and the ways in which the self-image is constructed (Frantova, Belinskaya, 2017).

Contemporary Russian studies also show that digital practices actively transform identity structures. A comparative analysis of online and offline self-matrices among adolescents and adults found that virtual and real identities interact with and complement one another, forming hybrid models of self-concept (Soldatova, Chigarkova, Ilyukhina, 2022).

Profession-related information flows on social media strengthen professional

belonging and commitment (Li, Guo, Zou, 2022), whereas engagement with social media feeds often leads to lower self-esteem and greater uncertainty, primarily because of upward comparisons with “idealized” examples. This pattern is also supported by a meta-analysis of social media effects (McComb, Vanman, Tobin, 2023) and by research on fear of missing out (FOMO) and related behavioral patterns (Pang, Quan, 2024).

At the same time, the digital environment has a contradictory influence on professional identity development: online platforms expand opportunities for professional interaction, exchange of experience, and stronger community belonging, while also blurring the boundaries between personal and professional images. Cyberaggression, stigmatizing content, and the absence of clear norms for online communication may increase professionals’ vulnerability, distort the public image of a profession, and act as risk factors for professional identity formation. Studies of digital professionalism and online attacks on educators emphasize that such risks complicate the maintenance of professional values, ethical interaction, and self-presentation in digital environments (Guraya, Guraya, Yusoff, 2021; Tomczyk et al., 2025). Alongside educational and social conditions of professional development, digital tools — including social media, e-portfolios, VR simulations, and generative artificial intelligence — are therefore playing an increasingly important role.

Digital tools in professional identity development: social media, e-portfolios, VR simulations, and generative AI

Social media expand opportunities for professional branding and networking (Lexis et al., 2023; Wu et al., 2024), while generative artificial intelligence acts as a cross-cut

ting factor influencing reflection, feedback, self-presentation, and the development of professional skills. At the same time, it creates risks to academic integrity associated with the uncritical use of technology (Maxwell, Messaoudi, Dhanaraj, 2025).

Additional components supporting professional identity development include access to educational resources and an emphasis on the long-term updating of profiles, which help students gradually build an effective online professional brand and adapt to the changing demands of the labor market (Lexis, Weaver, Julien, 2023).

Systematic and review studies published in 2024–2025 emphasize that electronic portfolios (e-portfolios) contribute to students' professional identity development by creating a structured environment for reflection, self-presentation, and the integration of professional skills and values (Yang, Wong, 2024; Wei et al., 2025; Baseer, 2024). The use of e-portfolios also supports greater awareness of career trajectories and clearer articulation of competencies.

Consideration of educational conditions, social interactions, and processes of making sense of professional experience provides a basis for analyzing practical experience and technological integration as factors that connect students' conceptions of a profession with real professional tasks and modes of activity.

The role of practical experience and technological integration in professional identity development

E.S. Tuzhikova's study showed that the professional activity of young psychologists is based primarily on cognitive motivation and interest in the outcomes of their work. Initiative and an understanding of one's own professional capabilities promote activity and resourcefulness in solving work-related tasks, whereas striving to achieve

difficult goals was less pronounced (Tuzhikova, 2022).

Exposure to diverse field-specific knowledge through guest lectures, workshops, and conferences also contributes substantially to students' professional engagement. By participating in professional groups, students gain access to field-specific knowledge and mentoring programs and can use resources for continuing professional development (Tomori, Ogunseiju, 2025).

The findings of an empirical study by A. Young, L. Dawes, and B. Senadji emphasize the importance of practical experience and the real-world application of skills (Young, Dawes, Senadji, 2022). Direct engagement with technology and the integration of technology into projects play a substantive rather than secondary role in developing a strong connection with the professional field.

A study in the field of digital technologies demonstrated the successful integration of a series of multidisciplinary interactive virtual reality scenarios into undergraduate nursing courses. The results showed substantial improvements in students' knowledge and clinical competence by the end of the semester as they progressively mastered the technology (Bradley et al., 2025).

Virtual simulations organized in small student groups with teacher support provide effective feedback and contribute to the development of soft skills such as communication, decision-making, time management, and critical thinking — skills that are clearly relevant to professional practice (Mork et al., 2024).

Discussion

The analysis of international studies published in 2022–2025 shows that professional identity development among university students is shaped by the educational environment, institutional support, practice-

oriented learning, sociocultural contexts, and digital technologies (Panagiotou et al., 2025; Young, Dawes, Senadji, 2022). Digital technologies and social media expand opportunities for professional identity development (Alharbi, Kuhn, Morphet, 2022) but also create risks of social pressure and unrealistic expectations, which makes it important to teach strategies for critical engagement and reflection (Machado, Hsiao, Vaccaro, Baker, 2024). In the digital environment, the traditional stage-based nature of professional development (Klimov, 2004) may be complicated by symbolically anticipatory self-presentation, in which external markers of professional identity appear before they are supported by sufficient experience and competence.

Despite the growing body of research on digital socialization, forms of digital vulnerability — cyberaggression, negative labeling, social comparison, and symbolic exclusion from professional online communities — remain insufficiently studied in the context of professional identity formation. Their relationship with students' professional self-determination and distancing from the professional community requires further analysis.

A promising direction for future research is a comparative analysis of professional development in digital and traditional educational environments. Such analysis may clarify how differences in identification, feedback, and social support affect the integrity and sustainability of future professionals' professional identity.

The theoretical novelty of this review lies in proposing an integrative analysis of factors in professional identity development among university students that brings together the following directions of contemporary research:

— the influence of the educational environment, career counseling programs, mentoring, and reflective practices;

— the role of digital technologies, social media, e-portfolios, and virtual simulations.

Conclusions

The review identified the key factors in professional identity development among university students: the educational environment, practice-oriented learning, mentoring and career counseling, reflective practices, interaction with professional communities, sociocultural conditions, and digital technologies.

Based on the analysis of international studies published in 2022–2025, an instrument for assessing professional identity was also developed, including integrative indicators, a scoring system, and an overall index with level-based interpretation. The model may be used in further research on the relationships between professional identity, agentic position, psychological well-being, and factors of digital vulnerability. Its validation and psychometric evaluation require a separate empirical study.

Limitations. The formation of professional identity takes place within a specific sociocultural, economic, and institutional context; therefore, findings from international studies cannot be directly transferred to a Russian sample. These differences concern educational systems, labor markets, professional values, mechanisms of digital socialization, and the nature of students' interactions with professional communities in digital environments. In this regard, a promising direction for future research is a cross-cultural comparative study of the mechanisms of professional identity formation in hybrid and traditional educational environments, including an analysis of the role of Russian digital platforms in professional socialization processes in comparison with Western counterparts such as LinkedIn.

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The author declares no conflict of interest.

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Predicting probabilities of bullying victimization or perpetration in adolescents: a multinomial logistic regression analysis

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Abstract

Context and relevance. Bullying remains a pervasive challenge across educational systems worldwide, posing serious risks to students' psychological well-being and academic performance. In Indonesia, its prevalence continues to grow, echoing patterns observed in various other countries and reinforcing the need for culturally informed, data-driven interventions. **Objective.** This study investigates high school students' risk of involvement in bullying — either as victims or perpetrators — based on age, gender, and school type. **Methods and materials.** Utilizing a cross-sectional survey design, data were collected from 1153 students aged 14 to 19 years ($M = 16$; $SD = 0,919$), including 514 males (45%) and 639 females (55%). The sample comprised 907 senior high school students and 246 vocational high school students from 10 sub-districts in Medan City, Indonesia. **Results.** A multinomial logistic regression analysis revealed that gender was the only significant predictor of victimization risk, while no variables significantly predicted dual roles as both perpetrator and victim. **Conclusions.** These findings underscore the importance of gender-sensitive monitoring and preventive strategies, particularly for female students, and contribute to a growing body of international research aimed at mitigating bullying behaviors through targeted educational programs.

Keywords: bullying, education, school, students, adolescents

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Оценка вероятности вовлеченности подростков в буллинг в роли жертвы или агрессора: мультиномиальный логистический регрессионный анализ

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Резюме

Контекст и актуальность. Буллинг остается широко распространенной проблемой в образовательных системах по всему миру, создавая серьезные риски для психологического благополучия и академической успеваемости учащихся. В Индонезии частота случаев буллинга неуклонно увеличивается, что соответствует тенденциям во многих других странах и еще раз доказывает необходимость разработки стратегий, которые опираются на культурные особенности и эмпирические данные. **Цель.** Настоящая работа направлена на изучение факторов риска вовлечения учащихся старших классов в ситуации буллинга (как в роли жертвы, так и в роли агрессора) в зависимости от их возраста, гендерной принадлежности и типа учебного заведения. **Методы и материалы.** В ходе кросс-секционного исследования были опрошены 1153 старшеклассника и учащихся профессиональных колледжей в возрасте от 14 до 19 лет ($M = 16$; $SD = 0,919$). Из них 514 (45%) — юноши, 639 (55%) — девушки. Выборка включала 907 учащихся общеобразовательных школ и 246 учащихся профессиональных учебных заведений из 10 районов города Медан (Индонезия). **Результаты.** Согласно результатам мультиномиального логистического регрессионного анализа, единственной статистически значимой переменной, предсказывающей риск стать жертвой, оказался пол респондентов. В то же время ни одна из включенных в модель переменных не позволила значимо предсказать совмещение ролей жертвы и агрессора. **Выводы.** Полученные результаты подчеркивают важность мониторинга и профилактических стратегий с учетом гендерных особенностей, особенно для учащихся женского пола, а также вносят вклад в растущий массив международных исследований, направленных на снижение случаев буллинга посредством целенаправленных образовательных программ.

Ключевые слова: буллинг, образование, школа, ученики, подростки

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Дополнительные данные. Наборы данных доступны и могут быть получены по запросу у ответственного автора.

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Introduction

Bullying is a widespread global issue that has long disrupted teaching and learning activities in schools (Chan, Wong, 2015). A study by Biswas et al. (2020) examining data from 83 countries and 317869 students found that 30% of students had experienced bullying. Similarly, a 2022 survey conducted by the National Center for Education Statistics (NCES) in public and private schools across the United States reported that one in five students had been subjected to bullying (PAC-ER's National Bullying Prevention Center, 2025). In Australia, a meta-analysis and systematic review by Jadambaa et al. (2019) revealed that one in seven students had been victims of bullying. In Indonesia, bullying in schools remains a prevalent issue (Abdillah et al., 2020; Yusuf et al., 2022).

Bullying in Indonesia has reached a critical level, with cases continuing to rise (Borualogo, Casas, 2022). In 2024 alone, the Indonesian Education Monitoring Network recorded 573 reports of school-related violence (Lintang, 2025). The prevalence of violence in schools hinders the creation of a safe and supportive learning environment, which is essential for optimizing students' potential (Ramadhani, Purnama, 2024). The increasing trend of school violence is a pressing concern, as a safe and bully-free environment is a fundamental right of every child in their educational journey.

Bullying is a deliberate behavior intended to harm or distress another individual. It is characterized by intentionality, repetition, and an imbalance of power between the perpetrator and the victim (Olweus, 2013). Bullying can take various forms, including verbal, physical, and relational aggression, as well as cyberbullying, which has emerged as a significant concern in the digital era (Smith, 2016).

According to Coloroso (2003), bullying behavior stems from feelings of dislike toward individuals perceived as inferior or unworthy of respect. This behavior may be driven by a desire to assert dominance, intolerance of differences, or the intention to exclude others. Dominance is one way in which students who engage in bullying seek to gain popularity within their peer group (Fine et al., 2023; Olweus, 2013; Smith, 2016). The manifestation of bullying behavior

often differs between male and female students. Male students are more likely to engage in physical bullying, whereas female students tend to exert dominance through relational bullying, such as social exclusion or spreading rumors (Shalaginova et al., 2019).

In some cases, individuals who experience bullying may also engage in bullying behavior themselves. Chan and Wong (2015) identified several factors that increase the likelihood of individuals becoming both victims and perpetrators of bullying. These factors include low empathy, limited prosocial behavior, weak attachment to school, negative perceptions of school harmony, a diminished sense of belonging, and poor overall school experiences and involvement. Notably, female students with low empathy skills are particularly at risk. Furthermore, the cycle of victimization and perpetration can become a recurring pattern, perpetuating bullying behavior over time (Borualogo, Casas, 2022). Walters (2021), in a meta-analysis study, found that victims of bullying are at risk of becoming perpetrators in the future. Similarly, Evans et al. (2019) discovered that prolonged exposure to bullying increases the likelihood of victims developing psychological disorders and engaging in aggressive behavior later in life. As a result, bullying can become a recurring cycle if not effectively prevented (Abdillah et al., 2020).

