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## **Russian Psychological Journal**

Russian Psychological Journal is a peer-reviewed open access journal that publishes original research papers on all aspects of psychology.

It was founded by the Russian Psychological Society in 2004.

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## Science review

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# Psychological Markers of Codependent Behavior: Theory and Practice

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## Abstract

**Introduction.** The purpose of the article is an analytical review of scientific approaches to the study of the features of psychological markers of codependent behavior. Modern approaches to the study of this phenomenon from the point of view of theoretical and practical aspects, reflecting the fragmentary nature of the representation of this concept, are considered. There are not only several definitions of the concept of "codependency", but also many approaches to its study. Based on the theoretical analysis of various approaches, the author's definition of the phenomenon was proposed, which reflects the scientific novelty of the study. **The theoretical justification** of the problem under study was carried out on the basis of the analysis of literary sources, comparative analysis and generalization of foreign and domestic approaches to the term "codependency" under study, approbation of the author's interpretation of the term under study. **Results.** Based on the analytical review, psychological markers of codependent behavior are identified, manifested through a learned set of behavioral forms, adaptation disorders, and various personality disorders. It is shown that the description of psychological characteristics related to the phenomenon of codependency is quite extensive, but it is not systemic. The ideas are outlined not only to continue the study of psychological markers of codependent behavior, but also to search for genetic factors that cause this behavior. **Discussion.** We have identified the interpretation of the term "codependency" as a phenomenon manifested in dependent behavior caused by a change in value-semantic constructs and a lack of necessary competencies, formed under the influence of negative experience of dysfunctional relationships with significant others. This definition combines a number of approaches and enriches them with a look through the prism of the deep features of a person who exhibits codependent patterns of behavior.

**Keywords:** codependency, psychological characteristics of personality, dependent relationships, codependent women, aggression, anxiety, depression, suicidal readiness

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## Introduction

The problem of addictions at the present stage of global development of society is becoming increasingly threatening and widespread. The use of various psychoactive substances, a tendency to gambling, other types of non-chemical addictions can lead to an increase in cases of domestic violence, a deterioration in the quality of life, can provoke antisocial behavior, contribute to the growth of crime and the manifestation of other social and psychological problems (Baykova, 2016; Baykova, Merinov, 2018; Lukashuk, Somkina, Baykova, Bychkova, 2015; Lukashuk, Filippova, 2015, Momeñe, Jáuregui & Estévez, 2017).

In the socialization, rehabilitation and correction of an addict – dependent personality, an important place is occupied by the person next to him (family member, partner). Such a partner can be defined as codependent (Rezvaya, Samsonov & Kutashova, 2019; Pukaev, 2016). Studying the peculiarities of their personality, identifying psychological markers and describing behavioral and coping strategies will allow providing psychological support and assistance at a qualitatively new level, which in turn will contribute to achieving psychological well-being in families faced with addiction problems (Merinov, Shustok & Lukashuk, 2015). The purpose of the article is to study the features of psychological markers of codependent behavior. Modern approaches to the study of this phenomenon from the point of view of theoretical and practical aspects are considered (Birch, 2017; Birch & Isaeva, 2018; Petrova, 2016).

The phenomenon of codependency has been in the focus of attention of researchers since the middle of the XX century. The works of domestic and foreign authors present various approaches to the interpretation of this phenomenon. It is also important to remember about the different etiology of this concept.

Any of the addictions (alcohol, drugs, gambling addictions) can provoke codependent relationships. However, a review of empirical results of studies of the phenomenon of codependency has shown that most studies are fragmentary and still focus only on users of psychoactive substances, extending little to family members who also suffer from the consequences of dependent behavior (Merinov, 2016; Merinov et al., 2016; Rybakova & Krupitsky, 2018).

Within the framework of the 1st US Conference on Codependency in 1989, it was determined that codependency is "a stable state of painful dependence on compulsive (that is, unmanageable) forms of behavior and on the opinions of other people, formed when a person tries to gain self-confidence, realize his own importance, define himself as a person" (Ermakov P. N., Kukulyar A.M., Kolenova A.S., 2018, p. 5). Further, the phenomenon was developed in works that are more of a practical nature and are aimed at psychotherapy and rehabilitation of this type of patients (Ermakov P.N. et al., 2018).

Considering the phenomenon we are investigating through the prism of classical and modern, domestic and foreign studies, mainly conducted over the past 5 years, we can conclude that

there are several trajectories in approaches to studying the phenomenon of codependency, an overview of which will be presented below.

### **Theoretical justification**

A report published by the United Nations Office on Drugs and Crime indicates that about 29.5 million people worldwide have problems with drug use (United Nations, 2017). Based on these values, we can talk about the ever-increasing nature of the problem of codependent relationships in the mainstream of psychological knowledge.

Recently, the etiology and psychological characteristics of the concept of “codependency” have been developed in various psychological studies. It has been found that problems with physical and emotional well-being and health are becoming more common as the level of codependency increases, which leads to adverse health consequences for family members (Bortolon et al., 2017).

The need to treat codependent family members is evidenced by a number of physical and psychological symptoms noted in numerous studies (Askian, Krauss, Baba, Kadir & Sharghi, 2016; Lima et al., 2019; Silva, Oliveira, Silva, Algeri & Soares, 2019; Zielinski et al., 2019).

Most authors adhere to the position that the overwhelming number of codependents experience significant psychological stress (Dias et al., 2021; Silva et al., 2019), complain of severe fatigue, lack of sleep and anxiety (Bortolon et al., 2017; Lampis, Cataudella, Busonera & Skowron, 2017; Lima et al., 2019), depressive experiences, emotional overload as a result of refusal of prescribed treatment (Vederhus, Kristensen & Timko, 2019; Zielinski et al., 2019), as well as an increase in the number of refusals from treatment with antidepressants (Rohden et al., 2017).

The use of psychoactive substances, in addition to significant losses in the life of the consumer, creates negative and lasting consequences for other members of the family system. The social status of such codependents may be in distress due to living with a problem drug user (Ahmad-Abadi et al., 2017; Lima et al., 2019; Vederhus, Kristensen & Timko, 2019; Zielinski et al., 2019). The suffering caused by such family members is described by the authors from the perspective of the presence of symptoms of physical and psychological diseases, changes in family relationships, situations of violence and various economic problems (Ahmad-Abadi et al., 2017; Askian et al., 2016; Bortolon et al., 2017; Lampis et al., 2017; Panaghi, Ahmadabadi, Khosravi, Sadeghi & Madanipour, 2016; Tamutiene & Laslett, 2016; Ulusoy & Guçray, 2017).

A number of researchers indicate that interventions aimed at meeting the specific needs of family members affected by the problem of drug use by a loved one are effective in reducing physical and psychological symptoms and characteristic symptoms of codependency (Ahmad-Abadi et al., 2017; Bortolon et al., 2017). Most codependents are characterized by self-sacrifice of their own needs in order to prioritize the needs of psychoactive substance users (Askian et al., 2016; Silva et al., 2019; Vederhus et al., 2019; Snetkov, 2017.).

Moreover, there are works that highlight the peculiarities of a person's experience of guilt and, as a result, the characteristic behavior of the victim. These works allow us to characterize codependent personalities and identify the following types:

1. Aimed at interaction (realize their aggression on others, but also expect help from them);
2. Exaggerating, but refusing to help;
3. With a high victim identity (auto-aggressive, sacrificial, manipulative);
4. Insecure and dependent on others (Andronnikova, 2017).

Studies showing manifestations of an extreme form of sacrifice and autoaggression – suicidal



readiness - are also described. A study of the autoaggressiveness of the wives of men suffering from alcohol addiction has shown that women who have a history of episodes of auto-destruction, autoaggression and suicidal attempts are usually more likely to marry an addict (Perminova, 2017; Karpushina, 2017). It was also described that the following types of autoaggressive behavior are characteristic of people who exhibit love addiction: suicidal thoughts, passive fantasies about death, self-harm (Buzik, Efimova, 2019). Pronounced suicidal risk in codependent individuals can be localized exclusively in one sphere of life – for example, risky victim behaviors caused by a sacrificial position were described (Zhukova, 2016; Serebryakova, 2018). At the same time, the conducted studies show that in these families, the husband who uses psychoactive substances can show manipulative tendencies through autoaggression and sacrifice (Polkova, 2018).

Suicidal activity of codependent women, as a rule, is characterized by reactivity, in combination with the position of the victim provoking the implementation of autoaggressive behavior, which undoubtedly includes them in the risk zone (Merinov et al., 2015, Somkina, 2016). Thus, it is shown that the presence of autoaggressive tendencies in the experience before marriage can become a marker for creating a family with a dependent person, consolidate the possibility of implementing this specific behavior (Merinov et al., 2015). Taking into account the complexity of the psychological portrait of a codependent woman prone to suicidal risk, domestic scientists have proposed a phased adaptation plan that provides for a contract, group classes in parallel husband-wife logic (Merinov et al., 2015).

Codependency is often characteristic of individuals with borderline and dependent personality disorder, which should be taken into account when trying to explain the relationships found between codependency and anamnestic data, as well as psychopathological (for example, childhood) violence, depression and insecure attachment. According to the authors, every second codependent person meets the five criteria necessary for the diagnosis of borderline personality disorder in DSM-IV-TR, and every seventh codependent meets the criteria established for the diagnosis of dependent personality disorder (Knapek, Balazs & Szabo, 2017). The authors indicate that 31% of codependent people have borderline traits; in addition, 31% of codependents have dependent traits. On the other hand, 16% of codependent people seem to be classified as "pure" codependents (Knapek et al., 2017).

The high comorbidity of codependency is described in a number of works. So, it can be a factor for the formation of Internet addiction in adolescents (Apenok, 2015). An interesting description is the phenomenon of stalking (stalking the object of love), which in a number of manifestations can be observed as a pathological manifestation of attachment, which can manifest itself in psychotic patients with delusions of love charm (Egorov, 2015).

Low adherence to treatment in family members of people who drink alcohol may be associated with the cumulative damage that has developed in the family system. The experience of violence, social isolation and stigmatization associated with problematic alcohol use by an individual may reduce treatment adherence (Shapoval, 2016, Tamutiene & Laslett, 2016).

In codependent relationships, family members in the presence of an addict with chemical dependence had psychological characteristics of suppressing their emotions. The belief that they can solve problems by neglecting their own needs for the sake of the needs of others causes them more family dysfunctions and a lower quality of life (Vederhus et al., 2019). The authors propose the SCCS scale, which is an effective tool for solving the life situation of affected families. This scale can help clinicians focus on family members within health services, especially within health care services.

People suffering from codependency realized that they had a weak will necessary to understand their "autonomy and self-esteem" (Anderson, Rempusheski & Leedy, 2018). A close relationship between alcohol dependence and codependency existed in women suffering from alcoholism. Shyness and anxiety were associated with codependent characteristics, including externally required confirmation (Prata, et al., 2017).

A significant correlation between codependency and perceived health, functional abilities, as well as anxiety and codependency was found by the authors (Sanchez-Roige, Palmer & Fontanillas, 2019). Anxiety, therefore, acts as a significant variable between codependent behavior and a tendency to self-destruction. It was found that there is a close relationship between low self-esteem and codependency.

As a separate direction, it is worth considering the specifics of the psychological relationship of the attending physician with the dependent and his co-dependent relatives.

Dias et al. (2021) note the peculiarities of the influence of the attending physician's personality on the specifics of the addict's recovery process. It is indicated that the position of inaction adopted by some experts in the fight against the use of psychoactive substances contributes to the joint illness of drug addicts and codependent family and community members.

Reducing adherence to treatment is a complex process without an established standard form (Aristizábal, 2020). When correcting codependent behavior, it is also important to follow the prescriptions of medical professionals aimed at preventing health problems, reducing symptoms of diseases and improving the effectiveness of medical interventions. These requirements include mandatory attendance at scheduled meetings and maintaining focus on compliance with the regime. Compliance with medical prescriptions will contribute to changing habits and improving mental health (Bortolon et al., 2017), reducing the assessment of the level of codependency (Foulds, Newton-Howes, Guy, Boden, & Mulder, 2017).

The specificity of the genealogies of HIV-infected patients with codependency is confirmed by the following factors: a high frequency of mental and behavioral disorders caused by alcohol abuse, as well as mental and behavioral disorders caused by opiate abuse, comorbidity of pathologies in families of codependents and their spouses, accumulation of chemical addictions and other similar addictions, personality disorders and affective disorders. It was also found that in accordance with the ICD-10 criteria, the following clinical signs of codependency were manifested in HIV-infected patients: mental and behavioral disorders caused by alcohol abuse (9.7%), mental and behavioral disorders caused by opiate abuse (15.0%), depressive episodes (14.1%), recurrent depressive disorders (34.5%), somatoform disorders (13.3%), hysterical personality disorders (32.7%) (Litvinova, 2017).

It is proved that comorbidity of pathology is a key sign of clinical manifestations of codependency of persons married to HIV-infected injecting drug users. It has been established that hereditary factors, the phenomenon of assortative mating and HIV infection of the spouse as the main chronic stress factor are involved in the formation of clinical manifestations of codependency (Gunko, Viltaniuk & Stepanyuk, 2019).

It was revealed that a high level of codependency was associated with an increase in mental health problems among parents who have children with intellectual disabilities. This implies that there is a certain family dynamic that strongly influences how people relate to each other. Perhaps one component of the family system can create ripple effects and cause interference in the specifics of family interaction (Marques, 2020; Nordgren, Torkel, Svensson & Johnson, 2020).

Parents of mentally retarded children may be at high risk of developing codependent behavior,

experiencing depression, stress and anxiety regardless of gender (Lampis et al., 2017).

The authors suggest that, in fact, only characteristics related to gender roles can influence codependency. Gender and its impact on mental health can also be understood through family systems. The ways parents interact with each other may deteriorate due to underlying mechanisms related to interdependence within the family (Lampis et al., 2017).

Parents who have children with intellectual disabilities report symptoms of depression and anxiety. Parents of children with physical disabilities have a decrease in sleep quality indicators. Psychological stress can be reasonably confirmed by the measure of the perceived burden of parents to care for a child with mental retardation. This burden is largely due to unmanageable workload, financial difficulties, being in a social position, undesirability and loneliness. Guilt was common with the burden of caring for parents with intellectual disabilities (Nordgren et al., 2020).

There are a number of other studies devoted to the search for biological markers of codependent behavior. It has been shown that women with codependency had autoaggressive destructive behaviors and alcoholism in the family history, which may be a risk factor for the development of addictive disease and somatoform disorders (Rozhnova, Kostyuk, Malygin, Enikolopov & Nikolenko, 2020).

The phenomenon of codependency as a non-chemical form of addiction includes psychological and genetic components. The autoaggressive vector of the personality of codependent individuals contributes to destructive forms of behavior and the formation of disorders of the mental and physical spectrum and psychosomatic pathology. The hereditary burden of alcohol dependence on the pedigrees of codependent women indicates the presence of a genetic factor in the pathogenesis of the analyzed form of addictive disorder and indicates the feasibility of studying the genetic component using molecular genetic technologies (Rozhnova et al., 2020).

### ***Conclusions on the theoretical justification***

After conducting a theoretical analysis of the literature, we can conclude that the term "codependency" is considered through the specifics of psychological and behavioral states, as a learned set of behavioral forms, adaptation disorder, illness, manifestation of personality disorders, and so on, which emphasizes its specificity and versatility.

So, codependency is a phenomenon manifested in dependent behavior caused by a change in value-semantic constructs, a lack of necessary competencies and formed under the influence of negative experience of dysfunctional relationships with significant others. This definition is highlighted in the context of this study and is relevant at the present stage of psychological research.

The study of interrelated subjective factors influencing the manifestation of codependent behavior and the identification of its markers make it possible to outline further prospects for research within the framework of psychogenetics of behavior, expanding the concept and creating new, fast and highly valid diagnostic methods for this phenomenon.

### **Discussion**

Thus, based on the theoretical analysis of various approaches, we proposed the definition of the term "codependency" as a phenomenon manifested in dependent behavior caused by changes in value-semantic constructs, lack of necessary competencies and formed under the influence of negative experience of dysfunctional relationships with significant others. This definition combines a number of approaches of domestic and foreign authors who concentrate their research in the field of personal and psychological traits of codependents (Artemtseva & Galkina, 2015; Birch,

Isaeva, Gorbatov & Antipina, 2016; Buzik & Efimova, 2019; Gagai & Selezneva, 2016; Yezin, 2018; Kolenova & Gurtskoy, 2019; Suntsova & Faizova, 2018; Lima et al., 2019).

On the other hand, this definition enriches psychological approaches by looking through the prism of the deep characteristics of people who exhibit codependent patterns of behavior, unlike those authors who focus exclusively on somatic and behavioral aspects manifested in codependent individuals (Bashmanov & Kalinichenko, 2015; Biktagirova & Garifullina, 2018; Bulatnikov & Zaretsky, 2017; Golovanova, 2016; Egorov, 2015; Somkina & Zhukova, 2017; Karpushina, 2017; Kayasheva & Efremova, 2016; Korablina, 2019; Litvinova, 2017; Moskalenko, 2016; Nechin, 2016; Pakulina, Lazarev & Filatov, 2016; Perminova, 2017; Pleshakova, 2018a; Pleshakova, 2018b; Polkova, 2018; Polukhina, 2018; Salomatova, 2019; Aristizábal, 2019; Robertson, 2018; Rohden et al., 2017; Weiss, 2016).

At the same time, we see the prospect of developing studies of codependent behavior in the aspects of searching for its genetic predictors, since the groundwork for this has already been laid in the works of Mandel and co-authors (2018), Martynova (2016, 2017), Osinskaya and Kravtsova (2016), Birkeland et al. (2017), Ehsan & Suneel (2020).

#### Conclusion

Thus, the analysis of the psychological characteristics of codependents showed that the phenomenon of codependency is manifested in emotional, behavioral and cognitive aspects; it is characterized by a sufficiently high comorbidity with emotional disorders and other dependent forms of behavior (dependence on surfactants, non-chemical addictions, Internet addiction, etc.)

At the same time, a theoretical review of classical and modern studies allowed us to develop a new definition of the phenomenon of codependency, describing the personal causes of codependency in a practical perspective.

We have described the prospects for modern studies of the features of the phenomenon of codependent behavior, which consist in the need for family genetic analysis and the establishment of the connection of genetic predictors with the results of individual psychological diagnostics.