Present study

This study explores the risk or tendency of high school students to become either victims or perpetrators of bullying. High school students fall within the adolescent age range, a developmental period characterized by psychological, physical, and social changes that may increase the likelihood of bullying behavior (Putri, Bhima, Saebani, 2015). The prevalence of bullying varies across different age groups. Physical, verbal, and relational bullying tend to peak at ages 12–13, while cyberbullying is most prevalent at ages 14–15, with both forms generally declining as students grow older (Pichel et al., 2021). In general, students with lower emotional maturity are more susceptible to engaging in bullying behavior (Ramadhani, Purnama, 2024).

Previous research on the tendency of students to become victims or perpetrators of bullying based on gender has yielded mixed results. Azid et al. (2022) found no significant difference between male and female students in their risk of becoming bullying victims. Additionally, Chapell et al. (2006) found no significant difference between boys and girls in their tendency to engage in bullying behavior. However, Baldry, Farrington, and Sorrentino (2017) reported contrasting findings, indicating that male students are more likely than female students to become victims of bullying, particularly physical bullying.

This study examines three student characteristics — gender, age, and school type (senior high school [SMA] or vocational high school [SMK]) — to predict the likelihood of students becoming victims or perpetrators of bullying. Identifying the most vulnerable student groups enables the implementation of targeted prevention and intervention programs. The study categorizes students into four groups based on their bullying tendencies: (1) those at risk of becoming victims, (2) those with a tendency to, (3) those who may be both victims and perpetrators, and (4) those who are neither victims nor perpetrators.

In summary, gender, age, and school type emerged as significant predictors of students' involvement in bullying, either as victims, perpetrators, or both. Gender plays a role in shaping behavioral expectations and social norms, which may influence how students express or experience aggression. Age is associated with emotional and cognitive development, affecting students' capacity for empathy, impulse control, and conflict resolution. School type contributes to variations in peer dynamics, institutional support systems, and exposure to preventive interventions. Taken together, these variables provide a multidimensional framework for understanding bullying roles within the adolescent population and underscore the importance of context-sensitive approaches to prevention and intervention.

Based on the discussion above, this study aims to address three main research questions:

1) Does age predict students' tendency to become victims or perpetrators of bullying?

2) Does gender predict students' tendency to become victims or perpetrators of bullying?

3) Does school type predict students' tendency to become victims or perpetrators of bullying?

The findings of this study are expected to inform the development of targeted programs or interventions for specific subgroups of high school students, based on age, gender, and school type. Identifying the factors influencing students' likelihood of experiencing or engaging in bullying is a crucial first step in preventing violence and bullying in schools. By understanding these tendencies, schools can implement effective measures to create a safer and more supportive learning environment.

Materials and methods

Participants

This study employed a convenience sampling method, targeting high school students in Medan City, Indonesia. Medan, the capital of North Sumatra and the third largest city in the country — after Jakarta and Surabaya — offers a culturally diverse urban setting that reflects broader national socio-cultural dynamics. Its multiethnic population, including Batak, Malay, Javanese, Chinese, and other communities, provides a meaningful context for examining adolescent bullying within a pluralistic society. This aligns with existing research suggesting that bullying may manifest differently across ethnic groups (Dadeh, 2021; Man et al., 2022).

A total of 1153 students participated in the study. The sample comprised 639 female students (55,5%) and 514 male students (44,5%). In terms of educational background, the majority of participants were enrolled in general high schools ($n = 907$, 79%), while the remaining 246 students (21%) attended vocational schools. All participants were recruited from public and private institutions across 10 districts in Medan, ensuring representation from different socio-economic and cultural backgrounds.

Measurement scale

This study utilized the Revised Olweus Bully/Victim Questionnaire (OBVQ-R), which has been modified and adapted for use in Indonesian. The

scale comprises 2 factors, such as victimization and perpetration, that assess five forms of bullying: physical, verbal, psychological, cyber, and relational. The scale demonstrated high validity ($CFI = TLI = 0,931$; $RMSEA = 0,093$) and reliability (Cronbach's $\alpha = 0,949$). The response options were structured using a five-point Likert scale, with values ranging from 0 to 4: 0 (never), 1 (once or twice), 2 (two to three times per month), 3 (approximately once per week), and 4 (several times per week). Scoring involves summing the item scores for each factor. Individuals are classified as potential perpetrators of bullying if their perpetration score is higher than their victimization score. Conversely, a higher victimization score suggests a tendency to be a victim of bullying. A balanced score between the two factors indicates a tendency to be a bully-victim, while a score of 0 on both factors suggests no tendency to be a perpetrator or a victim.

Procedures

This study used a cross-sectional survey design to investigate the prevalence and characteristics of bullying among senior high school students. The data was collected using a paper-and-pencil questionnaire specifically designed to measure various aspects of bullying behavior. The research team conducted data collection at multiple schools across 10 sub-districts in Medan City. The study employed a paper-and-pencil method, with the research team directly supervising the data collection process to ensure accuracy and consistency. Once all data were gathered, statistical analysis was conducted to examine the findings.

Data analysis

This study employed a quantitative research design, utilizing multinomial logistic regression to analyze the data. This method was selected because the dependent variable — students' bullying involvement — is nominal and consists of more than two categories. Specifically, participants were classified into four groups based on their reported tendencies: (1) victims, (2) perpetrators, (3) bully-victims (both victims and perpetrators), and (4) uninvolved (neither victims nor perpetrators).

The categorization was guided by criteria established by Solberg and Olweus (2003), which emphasize the repetitive nature of bullying behavior. This framework aligns with Olweus's (2013) widely accepted definition of bullying as a repeated and intentional act of aggression. Higher scores on the victimization and aggression scales were used to determine students' classification, with relative score balances indicating their tendency toward victim, perpetrator, or bully-victim roles.

Multinomial logistic regression was conducted to examine the relationship between bullying involvement and three predictor variables: age, gender, and school type. It is acknowledged that this method may not fully capture nuanced cases, such as students with low but equal scores on both scales or those whose experiences primarily involve witnessing bullying. Although witnesses play a critical role in shaping school climate and intervention outcomes, their experiences were beyond the scope of the present study.

Results

Multinomial logistic regression analysis

This study presents the results of a multinomial logistic regression analysis examining students' tendency to be victims and/or perpetrators of bullying. The majority of participants exhibited a tendency to be victims of bullying ($n = 795$, 69%), followed by those with no tendency to be either victims or perpetrators ($n = 134$, 12%). Additionally, 118 students (10%) showed a tendency to be perpetrators, while 104 students (9%) demonstrated a risk of becoming a victim and tendency to become perpetrators.

Based on Table 1, the statistical analysis demonstrates that the overall model provides a good fit to the data ($\chi^2[9] = 43,237$, $p < 0,001$), indicating that the selected predictors; age, gender, and school type collectively contribute to explaining variations in students' involvement in bullying. However, the *Nagelkerke* pseudo- R^2 value of 0,04 shows that these variables account for only 4% of the variance. This relatively small effect size suggests that, while significant, demographic factors alone are insufficient to fully capture the complexity of bullying dynamics. Other unmeasured variables,

such as school climate, peer relationships, family background, and personality traits, are likely to play a much more substantial role. The likelihood ratio test confirms that the predictors as a group are significant in differentiating between victims, perpetrators, bully-victims, and uninvolved students. Yet, a closer inspection of the multinomial logistic regression results reveals more nuanced insights. Gender emerges as the only significant predictor of victimization, suggesting that male and female students may experience or report bullying differently, possibly reflecting gendered expectations and social dynamics within Indonesian schools. In contrast, age and school type approach significance in predicting perpetration. This trend implies that older students or those in particular types of schools (e.g., vocational versus general high schools) may be more likely to engage in bullying behaviors, although the evidence in this data-set is not strong enough to draw firm conclusions. Taken together, these findings indicate that demographic factors provide only

a partial explanation of bullying involvement. Gender appears to be more strongly linked with victimization, whereas age and school type may influence perpetration but require further exploration with larger or more diverse samples. The low explanatory power of the model underscores the need for future research to incorporate psycho-social, contextual, and cultural variables that likely exert stronger influences on bullying dynamics.

The results of the likelihood ratio tests for the multinomial logistic regression of predictors of students' risk or tendency to become victims, perpetrators, or both victims and perpetrators of bullying are presented in Table 2. The multinomial logistic regression results in Table 3 provide important insights into the role of demographic factors in predicting students' involvement in bullying. Gender ($B = 0,668$, $p = 0,001$) emerges as the strongest and only statistically significant predictor, showing that girls are nearly twice as likely (195%) to be classified as victims compared to students who are uninvolved. This finding aligns

Table 1

Model fit and Pseudo-R-squared

	–2 Log likelihood	χ^2	Df	P
Intercept only	259,683			
Final	216,446	43,237	9	0,000
Pseudo-R-squared				
Cox and Snell		0,037		
Nagelkerke		0,043		
McFadden		0,020		

Table 2

**Likelihood ratio tests of multinomial logistic regression
of predictor variables of students' risk or tendency to be victims, perpetrators,
or both victims and perpetrators of bullying**

Effect	Model fitting criteria			Likelihood ratio tests		
	AIC of reduced model	BIC of reduced model	–2 Log likelihood of reduced model	Chi Square	Df	Sig.
Intercept	245,959	291,394	227,959	11,513	3	0,009
Age	249,463	294,898	231,463	15,017	3	0,002
Sex	257,391	302,826	239,391	22,945	3	0,000
School type	242,586	288,021	224,586	8,139	3	0,043

Table 3

Multinomial logistic regression of predictor variables of students' risk or tendency to be victims, perpetrators, or both victims and perpetrators of bullying with tendency not to be a victim and not to be a perpetrator of bullying as a reference

		B	SE	Wald	Df	Sig.	Exp(B)	95% Confidence interval for Exp(B)	
								Lower Bound	Upper Bound
Victims	Intercept	−1,140	1,708	0,446	1	0,504			
	Age	0,114	0,103	1,222	1	0,269	1,120	0,916	1,371
	Gender	0,668	0,194	11,824	1	0,001	1,950	1,333	2,852
	School type	0,071	0,227	0,098	1	0,755	1,074	0,688	1,676
Perpetrators	Intercept	4,591	2,365	3,768	1	0,052			
	Age	−0,238	0,144	2,722	1	0,099	0,788	0,594	1,046
	Gender	−0,100	0,260	0,147	1	0,702	0,905	0,543	1,508
	School type	−0,672	0,344	3,820	1	0,051	0,511	0,260	1,002
Victims-perpetrators	Intercept	2,436	2,459	0,981	1	0,322			
	Age	−0,200	0,149	1,787	1	0,181	0,819	0,611	1,098
	Gender	0,512	0,271	3,572	1	0,059	1,669	0,981	2,837
	School type	−0,234	0,338	0,478	1	0,489	0,792	0,408	1,535

with prior studies suggesting that female students are more likely to acknowledge and report victimization, possibly due to heightened sensitivity to relational aggression and social exclusion. It also reflects broader patterns of gendered social dynamics in Indonesian schools, where female adolescents may face unique vulnerabilities linked to cultural expectations and gender inequality. While age ($B = -0,238$, $p = 0,099$) and school type ($B = -0,672$, $p = 0,051$) do not reach conventional significance thresholds, their near-significant values indicate trends worthy of attention. The negative coefficient for age suggests that younger students are more likely to engage in bullying behaviors than older students. This trend could be related to lower levels of emotional regulation and impulse control among younger adolescents, as well as the use of aggression as a means of establishing dominance within peer groups. Similarly, the negative association with school type suggests that students in vocational schools may be more at risk of involvement in bullying compared to those in general high schools. This may reflect differences in peer dynamics, academic pressures, or so-

cioeconomic backgrounds across school types. The model further suggests that high school students are 51% more likely to be uninvolved in bullying than to be bullies, highlighting a potential protective role of general high school environments. Conversely, younger students show a 79% higher likelihood of engaging in bullying behaviors compared to being uninvolved, reinforcing the importance of early intervention. Despite these tendencies, the overall findings emphasize that among the examined demographic predictors, only gender demonstrates a robust and statistically significant relationship with bullying involvement. Taken together, the results suggest that while demographic factors contribute to understanding bullying, their explanatory power is limited. Gender plays a clear role in victimization, whereas age and school type show trends that may become significant with larger or more diverse samples. These findings point to the need for future research to integrate additional predictors such as family dynamics, peer networks, personality traits, and school climate to achieve a more comprehensive explanation of bullying behaviors among Indonesian adolescents.

Discussion

This study investigated students' tendencies to become victims or perpetrators of bullying based on three key factors: age, gender, and school type. Drawing on data from 1153 students across senior and vocational high schools in Indonesia, the findings reveal that a substantial proportion of students ($n = 795$, 69%) are at risk of victimization. This figure is alarming, as it reflects a widespread experience of insecurity and discomfort within school environments — conditions that can significantly disrupt students' emotional well-being, academic engagement, and sense of belonging. These results echo the rising trend of bullying cases in Indonesia (Borualogo, Casas, 2022), and underscore the urgent need for systemic interventions that address both individual and contextual contributors to bullying.

Multinomial logistic regression analysis identified gender as the sole significant predictor of students' likelihood of becoming victims of bullying. Specifically, female students were more likely to be victimized than to fall into the category of neither victims nor perpetrators. This finding aligns with research conducted in Estonia (Mark, Varnik, Sisask, 2019), which similarly reported higher rates of victimization among female students. Meanwhile, a study from Russia suggests that male students are more frequently involved in physical forms of bullying, either as victims or perpetrators, while female students are more commonly associated with relational bullying in both roles (Bochaver, Khlokov, 2013). However, these patterns diverge from findings in Italy and Malaysia (Azid et al., 2022; Baldry, Farrington, Sorrentino, 2017), where male students were more often victimized or where no significant gender differences were observed. Such inconsistencies underscore that bullying is not a universal phenomenon, but one deeply shaped by socio-cultural contexts, institutional norms, and systemic inequalities.

Gender-based differences, as explored by Shalaginova et al. (2019), further illustrate how cultural norms and social hierarchies influence bullying experiences, echoing patterns observed in Indonesia. Comparative studies by Bochaver et al. (2022) and Novikova and Rean (2019) re-

inforce the notion that macrosocial conditions — including national policies, educational structures, and prevailing societal attitudes — play a decisive role in shaping bullying dynamics.

To interpret these findings critically, Bronfenbrenner's ecological systems theory provides a valuable framework. This theory posits that individual development is influenced by multiple layers of environmental systems, from immediate settings like family and school (micro-system) to broader societal structures (macro-system). In the Indonesian context, gender-based victimization may reflect macro-systemic influences — particularly entrenched patriarchal norms and institutional responses to aggression. The country's Gender Development Index (GDI) remains among the lowest in ASEAN (Fauzi, Ferdian, Intania, 2024), indicating persistent structural inequality. In societies with greater gender disparities, girls are disproportionately exposed to bullying (Cosma et al., 2022), often compounded by feelings of helplessness and inadequate institutional support. These dynamics suggest that bullying is not merely a behavioral issue but a manifestation of deeper power imbalances, where male students may enact dominance through aggression, and female students may internalize victimization due to cultural expectations of passivity.

Moreover, the intersection of gender and school climate plays a critical role in shaping students' experiences. In schools where gender stereotypes are reinforced — either through curriculum, teacher attitudes, or peer norms — female students may be more vulnerable to relational aggression and exclusion. This vulnerability is exacerbated when schools lack gender-sensitive policies or fail to respond effectively to bullying incidents. The normalization of aggressive behavior, particularly when framed as "teasing" or "play", further silences victims and perpetuates cycles of harm.

Interestingly, gender did not predict students' likelihood of being perpetrators or both victims and perpetrators. This nuance supports findings by Azid et al. (2022) and Borualogo, Kusdiyati, and Wahyudi (2023), which show similar bullying prevalence across genders but differences in form. Male stu-

dents tend to engage in direct aggression — such as physical and verbal bullying — while female students are more likely to participate in indirect forms, including relational aggression and social exclusion (Mark, Värnik, Sisask, 2019; Neupane, 2014). These behavioral patterns are shaped by gender role socialization, often reinforced through parenting styles and cultural expectations.

Research among Indonesian adolescents indicates that boys exposed to authoritarian parenting may perceive bullying as a normative behavior, while girls may adapt to relational aggression styles shaped by parental expectations surrounding femininity (Zulkarnain et al., 2025). Authoritative parenting, which balances warmth and discipline, has been shown to mitigate bullying tendencies, while permissive or authoritarian styles may exacerbate them. These findings highlight the importance of family-based interventions that challenge normative beliefs about gender and aggression, and promote healthy emotional regulation and conflict resolution skills.

Cultural norms play a pivotal role in shaping how bullying is perceived, interpreted, and addressed. In the Indonesian context, verbal teasing is frequently dismissed as harmless humor, which blurs the boundary between playful interaction and psychological harm (Borualogo, 2025; Yusuf et al., 2022). This normalization — particularly within permissive or authoritarian parenting environments — can desensitize children to the emotional consequences of bullying and obstruct timely, effective intervention. Behaviors that may be classified as bullying in other cultural settings are often perceived as benign or even affectionate in Indonesia, especially when enacted among peers. This cultural framing complicates efforts to define, identify, and respond to bullying, highlighting the urgent need for frameworks that are both culturally responsive and locally attuned to how aggression and victimization are understood.

The pervasive attitude that finds humor in verbal teasing contributes to children, regardless of gender, viewing bullying as an acceptable form of peer interaction (Dadeh, 2021). When parents and teachers fail to intervene or trivialize such behavior, students may internalize

the belief that bullying is a normal part of school life. This not only perpetuates harm but also undermines the effectiveness of anti-bullying campaigns. Evidence from Indonesian studies suggests that a positive school climate — characterized by supportive peer relationships, respectful interactions, and consistent adult supervision — can significantly reduce the likelihood of bullying (Oktaviani, Dadeh, Sutatminingsih, 2024). The implementation of clear and consistent anti-bullying policies further contributes to the prevention and reduction of bullying incidents.

Complementing these observations, recent Russian scholarship offers valuable comparative insights into the macro-social dynamics of bullying. Studies by Stratiychuk and Chirkina (2019) and Bochaver et al. (2022) underscore the importance of institutional responses and adult involvement, particularly from teachers and parents, in shaping bullying prevalence. Their findings resonate with Indonesian research, which similarly points to the influence of school climate and adult modeling in either mitigating or perpetuating bullying behaviors. Moreover, Russian studies emphasize how broader societal factors, such as cultural norms and educational structures, interact with individual behavior to shape bullying dynamics (Bochaver et al., 2022). Integrating these perspectives strengthens the international relevance of the present study and reinforces the need for culturally grounded, system-level interventions that address both the social and psychological dimensions of bullying.

Although this study did not include direct measurement of cyberbullying, it is important to acknowledge its growing relevance in the broader landscape of student victimization. Bovina and Dvoryanchikov (2020) highlight the impact of digital environments and social identity on cyberbullying, a growing concern in both contexts. The rapid advancement of technology has increasingly blurred the boundaries between virtual and physical realities, leading to a significant rise in adolescents' engagement with digital platforms (Soldatova, Voiskounsky, 2021). As adolescents increasingly engage with digital platforms, cyberbullying has emerged as a pervasive and often under-reported form of

aggression. Its covert nature — characterized by anonymity, lack of physical cues, and rapid dissemination — poses unique challenges for detection and intervention (Kiriukhina, 2021; Merrill, Hanson, 2016). Victims may experience heightened emotional distress due to the inability to identify perpetrators, leading to feelings of isolation, anxiety, and depression (Przybylski, Bowes, 2017). Volkova and Volkova (2017) found that students who are involved in traditional bullying, whether as victims, perpetrators, or bully-victims, are also more likely to engage in or experience cyberbullying, indicating a significant overlap between offline and online forms of aggression. While our study focused on traditional bullying within school settings, future research should incorporate cyberbullying metrics to capture the full spectrum of peer victimization.

Given Indonesia's high rate of adolescent digital engagement, schools must proactively address online safety through digital literacy education, clear reporting mechanisms, and collaboration with relevant authorities to mitigate the psychological impact of cyberbullying.

The data analysis indicates that age is not a significant predictor of students' risk of victimization or tendency to be perpetrators. This suggests that high school students, regardless of age, have a similar likelihood of falling into one of the four categories: victim, perpetrator, both victim and perpetrator, or neither. One possible explanation is that all participants in this study were adolescents — a developmental stage characterized by heightened sensitivity to peer dynamics, identity formation, and emotional volatility (Putri, Bhima, Saebani, 2015). While previous research has shown that bullying tends to decrease as children grow older (Chappell et al., 2006; Novikova, Rean, 2019; Han et al., 2018), the present study's focus on high school students limits the ability to observe this downward trend across educational stages.

Similarly, the analysis of school type (senior high school vs. vocational high school) as a predictor of bullying involvement was found to be insignificant. This indicates that the likelihood of being a victim, a perpetrator, both, or neither is similar among students in both school types. These findings align with those of Putri, Bhima, and Saebani

(2015), who reported high bullying prevalence in both settings. The similarity may be attributed to the fact that both senior and vocational high school students fall within the same age range and are governed by the same national curriculum under the Ministry of Primary and Secondary Education.

However, the findings contrast with international research in Hungary and China (Horváth et al., 2018; Han et al., 2017), which reported higher bullying prevalence in vocational schools. This discrepancy may be attributed to differences in school climate and culture. Prevailing norms, leadership practices, and peer dynamics within a school can significantly influence bullying behavior (Moody, Stahel, 2025; Novikova, Rean, 2019; Strindberg, Horton, 2022). For instance, schools that emphasize competition, rigid discipline, or hierarchical relationships may inadvertently foster environments where bullying is more likely to occur. Future research should explore these micro-level factors to better understand the environmental conditions that foster or prevent bullying.

Conclusions

The results of the multinomial logistic regression analysis examining students' risk or tendency to be victims or perpetrators of bullying based on age, gender, and school type indicate that female students are more likely to be victims of bullying than to be neither victims nor perpetrators. This may be attributed to the persistence of gender inequality in Indonesia (Fauzi, Ferdian, Intania, 2024). Gender inequality heightens the risk of students engaging in gender-based violence (Mahendra et al., 2021). Female students often experience feelings of powerlessness and hopelessness when confronted with bullying, making them more vulnerable to victimization. Given these findings, it is crucial for schools to take proactive measures to ensure the safety of female students. One effective approach is the implementation of sensitization training programs aimed at reducing the gender inequality gap. Additionally, schools should provide awareness programs on how to respond to bullying and establish clear intervention strategies to address bullying incidents effectively.

Educating students, teachers, and parents about the effects of rigid gender roles that con-

tribute to bullying behaviors is crucial. Research indicates that bystanders often exhibit a gender bias, showing more empathy towards same-gender victims. Workshops and seminars can foster discussions that encourage students to challenge stereotypes and promote gender equity within school environments (Baldry, 2004; Fox et al., 2014). This can enhance peer support for victims and change the culture around bullying. It is important to note that bullying intervention should not rely on punitive measures. Harsh disciplinary actions, such as physical or verbal punishment, may inadvertently reinforce aggressive behavior by conveying that violence is an acceptable means of resolving conflict (Novikova, Rean, 2019).

Furthermore, teachers should receive training on handling bullying cases and develop greater vigilance in identifying signs of bullying, as victims often refrain from reporting incidents (Beilmann, 2017; Graham, 2016). Prior research has demonstrated that active teacher involvement plays a critical role in reducing bullying behaviors within the school environment (Bochaver, 2021).

Addressing the impact of parenting on bullying in schools requires context-specific strategies that account for these cultural and gender dynamics. Previous research has emphasized the significant influence of parenting styles on students' likelihood of engaging in bullying behavior, showing that variations in parental approaches may either foster or inhibit such tendencies (Bochaver et al., 2022). Furthermore, exposure to domestic violence within the home environment and neglect of the children's needs has been identified as a risk factor that can increase the probability of children becoming perpetrators of bullying (Bochaver, Khlokov, 2013; Novikova, Rean, 2018). Schools can implement educational programs that involve parents, fostering an authoritative parenting approach that emphasizes emotional support and healthy peer relationships. Holistic educational interventions can empower children to challenge traditional gender norms and promote non-violent conflict resolution strategies, thus narrowing the bullying gap while fostering a climate of respect and understanding among genders (Noboru et al., 2021; Zaneva et al., 2023).