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**Anastasia S. Kolenova** – curatorship of the study, final approval of the version for publication, conceptualization and methodology, organization of the study, retrospective analysis of literary sources.

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### **Conflict of Interest Information**

The authors have no conflicts of interest to declare.

Aleksey A. Sharov

The motivation structure of young people and their social activity...

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# The Motivation Structure of Young People and their Social Activity in the Complicating Conditions of Society Functioning

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## Abstract

**Introduction.** Today, the social activity of young people in the real and virtual environment is undergoing significant changes, as the conditions for the functioning of the social environment become more complicated. It is associated with several factors that affect social conditions, in particular the pandemic situation and the handling of a special military operation. The study aims to identify and describe the motivation structure and social activity of young people in the functioning complication of the social environment. The correlations between motives and types of activity were revealed for the first time, new forms of social activity were identified, and enlarged components of social activity for young people were presented. **Methods.** Two hundred Russian residents participated in the study. The average age was 19.8 years. To study the structure of social activity, a questionnaire was applied, which included 18 scale questions and four new author scales. The motivational structure was evaluated using seven question scales developed by the author and tested in previous scientific research. **Results.** The most pronounced among young people are the motives for learning new things, harmony with others, self-development, and self-realisation. The interrelations between the motives for learning new things, self-realisation and leisure, and Internet search activity, and between preventive activity and the motive of learning new things, post-pandemic activity, and the motives of confidence and success are revealed. The structure of social activity is represented by three enlarged components: civil and political activity, including a religious component; professional-educational and recreational activity; preventive and post-pandemic activity. Both traditional and new forms are highlighted in the structure of the social activity of young people. **Discussion.** The results obtained are quite understandable from the standpoint of the system-diachronic approach, according to which the activity of an individual and a group and its motivation are determined by the external state of the functioning of the social environment. These conditions lead to the emergence of new forms of social activity and approaches to the classification of the phenomenon under study.

**Keywords:** motivation, social activity, youth, real environment, virtual environment, factor structure, enlarged group, post-pandemic activity, self-development, civic activity

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## Introduction

Currently, there is an expansion in the number of studies on various aspects of the social activity of young people. First of all, it can be seen in the mainstream of social psychology. By social activity, modern authors mean not only the participation of representatives of the youth demographic group in various spheres of life and the fulfilment of their social roles but also a creative, proactive attitude towards themselves and various spheres of public life (Shamionov, 2020; Shamionov, 2018).

There are several areas of research in the context we are interested in. First, it is the development and description of various forms (types) of social activity (Shamionov et al., 2020). Further, it is necessary to mention the works of Russian authors devoted to the study of activity characteristics (Arendachuk, 2020), value (Shamionov, Bocharova, Nevsky, 2022), volitional (Shamionov, Grigoriev, Grigoriev, 2019) and socio-demographic predictors of social activity (Usova, 2019). The authors also consider the relationship between social activity and a tendency to risky behaviour (Shamionov, 2021), identity (Shamionov et al., 2022), and also the motivation of social activity and its relationship with civic consciousness (Grigorieva, Sharov, Zagranichny, 2022). A significant role in modern academic pursuits is occupied by examining the problematics of the interrelation between youth activity and various psychological characteristics (trust, psychological well-being, conformism) (Kislyakov, Shmeleva, 2022); analysis of oculomotor reactions in the process of young people's perception of stories with various forms of social activity (Shamionov, Nevsky, 2020). It is interesting to study the influence of the social activity of young people on their position in the labour market (Balog, 2017). It is particularly relevant to single out the types of social activity in real (physical) and virtual environments to consider their conjugation and the mechanisms of interlinking (Shamionov, Suzdaltsev, 2022; Zagranichny 2019). Moreover, there is a separation of an integrative branch of science – the psychology of social activity of an individual and a group (Shamionov et al., 2020). In foreign science, much attention is paid to virtual forms of social activity of young people, including deviant ones (cyber aggression, cyberbullying (Alvarez-García, Barreiro-Collazo, Núñez, & Dobarro, 2016; Nocentini et al., 2012; Schoffstall & Cohen, 2011; Mishna et al., 2018)), the study of the correlation of activity and social identity (Osborne, Jost, Becker, Badaan, & Sibley, 2018), and also the study of life orientations in the context of the social activity transformation (Hitlin & Salisbury, 2013), issues of digital socialization in general (Stornaiuolo, 2017).

In recent years, there has been a research interest in deviant forms of social activity in our country, both in real and virtual environments, in terms of diagnostics, typology, and interrelation (Sharov, 2019; Soldatova, Rasskazova, Chigarkova, 2020).

Thus, we can state a steady research interest of domestic and foreign authors in the topic

of social activity, the tendency to expand its types and boundaries, and the interlinking mechanisms.

M. A. Klenova (2018), V. A. Sitarov and V. G. Maralov (2015) emphasize that it is necessary to study the phenomenon of social activity of young people comprehensively, taking into account the dynamics of the functioning of modern society. In this context, the study by N. V. Usova and co-authors is representative. In this study, an attempt is made to substantiate diagnostic tools within the framework of studying person activity under forced self-isolation conditions (Usova, Arendachuk, Klenova, 2021). It can be assumed that currently a young person's activity is influenced by the increasingly complex circumstances of the functioning of the social environment. To these circumstances, firstly, it is necessary to include a fresh trace of the aggravated pandemic situation and various restrictions and prohibitions related to it, which have been continuing since February 2020, and, secondly, the unfavourable economic and geopolitical situation in which Russia found itself in connection with a special military operation.

The study aimed to identify and describe the motivation and social activity structure of young people in the increasingly complex conditions of the functioning of the social environment.

We have identified a number of hypotheses:

1. It is possible to assume the allocation of an enlarged structure of social activity of an individual and a group containing both traditional and new activity forms associated with the complicating conditions of the social environment;
2. There are significant correlations between the types and motives of social activity.

The objectives of this study are the development of new types of person's activity and their inclusion in the diagnostic block; the identification of the relationship between motives and types of activity; presentation of enlarged components of social activity of young people.

## Methods

The study sample consisted of 200 respondents, the average age was 19.8 years (61.5% of women), and 86% of the respondents are not married. Respondents live in small towns – 22.5%, villages – 12%, regional centres – 63.5%, and 2% of megalopolis residents. The sample group was formed in a simple randomized way. The study was conducted between April and June 2022.

As part of the research plan implementation, a questionnaire was applied, including 18 scale questions (Shamionov et al., 2020), meaningfully characterizing the forms of social activity of an individual (altruistic, leisure, sports and recreation, mass cultural, family and household, ecological, socio-political, Internet network, Internet search, civil, socio-economic, professional, educational and developmental, spiritual, religious, protest, radical protest, subcultural). Respondents were asked to rate their activity on a 5-point Likert scale (from 1 – 'rarely' to 5 – 'constantly') (Shamionov et al., 2020).

Motivation for social activity was assessed using seven author questions-scales tested in the previous phase of research (Grigorieva et al., 2022). Among the scales are food and shelter provision (1); confidence and success (2); acceptance by others (3); love and respect (4); learning new things (5); harmony with others (6); self-realization and self-development (7). The proposed new forms of social activity were evaluated by three scales developed by author (Table 1).

**Table 1***Questions-scales of new activity forms*

Scale name	Scale content
Preventive activity	Avoiding situations associated with staying in crowded places, using masks and gloves in public places and being in contact with people with symptoms of ARVI, revaccination, interest in news, preventive content within the scope of COVID-19
Post-pandemic activity	The use of digital services to search for information, purchase goods, receive services, interpersonal interaction, despite the abolition of the main covid restrictions, activities aimed at combating post-covid complications, building long-term plans in the aspect of life without taking into account the pandemic
Patriotic activity	Participation in collecting and sending humanitarian aid to residents of the DPR and LPR, in actions supporting a special military operation, the use of hashtags on social networks, symbols in the real environment (on clothing items, vehicles) of the Latin letter Z

The substantive validity of the new scale questions was evaluated by four experts. The Kendall concordance coefficient ( $W = 0.80$ ) indicates a high degree of consistency in the assessment of experts. The indicated scales also demonstrated an acceptable level of reliability:  $\alpha$  Cronbach = 0.74–0.83. Respondents were also asked to rate their activity on the Likert scale (from 1 to 5).

The diagnostic stage of the study was conducted using the Google Forms service. The average time to complete the questionnaire is 15 minutes. Statistical processing was carried out using the licensed statistical software package IBM SPSS Statistics 27.0.

## Results

All indicators obtained during the analytical stage were checked for normality of distribution according to the Kolmogorov-Smirnov test. An acceptable positive result was obtained ( $p > 0.05$ ), indicating the presumed correspondence of the empirical distributions to normal and the possibility of using parametric statistical procedures (Student's t-test, Pearson correlation analysis, factor analysis using the principal component method).

Let us turn to the data received reflecting descriptive statistics. Table 2 shows the results by type of social activity.

**Table 2***Descriptive statistics of social activity degree (n = 200)*

Activity	Minimum	Maximum	Average value	Standard deviation
Altruistic	1	4	2.60	1.99
<b>Leisure</b>	<b>1</b>	<b>5</b>	<b>4.09</b>	<b>1.01</b>
Sports and recreation	1	5	3.36	1.22
Mass cultural	1	5	2.71	1.24
<b>Family and household</b>	<b>1</b>	<b>5</b>	<b>3.93</b>	<b>1.03</b>
Ecological	1	5	2.89	1.17
Socio-political	1	5	1.83	1.15
Internet network	1	5	3.18	1.37
<b>Internet search</b>	<b>1</b>	<b>5</b>	<b>3.83</b>	<b>1.16</b>
Civil	1	5	2.21	1.16
Socio-economic	1	5	2.67	1.35
Professional	1	5	3.11	1.26
Educational and developmental	1	5	2.83	1.26
Spiritual	1	5	2.99	1.31
Religious	1	5	1.91	1.13
Protest	1	5	1.70	1.05
Radical protest	1	5	1.88	1.18
Subcultural	1	5	1.80	1.20
Altruistic	1	4	1.66	0.89
Post-pandemic	1	5	1.91	1.18
Patriotic	1	5	1.61	0.94



Table 2 shows that leisure, family and household and Internet search activity are the most pronounced among young people.

Let us turn to the data obtained concerning the motivation of social activity. Table 3 presents the results for the entire sample and also a comparative analysis between men and women.

**Table 3**

*Social activity motives (n = 200)*

Variables		Young people's social activity motives						
		1	2	3	4	5	6	7
Results for the entire sample	Average value	3.35	3.29	3.42	3.94	4.29	4.04	4,36
	S. D.	1.17	1.29	1.28	1.10	0.89	1.10	0,92
Women	Average value	3.21	3.32	3.31	4.20	4.31	4.20	4,30
	S. D.	0.90	1.31	1.35	0.98	0.95	1.05	0,96
Men	Average value	3.42	3.22	3.47	3.41	4.24	3.71	4,47
	S. D.	3.19	1.18	1.24	1.14	0.77	1.13	0,85
Student's t-test		0.54	0.50	0.83	5.23*	0.61	3.21*	1.30

Note: Significance level  $p \leq 0.01$ .

Table 3 shows that the motives for learning new things, harmony with others, and also self-development and self-realization are the most pronounced among young people. The women are dominated by motives of respect, love, and harmony with others. The results obtained overlap with previous studies conducted in the framework of the study of the social activity of young people (Grigorieva et al., 2022).

Let's turn to the results of the correlation analysis of the most pronounced motives and types of social activity. Significant correlations were obtained between the motives for learning new things and leisure activity ( $r = 0.256$  at  $p < 0.001$ ), and also Internet search activity ( $r = 0.225$  at  $p < 0.001$ ); the motive of self-realization and self-actualization and leisure activity ( $r = 0.369$  at  $p < 0.001$ ), and also Internet search activity ( $r = 0.341$  at  $p < 0.001$ ). Of interest are also the revealed interrelations between the motive of finding a new and preventive activity ( $r = -0.176$  at  $p < 0.001$ ), and the motive of confidence and success and post-pandemic activity ( $r = 0.210$  at  $p < 0.001$ ).

Let us proceed to the results of the factor structure of youth social activity. Values were obtained according to the KMO test = 0.826, and the statistical significance of Bartlett's test of sphericity was equal to 0.000. This indicates that the data can be subjected to factor analysis. As a result of factor analysis by principal component analysis with subsequent Varimax rotation (rotation

converged in 5 iterations) with Kaiser normalization, 3 factors were obtained, explaining 47% of variance. Each factor determines an enlarged group of elements in the structure of youth social activity. The results are presented in Table 4.

**Table 4**

*Factor loadings of social activity types (n = 200)*

Type of social activity	1 factor	2 factor	3 factor
Altruistic	–	0.486	–
Leisure	–	0.666	–
Sports and recreation	–	–	–
Mass cultural	–	0.569	–
Family and household	–	0.488	–
Ecological*	–	–	–
Socio-political	0.806	–	–
Internet network	–	0.543	–
Internet search	–	0.686	–
Civil	0.718	–	–
Socio-economic*	–	–	–
Professional	–	0.484	–

Type of social activity	1 factor	2 factor	3 factor
Educational and developmental	–	0.485	–
Spiritual	–	0.563	–
Religious	0.663	–	–
Protest	0.757	–	–
Radical protest	0.776	–	–
Subcultural	0.616	–	–
Preventive	–	–	0.855
Post-pandemic	–	–	0.887
Patriotic*	–	–	–
% coverage of total variance	21	16	10

Note: types marked with \*, are not included in any of the factors.

We named the first factor, including social and political, civic, religious, protest, radical and protest and subcultural types of social activities, as «civil and political activity, with a religious component».

The second factor contains the following forms of social activities: altruistic, leisure, mass cultural, family and household, Internet network, Internet search, professional, educational and developmental, and spiritual. This factor is named as «professional and educational, and recreational and household activity». The third factor includes post-pandemic and preventive social activities, and we called it «preventive and post-pandemic activity associated with the spread of COVID-19». Moreover, from the table, we see that none of the factors end up including ecological, socio-economic, and patriotic activity.

## Discussion

An analysis of the activity primary indicators allows us to state that leisure, family and household, and Internet search, are the priority types of social activity among young people. The results are consistent with previous studies (Shamionov, 2021; Arendachuk, 2021), which found that the priority types of activity among young adults are Internet network and leisure activities. This means that the listed types of activity also dominate in the increasingly complex conditions of the social environment.

The motives for learning new things, harmony with others, as well as self-development and self-realization, turned out to be the most expressed among young people. These results are consistent with previous studies (Grigorieva et al., 2022), which showed that the motives of self-development and learning new things are of importance for young adults. A comparative analysis showed that female respondents value the motives of harmony with others, respect and love, to a greater extent than males. This fact testifies to the orientation of women to a positive social response from the people around them in the process of social activity. We can see the expressed identity of the data obtained in different periods of time. This may indicate that the structure of motivation for the social activity in young people is relatively static, despite the increasingly difficult conditions for the functioning of society.

As for the relationship between motives and types of activity, it can be stated that the motives for learning new things, self-realization and self-actualization are associated with Internet search and leisure activities. From the other perspective, the lower the motive for learning new things, the higher the preventive activity. The motive of confidence and success is associated with post-pandemic activity. In other words, in the increasingly difficult conditions of the functioning of the social environment, the implementation of motives related to learning new things and self-development occurs through a person's leisure and Internet search activity. In addition, confidence and success are correlated with post-pandemic activity.

Patriotic activity was not included in any factor (the indicators have a low spread and a low average score). This can be explained by the fact that the actions of patriotic youth in this context can be included in civil and protest activity, identified at the early stages of the study (Shamionov et al., 2020) and later included in the first factor (an enlarged component of social activity named «civil and political activity, with a religious component»). The fact that the preventive and post-pandemic activities were identified as an independent factor (preventive and post-pandemic activity associated with the spread of COVID-19) can be explained as follows. The situation associated with the pandemic, various restrictions, isolation, and other aspects of the spread of coronavirus infection, appears quite longstanding. Despite the removal of the main restrictive measures in Russia at the time of the study, the situation remains tense and unpredictable. According to the epidemiological forecasts, an increase in the incidence of coronavirus infection is possible in the autumn-winter and spring periods, which is associated with a decrease in the level of antibodies (Barvina et al., 2021; Karpova, Stolyarov, Popovtseva, Stolyarova, Danilenko, 2022). It can be stated that news, as well as preventive, scientific and medical content has been actively broadcast in the media, the virtual environment, since 2019. This is probably why preventive activity, as a new type of social activity, was included in the mentioned enlarged component. The recent decrease in pandemic stress leads to the allocation of another new variation of activity, which is post-pandemic. Its aim is to build life plans without focussing on the pandemic situation, using the

acquired experience of interaction skills in a virtual environment, as well as activities aimed at overcoming the post-COVID complications.

The identification of motives, their association with social activity, and its enlarged components can be explained from the standpoint of a system and a diachronic approach. According to it, various types of social activity are determined not only by social and psychological characteristics, but also by the external conditions of the functioning of society in which an individual or a group is located. In this case, the emergence of a situational enlarged component of social activity (preventive and post-pandemic) is associated with changes in external living conditions caused by the spread of coronavirus infection.

### **Conclusion**

1. In the structure of social activity of young adults, we can distinguish both traditional forms of social activity (altruistic, leisure, sports and recreation, mass cultural, family and household, social and political, Internet network, Internet search, civil, professional, educational and developmental, spiritual, religious, protest, radical and protest, subcultural), and new ones, which are due to the changing conditions of life and the functioning of the social environment (preventive, post-pandemic, patriotic).
2. The motives of searching for the new, self-development, and self-actualization are associated with leisure and Internet activity. The motive of confidence and success determines post-pandemic activity.
3. The structure of the social activity of young people in the increasingly complex conditions of the social environment includes three enlarged components: civil and political activity, with a religious component; professional and educational, and recreational and household, as well as preventive and post-pandemic.

The results of the study can be used as part of the development of programs for psychological and social support under the increasingly difficult conditions of social environment functioning, as well as the organization of modern youth activities. Prospects for further research may be associated with the identification of new situationally determined forms of social activity, depending on the emergence of new conditions and challenges of the current times.

### **Limitations**

The limitations of the study lie in the sample's imbalance in gender (most respondents are women), as well as in place of residence (most respondents are residents of the regional center). In addition, a significant part of the subjects are students of educational institutions of higher education.

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### **Conflict of interest information**

The authors have no conflicts of interest to declare.



## Research article

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# Psychological Features of Students' Experience of Limited Access to Social Networks

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## Abstract

**Introduction.** Social networks are a tool for finding social contacts, emotional support, a means of self-expression and self-presentation. In the period of so called "crisis of credibility", expressed in a large amount of unverified and often contradictory information, it is very important to study the psychological characteristics of students' experience of limited access to social networks such as Instagram\* (a Meta Platforms Inc. project, which is banned in Russia). The study of informational behavior in recent years has acquired particular relevance, which has been realized in a large number of both foreign and Russian works. For the first time, an attempt was made to describe the differences in the characteristics of students' experience of limited access to social networks, depending on the actions of respondents after the restriction of access. **Methods.** The study involved 174 students aged 18 to 21 years (61 boys and 113 girls), students of 1–3 courses of the Don State Technical University. To achieve the goal of the study, the author's questionnaire was used (I. V. Abakumova, N. E. Komerova, S. V. Ryagin); test of Personal Adjustment (K. Rogers, adapted by A. K. Osnitsky); questionnaire "Strategic approach to coping scale" (SACS) (S. Hobfall, adapted by N. E. Vodopyanova, E. S. Starchenkova). Mathematical methods were the statistical Mann-Whitney U-test; Spearman's rank correlation coefficient. **Results.** Coping strategies and features of socio-psychological adaptation to stressful situations change depending on the actions of respondents after restricting access to the social network Instagram\* (continuation of use using VPN applications, termination of use after a ban). Respondents who stopped using the Instagram\* social network showed a higher level of avoidance and impulsive actions, less severity of internal control, adaptability, and emotional discomfort than respondents who continued to use this social network. **Discussion.** Studies of informational behavior by both domestic and foreign authors emphasize the importance of the virtual space of social networks as a way of self-presentation, communication, getting support, self-expression, etc., which is consistent with our results that limiting access to the popular resource among young people (Instagram\*) can be perceived as a frustrating event, the loss of a "part" of life, which activates certain coping strategies and mechanisms of socio-psychological adaptation.

**Keywords:** access restriction, social network, coping strategies, socio-psychological adaptation, credibility crisis, infodemic, avoidance, maladaptation, frustration, social contact

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## Introduction

The geopolitical tension that have arisen in recent years and is constantly growing in the modern world have become one of the stressors for young people, especially over the past year. In the period of so called "crisis of credibility", expressed in a large number of emerging multidirectional and often contradictory ("fake") information, in order to protect the population from unverified or false information, it was decided to block certain Internet resources in the territory of the Russian Federation, for example, a social network Instagram\* (hereinafter Instagram\* is a project of Meta Platforms Inc., whose activities are prohibited in Russia). It's widely known that the most active users of social networks are young people. For them, social networks act as a means of communication, obtaining information, promotion, self-presentation, shopping, and so on.

As a result of the Instagram\* ban on the territory of the Russian Federation, the student community was divided into two groups - those who continued to use social networks (using the VPN application), and those who stopped using them due to the ban.

A virtual private network (VPN) is a technology that allows you to establish a secure connection to the Internet. When connecting to the Internet via a VPN, the software creates a secure connection between the device and a remote VPN server by encrypting the user's web browsing data and hiding the IP address.

Thus, the study of the peculiarities of students' experience of limited access to social networks acquires great relevance.

The topic of informational behavior, and, in particular, the use of social networks, as well as the consequences of restricting access to social networks, has been at the peak of relevance in recent years and interest in it is realized in various areas, such as psychology, political science, sociology, and economics. So, Grebenkina A. A. (2020) explores virtual social networks, their capabilities and limitations; Emelyanov D.S. (2021) describes the features of restrictions on the right to freedom of speech in the era of social networks; Pashinina N. I. (2022) analyzes the impact on the activities of small businesses of restricting access to the social network Instagram\* in the Russian Federation and the prospects for the development of Rossgram; Serova S. A., Semishova E. P. (2022) highlight aspects of limiting the spread of false information in the media and social networks; Smirnov A. V. (2021) presents a model of a digital society in Russian reality; Ganichev N. A., Koshovets O. B. (2019) analyze the specifics of Russia's integration into the global digital transformation project; Wanqing H., Fenqing L., Solodukho A. (2022) focus on the study of smartphone addiction and cross-cultural adaptation among international Chinese students;

Shabunova A. A., Gruzdeva M. A., Kalachikova O. N. (2020) raise the issue of resolving the digital divide in modern Russia; Gaitán-Aguilar L., Hofhuis J., Bierwaczek K. & C. Carmen (2022) analyze the use of social networks, social identification and intercultural adaptation features of international students. Also, Collis A. & Eggers F. (2022) explore the impact of limiting social media use on student well-being and productivity; Haidt J. & Twenge J. (2022) analyze the relationship between social media use and mental health; Johannes N., Meier A., Reinecke L., Ehlert S., Setiawan D. N., Walasek N. et al (2021) describe the relationship between online caution and affective well-being in everyday life.

The above studies point to the importance of social networks in the life of a modern person, however, they do not fully reveal the emotional aspect of digital socialization, which, in the context of the introduction of bans on social networks, can come to the fore.

Any change in habitual lifestyle can be perceived by the individual as a stressful event and activate strategies for coping with the situation. Since social networks are today the "second" reality, the experience of limited access to them will be reflected in the behavior both on the Internet and in everyday life.

The study of coping strategies with stressful situations is considered by the authors from different angles (Kubekova, Fazlullah, 2021). So, Denisova E. G., Bykova Ya. A. (2021) analyzed the ways of co-ownership of adolescents in connection with indicators of self-regulation. Dmitrieva A. V. describes the relationship between coping strategies, social intelligence and behavioral strategies in adolescence (Dmitrieva, Sorokoumova, 2021). Kochurov M. G. (2020) highlights the relationship of coping strategies with the locus of control. Tunynina E. A. (2022), Surkova T. A (2021), Fteiha M. & Awwad N. (2020) explore the influence of emotional competence and various aspects of emotional intelligence on the coping behavior strategies choice. The influence of Internet addiction on the coping strategies of adolescents is noted (Yushko, Nurimanova, 2020). Stallman H. M., Lipson S. K., Zhou S. & Eisenberg D. (2022) analyze the coping strategies of American students.

After a period of active experience of a stressful situation, as a result, socio-psychological adaptation to new living conditions begins. The features of this period have been actively studied by the authors in recent years. For example, Ryabinkina S. A. studied the features of socio-psychological adaptation and the communicative sphere of Internet-addicted students (Ryabinkina, 2020). Skorodumova A. O. analyzed the socio-psychological adaptation of students in the initial courses of universities (Skorodumova & Eliseev, 2021).

Despite the abundance of scientific research in the field of psychology of social network users, the topic of students experiencing a unique situation of limited access to social networks is extremely relevant at the present time.

## **Methods**

The purpose of the study is to study the peculiarities of students' experience of limited access to social networks.

An empirical study was conducted on the basis of the Don State Technical University (DSTU, Rostov-on-Don). The study involved 174 people aged 18 to 21 years (61 boys and 113 girls), who were students of the 1st, 2nd and 3rd courses of the full-time and part-time departments of the "Psychology, Pedagogy and Defectology" and "Media Communications" faculties. In order to conduct a comparative analysis of the peculiarities of students' experience of limited access to social networks, it was decided to divide the group of respondents into two subgroups: Subgroup A

(in the amount of 102 people) included those who continued to use social networks using VPN; Subgroup B (72 people) – those who stopped using social networks.

To describe and analyze the features of students' experience of limited access to social networks, methods were chosen that reflect coping strategies for dealing with stressful situations, features of socio-psychological adaptation: test of Personal Adjustment (K. Rogers, adapted by A. K. Osinsky); questionnaire "Strategic approach to coping scale" (SACS) (S. Hobfall, adapted by N. E. Vodopyanova, E. S. Starchenkova). To assess the significance of differences, the statistical Mann–Whitney U-test was used; to identify the presence of relationships between variables – Spearman's rank correlation coefficient.

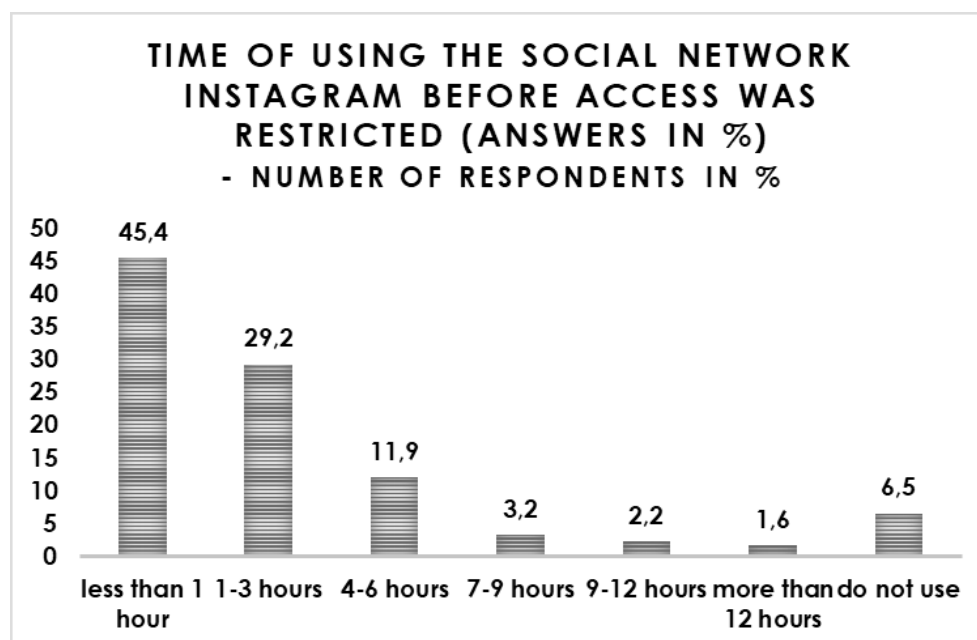
The study was conducted from August to September 2022. All respondents agreed to participate in the study, were informed about its objectives and notified of further use and publication of the results.

## Results

Data on the statistics of the use of the social network were obtained from the author's questionnaire (I. V. Abakumova, N. E. Komerova, S. V. Ryagin). According to our questionnaire survey, more than 93% of respondents used this social network at least once a day from a few minutes to 12 hours. The survey data are shown in Fig. 1.

**Figure 1**

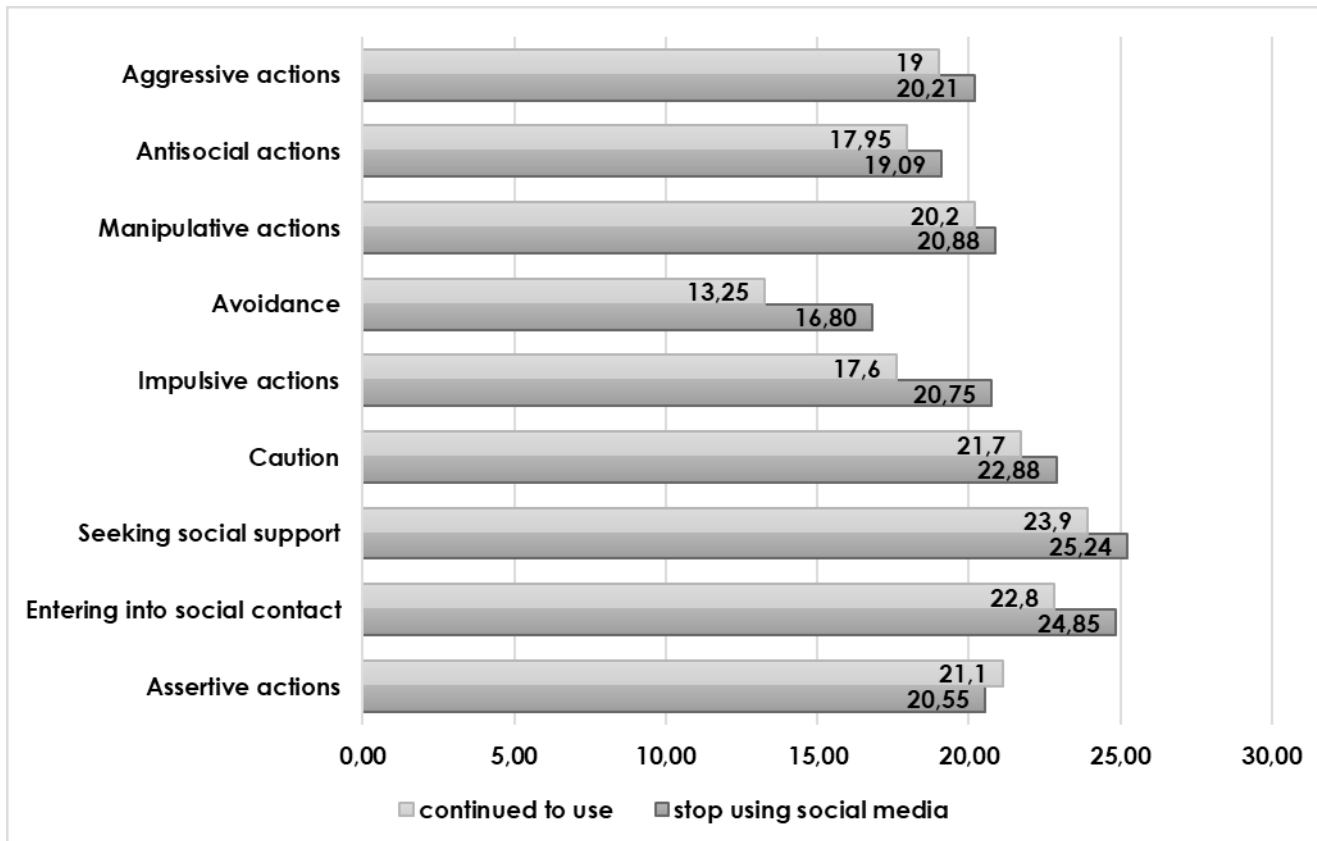
*Social network usage statistics by time during the day among respondents*



As a result of the study using questionnaire "Strategic approach to coping scale", the data presented in fig. 2.

**Figure 2**

*Average values of indicators of strategies for coping with stressful situations (among subgroups), in points*



As can be seen, in Subgroup A ("continued to use"), almost all types of coping strategies are expressed somewhat less intensively than in Subgroup B. So, for the entire sample, the leading coping strategies are: the search for social support (Subgroup A – 23.9 and Subgroup B – 25.24 points), entering into social contact (Subgroup A – 22.8 and Subgroup B – 24.85) and cautious actions (Subgroup A – 21.7 and Subgroup B – 22.88).

Consequently, the Subgroups express the importance of interpersonal communication, the need for interaction and support from others (family, friends, colleagues), the search for approval and the exchange of useful information, however, in Subgroup B, the indicators are on the border with high, and in Subgroup A, they are within average values. It should be noted that these coping strategies are generally typical for this age category of respondents, since this is a period of establishing new social contacts, searching for "love" and friendships, personal self-determination, and active social interaction.

However, it is worth noting the scales with the largest difference in mean values - these are "avoidance" and "impulsive actions". In Subgroup B, the average values on the scale "Avoidance" (16.8 points) are statistically significantly higher (at  $p < 0.05$ ) than in Subgroup A (13.25 points),

which indicates a tendency to refuse to solve problems, ignoring them among those who have stopped using social networks. On the Impulsive Actions scale, Subgroup B had an average of 20.75 points, while Subgroup A had an average of 17.6 points, which also demonstrates statistically significant differences at  $p < 0.05$ . These results allow us to state a greater propensity for impulsive actions, following intuitive impulses in Subgroup B, who decided to stop using social networks.

The statistical analysis of data according to questionnaire "Strategic approach to coping scale" using the U-Mann-Whitney criterion are presented in Table 1.