Limitations. This study successfully identified the risk profiles and behavioral tendencies of high school students in relation to bullying — whether as victims, perpetrators, or both. However, several limitations must be acknowledged to contextualize the findings. First, although the sample size was substantial ($n = 1153$), all participants were drawn exclusively from schools within Medan City. This geographic concentration limits the external validity of the results, as the social dynamics, school climates, and cultural factors influencing bullying behavior may vary significantly across different regions of Indonesia. Consequently, the findings may not fully capture the diversity of experiences among adolescents in rural areas, other urban centers, or provinces with distinct educational and sociocultural contexts. To enhance generalizability and establish a more comprehensive national understanding, future research should replicate this study in varied settings across Indonesia, incorporating regional comparisons and potentially stratified sampling techniques.

Second, this study relied exclusively on self-report questionnaires for data collection. While this method was appropriate for efficiently capturing large-scale behavioral data across a broad adolescent population, it is important to acknowledge its inherent limitations. Self-report instruments are susceptible to response biases, including social desirability and recall inaccuracies, which may affect the precision of the findings. To enhance the validity and depth of future research, complementary methodologies — such as structured interviews, peer or teacher assessments, and direct observational techniques — should be considered. Accordingly, the conclusions drawn from this study should be interpreted with caution, recognizing the constraints associated with relying solely on self-reported data.

Third, this study did not account for several external factors that may significantly influence students' involvement in bullying — whether as victims, perpetrators, or both. Variables such as school climate, family environment, personality traits, and socioeconomic status were not measured, limiting the contextual depth and explanatory scope of the findings. These factors are known to shape adolescents' vulnerability and behavioral responses, and

their exclusion may constrain the interpretation of bullying dynamics within the school setting.

Moreover, the study did not include specific measures of bystander behavior, despite its critical role in the bullying cycle. Bystanders can reinforce, ignore, or intervene in bullying incidents, and their actions often determine whether such behaviors are perpetuated or disrupted. The absence of data on bystander responses represents a notable gap, as it prevents a more holistic understanding of the social ecology surrounding bullying.

Lastly, the study focused exclusively on traditional, face-to-face bullying and did not

examine cyberbullying — a form of aggression that is increasingly prevalent among adolescents. Cyberbullying, which occurs through digital platforms and social media, often transcends school boundaries and can have distinct psychological impacts. Its exclusion limits the comprehensiveness of the findings, particularly in light of the growing digital engagement among youth. Future research should incorporate measures of online victimization and perpetration to capture the full spectrum of bullying experiences in contemporary adolescent life.

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Enhancing adolescent adjustment in schools: the role of emotion regulation training and parental attachment

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Abstract

Context and relevance. Self-adjustment of students is a crucial aspect of the success of the educational process. Many problems persist, including low academic engagement, deviant behavior, and difficulties in social interaction.

Objective. To examine the effectiveness of emotional regulation training in improving student self-adjustment in schools, this study considers parental attachment as a moderating variable. **Hypothesis.** Emotion regulation training is effective in improving the adjustment of middle school students at school.

Methods and materials. The study employed an experimental pretest-posttest control group design with a three-way factorial between-subjects ANOVA. It involved 62 junior high school students, who were randomly assigned to experimental and control groups. Each group was further divided into two subgroups based on parental attachment: secure and insecure. Data were collected using the School Adjustment Scale, the Adult Parental Attachment Scale, and the Difficulties in Emotion Regulation Scale. The Emotion Regulation Training Module was also used as an intervention instrument. **Results.** The results show that emotional regulation training significantly improves students' self-regulation and school adjustment. Additionally, secure attachment to parents strengthens the positive impact of training on students' self-regulation. **Conclusions.** Emotional regulation training has proven to be an effective emotion-based intervention that can be integrated into the school curriculum as local content. This study recommends strengthening the role of teachers as models of emotional regulation and improving the quality of emotional relationships between parents and children to support the success of student adjustment in school.

Keywords: self-adjustment, emotional regulation, parental attachment, junior high school adolescence, psychological intervention

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Совершенствование адаптации подростков в образовательной среде: роль привязанности к родителям и тренинга эмоциональной регуляции

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Резюме

Контекст и актуальность. Саморегуляция учащихся играет ключевую роль в успешности образовательного процесса. Однако все еще сохраняются такие проблемы, как низкая учебная вовлеченность, отклоняющееся поведение и трудности в социальном взаимодействии. **Цель.** Цель данного исследования — изучить эффективность тренинга эмоциональной регуляции в повышении саморегуляции учащихся в школе, рассматривая привязанность к родителям как модератор. **Гипотеза.** Тренинг регуляции эмоций эффективно способствует улучшению школьной адаптации учащихся средних классов. **Методы и материалы.** Исследование было проведено по экспериментальному плану с предварительным и итоговым тестированием и контрольной группой, с применением трехфакторного межгруппового дисперсионного анализа (ANOVA). В нем участвовали 62 ученика средней школы, случайным образом распределенные по экспериментальной и контрольной группам. Внутри каждой группы были выделены две подгруппы — с надежной и ненадежной привязанностью к родителям. Данные собирались с помощью Шкалы школьной адаптации, Шкалы привязанности к родителям у взрослых и Шкалы трудностей регуляции эмоций. В качестве инструмента вмешательства использовался Модуль тренинга регуляции эмоций. **Результаты.** Результаты показывают, что тренинг эмоциональной регуляции значительно улучшает саморегуляцию и школьную адаптацию учащихся. Кроме того, надежная привязанность к родителям усиливает положительное влияние тренинга на саморегуляцию учащихся. **Выводы.** Тренинг регуляции эмоций доказал свою эффективность как метод психологического воздействия, основанный на работе с эмоциями, и может быть включен в школьную программу в качестве регионального компонента. Авторы исследования рекомендуют усилить роль учителей как примеров для подражания в эмоциональной регуляции, а также улучшить качество эмоциональных отношений между родителями и детьми для успешной адаптации в школе.

Ключевые слова: саморегуляция, эмоциональная регуляция, привязанность к родителям, подростки среднего школьного возраста, психологическое вмешательство

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Introduction

Early adolescence is a developmental period characterized by significant biological, cognitive, and social transitions. One important transition during this stage is entering junior high school, which often poses challenges for students' adaptation to the school environment (Green et al., 2021). This period is also associated with an increased risk of academic failure and school dropout, which may result from school mismatch and maladjustment (Lasarte et al., 2020). Many adolescents experience difficulties in following school rules and norms, primarily due to issues with school adjustment. These difficulties are frequently accompanied by emotional problems, particularly negative emotions that lead to feelings of depression and hinder social interactions with peers and teachers (Kalman-Halevi et al., 2023).

School adjustment is a crucial ability that students must develop, as it is closely related to academic achievement, socially appropriate behavior, and positive peer relationships (Ma et al., 2020). School adjustment also includes the capacity to adapt to academic demands, school tasks, and interpersonal relationships within the school system, feeling comfortable, and accepted in the school environment (Zhang et al., 2022). In addition to individual factors, environmental conditions play an important role in shaping school adjustment and academic performance (Lee, 2023).

The transition from childhood to adulthood also brings significant social and academic challenges that are closely related to parental attachment (Kitahara et al., 2020). Family factors, parenting styles, and the quality of attachment between parents and children influence how adolescents interact with others and manage daily life demands (Zou et al., 2020). Previous studies have shown that parent-child attachment is positively associated with students' levels of school adjustment (Zhang et al., 2022). The quality of parent-child relationships, including experiences of acceptance or rejection within the family, represents a key component of psychosocial adjustment across developmental stages, includ-

ing educational contexts (Sánchez-Sandoval, Verdugo, 2021).

Attachment functions as a system of emotional bonds between parents and children that supports adolescents in regulating their behavior and emotions when interacting with environments outside the family (Wang et al., 2021). Secure attachment contributes to sustained adaptive functioning during childhood and adolescence and is associated with more effective coping with stress across various situations (Miljkovitch et al., 2021). The positive parenting of fathers and mothers, as well as the attachment between fathers and mothers and adolescents, affects adolescent life satisfaction and provides confidence in facing difficulties (Chen et al., 2022; Li et al., 2023). In contrast, negative emotional conditions in parents may increase adolescents' vulnerability to depressive symptoms (Chen, Panebianco, 2020), prosocial behavior, and aggressive behavior (Maya et al., 2024; Ratliff et al., 2023), and also result in social anxiety (Mathijs et al., 2023). The quality of parental attachment also shapes adolescents' self-representation, encompassing both cognitive and emotional aspects, which in turn influence mental development, social relationships, behavioral adaptation, and school adjustment (Verschuere, 2020).

Parental attachment is commonly classified into three types: secure, avoidant, and ambivalent. Adolescents who experience secure attachment, characterized by care and trust, tend to exhibit better social adaptation and more positive interactions (Zhang et al., 2022). Responsive parenting practices that emphasize security, non-punitive discipline, and non-violent approaches foster confidence and positive behavior. Conversely, insecure parenting patterns marked by rejection or violence are associated with lower self-confidence and greater difficulties in adolescent adjustment (Li, Cheng, 2022; Wang et al., 2021). Adolescents with insecure attachment are more vulnerable to mental health problems and risky behaviors, including substance use, whereas those with secure attachment demonstrate better emotional regulation and anger control (Flykt et al., 2021). Attach-

ment to maternal figures, in particular, has been linked to stronger self-control in adolescents (Mancinelli et al., 2021).

In addition to attachment-related factors, adolescence is marked by internal and external challenges that influence psychosocial adjustment. Attachment dimensions are associated with emotional regulation among adolescents (Mota et al., 2021). Secure attachment was positively related to motivation and academic adjustment, whereas insecure attachment, whether avoidant or anxious, resulted in the opposite, and positively predicted the use of adaptive emotion regulation strategies (Iuga et al., 2023; Yang et al., 2024). Emotional regulation plays a critical role during this period (Giunta et al., 2022). Emotion regulation involves reducing negative emotions and enhancing positive emotional experiences (Houck et al., 2016), and it is influenced by both internal and external motivational factors (Kalman-Halevi et al., 2023). However, adolescents often experience difficulties in regulating emotions, making them more vulnerable to depression, problematic behaviors, antisocial behavior, and depressive symptoms in adolescence (Criss et al., 2021; Silk et al., 2003).

Emotion regulation has therefore become an important target for psychological interventions aimed at addressing mental health problems, regulating negative emotions, and helping to prevent problematic behavior in adolescents (Fombouchet et al., 2023; Slovak et al., 2023; Yu et al., 2023). Emotion regulation interventions typically focus on developing skills such as emotional awareness, self-regulation, positive self-perception, self-esteem, impulse control, perseverance, and stress management (Kamei, Harriott, 2020). Training programs in emotion regulation have demonstrated effectiveness in improving emotional skills among individuals with mental health difficulties and in supporting emotional functioning in daily life (Berking, Whitley, 2014). Such as the anger management program, which was effective in enhancing adolescents' school adjustment (Anjanappa et al., 2023). Based on this evidence, interventions aimed at improving school adjustment through emotion regulation training are urgently needed.

Previous studies have demonstrated that the effectiveness of emotion regulation strategies is closely related to specific emotional experiences (Wojnarowska et al., 2020). Emotion regulation interventions have been shown to improve psychological well-being and professional quality of life among nurses (Kharatzadeh et al., 2020) and to reduce anxiety levels in parents of children with cancer when based on Gross's model (Bahrami, 2020). Moreover, emotion regulation programs increase positive affect, reduce negative affect, and enhance student well-being (LeBlanc et al., 2017). Such programs are also effective in reducing externalizing problems in adolescence (Brinke et al., 2021) and addressing risky behaviors related to adolescent mental health (Houck et al., 2016). These interventions contribute to improved psychological health and interpersonal functioning, including adolescents' interactions within the school environment (Kitahara et al., 2020).

Although emotion regulation interventions have demonstrated effectiveness in addressing adolescent behavioral and emotional problems, relatively few studies have applied these interventions specifically to adolescents in the context of school adjustment (Moltrecht et al., 2021). This study, therefore, proposes a novel psychological intervention designed to enhance school adjustment among early adolescents in secondary education. The intervention is based on Gross's emotion regulation model, which emphasizes strategies for emotion modulation and self-monitoring (Gross, 2014). Additionally, this study investigates parental attachment as a moderating variable that may impact the effectiveness of emotion regulation training on school adjustment. Accordingly, the present study aims to investigate the impact of emotion regulation training on students' school adjustment while considering parental attachment as a moderating factor.