**Table 1**

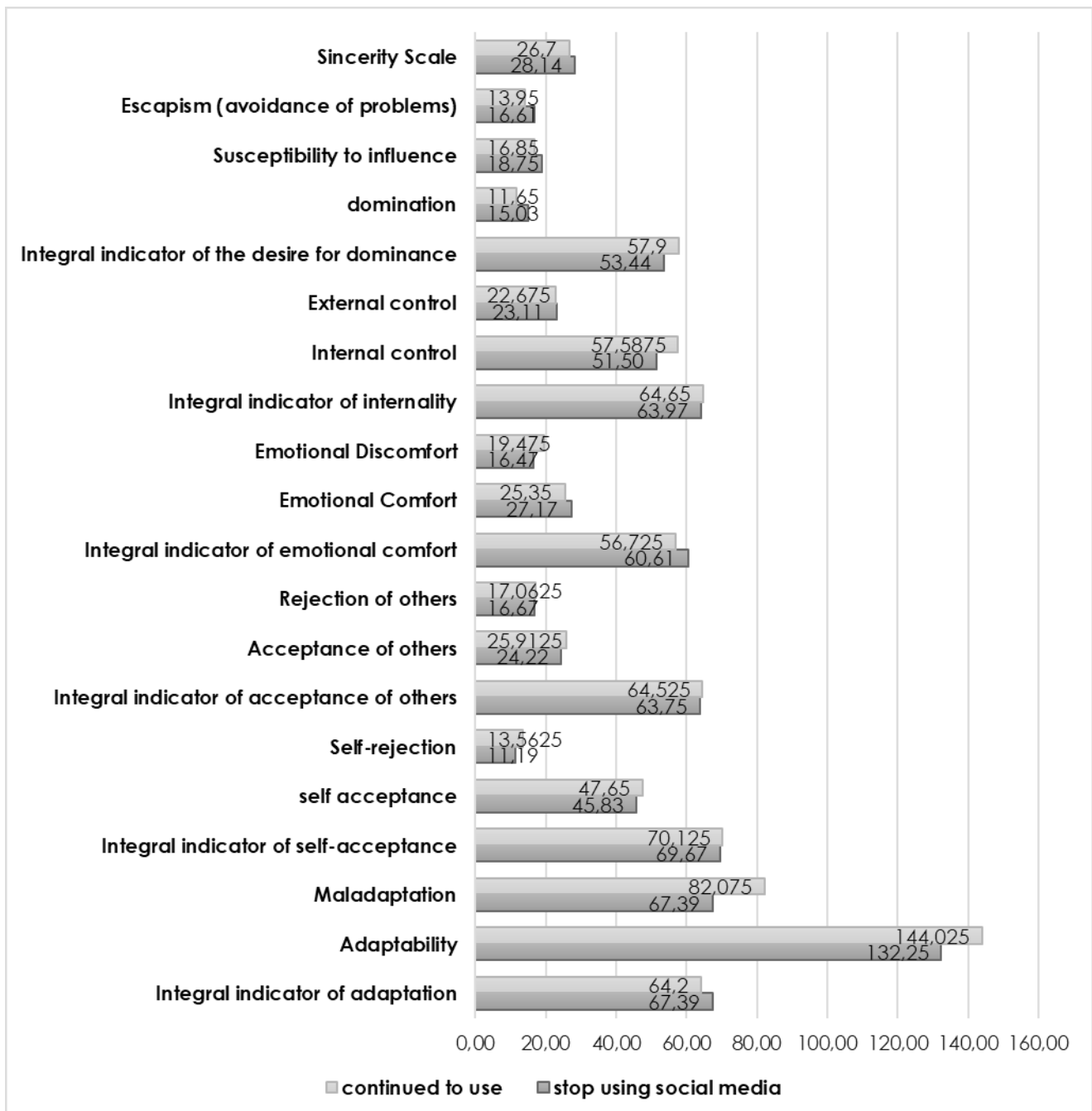
*Results of statistical analysis of data using the U-Mann-Whitney test*

Scale	Mean value Subgroup 1	Mean value Subgroup2	Rank_1	Rank_2	U	p_value
Assertive actions	20.545	21.125	61.712	55.056	1380	0.704
Entering into social contact	24.848	22.825	61.621	55.094	1443	0.435
Seeking social support	25.242	23.988	60.045	55.744	1468.5	0.347
Caution	22.879	21.712	66.53	53.069	1251	0.661
Impulsive actions	20.758	17.613	67.955	52.481	1681.5	0.022
Avoidance	16.818	13.25	54.909	57.862	1634.5	0.046
Manipulative actions	20.879	20.275	61.5	55.144	1420.5	0.525
Antisocial actions	19.091	17.95	60.727	55.462	1472.5	0.334
Aggressive actions	20.212	19.012	58.818	56.25	1475.5	0.325

The results of the study according to test of Personal Adjustment are presented in fig. 3.

**Figure 3**

*Average values of indicators of socio-psychological adaptation (among subgroups)*



As can be seen from the results obtained, Subgroup A (144 points) score on the Adaptability scale is higher than that of Subgroup B (132 points), which indicates greater flexibility of those

who have decided to continue using social networks. The Adaptability scale reflects a state that implies a productive movement towards the tasks of self-actualization, the successful satisfaction of one's basic needs. Thus, the respondents of Subgroup A decided to continue using social networks, as it is one of their leading needs at this stage of life. However, the integral indicator of adaptability is higher in total in subgroup B, which is explained, in our opinion, by the fact that students chose avoidance as a way of coping with this stressor, which helped relieve tension that caused a feeling of maladjustment in Subgroup B.

The results on the scale "Integral indicator of emotional comfort" are higher in Subgroup B, since the termination of communication in social networks was the result that was supposed to be blocked. This is also confirmed by the data on the "emotional discomfort" scale, according to which Subgroup A (19.475) scores higher than Subgroup B (16.47), that is, it can be assumed that the decision to continue using social networks, despite the ban, caused increased emotional stress. These differences are statistically significant according to Whitney's U-mann test (at  $p < 0.05$ ). Statistical analysis data are presented in Table. 2.

**Table 2**

Results of statistical analysis by U-Mann-Whitney test

Scale	Mean_1	Mean_2	Rank_1	Rank_2	U	p_value
Integral indicator of adaptation	67.389	64.2	59.306	58.138	1619	0.285
Adaptability	132.25	144.025	54.778	60.175	1224	0.197
Maladaptation	67.389	82.075	60.597	57.556	1133.5	0.067
Integral indicator of self-acceptance	69.667	70.125	56.111	59.575	1535	0.571
Self-acceptance	45.833	47.65	53.431	60.781	1365.5	0.656
Self-rejection	11.194	13.562	55.181	59.994	1189.5	0.134
Integral indicator of acceptance of others	63.75	64.525	48.694	62.913	1521	0.629
Acceptance of others	24.222	25.913	58.653	58.431	1279.5	0.337
Rejection of others	16.667	17.062	49.083	62.737	1269	0.307
Integral indicator of emotional comfort	60.611	56.725	58.194	58.638	1631	0.254
Emotional Comfort	27.167	25.35	63.806	56.112	1429	0.948



Scale	Mean_1	Mean_2	Rank_1	Rank_2	U	p_value
Emotional Discomfort	16.472	19.475	53.75	60.638	1101	0.043
Integral indicator of internality	63.972	64.65	54.042	60.506	1445.5	0.974
Internal control	51.5	57.587	60.75	57.487	1087	0.035
External control	23.111	22.675	51.542	61.631	1320.5	0.476
Integral indicator of desire to dominate	53.444	57.9	56.431	59.431	1257.5	0.276
Domination	15.028	11.65	61.139	57.312	1354	0.607
Susceptibility to influence	18.75	16.85	49.986	62.331	1515.5	0.652
Escapism	16.611	13.95	52.5	61.2	1306	0.423

A statistically significant result is the data on the "Internal Control" scale, in Subgroup A (57.58 points) the result is higher than in Subgroup B (51.50 points). It can be argued that those who decide to continue using social networks after the restriction have a more pronounced position on independent decision-making, confidence in personal control of ongoing events, and an active life position.

Let's analyze the results of Spearman's correlation analysis presented in Table 3.

**Table 3**

Correlation analysis according to Spearman in Subgroup A (those who continued to use Instagram\*)

Scales	Assertive actions	Impulsive actions	Manipulative actions	Asocial actions	Aggressive actions
Integral indicator of adaptability	0.291**	-0.266*			-0.249*
Maladaptation	-0.399***	0.233*			0.302**
Self-rejection	-0.268*				0.275*
Integral indicator acceptance of others					-0.27*

Scales	Assertive actions	Impulsive actions	Manipulative actions	Asocial actions	Aggressive actions
Rejection of others	-0.271*		0.25*	0.228*	0.322**
Integral indicator of emotional comfort	0.258*				
Emotional Discomfort	-0.347**				0.329**
Integral indicator of internality		-0.322**			
Internal control					0.257*
External control	-0.358**	0.306**			0.279*
Integral indicator of desire to dominate	0.388***				
Susceptibility to influence	-0.396***				
Escapism	-0.361**	0.229*			0.399***

Note: \* $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Thus, the strategies of coping with stressful situations and the characteristics of the socio-psychological adaptation of respondents who continued to use the Instagram\* social network have a number of interrelations. Thus, the "Maladaptation" indicator has an inverse relationship (-0.399\*\*\*) with the "Assertive actions" scale, and a direct relationship with the "Aggressive actions" scale (0.302\*\*), which indicates that the more confident one feels and leads the respondent, the higher the level of adaptation to various life difficulties and the lower the level of aggressiveness. The scale "Emotional discomfort" has an inverse correlation with the scale "Assertive actions" (-0.347\*\*) and a direct relationship with the scale "Aggressive actions" (0.329\*\*). It can be said that the higher the level of emotional well-being, the more confidently the respondent acts and the less aggressive actions he performs. Interestingly, the integral indicator of internality (-0.322\*\*) has an inverse relationship with the "Impulsive actions" scale, which suggests that the more the respondent believes in the influence of external circumstances on his life, the more he is ready to commit impulsive actions ("External control" – "Impulsive actions": 0.306\*\*).

For a comparative analysis of the features of experiencing limited access to social networks between subgroups A and B, we consider the results in Subgroup B, obtained using the Spearman correlation coefficient (Table 4).

**Table 4**

*The results of Spearman's correlation analysis in Subgroup B (those who stopped using the social network Instagram\*)*

Scale	Asser- tive ac- tions	Ente- ring into social con- tact	Cau- tion	Impul- sive ac- tions	Avoi- dance	Mani- pulative actions	Anti- social actions	Aggresive actions
Integral indicator of adaptability	0.654***	0.373*		0.361*				
Adaptability	0.491**	0.387*		0.342*				
Maladap- tation	-0.448**				0.504**			0.397*
Integral indicator of self- acceptance	0.626***	0.346*		0.338*		0.352*	0.368*	
Self acceptance	0.566***	0.383*					0.345*	
Self-rejection	-0.396*				0.335*			
Integral indicator of acceptance of others	0.537***	0.398*		0.522**			0.367*	
Acceptance of others		0.351*		0.372*				
Integral indicator of emotional comfort	0.664***							

Scale	Asser- tive ac- tions	Ente- ring into social con- tact	Cau- tion	Impul- sive ac- tions	Avoi- dance	Mani- pulative actions	Anti- social actions	Aggresive actions
Emotional Comfort	0.345*	0.436**	0.471**	0.517**		0.373*	0.529***	0.409*
Emotional Discomfort	-0.461**				0.494**			0.388*
Integral indicator of internality	0.621***							
External control	-0.39*				0.534***			0.411*
Integral indicator of dominance	0.44**							
Domination				0.41*		0.346*		
Susceptibility to influence	-0.514**				0.543***			0.358*
Escapism					0.549***			0.503**

Note: \* $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

As can be seen from the presented data, the level of avoidance is in a strong direct relationship with "External control" (0.534\*\*\*), "Maladjustment" (0.504\*\*), "Emotional discomfort" (0.494\*\*), "Susceptibility to influence" (0.543\*\*\*), "Escapism" (0.549\*\*\*), that is, the higher the level of avoidance, the more the respondents of Subgroup B believe in the influence of external circumstances on the events of their lives, the more they are prone to maladaptive forms of emotional response, avoiding problem solving and conformism.

Let us pay attention to the inverse relationships that appeared between the scales "Assertive actions" and "Maladjustment" (-0.448\*\*), "Self-rejection" (-0.396\*), "Emotional discomfort" (-0.461\*\*), "External control" (-0.39\*), "Susceptibility to influence" (-0.514\*\*), characteristically reflecting that the higher the level of confidence, the lower the indicators of self-rejection, conformism, emotional deprivation and belief that external circumstances determine the course of life.

Coping strategy "Entering into social contact" has a positive relationship with the scales "Adaptability" (0.387\*), "Self-acceptance" (0.383\*), "Acceptance of others" (0.351\*), "Emotional comfort" (0.436\*\*).

## **Discussion**

Comparing the data obtained with the studies of other scientists, we note the conclusions of some of them.

U. Turkcapar, M. Atasoy, K. Bolat write: "... social media is not a virtual and false world, they continue to exist as another face of reality and create another space of reality, consisting of a mixture of virtual and real. Thus, one can talk about life with two centers, online and offline, each with its own real content and rules" (Turkcapar, Atasoy, & Bolat, 2022, p. 82). These findings emphasize the importance of using social networks for a modern person, confirming that the virtual world is not just a "fake" space, but a second, parallel reality.

Temnikova L.B., Vandisheva A.V. state that "a new type of online interaction marked a fundamentally different situation, when group communication configurations replaced traditional linear communications. In online communication, users, as in everyday offline life, devote more time to private, everyday interests and hobbies than to socially significant issues" (Temnikova & Vandisheva, 2022, p. 274).

The study of how social networks help to cope with stressful situations has been carried out by various scientists in recent years. L. N. Wolfers, R. Festl & S. Utz (2020) state that there are relationships between nomophobia and stress levels in the current moment, but not over time. J. Brailovskaia, E. Rohmann, H.-W. Bierhoff, H. Schillack, J. Margraf (2019) found that direct social support (offline) helps protect mental health, while online support increases the need for social networks and the development of Internet addictions.

The conclusions of the above scientists indicate the relevance of the Internet virtual space in human communication, respectively, the loss of an account or the restriction of access to a social network can be perceived as a stressful event, and sometimes as a traumatic one, as the loss of a part of life, an "alternative" personality. The use of social networks satisfies the needs for affective experiences, which can have a different vector of direction. Consequently, the restriction of access to social networks may be accompanied by frustration, loss of "significant" support, increased stress levels, and as a result, activation of coping strategies and processes of socio-psychological adaptation to new conditions, depending on the psychological characteristics of the individual.

## **Conclusion**

1. Restriction of access to social networks activates certain coping strategies for coping with stressful situations, depending on the psychological characteristics of the individual.

2. Methods of socio-psychological adaptation in groups with different attitudes towards restricting access to social networks have differences.

3. The situation of restricting access to Instagram\* caused certain frustrating experiences, which found expression in the implementation of coping strategies: seeking social support, entering into social contact, careful actions, avoidance, and others.

4. Peculiarities of students' experience of limited access to the social network Instagram\* are characterized by different severity of strategies for coping with stress and ways of social and psychological adaptation.

Thus, the experience of limited access to social networks of students depending on the actions after the ban on the use of Instagram \* has its own psychological differences, which are manifested in the ways of coping with stressful situations and the characteristics of socio-psychological adaptation. The entire sample of students aged 18 to 21 is characterized by the following coping strategies: seeking social support, entering into social contact and cautious actions, which indicates a focus on interpersonal interaction that is characteristic of this age. However, the subgroup of those who decided to continue using the social network Instagram\*, by passing the restrictions, is characterized by a less pronounced level of avoidance (avoidance from solving problems) and a less severity of impulsive actions. The obtained data are statistically reliable, which allows us to state the fact of the activation of certain coping strategies in connection with the experience of limited access to social networks.

Socio-psychological adaptation in subgroups of respondents has interesting differences. The subgroup of respondents who decided to stop using the Instagram\* social network banned in the Russian Federation has higher indicators in terms of the level of emotional comfort, that is, the cessation of communication in social networks was not so significant for them. However, in the subgroup of respondents who decided to continue using the social network, the level of emotional discomfort is statistically significantly higher, which suggests that the decision to continue using the social network despite the ban caused some emotional stress. They also have a statistically significantly higher level of internal control, which indicates an active position in relation to their lives and decision-making. An analysis of the relationship between coping strategies and the specifics of socio-psychological adaptation made it possible to identify significant direct and inverse relationships between indicators.

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**Irina Vladimirovna Abakumova** made the conceptualization, methodology, project administration, final approval of the version of the article for publication.

**Natalya Evgenievna Komerova** made the research, data analysis, description of the results and statistical processing of data.

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# Diagnostic Possibilities of Dream Analysis: Theoretical Background and Methodological Approaches

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## Abstract

**Introduction.** Violation of some cognitive functions and general mental state after massive treatment makes it difficult to use generally accepted survey methods for the diagnosis of neurological and psychological status during rehabilitation. In this regard, the analysis of dreams seems to be an actual method, which, according to modern research, makes it possible to identify violations of the psychological and somatic state of patients at the early stages and make a forecast about their recovery. **Theoretical justification.** The possibility of using dream analysis as a diagnostic method is based on modern ideas about the neurophysiological and mental mechanisms of dreaming. Different author notes changes in dream activity while neurological, mental and somatic diseases. More and more researchers agree that dreams can be harbingers, a kind of «signal system» of emerging somatic, neurological and mental disorders. Clinical and diagnostic analysis of dreams in neurotic disorders revealed their features both in different variants of neuroses and at all stages of the disease – from compensation to decompensation. The existence of a relationship between dream images and a predisposition to anxiety, depression and asthenia has been established. **Discussion.** Existing scientific research suggests the possibility of using dream analysis as an early diagnosis of neurotic conditions and somatic pathologies, the clinical symptoms of which have not yet manifested themselves symptomatically but already appear in dreams. The article provides a literature review on modern concepts of neurophysiological and mental mechanisms of dreams and the possibilities of using the results of their analysis as a diagnostic model are indicated.

**Keywords:** dream activity, mental activity, diagnostic, neurotic states, somatic disorders, visceral theory of sleep, REM sleep

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## **Introduction**

Sleep with dreams is a unique and greatest mystery for science, a kind of third state, separate from ordinary sleep and different from wakefulness (Kovalzon, 2021). All the data obtained at the moment confirm that rapid sleep differs from slow-wave sleep and wakefulness not only by neurophysiological mechanisms of its launch and maintenance but also by the presence of a special type of mental activity - dreams.

Dreams are also present in slow-wave sleep but in a significantly weakened form (Siclari et al., 2017; Fazekas & Nemeth, 2018; Frohlich, Toker & Monti, 2021). Thus, upon awakening from a shallow slow-wave sleep, 80–90% of the surveyed people report dreams, which, as a rule, are vivid hallucinatory experiences – the so-called hypnagogic hallucinations. Unlike dreams, hypnagogic hallucinations are static, do not contain their own plot (Kelmanson, 2018; Siclari & Tononi, 2017), and their content may be influenced by events preceding sleep (Stickgold, 2013; Picard-Deland, Pastor, Solomonova, Paquette & Nielsen, 2020; Picard-Deland, Allaire & Nielsen, 2022). There are quite a few reports of dreams received upon awakening from deep sleep (Stickgold, 2013; Chambers, 2017). These dreams are qualitatively different from those in rapid sleep: they are usually shorter, less vivid and more conceptual, contain few scenes with movement, are more controlled and believable, and less emotional (Fazekas & Nemeth, 2020; Sikka, Valli, Revonsuo & Tuominen, 2021; Ghrouz et al., 2019). Despite numerous studies indicating the presence of dreams in both slow and rapid sleep, an increasing number of scientists tend to believe that dreams are inherent only in REM sleep, and during slow-wave sleep, there is somehow a «reflection» or «introduction» of mental activity from REM sleep (Fagioli, 2002; Fazekas & Nemeth, 2020; Yu et al., 2022).

### ***Study purpose***

In accordance with the above, the article aims to review studies devoted to the research of neurophysiological and mental mechanisms of dreams and the possibility of using dream analysis in various diseases, such as neurological, somatic and oncological.

## **Theoretical justification**

### ***Neurophysiological mechanisms of dream activity***

Dreams are a reflection of personality, individual experience and creative potential. Dreams have their own plot and characters and include all categories typical of wakefulness (familiar faces, places, situations, and objects) (Nir & Tononi, 2010; Konkoly et al., 2021; Vanek et al., 2020) and can also reflect the worries and experiences of the day (Voss & Klimke, 2018; Samson-Daoust, Julien, Beaulieu-Prévost & Zadra, 2019; Martinec, Miletínová, Kliková & Bušková, 2021). As a rule, reflexive thinking prevails in a dream: a person asleep can easily accept the unreality of images and events (which is reflected in such phenomena as flying in a dream, inconsistent changes of scenes, and the presence of unreal fantasy objects) (Avakumov, 2009), disorientation, lack of a sense of time and perception of their sometimes-altered personality. Dreams may contain elements of sensory perception of different modalities (for example, colour perception, sounds, tactile sensations, smells and tastes, and feelings of pleasure or pain) (Kraehenmann, 2017; Johnson, Hendricks, Barrett & Griffiths, 2019). Dreams are not realized contextually, and a person asleep is not aware of themselves either awake or asleep, while the uniformity of the thought process and changing images is noted (Hong, Fallon, Friston & Harris, 2018; Konkoly et al., 2021).

Recent studies of the brain using modern neuroimaging techniques have shown that dreams are associated with physiological indicators and brain activity during sleep. In a dream, the person asleep can see and feel how they make movements, even if they cannot move while awake, while the brain structures responsible for these movements in wakefulness are activated. Thus, patients with congenital paraplegia dream of walking, and phantom limb pain may disappear (Siclari, Valli & Arnulf, 2020).

The paradox of REM sleep is that, despite the high activation of the brain, similar to its activity in wakefulness (Sikkens, Bosman & Olcese, 2019; Tivadar, Knight & Tzovara, 2021; Kovalzon, 2021), and a comparable level of metabolism (Zhou et al., 2019; Hoel, 2021; Rué-Queralt et al., 2021; Luczak & Kubo, 2022), in rapid sleep the body is completely paralyzed due to deep inhibition of the spinal cord (Stettner, Lei, Benincasa & Kubin, 2013; O'Malley & Datta, 2013; Kovalzon, 2021). It is noteworthy that in rapid sleep, the person asleep cannot move, as in slow-wave sleep, they lose connectivity to the world: the person asleep does not see, hear or feel anything; moreover, stimuli not only do not cause behavioural reactions but also do not affect the content of dreams (Nir & Tononi, 2010; Gent et al., 2018; Aime et al., 2022).

The lack of communication with the environment during sleep is associated with a change in the activity of the default system, which, along with the sensorimotor and visual cortex, is a likely correlate of dreams (Domhoff & Fox, 2015; Vallat, Nicolas & Ruby 2022). The results of PET and MRI studies have shown that the medial prefrontal cortex - part of the default system - is more active in the rapid sleep phase than in the state of calm wakefulness (Hong et al., 2018; Scarpelli, Bartolacci, D'Atri, Gorgoni & De Gennaro, 2021; Hong et al., 2021), but at the same time, the activity of other structures of the default system (cingulate gyrus, parietal cortex) decreases during REM sleep (Miyachi et al., 2009; Hong et al., 2018; Hoel, 2021; Rué-Queralt et al., 2021).

Speaking about the neurophysiological mechanisms of dreams, it is impossible not to mention the pioneering work of the British neuropsychologist Mark Solms. When analyzing the dreams of 361 patients with neurological disorders, data were obtained, based on which he showed that the nature of dreams varies depending on the localization of lesions in the forebrain and not in its axis, where, according to most researchers, the main generator of REM sleep is located (Solms, 1997). In most cases, with a unilateral lesion of the parieto-temporo-occipital region of the brain, there is a complete absence of dream activity (Zou et al., 2018; Vallat et al., 2020), which Mark Solms associated with the loss of some cognitive abilities, including the ability to create visual images. Studying patients who underwent leukotomy (cutting of dopamine pathways leading to the frontal cortex in order to weaken hallucinations in psychoses and some epileptic seizures), Mark Solms found that they lose the ability to purposeful behaviour, lose the ability to fantasize and dream while maintaining REM sleep generation (Solms, 2000).

Other researchers have also found that the loss of the ability to dream is noted in patients with damage to areas of the brain that provide visual perception of colour and movement of objects (Solms, 2000). In other cases, patients with lesions of such brain structures as the medial prefrontal cortex, and anterior cingulate gyrus, on the contrary, have an increase in the frequency and brightness of dreams and even their intrusion into wakefulness (Solms, 1997).

From the data obtained, M. Solms concluded that dreams have a complex nature and are carried out with the participation of forebrain structures associated with thinking, memory and emotions; in health, dreams are «triggered» by REM sleep and, apparently, while pathological brain disorders, they can occur outside this phase.

### ***Mental mechanisms in REM sleep***

Despite some similarity of the events experienced in a dream with reality, the dreamer's volitional activity and arbitrary control over themselves and the events taking place decreases (Nir & Tononi, 2010). The lack of self-control during sleep may be associated with a decreased activity of brain regions such as the inferior parietal, orbitofrontal, dorsolateral and prefrontal cortex (Van De Poll & van Swinderen, 2021; Vertes & Linley, 2021). Indeed, it has been shown that a decrease in activity in the prefrontal cortex during sensory perception in wakefulness was accompanied by a decreased self-awareness (Yang & Lewis, 2021; Kim et al., 2022).

Mental activity in REM sleep differs from mental activity in other states (for example, slow-wave sleep and wakefulness) by strong emotional colouring and extreme brain activity and when experiencing severe emotional stress (Kovalzon, 2021). Studies using neuroimaging techniques have shown that the processes regulating dreams and emotional significance have the same neural substrates that control emotions during wakefulness (Scarpelli et al., 2019; Sikka et al., 2022; Barbeau, Turpin, Lafrenière, Campbell & De Koninck, 2022). So, feelings of joy, surprise, anger, fear and anxiety are experienced in a dream. At the same time, it is believed that sadness, guilt and depressive affects are rare, possibly due to a decrease in self-reflection in sleep (Vandekerckhove & Wang, 2017; Palmer & Alfano, 2017; Witvliet, Blank & Gall, 2022). During dreams in rapid sleep, anxiety and fear can manifest themselves to a greater extent than in wakefulness, which is explained by the activation of limbic and paralimbic structures, the amygdala, anterior cingulate gyrus and insula (Sikka et al., 2019; Lai et al., 2020) – structures responsible for these emotions in wakefulness. According to the degree of manifestation of emotions, dreams vary from positive (joy, happiness, inspiration, etc.) to negative (fear, despair, anger, etc.), and 25–35% of reports about dreams are emotionally neutral (Fosse, Stickgold & Hobson, 2001; Matei, Bergel, Pezet & Tanter, 2022).

The peculiarity of dreams is also that at this time the mechanisms of extracting 'old' memories from memory are actively working, however, the mechanism of memorization is suppressed and only a small part of dreams is recalled upon awakening (Naiman, 2017; Kovalzon, 2021). The reason for this phenomenon probably lies in the fact that during REM sleep, the medial limbic region of the temporal lobe, which is involved in memory processes, is largely active, and in the processes of forgetting dreams, the hypoactivity of the prefrontal cortex of the brain is noted (Nir & Tononi, 2010; De Gennaro, Marzano, Cipolli & Ferrara, 2012; Wamsley, 2020).

V. M. Kovalzon says: «We need dreams not to remember them» (Kovalzon, 2021, p. 181). The existing modern theories of dreams offer different mechanisms for forgetting dreams. So, according to the psychodynamic model of Z. Freud and M. Solms, this process is based on the process of active displacement (Freud, 2021). In Hobson's three-dimensional model, dream forgetting is associated with a change in the state caused by a decrease in the activity of monoaminergic systems ('aminergic demodulation') and a decrease in the activity of the dorsolateral prefrontal cortex (Hobson, Pace-Schott, & Stickgold, 2000; Parrino et al., 2022). The neurocognitive model, founded by W. Domhoff and K. Hall, states that dreams are usually forgotten since the internal dream narrative is often contextually unrelated to events and objects in wakefulness (Wamsley, 2013; Domhoff & Fox, 2015; Alcaro & Carta, 2019).

### ***Information processing in SWS and REM sleep***

During both SWS and REM sleep, signals from sensory systems to the cerebral cortex cease to

flow, information processing in the thalamocortical system, which is the principle of higher mental functions, drops (Hill & Tononi, 2005; Kovalzon, 2021; Steriade, 2003). At that time, intercortical interactions decrease (Bhattacharya, Patterson, Galluppi, Durrant & Furber, 2014; Rao, Cecchi & Kaplan, 2015), and there are functional rearrangements of interhemispheric relations (Liu et al., 2018; Zhu et al., 2020; Arbune et al., 2020).

Experiments of Ivan Nikolaevich Pigarev, a Russian researcher, showed that during SWS, cortical neurons reach a state of depolarization, followed by inhibition or hyperpolarization. According to his visceral theory of sleep, the afferent flow to the cerebral cortex does not stop during sleep, but its sources change: instead of exteroceptive and proprioceptive information, interoceptive information about the state of all visceral systems of the body is transmitted along the same pathways (Pigarev, 2013; Pigarev & Pigareva, 2018; Pigarev, Pigareva, 2018; Pigarev, Pigareva, Levichkina, 2019). In his opinion, visceral systems have no representation in the human mind, therefore, information about the physical state of organs and tissues is not realized, but passes into structures connected with associative visceral regulation (Pigarev, 2013; Pigarev, Pigareva, 2018). Many visceral organs have rhythmic activity, and during sleep, heartbeats, respiration, and peristaltic activity of the stomach and intestine, create a constant afferent flow to the cerebral cortex, and its rhythm stops in REM sleep (Pigarev, Pigareva, 2018).

According to Ivan Nikolaevich Pigarev (Pigarev & Pigareva, 2014; Pigarev & Pigareva, 2017), the cause of dream pathologies (nightmares, obsessive dreams, and others) lies in the fact that the system that blocks consciousness during sleep remains incompletely closed during REM sleep for a long period of time. Therefore, the excitation coming from the cortex and reflecting the result of the visceral information analysis can “activate” the images formed in wakefulness and start the development of fantastic plots through associative links in the consciousness system. It is possible that stronger impulses coming from any organ suppress other afferent flows, and further transform into dreams associated with this organ (Berezina, 2015).

Ivan Nikolaevich Pigarev's visceral theory of sleep, not being alone in the field, does not contradict modern ideas on the same issue. Meanwhile, in a sense, this theory can serve as a scientific basis for developing a direction specialized in the early diagnosis of the disorders or their dynamics according to the nature of the development and the course of dreaming activity.

According to modern ideas about the neurophysiological and mental mechanisms underlying the dream activity, dreams are not only a reflection of the human mental health, but also of the somatic state, including both general and individual states of organs and systems.

## Results

According to the World Health Organization, about 30–40% of sleep disorders are indicators of neurological and mental diseases (Aleksandrovsky, 2000; Avakumov, 2009). Sleep pathology, along with autonomic regulation, general sensitivity, and activity disorders, is one of the earliest and most stable signs of a mental disorder. Patients note an increase in the frequency of dreams, the appearance of unusually vivid dreams; less often a loss of the ability to dream is observed (Kalinchuk, Antsyborov, 2020; Nigam et al., 2021). Moreover, the work of T. A. Sviridchenkova (2013) shows the relationship between dream images and a predisposition to such neurotic states as anxiety, neurotic depression, and asthenia. It allows one to consider the possibility of using dream analysis as a preliminary diagnosis of neurotic states whose clinical symptoms have not yet manifested in wakefulness.

### ***Dream activity in neurological disorders***

Sleep disorders, quantitative and qualitative changes in dreams, are recognized as one of the consistent symptoms of neurotic states (Wayne, Hecht, 1989, Karvasarsky, 1990; Kalsched, 2017; de Cortiñas, 2013).

Clinical diagnostic analysis of dreams in neurotic disorders in children and adolescents, performed by E. A. Korabelnikova (Golubev, Korabelnikova, 1996; Korabelnikova, Golubev, 2000), identified its features in different types of neurosis compared to healthy peers.

Compared to healthy patients, in the compensation stage, in patients with neuroses, a positive affect was less observed after awakening after dreams. They showed a higher frequency of negative emotions in dreams, a prolonged retention of dreams in memory, and their incompleteness. The phenomenon of lucid dreaming (dreams within dreams) was observed more often.

In the stage of subcompensation of a neurotic disease, dream activity intensifies: dreams became obsessive and painful for the patient, awakenings were often accompanied by a feeling of relief; and the frequency of feelings of fright, fear, anxiety, and aggressive manifestations appearing in dreams increased, as well as the perception of individual colours (channelling of colour perception) (Korabelnikova, Golubev, 2000).

In the decompensation stage, the intensification of dreams was replaced by the oppression (low frequency, rare connection between awakenings and dreams). The authors associate the fact that lucid dreaming occurs in the early stages of a disease and disappears in the stage of exacerbation of a neurotic disorder with the adaptive mechanisms of dreams (Korabelnikova, Golubev, 2000). In their opinion, the phenomenon of lucid dreaming contributes to the elimination of the neurotic effect on the psyche created by dreams themselves. This is confirmed by the feeling of relief that occurs during the transition from dreaming to wakefulness at the stages of compensation and subcompensation in patients. Patients in the stage of decompensation likely have no distinction between sensations and experiences associated with a dream and an emotional state in wakefulness.

### ***Dream activity in somatic diseases***

Changes in dream activity are observed in somatic diseases as well: patients have difficulty falling asleep, they experience frequent night awakenings, there are complaints of emotional dreams and nightmares (Kalinchuk, Antsyborov, 2020). Cardiovascular patients often have nightmares. Upon awakening, they often experience fear of death, which may be the result of impaired blood circulation to the brain during sleep. With obesity, respiratory diseases, patients often dream scenes of suffocation, there is a feeling described as "stone on the chest" (Zhuchkov, Timoshenko, 2019; Berezina, 2015). Patients suffering from migraine are more likely to experience a feeling of fear and suffering during sleep (DeAngeli et al., 2014). They often have dreams in which they can taste and smell, which may reflect the special sensitivity of taste and olfactory analyzers in this disease (Lovati et al., 2014).

Dreaming about a disease can be a preliminary step towards the onset of its symptoms. The study by Burk et al. (Burk, Wehner, Soo, 2020), carried out in 163 women with suspected breast cancer, has shown that 64% of the respondents remember their dreams and 5,5% of the women dreamed of the word "cancer" before the appearance symptoms and diagnosis.

### ***Dreams as harbingers of illness***

Currently, the prevention of neurological and somatic diseases is complex and difficult to implement, as the mechanisms of their occurrence and course are still unclear, and technologies and methods for early diagnosis have not been developed (Pyatin et al., 2021). More and more researchers are coming to the conclusion that dreams can be harbingers, somewhat a “signal system” of somatic, neurological, and mental disorders (Pichugina et al., 2017).

The only limitation of using dream activity analysis as an objective tool lies in the fact that dreams are mental activities that occur during sleep. This makes them difficult to study through scientific observation and experiment.

Information about a dream can only be obtained from a subjective report, which has a number of disadvantages: upon awakening, memories of a dream may be preserved to varying degrees or completely absent, the subject can make adjustments to the plot of the dream in order to hide their personal experiences or immoral, aggressive scenes, which may receive a negative assessment from the other person, and the last is the difficulty to verbalize experiences, which in a dream are more often visual and emotional in nature. Therefore, most modern research is aimed at studying the general neurophysiological mechanisms of dreams without considering their content. K. Bulkeley (2017) identifies three promising directions in the study of dreams: neurobiological studies of the activity of the brain-mind system during sleep (for example, in lucid dreams); systematic analysis of large collections of dream reports from different groups of people; and psychotherapeutic studies of the “personal” component woven into dreams of each person.

### **Discussion**

There is still no consensus on the nature and purpose of dreams. Several theories claim that dreams are an accidental byproduct of rapid sleep and do not serve any natural function. However, dreams appear organized and selective. As practice shows, their form and content are not random. They reflect not only the mental state, but also the somatic state of the body. During dreams, the brain constructs a complex model of the world in which some elements are underrepresented, while others are excessive, compared to wakefulness. During dreams, an encounter with the “self” occurs (Shkuratov, 2014).

The content of dreams is constantly modulated by the events of awakening. As A. Revonsuo (Revonsuo, 2001) suggests, it is modulated by events of threatening nature with subsequent processing of threat perception and its avoidance. Therefore, dream activity is closely related to both the mental and physical state of a person. Despite the obvious limitations of using dreams as a diagnostic model, there are objective models that determine the relationship of dreams with the somatic state of the body. This indicates the prospects for the use of dream analysis in cases with patients of various disease profiles, including oncological patients who have undergone massive treatment.

Patients with malignancies are a complex category in dire need of both physical and psychological rehabilitation. However, due to impaired cognitive functions, their general mental state, it is sometimes difficult or impossible to use universally accepted questionnaire methods to diagnose their physical, neurological and psychological status. The use of dream analysis in oncological patients at the stages of rehabilitation can provide additional data on the dynamics of both neurological functions and the psychosomatic state. This data is necessary for clarification the diagnosis and corrections to the ongoing rehabilitation measures.



### **Conclusion**

Thus, dream activity has a close relationship with both the mental and physical state of a person. Dreams can be harbingers in somatic, neurological and mental disorders. It determines the relevance of using their analysis for the early diagnosis of diseases associated with these disorders. The conclusions obtained on the basis of the results of the dream analysis can be of a recommendatory nature for the diagnostics specification.

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# Estimation of Magnitudes and Numerosity in Different Formats of Stimulus Presentation: the Numerical Ratio Effect

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## Abstract

**Introduction.** Several researchers discuss the possibility of existence of a common mental system responsible for the estimation of both discrete numerosities and continuous magnitudes. The numerical ratio effect observed during comparison tasks is one of the evidences of an existence of such system. It manifests itself in an increase in response time and a decrease in accuracy as the numerical proportion between the compared arrays of objects or magnitudes increases. This study investigated the numerical ratio effect for different types of tests and stimulus presentation formats in order to explore the interrelationships between systems of magnitude and numerosity estimation. **Methods.** The sample consisted of 83 students (20% were men, the average age was 20.34 years). The participants of the study performed nonsymbolic comparison tasks, areas comparison task and comparison of nonsymbolic quantity with symbolic numbers task (nonsymbolic – symbolic comparison test). Two formats of stimulus presentation were used during the nonsymbolic comparison test: separate/homogeneous and mixed/heterogeneous. The accuracy of estimation and numerical ratio effect were calculated for each test. **Results.** The numerical ratio effect was significant in the nonsymbolic comparison tests (for both formats of stimulus presentation) and in the nonsymbolic-symbolic comparison test, but was not significant in the areas comparison test. Numerical ratio effects for different tests do not correlate with each other. It was also shown that the accuracy of the estimation of magnitudes correlates with the results of the nonsymbolic comparison test, and this relationship was stronger for the mixed/heterogeneous format. **Discussion.** Results of this study demonstrated that the relationship between magnitude and discrete numerosity estimation systems can vary under different conditions of stimulus presentation. It makes possible to refine the existing theoretical models describing functioning of the Approximate Number System. The obtained results cannot be fully explained by the theory of a unified numerosity/magnitude estimation system. It was shown, however, that the magnitude estimation system does in fact contribute to the estimation of discrete numerosity.