Materials and methods

This study is an experimental investigation using a pretest-posttest control group design. This study involved students in the early adolescent age range of 12–15 years, comprising a population of 218 students. An eligibility measurement

process was then carried out to determine the eligible students among 153 participants. Measurements using the difficulties in emotion regulation scale short form, developed by Kaufman, are used in this study to measure the emotion regulation of the students (Kaufman et al., 2016). The data collection instrument also utilized the Adult Scale of Parental Attachment-Short Form, developed by Michael and Snow, to control for the influence of the independent variable (Michael, Snow, 2019). In this study, the Adult Scale of Parental Attachment Short Form was used in adolescents, considering that they have also formed relatively stable mental representations of parent-child relationships, which serve as a basis

for the process of self-adjustment and emotion regulation. The attributes of the individuals in the experimental and control groups (Fig. 1).

From the results of the random assignment, which originally included 18 students with secure parental attachment and 17 students with insecure parental attachment in the experimental group, some students were absent and others withdrew. This resulted in a final experimental sample of 17 students with secure parental attachment and 14 students with insecure parental attachment. In the control group, the original sample consisted of 16 students with secure parental attachment and 15 students with insecure parental attachment.

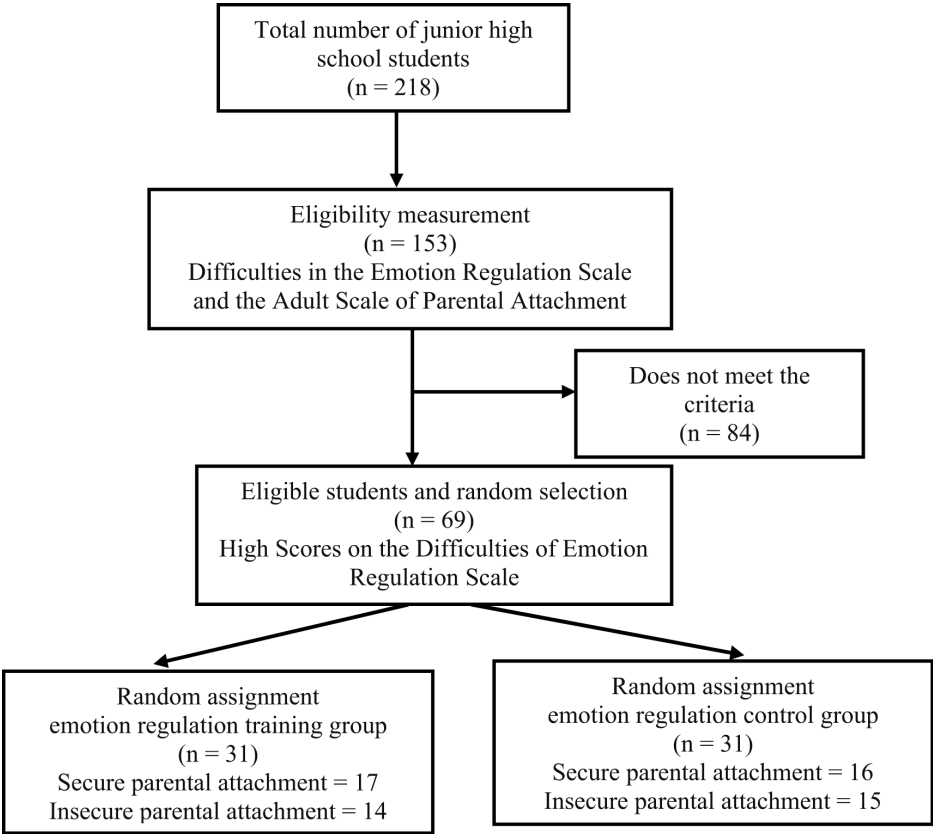


Fig. 1. The mechanism of control and measurement of eligible samples

Before the emotion regulation training intervention, participants were given an informed consent form and were then gathered in two different rooms. A pretest was administered to both the experimental and control groups using the School Adjustment Scale, which was developed in 2018 by Soo Jung, Joe, Hyun-Sim, and Doh (Joe, Doh, 2018). The distribution of participants by treatment condition and age is presented in Table 1.

A three-way mixed ANOVA was used to analyze the impact of the intervention and parental attachment styles on changes in outcome variables in the experimental and control groups. A $2 \times 2 \times 2$ factorial design was employed to evaluate the main effects of each factor. Group (experimental vs. control) is a between-subjects factor used to compare the effects of the intervention between the two groups. Intervention time (pretest vs. post-test) is a within-subjects factor designed to measure changes within individuals over time. Parental attachment (secure vs. insecure) is also a between-subjects factor based on attachment patterns.

The emotional regulation training consisted of seven 90- to 120-minute sessions, each focusing on a specific skill, held 7 weeks apart, and the course unit's facilitator facilitated all of them. Students were divided into two different groups and given a pretest before the emotion regulation training intervention. The experimental and the control group took the test in separate rooms. Emotion regulation training materials were provided only to the experimental group.

After being informed about the importance of emotional regulation, informed consent, and explanation of the regulations, the training continued with the presentation of the core content of emotional regulation, which encompasses the mastery of seven skills designed within this emotional regulation training:

Skill 1: Self-emotion recognition. In mastering the skill of self-emotion recognition, the facilitator explains six types of emotions: happiness, sadness, fear, anger, surprise, and disgust. The manifestation of these various emotions in expressions and behaviors is discussed.

Skill 2: Identification of emotional triggers. The activity begins with an interactive game designed to help students focus their concentration before delving into the material. In mastering the skill of identifying emotional triggers, the facilitator explains the importance of students systematically investigating the basis of their emotions by classifying the various specific factors that promote the development and maintenance of emotions. In addition to retrieval control, analyzing emotions also provides an important starting point for initiating subsequent processes in modifying one's emotions.

Skill 3: Non-judgmental awareness. In mastering the skill of non-judgmental awareness, the facilitator explains two essential tasks. The first task involves labeling emotions using words to create a mental representation of one's current internal experience. The second task is cultivating neutrality in feeling, which means becoming aware of one's emotions, then slowing down and reducing the process of judgment and automatic reactions, describing emotions neutrally without judgment.

Table 1

The distribution of samples based on treatment and age

Group	Age (years)	Frequency	Percentage (%)
Experimental group	13	18	58,1
	14	10	32,3
	15	3	9,7
Control group	13	17	54,8
	14	7	22,6
	15	7	22,6

Skill 4: Analysis of self-support mechanisms. The facilitator continues the emotional regulation training material by explaining the importance of self-recognition, self-appreciation, and self-belief as means of self-support for self-improvement.

Skill 5: Positive self-conditioning. The facilitator proceeds with the fifth skill, which focuses on positive self-conditioning, as a key effort in the cognitive change process in emotional regulation, according to Gross. In mastering this skill, participants are taught to refocus on positive aspects, which will help them manage their emotions in a more positive direction. Essentially, this serves as a positive refocusing mechanism that involves thinking about pleasant things in life events.

Skill 6: Emotion coping strategies. In this session, students are taught to examine their role in the problems they encounter and are subsequently instructed on how to transform negative emotions into positive ones, laying the foundation for effective problem-solving and planning.

Skill 7: Implementation of appropriate emotional expression and behavior. In this final skill, the focus is on implementing changes in emotions to move in a positive direction, as demonstrated through direct expressions and behaviors, including facial expressions, speech, and body language. The activity concludes with students being instructed to believe that they have now become new individuals with positive emotions and behaviors. The facilitator then concludes with closing remarks.

One week after the last session, the experimental group and the control group took a posttest on the students' school adjustment, serving as the final step in the emotion regulation training experiment. The tests were delivered in separate rooms. Measurement using the school adjustment scale is used to determine whether emotion regulation training has an effect on students' school adjustment.

Data analysis was conducted using IBM SPSS Statistics 24.0 software to examine the effect of emotion regulation training and parental attachment on junior high school students' school adjustment, employing a three-way mixed ANOVA. The analysis aimed to evaluate

the effect of each independent variable, namely emotion regulation training and parental attachment, on the dependent variable, namely school adjustment. This analysis allowed us to determine the extent to which each independent variable had an independent effect, as well as to see the interaction between the two in influencing students' school adjustment.

Results

Preliminary analyses

To ensure the validity of the results from the three-way mixed ANOVA analysis, two main assumptions were examined: residual normality and homogeneity of variance between groups. Based on Table 2, the pretest data, the Kolmogorov-Smirnov test produced a significance value of 0,05, indicating that the residuals are close to a normal distribution. Meanwhile, the Kolmogorov-Smirnov test showed a significance of 0,200 > 0,05 in the posttest data, indicating that the posttest residual data are typically distributed. Since violations occur only in residual pretests, but ANOVA is known to be robust enough against mild normality violations when the sample size is large enough and balanced, the analysis can still be continued (Field, 2017), so that no data transformation was carried out because no extreme outliers were found and other tests were fulfilled.

Furthermore, Levene's test was conducted to determine the similarities between the groups. The statistical value shows that pretest: $F = 2,33$, $sig = 0,08$, and posttest: $F = 1,30$, $sig = 0,28$. Since the value is 0,05 for both tests, it is concluded that the homogeneity assumption of variance is met. Since the sample size is sufficient and the assumption of variance homogeneity is met (Levene's test is not significant), the ANOVA analysis can proceed (Field, 2017; Knief, Forstmeier, 2021; Liu, Wang, 2021).

Furthermore, to ensure the distribution of age data between the experimental group and the control group (whether both are equal in terms of age), the Chi-Square test was performed, as shown in Table 3. The assumption is H_0 : The age distribution did not differ significantly between the experimental group and the control group. H_a : The age distribution differed

Table 2

Summary table of the normality and homogeneity test

Output Statistics	Pretest_SchoolAdjustment	Posttest_SchoolAdjustment
Tests of Normality for Standardized Residuals		
Kolmogorov-Smirnov (Sig.)	0,05	0,20
Interpretation	Almost normally distributed	Normally distributed
Levene's Test of Equality of Error Variances		
F	2,33	1,30
df1	3	3
df2	58	58
Sig.	0,08	0,28
Interpretation	Homogeneity assumed	Homogeneity assumed

significantly between the experimental group and the control group. The results of the analysis show that the Asymp. Sig. Pearson Chi-Square is $0,340 > 0,05$, so that H_0 is accepted. The analysis showed that the age distribution did not differ significantly between the experimental group and the control group.

Performance data

1. Main effects: time, group, parental attachment

Based on the tests of within-subject effects and tests of between-subjects effects, there was a significant difference between the overall pre-test and posttest scores, indicated by the values of $F(1,58) = 168,96$, $p = 0,00$, $\eta^2p = 0,74$ (pretest $M = 70,30$; posttest $M = 75,92$). This indicates

a significant improvement in student self-adjustment following treatment. Furthermore, there was a significant difference between the scores of the experimental group and the control group, with values of $F(1,58) = 7,34$, $p = 0,01$, $\eta^2p = 0,11$ (experiment $M = 74,58$; control $M = 71,64$). In parental attachments, the values of $F(1, 58) = 0,85$, $p = 0,36$, $\eta^2p = 0,01$, showed no significant difference between the secure and insecure groups (secure $M = 73,61$; insecure $M = 72,61$).

2. Interaction effects: time $\times$ group

There was a significant interaction between time and the treatment group (Time $\times$ Group), with $F(1,58) = 24,45$, $p = 0,00$, $\eta^2p = 0,30$. This suggests that the change from pretest to posttest differs significantly between the experimen-

Table 3

Summary table of the Chi-Square test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2,158 ^a	2	0,340
Likelihood Ratio	2,206	2	0,332
Linear-by-Linear Association	0,704	1	0,401
N of Valid Cases	62		

Table 4

Summary table of descriptive statistics

Variable		Pretest	Posttest
Experiment	Secure (n = 17)	$M = 70,82$ (SD = 6,68)	$M = 80,35$ (SD = 4,00)
	Insecure (n = 14)	$M = 70,57$ (SD = 5,97)	$M = 76,57$ (SD = 4,01)

Variable		Pretest	Posttest
Control	Secure (n = 15)	M = 69,87 (SD = 3,87)	M = 73,40 (SD = 2,41)
	Insecure (n = 16)	M = 69,94 (SD = 4,57)	M = 73,38 (SD = 3,52)
Secure (n = 32)		M = 70,38 (SD = 5,48)	M = 77,09 (SD = 4,83)
Insecure (n = 30)		M = 70,23 (SD = 5,18)	M = 74,87 (SD = 4,03)
Experiment (n = 31)		M = 70,71 (SD = 6,27)	M = 78,65 (SD = 4,38)
Control (n = 31)		M = 69,90 (SD = 4,17)	M = 73,39 (SD = 2,99)

tal and control groups. This significance can also be seen in the data from the experiment's pretest and posttest ($M = 70,71$ vs. $M = 78,65$) and the control's pretest and posttest ($M = 69,90$ vs. $M = 73,39$).