**Keywords:** the Approximate Number System, number sense, the Approximate Magnitude System, nonsymbolic representation, numerical ratio effect, congruency effect, visual cues, nonsymbolic comparison, format of stimuli presentation

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## Introduction

Starting from a very young age, humans are able to perceive and process “quantitative” information. For example, people can estimate and compare distances to surrounding objects, compare objects by size (length, width, height, area) or determine which arrays contain more objects. During evaluation and processing of “quantitative” information, there are three main dimensions that can be estimated: time (for example, estimation of temporal periods), space (estimation of sizes, lengths, distances, areas, etc.) and numerosity (estimation of the number of discrete objects). It should be noted that estimation of numerosity refers to the ability to estimate the discrete characteristics of objects, while estimation of size or time is described as the estimation of continuous magnitudes (Leibovich & Henik, 2014).

Several researchers proposed the existence of a single unified system responsible for the estimation of both numerosity and magnitude (Walsh, 2003). This so called General Magnitude System (GMS) is part of the proposed theory - A Theory of Magnitude (ATOM). Currently, there are a fairly large number of studies confirming the existence such system. Firstly, a large number of neurophysiological studies have shown that the right intraparietal sulcus is activated when processing information about quantity, time, and size (e.g., Buetti & Walsh, 2009; Dormal & Pesenti, 2007; Dormal, Andres & Pesenti, 2012). For example, electrical stimulation of this brain area was shown to lead to changes in both quantity and time and length perception (Cappelletti et al., 2013; Dormal et al., 2012).

Secondly, in studies related to the processing of numerosity without using symbols (Approximate Number Sense, ANS), it was shown that an approximate and quick estimation of numerosity was predominantly based on the evaluation of continuous visual properties, such as the size of objects, total area, perimeter of the occupied surface (convex hull), density (Gebuis & Reynvoet, 2012; Hurewitz, Gelman, & Schnitze, 2006; Clayton, Gilmore & Inglis, 2015). For example, when comparing the number of objects in two arrays, the numerosity decision could be based on comparison of sizes of the objects, surface areas, or cumulative areas. The estimation of numerosity can be based on processing of information related to several visual parameters (e.g. Gebuis, Kadosh, & Gevers, 2016; Leibovich, Katzin, Harel & Henik, 2017). Many studies have confirmed that the estimation of numerosity was more accurate in congruent conditions, when visual parameters provided the correct information related to numerosity, compared to incongruent conditions (e.g. Smets, Moors & Reynvoet, 2016; Clayton, Gilmore & Inglis, 2015). For example, when a set containing more objects had a larger surface or cumulative area than a set, containing fewer objects. Differences between congruent and incongruent items (the congruency effect) reflect the bias in numerosity estimation that is related to estimation of visual cues.

Additionally, some researchers have suggested that there is no separate ability (or a system) responsible for nonsymbolic estimation of numerosity, since it is always related to estimation of

continuous visual parameters (for example, Gebuis & Reynvoet, 2012). Some studies have shown that a person can identify differences or changes in numerosity only if they are accompanied by differences or changes in visual cues (e.g. Gebuis, Kadosh & Gevers, 2016). Other researchers have proposed "softer" hypotheses, suggesting that the estimation of numerosity can be both direct and indirect via the estimation and comparison of numerous visual cues (for example, Kuzmina & Malykh, 2022; Leibovich-Raveh, Stein, Henik & Salti, 2018). It was also shown that the estimation of numerosity can, in turn, distort the estimation of physical dimensions (e.g., Leibovich, Henik, & Salti, 2015; Hendryckx, Guillaume, Beuel, Van Rinsveld & Content, 2021).

The existence of a united system responsible both for the estimation of numerosity and continuous magnitudes (such as length or area) is evidenced by the fact that patterns observed during quantity comparison tasks are also observed in tasks related to comparison of physical dimensions. In particular, the numerical ratio effect (NRE), an increase in response time and a decrease in accuracy as the ratio between two compared arrays of objects becomes smaller, was found when comparing the lengths of segments (Dormal & Pesenti, 2007), the number of objects (Sasanguie, Defever, Van den Bussche & Reynvoet, 2011) and comparing numbers (Lyons, Nuerk & Ansari, 2015). According to numerous findings, NRE reflects the important characteristic of numerosity processing and is associated with the overlapping of neuron activation curves for processing numerosities which are closer to each other (Dehaene, 2003; Dietrich, Huber & Nuerk, 2015). Observing the NRE for both discrete objects comparison tasks and continuous objects comparison tasks may confirm the existence of common system that is responsible for the estimation of both the numerosity and magnitude.

On the other hand, there exists some findings that contradict the proposed theory (A Theory of Magnitude). Some studies have shown that visual and quantitative information can be processed independently of each other (Park, DeWind, Woldorff & Brannon, 2016; Odic & Halberda, 2015). Several other studies have also shown that humans have the ability to estimate numerosity directly, similarly how other perceptual properties such as the volume, size, shape of objects, etc. are estimated (Ross & Burr, 2010; Sokolowski, Fias, Mousa & Ansari, 2017). Dedicated "numerical" neurons in the right intraparietal sulcus are responsible for this specific sensitivity to quantitative information (for example, Nieder & Miller, 2003; Piazza, Pinel, Le Bihan & Dehaene, 2007; Nieder, 2016). A number of studies have also demonstrated that "quantity" can be processed independently in the visual cortex during early stages of perception, similarly to the way low-level visual information is processed (Fornaciai, Brannon, Woldorff & Pa, 2017; Van Rinsveld et al., 2020).

Secondly, recent data from psychophysiological studies and simulation studies using neural networks and deep learning models showed that the quantity estimation and the estimation of visual parameters can be closely interrelated during the early stages of development, but during later stages of development estimation of numerosity can be carried out independently of estimation of visual cues (Testolin, Zou & McClelland, 2020; Creatore, Sabathiel & Solstad, 2021).

It was hypothesized that numerosity could be estimated both directly and indirectly through the estimation of visual parameters (Kuzmina & Malykh, 2022; Kuzmina et al., 2019). At the same time, numerosity comparison might be affected by the formats of stimulus presentation and the availability of visual cues. It was shown that in the case of easy access to comparison of visual cues such as surface area or cumulative area (e.g. in the case of separated/homogeneous format where two sets of identical figures are presented together, but they are still separated

spatially), the estimation of quantity can be distorted by the assessment of visual parameters, which manifests in an increase in the congruency effect (Kuzmina & Malykh, 2022; Kuzmina et al., 2019; Kuzmina et al., 2020). The congruency effect becomes insignificant, and the comparison numerosities becomes less biased when comparison of certain visual cues are impeded (for example, during comparison of two sets of heterogeneous objects without an obvious spatial separation, i.e. in a mixed/heterogeneous presentation format).

Although several studies have shown that the accuracy of nonsymbolic comparison can vary depending on the format of stimulus presentation (e.g., Price, Palmer, Battista & Ansari, 2012) and that corresponding congruency effects varied for different formats (Kuzmina & Malykh, 2022), the association between accuracy of estimation of continuous magnitudes with accuracy of nonsymbolic comparison in different formats of presentation is unclear.

The current study has two main goals. The first goal is to assess the NRE in magnitude comparison task and in nonsymbolic numerosity comparison task in two formats of stimulus presentation. NRE is a key characteristic of representation of quantity in different formats, so we assume that if there is a single system responsible for quantity estimation for both continuous and discrete quantities, there should be a high correlation between the NREs in magnitude comparison and in numerosity comparison, regardless of the format of stimulus presentation.

The second goal is to assess the contribution of the accuracy of the magnitude comparison and numerosity estimation to the performance of tasks for nonsymbolic comparison in different formats. We assume that the accuracy of the magnitude comparison will be more related to the accuracy of the nonsymbolic comparison in the format that produces larger congruency effect, while the accuracy of the discrete numerosity estimation is more related to the accuracy of the nonsymbolic comparison in the format in which the congruency effect is smaller.

## **Method**

### ***Sample***

The sample consisted of 92 students (mean age 20.36 years, standard deviation 5.33 years, 20% were men). Nine participants failed to complete at least one of the tests, so they were excluded from the final analysis. The demographic characteristics of the sample did not change after the exclusion. The final sample included 83 people (20% men, mean age 20.34 years).

### ***Procedure and instruments***

The study was conducted using the online pavlovia.org platform. Participants were asked to complete three tests: a nonsymbolic comparison test, an areas comparison test, and a numerosity estimation test (comparison of number of objects with symbolic numerosity).

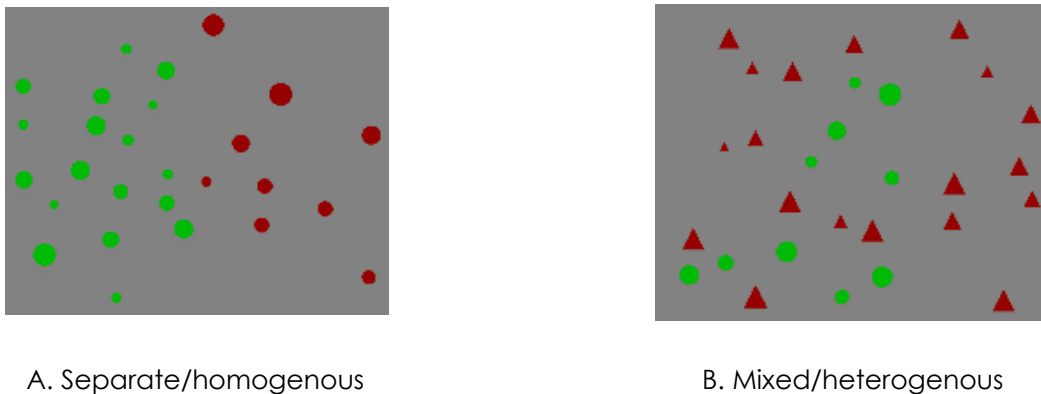
### ***Nonsymbolic comparison test***

During the test, two sets of red and green figures (circles of triangles) were demonstrated to a participant, who was supposed to determine if there were more green or red colored figures on the screen and press the corresponding key: "r" - if there were more red ones, "g" - if there were more green ones. Both sets of figures were demonstrated on the screen for 400ms, after which the reminder was shown: "Press "r" if there are more red figures, press "g" if there are more green figures." After the key was pressed, a fixation cross was shown on the screen (400 ms) and then the next screen with two sets of figures was demonstrated.

Two formats of stimulus presentation were used in the test: a separate format with homogeneous figures and a mixed format with heterogeneous figures (Figure 1).

**Figure 1**

*Examples of formats of stimulus presentation*



Both formats were chosen based on the data from previous studies that have shown that the separate/homogeneous format produces the largest congruency effect, indicating that the numerosity estimation might be distorted by the estimation of visual cues. In the mixed/heterogeneous format, the congruency effect was not significant (Kuzmina et al., 2019; Kuzmina et al., 2020; Kuzmina & Malykh, 2022).

Two types of numerical proportions were included for each presentation format: simple and complex proportion. For a simple proportion, the ratio of a smaller array of objects to a larger one varied from 0.47 to 0.53 (a smaller numerosity divided by a larger one), for a complex proportion it varied from 0.72 to 0.77. The choice of ratio was based on the data from previous studies, which demonstrated, for example, that with a ratio of 0.5, accuracy of comparison approaches 0.90 on average, but as the ratio increases, the accuracy decreased significantly. For a ratio of 0.75, accuracy ranged from 0.72 to 0.80, depending on the format of stimulus presentation (Price et al., 2012).

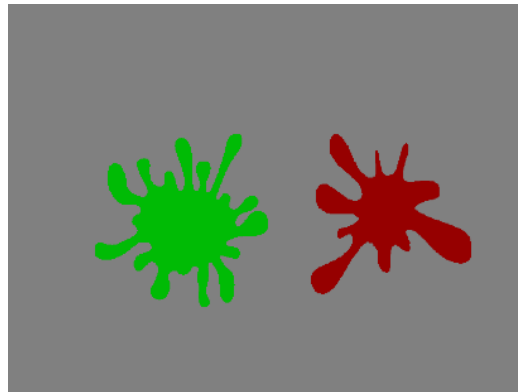
In half of trials the stimuli shown were congruent on two visual parameters - the convex hull (the perimeter of the area that includes all figures of the same color) and the total area (the sum of the areas of all figures of the same color) - for each type of proportion and format of presentation. In the other half, the stimuli were incongruent on the same parameters. There were 216 tasks in total. Stimuli from different conditions were randomly mixed, the order of presentation was the same for all respondents.

### ***Areas Comparison Test***

Each participant was presented with two figures ("blobs") of red and green colors on the screen (Figure 2). Similarly to the nonsymbolic comparison test, the "blobs" were presented for 400 ms, after which the participant was supposed to choose a figure with a larger total area by pressing then corresponding key: "r" if the larger figure was red or "g" if it was green.

**Figure 2**

*Areas comparison test stimulus example*



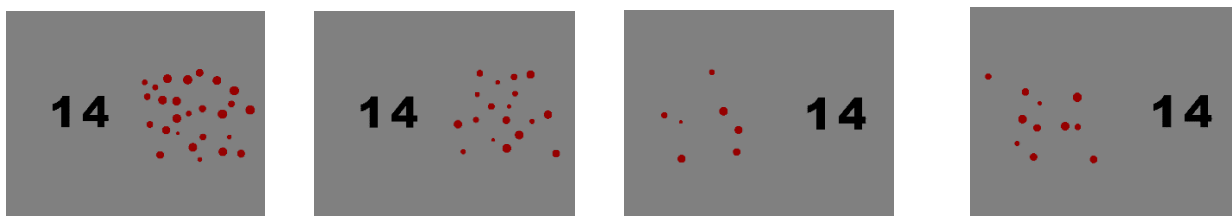
Two additional conditions were also added to the test: a simple and a complex proportion of total areas of the two figures. The ratios of areas of the two figures varied from 0.47 to 0.53 for simple proportion, and from 0.72 to 0.77 for complex proportion. The ratios were chosen to be comparable to the conditions of the nonsymbolic quantity comparison task. In total, there were 124 tasks in the test.

**Numerosity Estimation Test**

The respondents were presented with a screen showing a number on one side and an array of geometric shapes (circles or triangles) on the other (Figure 3). The respondent had to choose which side of the screen represented a greater number - the number shown or the amount of geometric shapes shown - by pressing the corresponding key: "right arrow" if a greater number was represented by information on the right side of the screen or "left arrow" in the other case.

**Figure 3**

*Numerosity estimation example stimulus material (number and quantity comparison)*



A. Simple proportion, quantity greater than number

B. Complex proportion, quantity greater than number

C. Simple proportion, number greater than quantity

D. Complex proportion, number greater than quantity

Two-digit numbers from 10 to 16 were used in the test. The tasks were designed in such a way that in half of the cases the number was greater than the amount of figures and vice versa in the other half. The side of the screen that showed either the number or the shapes was controlled. Thus, in 25% of the tasks the number was greater and it was shown on the left, in 25% of the tasks the number was smaller and it was shown on the left, in 25% of the tasks the number was greater and it was shown on the right, in 25% of the tasks the number was smaller and it was shown on the right.

Similarly to the previous tests, the proportion between the number and the amount of figures shown could be simple (ratio from 0.50 to 0.55) or complex (ratio from 0.70 to 0.78). A total of 56 tasks were included in the test.

### **Statistical approach**

At the first step of analysis, the accuracy was calculated for each test (the proportion of correct answers). At the next step, the NRE was calculated for the area comparison and numerosity estimation tests and for the two formats of stimulus presentation of the nonsymbolic comparison test. The NRE was calculated as the difference in accuracy between items with a simple proportion and items with a complex proportion. The NREs were calculated for each respondent and then the correlations between the NREs in three tests were evaluated.

Next, a regression analysis was performed for the accuracy of nonsymbolic comparison in both formats of stimulus presentation as a dependent variable. For each dependent variable (accuracy in separate/homogeneous format and accuracy in mixed/heterogeneous format), the accuracy of the area comparison and the accuracy of the numerosity estimation (comparison of number and quantity) are included as predictors into the model. The comparison of standardized regression coefficients provided information about effect size of association of each predictor with dependent variables.

## **Results**

### **Descriptive statistics**

Table 1 shows test accuracy scores, standard deviation, and range.

**Table 1**

*Descriptive statistics for area comparison, numerosity estimation, and nonsymbolic comparison tests*

Tests	Accuracy (ratio of correct answers)			
	Average (s.e.)	SD	Min	Max
Area comparison	0.82 (0.01)	0.12	0.48	0.94
Numerosity estimation	0.80 (0.01)	0.13	0.45	1
Nonsymbolic comparison (separate/homogenous format)	0.84 (0.01)	0.10	0.54	0.97
Nonsymbolic comparison (mixed/ heterogenous format)	0.83 (0.01)	0.10	0.49	0.96



In general, it should be noted that the accuracy was quite high for all tests. The lowest average accuracy was observed in numerosity estimation test, which involved the comparison of a number and a quantity of geometric objects.

At the next step, an analysis of differences in accuracy between simple and complex proportions was carried out for each test. Mean differences and their statistical significance are presented in Table 2.