3. Interaction effects: time $\times$ parental attachment

As shown in table 5, it shows that the interaction between time and the type of parental attachment (Time $\times$ Parental Attachment) is also significant, with $F(1,58) = 4,39$, $p = 0,04$, $\eta^2p = 0,07$. This significance can also be seen from the data for the secure pretest to the posttest ($M = 70,38$ vs. $M = 77,09$) compared to the change in the insecure pretest group to the posttest ($M = 70,23$ vs. $M = 74,87$).

4. Interaction effects: group $\times$ parental attachment

The results showed that the interaction between the treatment group and the type of parental attachment (group $\times$ parental attachment) was not significant, with $F(1,58) = 0,89$, $p = 0,35$, $\eta^2p = 0,02$. This means that the existence of control and experimental groups does not differ

significantly between students with secure and insecure parental attachments.

5. Interaction effects three-way: time $\times$ group $\times$ parental attachment

The three-way interaction between time, treatment group, and type of parental attachment (time $\times$ group $\times$ parental attachment) was close to significant, with $F(1,58) = 3,93$, $p = 0,05$, $\eta^2p = 0,06$. This means that the interaction between parental attachment and time and group may have an effect but less significant on changes in self-adjustment scores. As can be seen in Table 4, the treatment given to the experimental class resulted in an increase in scores for both Secure and Insecure students (Secure: $M = 70,82$ to $M = 80,35$; Insecure: $M = 70,57$ to $M = 76,57$). Overall, the increase in scores in the experimental group was also higher compared to the control group (experiment: $M = 70,71$ to $M = 78,65$ vs. control: $M = 69,90$ to $M = 73,39$).

6. Effect sizes

Quantitative measures of the magnitude of the effect of a treatment, difference, or relationship, beyond mere statistical significance (p -value),

Table 5

Summary of the within and between subjects effects test

Effect	F	df	Sig. (p)	Partial η^2
Time	168,96	1,58	0,00	0,74
Group	7,34	1,58	0,01	0,11
Parental Attachment	0,85	1,58	0,36	0,01
Time $\times$ Group	24,45	1,58	0,00	0,30
Time $\times$ Parental Attachment	4,39	1,58	0,04	0,07
Group $\times$ Parental Attachment	0,89	1,58	0,35	0,02
Time $\times$ Group $\times$ Attachment	3,93	1,58	0,05	0,06

are presented in Table 6. According to Cohen’s criteria (0,5 = large, 0,3 = medium, 0,1 = small; Cohen, 1988), the Partial Eta Squared (η^2p) values indicated that the main effect of Time was significant. Cohen’s d values showed that the intervention had a significant effect for both secure and insecure attachment groups in the experimental condition. In comparison, the control group showed a much smaller effect, especially among participants with insecure attachment.

The above results are further supported by the profile plot (Fig. 2), which shows a sig-

nificant increase in scores in the experimental group compared to the control group. Similarly, the results in Fig. 3 show that both students with secure and insecure attachments experienced an increase in scores, with a greater increase in the secure group than in the insecure group.

Discussion

The results of this study yield meaningful findings and strengthen the proposed hypothesis. Overall, there was a significant improvement in students’ self-adjustment ability from the pretest

Table 6

Cohen’s d calculation and interpretation

Group	Parental Attachment	Cohen’s d	Interpretation
Experiment	Secure	1,73	Large
Experiment	Insecure	1,18	Large
Control	Secure	1,10	Large
Control	Insecure	0,84	Large

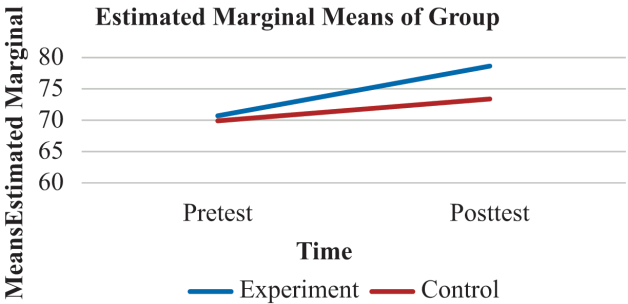


Fig. 2. Comparison of experimental and control groups

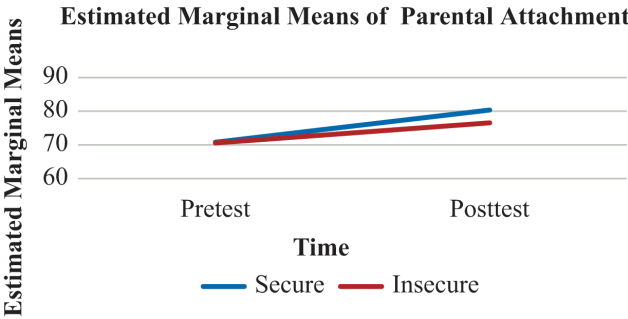


Fig. 3. Comparison of secure and insecure parental attachments

to the posttest phase. These findings show that emotion regulation training interventions have a significant positive influence on students' ability to adapt to their school environment. This finding aligns with previous research that emphasizes the importance of emotion regulation for adolescents' psychological well-being and interpersonal abilities, as the ability to regulate emotions enables a decrease in negative emotions and an increase in positive emotions (Di Giunta et al., 2022; Houck et al., 2016). These findings also fill a gap in previous research, which has not applied many specific emotion regulation interventions to adolescent school adjustments.

The effect of the interaction between time and the group (time $\times$ group) was also significant, indicating a pretest-posttest difference between the experimental group that received emotion regulation training and the control group. The experimental group showed a greater increase in scores than the control group. These findings further confirm that the emotion regulation training intervention is a practical approach for improving school adjustment. These results are consistent with previous research that emotion regulation interventions show effectiveness for mental health and minimize behavioral problems, including lowering anxiety levels, reducing external negative influences in adolescents, improving psychological well-being, and interpersonal abilities (Bahrami, 2020; Kharatzadeh et al., 2020; Kitahara et al., 2020; te Brinke et al., 2021).

The results of this study support the role of parental attachment as an important factor that can moderate the effectiveness of the intervention. School adjustment also depends on the type of parental attachment. Although both the secure and insecure groups showed improvement, the increase was greater in the secure group. This is consistent with attachment theory, which posits that attachment serves as a feedback system of emotional bonding between parents and children, helping adolescents regulate themselves and adapt to environments outside the family. This leads to sustained adaptive functioning during childhood and adolescence and is associated with successful coping with stress in various situations. These factors are determinants of

adolescent mental development, including social relationships, behavioral adaptation, and school adjustment (Miljkovitch et al., 2021; Verschueren, 2020; Wang et al., 2021).

The measurement of three-way interaction (time $\times$ group $\times$ parental attachment) also showed that the treatment in the experimental group was able to provide an increase in scores in both students with secure and insecure attachments. However, the overall improvement in scores in the experimental group was much higher compared to the control group, confirming that emotion regulation training was a major driver of improved school adjustment. These findings certainly further strengthen theoretical studies on the role of emotion regulation and parental attachment. Children whose attachment to their parents is characterized by care and trust can adapt and interact socially positively, showing self-confidence and positive behavior (Li, Cheng, 2022). Emotion regulation interventions involve skills such as self-awareness and self-regulation of emotions, maintaining a positive self-perception, self-esteem, impulse control, perseverance, fortitude, and stress management, all of which relate to specific emotions in individuals (Kamei, Harriott, 2020; Wojnarowska et al., 2020).

The significant improvement observed in the control group can be attributed to several developmental and contextual factors. Early adolescence is characterized by rapid cognitive, emotional, and social maturation, which can naturally support gradual improvements in school adjustment over time (Green et al., 2021). Furthermore, school adjustment is influenced by ongoing exposure to the school environment, including academic demands, peer interactions, and institutional routines, which may facilitate adaptive changes even in the absence of a structured intervention (Lee, 2023; Ma et al., 2020; Zhang et al., 2022). Repeated participation in assessment procedures may also enhance adolescents' emotional awareness and self-monitoring, both of which are central components of emotion regulation (Houck et al., 2016; Kalman-Halevi et al., 2023). Nevertheless, the greater improvement observed in

the experimental group indicates that emotion regulation training provided an additional benefit beyond these developmental and contextual influences.

Overall, the results of this study provide strong evidence that emotion regulation training is an effective intervention for improving student self-adjustment in school, and this effect is reinforced by the presence of secure parental attachment. In previous studies, the evidence presented consisted of separate results. However, this study provided evidence regarding the effectiveness of emotion regulation training on the school adjustment of high school students in the early adolescent developmental stage, taking into account parental attachment as a moderator, whose influence was measured simultaneously.

Emotion regulation training demonstrates its capacity to improve school adjustment in students, regardless of whether they exhibit secure or insecure parental attachment. Nevertheless, its efficacy was much greater in the secure attachment group, characterized by a much larger mean difference and faster understanding and internalization compared to students in the insecure attachment group. In terms of the process, students with a tendency to insecure parental attachment tend to need a relatively long duration to neutralize their negative emotions. These findings fill a gap in the literature by specifically showing how emotion-based interventions can be integrated into school curricula as local content to support student adjustment.

Conclusions

This research has demonstrated that emotion regulation training is an effective interven-

tion for improving students' self-adjustment in school. The results showed a significant improvement in students' overall self-adjustment from pretest to posttest, with the main effect of time (Time) showing a large effect. It was then reinforced by a significant interaction between time and the treatment group (Time $\times$ Group), where the experimental group showed a greater average improvement than the control group. These findings demonstrate that emotion regulation training interventions are an effective strategy for supporting student adjustment in the school environment.

In addition, a significant interaction between time and parental attachment (Time $\times$ Parental Attachment) was found, indicating that parental attachment plays a role in moderating training effectiveness, with greater improvements observed in students with secure attachment compared to those with insecure attachment. This underscores the need for a holistic approach that not only focuses on students but also engages parents and caregivers. Teachers can be trained to model effective emotion regulation, and programs that enhance the quality of emotional relationships between parents and children should be encouraged to create a comprehensive, supportive environment for student adjustment in schools.

Considering the presence of other variables, such as teachers and peers, it is advisable for future research to include these variables as measures in the study. Additionally, it is imperative to compare other interventions or treatments rather than limit the study to a single treatment or intervention.

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The authors declare no conflict of interest.

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Understanding the psychological pathway linking parental phubbing to academic burnout among Chinese high school students: the role of alienation

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Abstract

Context and relevance. Academic burnout has become a major concern among adolescents in exam-oriented educational systems. Parental phubbing, defined as parents' distraction by smartphones during interactions, is increasingly recognized as a potential risk factor for students' psychological and academic adjustment. **Objective.** This study examined the psychological pathway linking parental phubbing to academic burnout among Chinese high school students, with particular attention to the role of alienation within the framework of Self-Determination Theory. **Hypothesis.** It was hypothesized that parental phubbing would be positively associated with alienation and academic burnout, that alienation would be positively associated with academic burnout, and that alienation would mediate the association between parental phubbing and academic burnout. **Methods and materials.** A total of 511 students ($M = 17,0$; $SD = 0,88$; 54,4% female) from Shanxi and Heilongjiang provinces completed validated questionnaires assessing parental phubbing, alienation, and academic burnout. Structural equation modeling was performed using SmartPLS 4 with 5,000 bootstrap resamples. **Results.** Parental phubbing was positively associated with both alienation and academic burnout. Alienation significantly predicted academic burnout and partially mediated the association between parental phubbing and academic burnout. Gender differences were observed, with female students reporting higher levels of burnout. **Conclusions.** The findings suggest that alienation represents an important psychological pathway through which parental phubbing may be associated with academic burnout among Chinese high school students. The results highlight the relevance of adolescents' perceived relational disconnection in understanding the academic consequences of digitally distracted parenting.

Keywords: parental phubbing, academic burnout, alienation, high school students

Supplemental data. The datasets generated and/or analyzed during the current study are not publicly available due to the inclusion of sensitive information on students' academic performance and perceived parental behaviors, but are available from the corresponding authors upon reasonable request.

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Психологический механизм взаимосвязи родительского фаббинга и академического выгорания у китайских старшеклассников: опосредующая роль отчуждения

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Резюме

Контекст и актуальность. Академическое выгорание представляет собой значимую проблему среди подростков, обучающихся в системах образования, ориентированных на экзаменационные результаты. Родительский фаббинг, понимаемый как отвлечение родителей на мобильные устройства в процессе общения с детьми, в настоящее время рассматривается в качестве фактора риска нарушений психологической и академической адаптации учащихся. **Цель.** В данном исследовании проверялось, опосредует ли отчуждение связь между родительским фаббингом и академическим выгоранием у китайских старшеклассников, с опорой на теорию самодетерминации. **Гипотеза.** Предполагалось, что: родительский фаббинг будет положительно связан с отчуждением и академическим выгоранием; отчуждение будет положительно связано с академическим выгоранием; отчуждение будет опосредовать взаимосвязь между родительским фаббингом и академическим выгоранием. **Методы и материалы.** Выборку составили 511 учащихся ($M = 17,0$; $SD = 0,88$; 54,4% лиц женского пола) из провинций Шаньси и Хэйлунцзян, которые прошли валидизированные опросники, направленные на оценку родительского фаббинга, отчуждения и академического выгорания. Статистический анализ проводился с помощью моделирования структурными уравнениями в пакете SmartPLS 4 на основе 5000 бутстраповских ресемплов. **Результаты.** Родительский фаббинг положительно коррелировал как с отчуждением, так и с академическим выгоранием. Отчуждение было значимым предиктором академического выгорания и частично опосредовало взаимосвязь между родительским фаббингом и академическим выгоранием. Были выявлены гендерные различия: у девушек наблюдался более высокий уровень выгорания. **Выводы.** Полученные результаты позволяют предположить, что отчуждение представляет собой важный психологический механизм, посредством которого родительский фаббинг может быть связан с академическим выгоранием у китайских старшеклассников. Результаты подчеркивают значимость воспринимаемого подростками межличностного и реляционного отчуждения для понимания академических последствий цифровой отвлеченности родителей.

Ключевые слова: родительский фаббинг, академическое выгорание, отчуждение, старшеклассники

Дополнительные материалы. Наборы данных, полученные и/или проанализированные в ходе настоящего исследования, не являются общедоступными в связи с наличием в них конфиденциальной информации об академической успеваемости учащихся и их восприятии родительского поведения, однако могут быть предоставлены авторами для переписки по обоснованному запросу.

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Introduction

With the rapid penetration of mobile internet technologies, smartphones have become indispensable in daily interactions. While they provide instant communication and convenience, concerns have grown about their unintended social and psychological consequences. One such phenomenon is “phubbing”, a term combining “phone” and “snubbing”, which refers to situations in which individuals prioritize mobile devices over face-to-face interactions (Pera, 2020).

In contemporary digital parenting research, phubbing is increasingly viewed as a specific behavioral manifestation of smartphone-based neglect during dyadic interaction, whereas the broader construct of parental technofence refers to a wider range of technology-driven interruptions in family life, including disruptions caused by various digital devices and media use (Dixon et al., 2023; Nie et al., 2024). Compared with parental technofence, parental phubbing highlights the interpersonal and relational nature of moment-to-moment disengagement during parent-child interactions. In family contexts, parental phubbing, which refers to parents diverting their attention from children to mobile devices, has received increasing scholarly attention because it undermines the quality of parent-child relationships (Selak et al., 2025; Shen, Xie, 2024; Zhang, Wang, 2025).

Adolescents are particularly sensitive to parental behaviors, and prior studies suggest that parental phubbing may impair their psychological well-being and academic adjustment (Wang et

al., 2023; Zhang et al., 2023). Academic burnout has emerged as a critical concern among students in upper secondary education (senior high school), particularly within exam-oriented educational systems (Liu et al., 2023; Vazsonyi et al., 2024). Although some studies have documented the negative effects of parental phubbing on academic outcomes among younger students (He et al., 2022), less is known about its role in academic burnout during the high school years.

A growing body of literature suggests that alienation may serve as a key explanatory mechanism. Alienation reflects a psychological state of disconnection from meaningful social relationships, accompanied by feelings of powerlessness, meaninglessness, and loneliness (Mann, 2001). Evidence shows that parental phubbing is associated with disrupted parent-child interactions and heightened adolescents' sense of alienation (Frackowiak et al., 2024; Liu et al., 2024; Mi et al., 2023). In turn, alienation has been identified as a risk factor for academic maladjustment, including burnout (Atik, Özer, 2020). These findings point to alienation as a potential psychological pathway linking parental phubbing and academic burnout. However, this potential pathway has not been systematically examined among high school students.

The present study is theoretically informed by Self-Determination Theory (SDT), which identifies autonomy, competence, and relatedness as fundamental psychological needs that support motivation and psychological functioning (Deci, Ryan, 1985, 2008). Within the con-

text of parent-child relationships, parental attentiveness and emotional availability are especially relevant for satisfying adolescents' need for relatedness. When parents are frequently distracted by smartphones, adolescents' relatedness needs may remain unmet, thereby increasing feelings of alienation. Higher levels of alienation may be associated with poorer academic and emotional functioning, including greater vulnerability to academic burnout (Guo et al., 2024; Shim, Go, 2025). Although the present study primarily focuses on relatedness as the most proximal pathway linking parental phubbing to academic burnout, autonomy and competence may also be indirectly affected by digitally distracted parenting and merit further examination in future research. In this way, SDT serves as an integrative theoretical framework for understanding how digital parenting behaviors may shape adolescents' academic and emotional functioning.

The present study therefore examines alienation as a potential psychological pathway linking parental phubbing with academic burnout among Chinese high school students. By addressing this question, the study seeks to extend the literature on the psychological effects of parental phubbing and to clarify the potential psychological mechanisms underlying its academic consequences. Theoretically, this work aims to refine the application of SDT to family-school contexts by elucidating how parental interaction patterns are associated with adolescents' learning-related outcomes. From a practical perspective, the findings may inform future discussions on how parental

smartphone use can be guided to promote adolescents' emotional well-being and academic adjustment.

Materials and methods

Participants

A total of 600 high school students (corresponding to the senior high school level in the Chinese education system) were recruited using a multistage cluster sampling strategy from schools in Shanxi and Heilongjiang provinces, China. These provinces were selected to ensure regional diversity and to capture potential variations in educational environments between central and north-eastern regions. Within each province, schools were randomly selected, and classes within these schools were then randomly chosen.

Of the 600 distributed questionnaires, 511 valid responses were obtained, yielding a response rate of 85,2%. The final sample comprised 54,4% female students, with a mean age of 17,01 years (*SD* = 0,88). In the Chinese education system, high school (senior high school) typically includes Grades 10–12, corresponding approximately to ages 15–18 years. In the present sample, Grade 10 students were mainly aged 15–16 years, Grade 11 students were aged 16–17 years, and Grade 12 students were aged 17–18 years. This age-grade correspondence is provided to facilitate interpretation across different educational systems.

Questionnaires exhibiting patterned responses, extreme outliers, or excessive missing data were excluded (Kang, 2013). Table 1 presents the descriptive statistics of participants' demographic characteristics.

Table 1

Participant characteristics (N = 511)

Variable	Type	Frequency	Percentage
Gender	Female	278	54,40
	Male	233	45,60
Grade	10	191	37,38
	11	163	31,90
	12	157	30,72
Area	Rural	209	40,90

Variable	Type	Frequency	Percentage
	Urban	302	59,10
Only-child status	Yes	199	38,94
	No	312	61,06

Measures

Parental phubbing

Parental phubbing was measured using the Parent Phubbing Scale, adapted from the Partner Phubbing Scale developed by Roberts and David (2016) and revised for parent-child contexts by Ding et al. (2020). The instrument includes nine items (e.g., “My parent checks their phone during conversations with me”) rated on a five-point Likert scale (1 = never, 5 = always). Higher scores indicate more frequent parental phubbing. The scale demonstrated satisfactory internal consistency in the present study (Cronbach’s $\alpha = 0,839$).

Academic burnout

Academic burnout was assessed using the Secondary School Students’ Academic Burnout Scale developed by Hu and Dai (2007). The original scale comprises 21 items across four dimensions: emotional exhaustion, teacher-student relationship disengagement, low learning efficacy, and physical exhaustion. In the present study, one item referring to textbook reviewing behavior was excluded because it was considered less relevant to the learning behaviors of students in senior high school, resulting in a 20-item version. Items were rated on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree), with higher scores reflecting greater academic burnout. The scale demonstrated good internal consistency in the present study (Cronbach’s $\alpha = 0,887$).

Alienation

Alienation was evaluated using the Interpersonal Alienation Subscale developed by Yang et al. (2002), which was constructed within the Chinese cultural context. The subscale contains 16 items across three dimensions: interpersonal alienation (items 1–7), family alienation

(items 8–11), and social isolation (items 12–16). Items were scored on a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree). Higher scores indicate a stronger sense of alienation. The scale demonstrated acceptable internal consistency in the present study (Cronbach’s $\alpha = 0,847$).

Demographic variables

Demographic information, including gender, grade level, single-child status, and place of residence, was collected. Gender, single-child status, and place of residence were statistically controlled in the structural model to minimize potential confounding effects, whereas grade level was excluded as preliminary analyses revealed no significant association with the primary study variables.

Proposed research model

The hypothesized model is depicted in Fig. 1. The model illustrates the hypothesized relationships among parental phubbing behavior (PPB), alienation (AL), and academic burnout (AB). Specifically, PPB is expected to be positively associated with AL, which in turn is positively associated with AB, thereby examining the potential psychological pathway through alienation. Gender, only-child status, and place of residence were included as control variables in the structural model.

Procedure

The study protocol was reviewed and approved by the Research Ethics Committee of the authors’ affiliated university. Informed consent was obtained from school administrators, teachers, parents, and students before participation. Data collection was carried out in classroom settings using a paper-and-pencil survey format. Trained research assistants ad-

ministered the questionnaires according to a standardized protocol. Students were informed of the anonymity and confidentiality of their responses. Completed questionnaires were collected immediately after administration and securely stored for data analysis.

Statistical analysis

Data analysis was performed using SmartPLS 4, which applies the partial least squares structural equation modeling (PLS-SEM) approach. This method was chosen because it is well-suited for testing complex mediation models and makes fewer assumptions about data distribution. The analysis proceeded in two stages.

First, the measurement model was evaluated by examining indicator reliability, composite reliability (CR), average variance extracted (AVE), and discriminant validity based on the Fornell-Larcker criterion and the heterotrait-monotrait ratio (HTMT). Second, the structural model was assessed to test the hypothesized relationships. Path coefficients were estimated, and their significance was determined using a bootstrapping procedure with 5000 resamples. The mediating effect of alienation was examined by testing the indirect path from parental phubbing to academic burnout through alienation. Mediation was considered significant if the 95% confidence

intervals (CIs) of the bootstrapped estimates did not include zero.

Results

Common method bias

To evaluate the potential influence of common method bias (CMB), Harman's single-factor test was first conducted (Harman, 1976; Podsakoff et al., 2003). The unrotated factor analysis extracted 11 factors with eigenvalues greater than 1, and the first factor accounted for 23,58% of the total variance, which is well below the commonly accepted threshold of 40%. This suggests that common method bias was not a major threat in the present study.

To further assess the potential influence of common method bias, full collinearity variance inflation factors (VIFs) were assessed using SmartPLS 4 (Kock, 2017; Singh et al., 2024). The VIF values ranged from 1,000 to 1,115, all below the recommended cutoff value of 3,3, thereby providing additional evidence that common method variance was unlikely to confound the study's results.