**Table 2**

*Analysis of differences in accuracy between simple and complex proportions for area comparison, numerosity estimation and nonsymbolic comparison tests*

Test	Simple proportion	Complex proportion	Proportion effect [95 % CI]	t-test
Area comparison	0.81	0.82	-0.01 [-0.02; 0.002]	-1.69
Numerosity estimation	0.84	0.81	0.03 [0.01; 0.05]	3.05**
Nonsymbolic comparison (separate format)	0.89	0.72	0.17 [0.15; 0.19]	18.07***
Nonsymbolic comparison (mixed format)	0.91	0.74	0.17 [0.15; 0.18]	22.20***

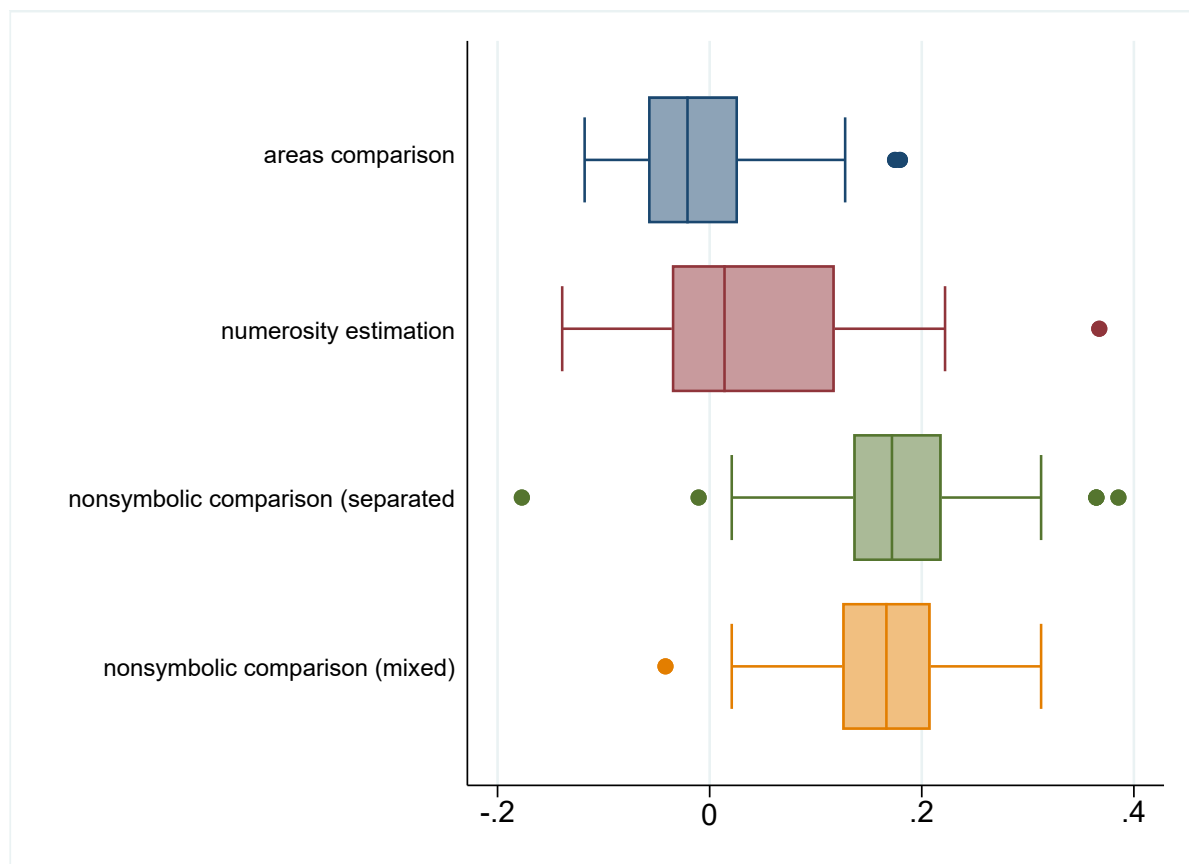
Note: \*\*\* $p < .001$ , \*\* $p < .01$

An analysis of the average NRE for each test showed that in the areas comparison test, the NRE was not significant. In the numerosity estimation test, the NRE was significant but small. For both formats of the non-symbolic comparison test, the NRE was identified and the effect size is significant (Cohen's  $d = 1.62$  for the mixed format and  $1.66$  for the separated format).

Next, to analyze the relationship between NREs in different tests, the NREs were calculated for each respondent. The distribution of NREs for three tests are shown at Figure 4.

**Figure 4**

*Numerical ratio effect (difference in performance between simple and complex proportions) for different tests and conditions of stimuli presentation*



Next, correlations between NREs for different tests were analyzed. The analysis showed that NREs do not correlate with each other, with one exception. There was a significant negative correlation between the NRE in the area comparison test and the NRE in the nonsymbolic comparison test in separate/homogeneous format ( $r = -0.31$ ,  $p=0.005$ ). Thus, higher NRE in the nonsymbolic comparison test are associated with lower NRE in the area comparison test.

During the final stage of the analysis, a regression analysis was performed for the accuracy of the nonsymbolic comparison in each format as a dependent variable. The results of the regression analysis are presented in Table 3.

**Table 3**

*Results of the regression analysis of the relationship between the accuracy of nonsymbolic comparison test and the accuracy of numerosity estimation and area comparison*

Variables	DV: Accuracy in separated format		DV: Accuracy in mixed format	
	B (s.e.)	$\beta$	B (s.e.)	$\beta$
Constant	0.41*** (0.06)		0.35*** (0.06)	
Accuracy of area comparison	0.30** (0.09)	0.37	0.43*** (0.08)	0.52
Accuracy of estimation of numerosity	0.23** (0.07)	0.33	0.16* (0.07)	0.22
F-test	23.73		30.25	
R-squared	0.36		0.42	

Note: \*\*\* $p < .001$ , \*\*  $p < .01$ , \* $p < .05$

The results of the analysis showed that the accuracy of areas comparison was significantly associated to the accuracy of nonsymbolic comparison for both formats of stimulus presentation. Additionally, this relationship was stronger for the mixed format of presentation, compared to the separate format. The accuracy of the estimation of numerosity was also related to the accuracy of the nonsymbolic comparison, although the effect of area comparison was stronger. The results obtained partly contradict the previously suggested hypotheses, which will be discussed below in the "Discussion" section.

## Discussion

In this study, we examined the accuracy and the NRE for three different tests designed to assess the ability to estimate quantitative information. Previous studies explore the extent to which the estimation of sets of discrete objects (numerosity) and the estimation of continuous quantities (magnitudes) can be related. It was suggested that the estimation of numerosity without using of symbols can be carried out both directly (direct estimation of numerosity) and indirectly, through the estimation of visual parameters (Kuzmina et al., 2019; Kuzmina & Malykh, 2022). Additionally, the choice of the estimation approach used may be determined by the format of stimulus presentation (separate or mixed).

The current study tested the hypothesis that the accuracy of nonsymbolic comparison in a separate presentation format correlates more strongly with the accuracy of magnitude comparison (assessed using the areas comparison test), while the accuracy of the numerosity estimation (assessed using the symbolic-nonsymbolic comparison test) correlates more strongly with the

accuracy of nonsymbolic comparison in mixed format. In addition, the NRE was assessed for all tests and the correlation of proportion effects was evaluated for all tests and formats of stimulus presentation.

The results show that the NRE is more pronounced in the nonsymbolic comparison test and is not significant in the magnitude comparison test (e.g., Leibovich & Henik, 2014). This contradicts, in part, previous findings regarding NRE in magnitude comparison tests. Consideration of the conditions of previous studies may explain these discrepancies. Leibovich & Henik (2014) used an area comparison task with squares, while our study used blobs instead areas. It seems that, in general, comparison of areas of complex figures is more complicated process than comparison of squares, when for area comparison it is enough to compare the length of one or two sides. Additionally, only two types of numerical proportion ranges were used in our study (simple, ranging from 0.47 to 0.53 and complex, ranging from 0.72 to 0.75), while other studies used more types of ranges and more complex proportions (for example, ranging from 0.80 to 0.95). In the study by Leibovich & Henik (2014), it was shown that the decrease in accuracy associated with increase in proportion during area comparison tasks manifested only for the most complex proportion (greater than 0.85), less complex proportions showed no decrease in accuracy. Taking this into account, we can conclude that during estimation of continuous parameters, the NRE is observed only in the conditions of significantly more complex proportions than those used in our study.

This study revealed that there were no significant correlations between the NRE for different tests, with a single exception. On one hand, this may serve as evidence that the systems of representation of discrete numerosity and the representation of continuous magnitudes are separate systems, which was also confirmed in previous studies (for example, Odic, 2018; Leibovich & Henik, 2014). On the other hand, the absence of correlations can be explained by the specificity of evaluation of the NREs. The NRE was obtained as the difference in accuracy between the complex and simple proportions. Previously, some studies have shown that the NRE has low reliability and low variance (e.g., Lyons et al., 2015; Maloney, Risko, Preston, Ansari & Fugelsang, 2010; Chesney, 2018). Additionally, any parameter calculated as the difference between two conditions was shown to have lower reliability than the parameter obtained in any of the separate condition (Caruso, 2004).

The results of the regression analysis did not confirm the proposed hypothesis. On the one hand, the accuracy of area comparison is strongly related to the accuracy of nonsymbolic comparison in both formats of stimulus presentation. Secondly, it is more strongly related to nonsymbolic comparison in mixed format, which contradicts the proposed hypothesis. On the other hand, the results obtained may indicate that the estimation of visual parameters is involved in the estimation of quantity, regardless of the format. Still, it was shown previously that in a mixed presentation format, participants are less reliant on the assessment of the surface area or the convex hull, and rely more on the assessment of the cumulative area (the sum of the areas of all objects). The cumulative area effect was observed even for heterogeneous objects, although in general it is more difficult to estimate the cumulative areas in this case (Kuzmina et al., 2020; Kuzmina & Malykh, 2022). It may possible that in the current version of the test in this study, the comparison of areas was based on the estimation of the cumulative area, rather than the perimeter. The compared figures had complex shapes, so assessment and comparison of perimeters can be difficult in this case. In a separate presentation format, as shown in previous studies, participants rely more on the assessment of the perimeter or the convex hull, the assessment of which was not required

in the area comparison test due to the peculiarity of figures involved in the test. Taking this into account, in future studies it might be necessary to alter the area comparison tasks accordingly. Firstly, more complex types of proportions should be used for visual parameter comparison tasks. Secondly, different types of figures (shapes) should be used in order to assess the participants ability to compare convex hulls, and not only cumulative areas.

Weak correlation of numerosity estimation test accuracy with the accuracy of nonsymbolic comparison is also difficult to explain. One possible explanation is that comparison of symbolic and nonsymbolic numerosity required the mapping ability, the ability to map nonsymbolic representations of quantity to symbolic representations. The mapping implies the involvement of the system of symbolic representation. According to some studies, the systems of symbolic representation and the system of nonsymbolic representation are separated and the relationship between them reduced across development (for example, Lyons, Nuerk, & Ansari, 2015; Sasanguie, De Smedt, & Reynvoet, 2017; Goffin & Ansari, 2019). Taking into account that participants were students, one possible explanation is the weakening of the connection between the symbolic and nonsymbolic systems of representation at this age, which is reflected in lower involvement of the symbolic system in nonsymbolic comparison. In other words, when comparing two sets of objects, participants do not need to convert a nonsymbolic quantity into its symbolic representation, they can compare sets based on their visual parameters or directly estimate the numerosity.

It should also be noted that small sample size is one of the limitations of this study, which could lead to a decrease in its statistical power and an increase in the probability of Type I error (Schönbrodt & Perugini, 2013; Akobeng, 2016). In future studies, it is necessary to investigate the findings obtained in this study on a larger sample and take into account the possibility of improving the design of the tests.

### **Conclusion**

- The NRE is more pronounced in the nonsymbolic comparison test and is not significant in the area comparison test.
- There are no significant correlations between the NRE for area comparison test, numerosity estimation test, and nonsymbolic comparison test, which do not confirm the hypothesis of existence of a common for processing both discrete numerosity and continuous magnitude.
- The accuracy of comparison of visual parameters correlates with the accuracy of nonsymbolic comparison, and this relationship is more pronounced for the mixed/heterogeneous format of stimulus presentation.

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# Complementary Model of Personality Self-Determination

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## Abstract

**Introduction.** The relevance of studying the phenomenon of self-determination is substantiated by the compliance of this research problem with two actively developing areas of personality psychology – the psychology of a change and the psychology of a possible. The variety of manifestations of personality self-determination, the complexity and uniqueness of this phenomenon necessitate the generalization of existing theoretical developments, ideas and concepts, as well as accumulated empirical material. Modern Russian authors formulate theoretical prerequisites for the study of self-determination in the framework of the subject-activity approach, however, providing empirical research, they are often based on the methodology of foreign colleagues. The originality of the present work consists in the search for new methodological foundations for the study of personality self-determination. **Theoretical justification.** The complexity and ambiguity of the phenomenon of self-determination enhance the differentiation of theoretical approaches to its description. The researchers focus on different levels of manifestations of self-determination: the nature-conditioned ability to self-organization and the innate need for autonomy of the individuum, the processes of self-regulation of behavior and activity by the Subject, the mechanisms of the formation of subjectivity and the development of the Self, as well as personality's ways to realize a freedom and an intentionality. Along with a wide variety of theories and concepts, there is a deficiency of systemic and complex models. **Results.** The authors of the article first proposed the complementary model of self-determination, which allows to integrate existing theoretical approaches to research through a level-by-level consideration of individ's, subject's and personality characteristics. The basic level of spontaneous (functional) self-determination corresponds to the principles of self-organization of complex open non-equilibrium systems with a naturally conditioned ability to self-deterministic behavior. The second level of purposeful or "activity-based" self-determination demonstrates the role of conscious planning, volitional effort and conscious choice as a tool for achieving goals and self-regulation of the Subject. Finally, the third, highest level of meaningful self-determination describes the value and moral self-regulation associated with the implementation of meaningful choices. **Discussion.** The research presents a new look at the scientific problem of personality self-determination. The complementary model reflects a complex multilevel system of self-determination, the evolution of its mechanisms in the

process of ontogenesis from the basic psychological needs of the individual to the complex processes of meaningful self-determination of the personality.

**Keywords:** self-determination, personality, subjectivity, autonomy, free will, intentionality, self-organization, self-regulation, telosponding, meaningful choice

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## Introduction

Self-determination is a unique phenomenon that combines a humanistic view of human nature and its natural-scientific basis. The content of the term of self-determination, historically associated with the problem of “non-causal view of reality” (Mamardashvili, 1997, p. 546), directly unites the two most actively developing areas of personality psychology: the psychology of a change (Asmolov, 2018; Kostromina, 2019; Grishina, 2018; Martsinkovskaya, 2015, etc.) and the psychology of a possible (Leontiev, 2019; Znakov, 2022, etc.). The versatility of the manifestations of self-determination conditions the complexity and ambiguity of its description, the impossibility of limiting the understanding of self-determination exclusively to one approach or a single idea.

In the foreign psychological literature, the problem of self-determination has been actively developed since the late 70s of the twentieth century due to the revealed insufficiency of existing explanatory models of human behavior motivation, which the authors of the modern model of self-determination characterized as an “existential crisis of psychology” (Ryan, Soenens & Vansteenkiste, 2019). The most well-known works in the field of self-deterministic behavior research, in addition to the theory of E. Deci and R. Ryan, are currently the concepts of R. Harre (1983) and A. Bandura (1997).

The analysis of Russian works on the problem of self-determination shows their predominantly theoretical nature, which is associated with the complexity of the concept itself and methodological problems of its study (Averyanov, 2014; Gordeeva, 2010a, 2010b; Kostina, 2010; Kolotaev, Ulybina, 2012; Korneenkov, 2012; Popov, Balymova, 2009; Pochtareva, 2015; Sapogova, 2011; Stepanova, 2017; Shadrin, 2012; Shatakhanov, Karina, 2015). In general, it should be recognized that despite the deep domestic traditions in the understanding of the Subject and subjectivity, founded by S. L. Rubinstein (1997, 2003, 2020), A. N. Leontiev (1975), L. S. Vygotsky (2005), B. F. Lomov (1984), A. V. Brushlinsky (1991, 2006), K. A. Abulkhanova-Slavskaya (2005), they are used as a theoretical justification of the phenomenon of self-determination, while the methodology of empirical research is based on the works of E. Deci and R. Ryan (Ryan & Deci, 2017; Sheldon & Prentice, 2019), which have a different ideology and approach to understanding a self-determination. In this inconsistency, there is a deep gap between the existing theoretical prerequisites in the study of self-determination in domestic psychology and the absence of a developed construct, as well as its own research methodology. As a consequence, in many modern Russian works, there is

common a reduction of the unique concept of self-determination, which has its own content and specificity, to other concepts, in particular, such as self-regulation, self-realization, self-actualization, self-definition, subjectivity, humanity, freedom of choice, self-improvement (Bolotova, Puretsky, 2015; Bohan et al., 2019; Galazhinsky, 2008; Rastorgueva, 2017, etc.). There are studies in which the concept of self-determination remains unrevealed, but it is concluded that it determines the level of autonomy in relation to the social environment, awareness and independence of choice (Kolotaev, Ulybina, 2012). This circumstance elicits a number of key questions for researchers that require a separate theoretical and methodological analysis of the essence of self-determination as a psychological phenomenon. Among them there are questions about the relationship between the concepts of subjectivity and self-determination, about the nature of self-determination, about its structure and the possibilities of operationalization, which we will try to answer in this article.

## **Theoretical justification**

### ***Scientific approaches to the study of personality self-determination***

In our opinion, the uniqueness of the phenomenon of personality self-determination is explained by its complex multilevel hierarchical structure and specific nature, integrating biological, social and individual-personality factors.

The origins of the domestic approach to the problem of self-determination are closely related to the idea of *subjectivity*, first identified in the works of S. L. Rubinstein, L. S. Vygotsky and A. N. Leontiev. The ability to feel like the initiator and owner of activity, which is aimed at changing the surrounding world and oneself, is defined as a key characteristic of a Subject. A. K. Osnitsky (2010) directly points out that self-determination is predicated by subjectivity, which in turn reflects the content-action characteristic of human activity. Continuing the tradition of A. V. Brushlinsky, E. A. Sergienko underlines the connection of subjectivity with the category of self-regulation (Sergienko, 2013). She considers subjectivity as a special way of self-regulation and self-organization of the personality, through which coordination and coherence of internal and external conditions, under which the implementation of activities is proceeding. The ideas of E. A. Sergienko and K. A. Abulkhanova-Slavskaya are consonant with the general theoretical ideas of V. A. Petrovsky (1996, 2013), who, when revealing the term of the Subject, refers to the concept of “free causality” (*causa sui*) and names it as the main characteristic of subjectivity. Developing the traditional idea of domestic psychology about the leading role of activity in the formation of human existence, D. A. Leontiev and V. I. Slobodchikov (1986) describe self-determination from the point of view of the personality resource of the Subject as the experience and realization of one’s activity possibilities. Self-determination is considered by D. A. Leontiev as a mechanism for the formation of subjectivity and the realization of freedom (Leontiev, 2000).