Measurement model assessment

The reliability and validity of the measurement model were first evaluated. The results are presented in Table 2. Indicator reliability was acceptable, with factor loadings ranging

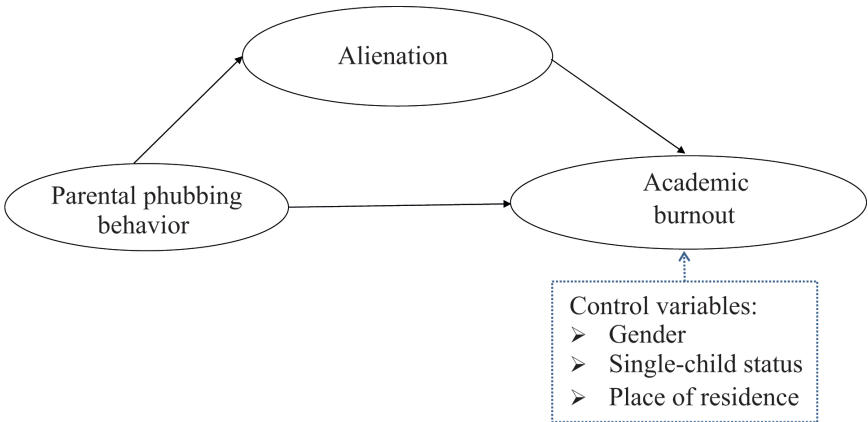


Fig. 1. Proposed research model

from 0,60 to 0,83. Internal consistency was satisfactory, with composite reliability (CR) values ranging from 0,82 to 0,90, all above the 0,70 cutoff. Convergent validity was supported, as the average variance extracted (AVE) values for each construct exceeded the minimum acceptable value of 0,40. Discriminant validity was confirmed: the Fornell-Larcker criterion was met, with the square root of each construct's AVE greater than its correlations with other constructs, and the HTMT values were below 0,85. Together, these results demonstrate that the measurement model exhibited satisfactory psychometric properties.

**Descriptive statistics
and correlation analysis**

Table 3 presents the descriptive statistics and correlation coefficients of all study variables. Parental phubbing was positively correlated with both alienation and academic burnout, and alienation was positively correlated with academic burnout. These findings provide preliminary support for Hypothesis 1.

Structural model assessment

Figure 2 presents the hypothesized structural model. Parental phubbing behavior (PPB) was modeled as the independent variable, alienation (AL) as the proposed psychological pathway, and academic burnout (AB) as the dependent variable. Gender, only-child status, and place of residence were included as control variables.

The structural model was evaluated in SmartPLS 4 using a bootstrapping procedure with 5000 resamples. Standardized path coefficients (β), standard errors, and significance levels were obtained. Table 4 summarizes the structural model results.

PPB significantly predicted AL ($\beta = 0,321$, $p < 0,001$), and AL significantly predicted AB ($\beta = 0,524$, $p < 0,001$). The direct effect of PPB on AB remained significant ($\beta = 0,106$, $p = 0,006$), indicating that alienation partially mediated the association between parental phubbing and academic burnout, thereby supporting Hypothesis 2. Regarding the control variables, gender was significantly associated

Table 2

Reliability and validity of the measurement model

Construct (Variable)	Indicator reliability (factor loadings)	Composite reliability (CR)	Average variance extracted (AVE)	Fornell-Larcker criterion ($\sqrt{\text{AVE}} > \text{correlations}$)	HTMT ($< 0,85$)
Parental phubbing behavior (PPB, IV)	0,72–0,77	0,88	0,55	Satisfied	Satisfied
Alienation (AL, Mediator)	0,70–0,83	0,82	0,60	Satisfied	Satisfied
Academic burnout (AB, DV)	0,60–0,72	0,90	0,53	Satisfied	Satisfied

Table 3

Descriptive statistics and correlation coefficients for variables

Variable	M	SD	PPB	AB	AL	IA	FA	SI
PPB	2,55	0,68	1					
AB	2,60	0,58	0,23**	1				
AL	3,68	0,96	0,30**	0,52**	1			
IA	3,78	1,03	0,20**	0,34**	0,83**	1		
FA	3,24	1,15	0,29**	0,28**	0,67**	0,45**	1	
SI	3,89	1,56	0,23**	0,54**	0,81**	0,44**	0,32**	1

Note: «**» — correlation is significant at the 0,01 level (two-sided). PPB = parental phubbing behavior; AB = academic burnout; AL = alienation; IA = interpersonal alienation; FA = family alienation; SI = social isolation.

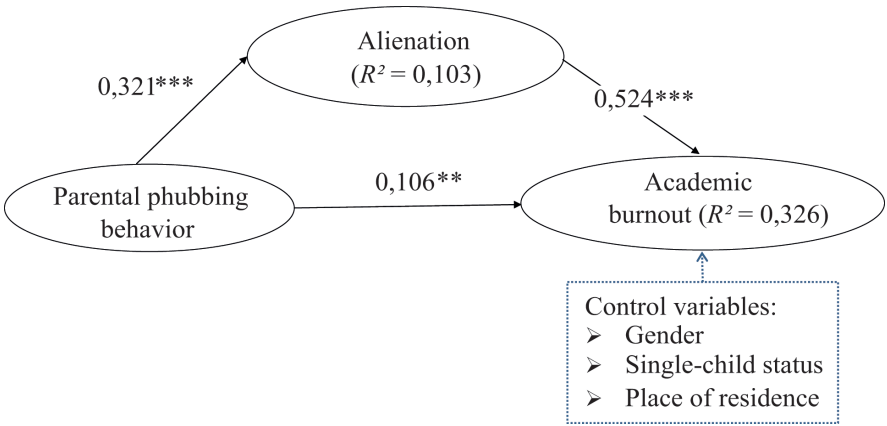


Fig. 2. The structural model with standardized path coefficients (β) and explained variance (R^2):
«*» — $p < 0,05$; «**» — $p < 0,01$; «***» — $p < 0,001$

Table 4

Structural model results

Path	β	SE	t	p	Result
PPB → AL	0,321	0,043	7,509	< 0,001	Supported
AL → AB	0,524	0,034	15,31	< 0,001	Supported
PPB → AB	0,106	0,039	2,725	0,006	Supported
Gender → AB	−0,249	0,076	3,253	0,001	Supported
Only-child status → AB	0,020	0,079	0,248	0,804	Not Supported
Place of residence → AB	0,045	0,163	0,277	0,782	Not Supported

Note. AB = academic burnout; PPB = parental phubbing behavior; AL = alienation. Gender was coded as 1 = female and 2 = male.

with AB ($\beta = -0,249$, $p = 0,001$), indicating that female students reported higher levels of academic burnout than male students. In contrast, only-child status and place of residence were not significant predictors.

predictive relevance, as Q^2 values were positive ($Q^2 = 0,095$ for alienation; $Q^2 = 0,049$ for academic burnout). The global model fit was satisfactory (SRMR = 0,072).

Discussion

The present study examined the relationships among parental phubbing, alienation, and academic burnout in Chinese high school students. The findings supported both primary hypotheses. Specifically, consistent with Hypothesis 1, parental phubbing was positively associated with alienation and academic burnout. Moreover, in line with Hypothesis 2, alienation emerged as an important psychological pathway linking parental phubbing and academic burnout.

Structural model results

Endogenous variable	R^2	Q^2
Alienation (AL)	0,103	0,095
Academic burnout (AB)	0,326	0,049

The structural model demonstrated acceptable explanatory power (see Table 5), with $R^2 = 0,103$ for alienation and $R^2 = 0,326$ for academic burnout. The model also demonstrated

The results further indicated that students who frequently experienced parental smartphone distraction during face-to-face interactions reported stronger feelings of detachment and higher levels of academic burnout. These findings are consistent with previous studies indicating that parental distraction during face-to-face communication undermines adolescents' psychological well-being and academic functioning (He et al., 2022; Marsh et al., 2024). However, most existing studies have focused on primary and middle school students. By contrast, the present study extends this evidence by focusing on Chinese high school students, who face particularly intense academic pressures within an exam-oriented educational context and may therefore be especially vulnerable to the effects of parental phubbing.

Whereas earlier research has primarily emphasized the emotional consequences of parental phubbing, the present findings further highlight its academic implications, suggesting that digitally mediated parental inattention not only disrupts interpersonal dynamics but also undermines students' engagement and persistence in learning.

The findings further suggest that alienation may represent an important psychological pathway linking parental phubbing behavior with academic burnout. Specifically, when parents prioritize mobile phone use over face-to-face interactions with their children, adolescents are more likely to perceive parental neglect and relational disconnection, which may undermine their sense of relatedness, weaken intrinsic motivation, and increase emotional exhaustion. These findings align with Self-Determination Theory (Deci, Ryan, 1985, 2008), which posits that the satisfaction of relatedness needs is essential for sustaining motivation and psychological resilience.

Although similar mechanisms have been documented among college students (Liu et al., 2023), the present study extends this evidence to high school students who are at a critical developmental stage and exposed to heightened academic demands. Within China's highly competitive examination system, weakened parent-child bonds may therefore amplify adolescents' vulnerability to academic burnout and disengagement.

In addition to the hypothesized pathways, the results revealed a noteworthy gender difference: female students reported higher levels of academic burnout compared to their male peers, even after controlling for parental phubbing and alienation. One possible explanation is that adolescent girls tend to be more sensitive to interpersonal dynamics and relational cues, which may heighten their emotional responsiveness to familial interactions. Prior research suggests that girls are more likely to register negative social experiences and exhibit heightened interpersonal sensitivity (Mella-Defranchi, Araya, 2025; Trentini et al., 2022), and that such sensitivity contributes to increased emotional distress during early adolescence (Rudolph, 2002).

This heightened relational sensitivity may make girls particularly vulnerable to the emotional consequences of parental inattention (such as phubbing), thereby increasing their susceptibility to alienation and subsequent academic burnout. The observed gender difference may thus reflect the combined effects of strong academic pressure and elevated emotional sensitivity.

Taken together, beyond demonstrating the detrimental effects of parental phubbing, these findings underscore the importance of fostering healthy family interaction patterns in the digital age. Effective intervention should focus not only on reducing parents' smartphone distraction but also on actively cultivating emotionally responsive and supportive parent-child communication. Establishing family media-use norms, engaging in shared activities, and promoting attentive communication may strengthen adolescents' sense of relatedness and help mitigate academic burnout.

At the broader level, schools and policymakers may contribute by implementing parent-oriented digital literacy programs that raise awareness of how everyday smartphone practices influence adolescents' academic and psychological well-being. In cultural contexts where academic achievement is closely intertwined with family expectations, addressing parental digital behaviors represents an important avenue for supporting adolescents' healthy adjustment.

Conclusions and limitations

The present study examined the relationships among parental phubbing, alienation, and academic burnout among Chinese high school students. The findings supported both primary hypotheses: parental phubbing behavior was positively associated with alienation and academic burnout, and alienation accounted for part of the association between parental phubbing and academic burnout, highlighting its role as an important psychological pathway. In addition, a significant gender difference emerged, with female students reporting higher levels of academic burnout, which may reflect greater sensitivity to parental inattention during everyday interactions. Together, these findings underscore the importance of family digital behaviors, particularly parents' moment-to-moment attentiveness, in shaping adolescents' psychological well-being and academic adjustment. This study further extends prior evidence from younger populations to high school students within an exam-oriented educational context.

At the same time, several limitations should be acknowledged. First, the sample was drawn from only two provinces in China, which may limit the generalizability of the findings to other cultural, regional, and educational contexts. Second, the reliance on self-report measures may have introduced common method bias and social desirability effects. Third, the cross-sectional design precludes strong causal inferences regarding the directionality of the observed relationships. Future research should employ longitudinal, multi-informant, or experimental designs to clarify temporal dynamics and causal mechanisms. In addition, expanding the investigation to more diverse samples, including cross-cultural comparisons, would further enhance the exter-

nal validity of the findings. Future studies may also examine additional moderators or mediators, such as parental stress, parenting styles, peer support, school climate, or broader forms of digital interference (e.g., technofence), to develop a more comprehensive explanatory model of academic burnout.

Taken together, this study contributes to the growing literature on the psychological and academic consequences of parental phubbing by identifying alienation as an important psychological pathway linking parental phubbing and academic burnout. The findings highlight that digitally distracted parenting not only disrupts immediate parent-child interactions but may also undermine adolescents' sense of relational connectedness, thereby increasing vulnerability to academic burnout. These findings further support the value of Self-Determination Theory in explaining how digital parenting behaviors influence adolescents' motivation and emotional functioning in contemporary family contexts.

From a policy and practice perspective, the findings suggest that parent education initiatives should explicitly address digital parenting behaviors, with an emphasis on mindful smartphone use and the cultivation of high-quality parent-child interactions. Schools and community agencies may consider integrating digital literacy, family communication training, and parent-child relationship enhancement programs into existing mental health and academic support services. At a broader level, policymakers may promote public awareness campaigns that encourage balanced technology use within families. Such multi-level interventions may help mitigate the risks associated with parental phubbing and foster healthier psychological and academic development among adolescents.

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Conflict of interest

The authors declare no conflict of interest.

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