However, we suppose that self-determination is not identical to the concept of subjectivity, and therefore its more complete definition implies the inclusion of both individual’s and personality characteristics into the analysis. These characteristics are found in foreign theories and concepts describing various manifestations of self-determination and phenomena close to them in content.

*At the level of an individuum* included in the social environment, self-determination can be defined by interpreting the most popular and verified by numerous empirical studies self-determination theory by E. Deci and R. Ryan (Ryan & Deci, 2017; Amiot, Blanchard & Gaudreau, 2008; Altea, Boersma, Beijersbergen & Wolf, 2018; Bauer, King & Steger, 2019; Benita, 2020; Gomez-Baya & Lucia-Casademunt, 2018; Liu, Raza, Zhang, 2022; Sedikides, Ntoumanis, Sheldon, 2017). The crucial

thesis of the theory is that the tendency for self-determination and autonomous regulation of one's own behavior is a *biologically determined basic need* that has an innate nature, and various options for the realization of this need are mediated by the interaction of the individual with the surrounding social context (Deci & Ryan, 2008). The representation of various in content and complexity forms of motivation in a person is explained by the fact that the basic need for self-determination is coordinated with other innate needs – needs for competence and relatedness with people, as well as with other need-motivational or cognitive individual characteristics: cognitive evaluations of the situation, the tendency to organismic integration, the content of goals, causality orientation, relationships motivation (Ryan & Deci, 2020; Howard, Gagné & Bureau, 2017).

In contrast to the theory of E. Deci and R. Ryan, in a great number of other approaches, self-determination is not positioned as an independent object of research, however, the *personality phenomena* described in them can be considered as various forms of its manifestation.

Thus, the role of cognitive factors as driving attitudes of personality in the performance of self-determined behavior is emphasized in the concept of the locus of control by J. Rotter (Rotter, Chance & Phares, 1972; Brosschot, Gebhardt & Godaert, 1994) and A. Bandura's theory of self-efficacy (Bandura, 1997; Ansari & Khan, 2015; Azizli, Atkinson, Baughman & Giammarco, 2015). The authors associate the formation of these cognitive attitudes with the mechanism of internalization and the process of social learning, therefore, the nature of self-determination, according to the logic of this approach, is rather social, and not conditioned by innate basic needs.

Manifestations of self-determination can also be observed in the socio-culturally conditioned mechanism of Self-development, which is found in the expectations, goals, fears, hopes and aspirations of the personality, i.e., in the elements of the Self-concept directed to the future ("possible selves") (Nuttin, 2004; Markus & Nurius, 1986; Oyserman & James, 2009). In addition, the nature of self-determination can be explained by the dialogical structure of "I", which assumes the presence of relatively independent "I-positions", each of these formulates its own independent narrative and at the same time preserves the ability to communicate with others (Hermans, 1996, 2001; Hermans et al., 1992). In this context, self-determination correlates with the ability of a personality to "position" itself in a system of variable positions and "possible selves", as well as with the concept of meta-position, which describes the process of self-reflection and the height point for making independent decisions by a personality.

*The existential aspect* of self-determination is associated with the realization of personality freedom – a key category of being, manifested in a person's ability to understand that he is determined, and choose his attitude to what determines him, accept his own fate, despite the inevitability of death, and be ready for changes (Frankl, 1990; Harre, 1983, 2002; May, 1967). The opportunity to make a free choice, giving meaning to one's past experience and predicting the future, is based on a person's intentionality, which, at first sight, can be identified with the concept of subjectivity, since it defines the teleology of behavior, its conscious purpose aspect (Višak, 2017; Vazeou-Nieuwenhuis, Orehek, Scheier, 2017). However, according to R. May, intentionality can go beyond the conscious, manifest itself in spontaneity, bodily sensations, symbolic meanings and other phenomena related to the sphere of the unconscious (May, 1997). In other words, in framework of the existential approach, self-determination performs as a characteristic of the content of the inner world (personality characteristic), including spontaneous unconscious internal processes, as well as a form of realization of the inner world in the external plan, in behavior and activity (a characteristic of the Subject) (Sergienko, 2013).

As can be seen from the above examples, the authors consider concrete manifestations of the phenomenon of self-determination, which, in essence, can be attributed to *different levels of human organization* (individ's, subject's and personality characteristics). This circumstance enables to make an analogy with the level descriptions of other psychological phenomena, widely presented in Russian and foreign literature (Barsky, 2008; Grishina, Kostromina, Mironenko, 2018; Klochko, 2005; Krupnov, Novikova, Vorobyova, 2016; Baumert et al., 2017; Sosnowska et al., 2019, 2020; Strus & Ciecuch, 2017), and to illustrate the systematic approach with examples closely related to the personality self-determination.

In particular, V. S. Merlin developed a system model of «integral individuality», which is a hierarchical set of subsystems on different levels that are not included in each other and relatively autonomously coexisting: subsystems of individual properties of the organism, individual mental properties and socio-psychological individual properties (Dorfman, 2008; Merlin, 1980). There is significant statement in his theory about the *existence of different types of determination* in this system: on the one hand, there is a hierarchy of causal connections, according to which the properties of the lowest level are determinants of higher properties, and on the other hand, there is teleological determinism in the system – a focus on a certain useful result and following the internal goal of the system. A similar description of the mechanisms of regulation of human behavior is presented in the model of the desired future by N. A. Bernstein. According to the theory, the model of the desired future is the goal of the organism, directing motor activity of a high level of complexity and allowing to go beyond reactive behavior through regulation by complex functional motion control systems (Bernstein, 1966).

In the conception of a life path S. Buhler describes the processes of determination through a hierarchy of multidirectional basic human tendencies unfolding in the process of development. The model includes such elements as needs satisfaction, self-limiting for the purpose of adaptation to the environment, the desire for self-expression, achievements and creativity, the tendency to integrate and uphold the order of the inner world (Bühler & Allen, 1972; Bühler & Marschack, 1968). The stages of the life path identified by S. Buhler can be correlated with various levels of self-determination: needs satisfaction and adaptation to the environment are realized predominantly at the individuum level, the desire for activity, achievements and creativity can be considered as manifestations of subjectivity, and the integration of the inner world determines the highest, meaning level of the personality organization.

The idea of the levels' functioning of personality autonomy is also presented in the works of G. Allport, who distinguished between stable and "preservative" functional autonomy based on feedback mechanisms in the nervous system (the level of properties of individuum) and one's own "proprie" functional autonomy associated with acquired human interests, values, attitudes and intentions (personality level) (Allport, 2002).

The identity model of D. McAdams also describes different levels of personality: it includes a description of personality at the level of basic traits or dispositions that determine stable behavioral patterns, as well as at the level of individual motives, goals, schemes and values associated with the inclusion of a person in a social context (McAdams, 2008). As the third integrating level, D. McAdams describes the identity of a personality, defined by him as a subjective life story that integrates the past, present and future and gives meaning, direction and unity to a person's life (McAdams, 1996, 2009; Thorne & Latzke, 1996).

The reviewed system descriptions of psychological phenomena are closely related to the construct

of self-determination and provide reasons to suppose that combining various manifestations of personality self-determination in a level model will allow us to describe in greater detail the structure of self-determination as a complex and heterogeneous phenomenon, thereby expanding the possibilities for operationalization of this concept.

### ***Self-determination as a complex multidimensional phenomenon***

The general scientific view of the problem of self-determination, which has developed in modern literature, allows us to formulate several important conclusions. On the one hand, practically all authors concede the presence of biological bases (innate mechanisms) of self-determination. In foreign sources, this idea is maximally complete realized in the motivational theory of E. Deci and R. Ryan (Ryan & Deci, 2017), who describe self-determination in terms of basic psychological needs for autonomy, competence and relatedness. At the same time, D. A. Leontiev's critical remark (Leontiev, 2011) highlights the fact that this theory absents an answer to the main question: Why do people need autonomy and self-determination? What is their meaning? On the other hand, this aspect is quite completely revealed in the domestic literature, which actually identifies subjectivity and self-determination by recognizing the role of consciousness in the ability and readiness to make a choice, as well as in the meaning orientation of this choice. It's hard to disagree with the objective fact that in life decision-making and the transformation of possibilities into reality occur significantly more often in the process of awareness of life experience, and not due to the proceeding of innate mechanisms.

The existing contradiction, as we see it, is rather based not on the difference in theoretical views and methodological approaches (although they also take place), but on the variety of manifestations of self-determination, conditioned by the complexity of the phenomenon of personality itself. The variety of forms of self-determined behavior does not fit into the "Procrustean bed" of any one structural and functional localization and causes the question of the necessity of a level consideration of self-determined behavior (from the lowest – at the level of self-organization of individ's system, through volitional regulation – willpower and goal-setting, to the highest level – freedom of will and freedom of choice). Obviously, the different functional levels of personality comply with their own mechanisms of self-determination, which, because of the evolutionary changes of personality during a life (its development and complication), also develop and getting more complicated, complementing each other.

The ontological essence of personality determines the evolutionary processes of the differentiation of its structure, the development of new forms of behavior and the formation of a variety of functional mechanisms that determine human ways of interacting with reality. While at the beginning of its development the basic elements of self-determination are innate mechanisms of autonomous behavior of the system, as it develops, those come to the fore that are fixing in the experience of interaction with the environment and dialectically building up over the previous ones (mental over biological, meaningful over mental). At the same time, there is going on a reorganization of the elements of the personality system at lower levels, which are under the controlling influence of higher structures. This means that, like any other functional substructure, self-determination undergoes similar processes of complication and differentiation. Submitting to the principle of isomorphism, self-determination has an appropriate form and mechanisms of implementation in relation to the hierarchically organized architecture of the personality system. In other words, it continues to exist as an innate ability for autonomous behavior and

subject's activity, while more conscious forms of self-determined behavior are developing, such as self-management or self-change. In her time S. Buhler (Bühler & Marschack, 1968) said that a personality's life path is a way of realizing intentionality, which manifests itself in life choices that are not always recognized by a person. However, at higher levels, other forms of its realization emerge that are not directly connected with the biology of the individual. Confronting with a problem in achieving a result, through trial and error, a person develops new forms (new actions) of self-determined behavior, which, if they are effective and meaningful, become anchored and serve as the basis for the birth of new forms and mechanisms of self-determination. Therefore, as a person matures and gains experience, forms of self-determined behavior grow and change, which complement previous ones at the expense of their value to the person's life functioning.

## Results

### ***Complementary model of self-determination: level-by-level description***

In essence, a processual understanding of self-determination (Kostromina, 2019; Moskvicheva et al., 2022; Kostromina et al., 2022) from the point of view of the evolution of complex open self-developing systems eliminates the existing contradiction in the understanding of self-determination as an innate or acquired (socially conditioned) personality trait. A level-by-level description of self-determination allows it to be described as a complementary model (fig. 1), revealing the complementary nature of different types of self-determination and emphasizing its transformation as the personality evolves through ontogenesis. At the same time, regardless of the level of description, the key conditions (or principles) for self-determined behavior persist. These include internal activity (subjectivity), long-term plasticity (ability to change and transform according to conditions) and freedom of choice (plurality, alternativity, redundancy).

It should be admitted, that, from the idea of the innate nature of self-determination, there is the existence of a **basic (first) level** based on the principles of living systems characterized by their ability for self-organization and self-development. In such systems, on the basis of the immanent properties of structures and functions, the internal architecture is independently reproduced, refined and created without external control influences. The foundation for independent growth and change is the ability to **active life functioning (involvement)**, which determines expansion into the outside world (especially in the mature stages of development) and the **active exchange** of energy and information with the outside world (**openness**). Accordingly, choice at this level is realized in the evolutionary **mechanism of bifurcation** (Prigogine, 1991) – through the choice of the most efficient way of interacting with the world at the current moment in time, providing maximum adaptive effect. Thus, active behavior is not determined by an external stimulus, but by the discharging internal sources of energy accumulated within the system itself.

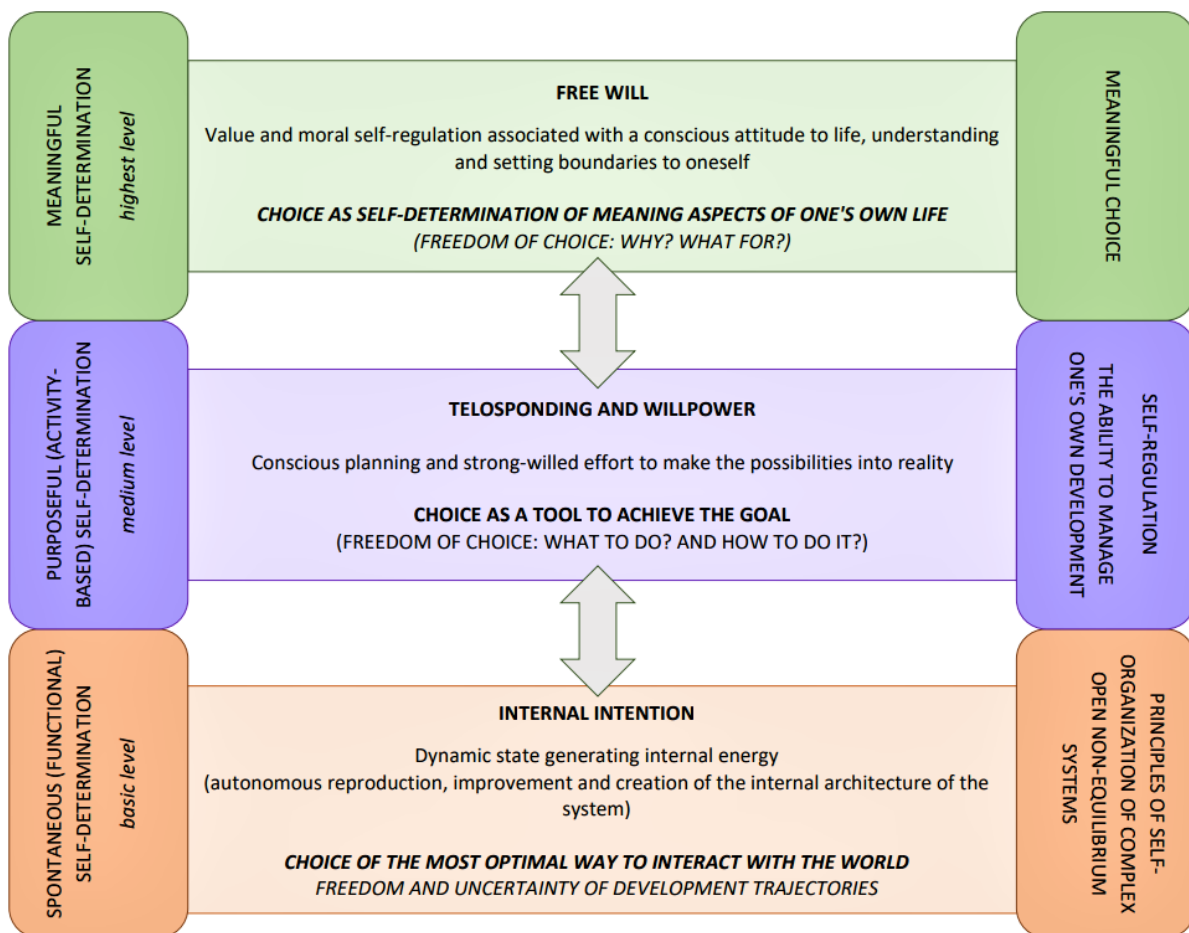
It is unlikely that at this level we can speak of a manifestation of subjectivity in the classical domestic understanding. In general, these are dynamic states associated with instability and the generation of internal energy. Disturbances in inner equilibrium due to external and internal influences are accompanied by an active energy emission in the form of thoughts, experiences and acts, and by the necessity to order the inner state. Henri Bergson used the metaphor of "creative impulse" to define the process, which is inherent in all living things and does not simply describe different directions of movement, but functions as a fulcrum for irreversible processes driving to the emergence of new structures, where systemic connections are self-established (Bergson, 2019). S. L. Rubinstein referred to this state as "being in change", as "going on" and



“constant motion” (Rubinstein, 1997). It is the “inner life” of a personality, where intentions and desires are generated, plans and images of the future are constructed, a dialogue with oneself is conducted, fluctuations in decision-making occur, past events are experienced and life experience is integrated (Rubinstein, 2003).

**Figure 1**

*Complementary model of personality self-determination*



Therefore, at the basic level, self-determination manifests itself in a special way. A naturally conditioned ability for self-development determines the internal generation and accumulation of energy, which is used to overcome various external and internal obstacles that appear in the way of realizing any goals or programs of activity. And the higher one's involvement in life, the more sensitive one is to various kinds of fluctuations, the more probably one is to form attractors providing the creation of a “space of freedom” – a “window of bifurcations” where a

range of multiple states is generated from which only one will be chosen. Hence, at this level self-determination and autonomy are necessitate in order to find out **the best way of interacting** with the surrounding reality, that is, the one which is most rational and functionally valuable for the current conditions. Self-determined behavior in this case reveals an aspiration for the future that prevails over reactivity. The internal energy initiates a vector of activity into the space of the future, displaces activity into the future, towards the achievement of the desired state. Based on the naturally conditioned ability for self-determined behavior of complex open non-equilibrium systems, the first basic level could be designated as **the level of spontaneous self-determination, self-determination as a natural given**.

Obviously, the self-determined human behavior cannot be explained **exclusively** by coincidence or by the spontaneous (analogous to mutation) emergence of structures. Beyond this explanation remains the idea of the authorship of life, the initiation, construction, maintenance and management of all kinds and forms of external and internal activity that aim to achieve the goals being built. In addition to experiencing emotions, person is able to monitor and regulate them, and in some cases struggle with them, without always being aware of these processes. The conscious activity of a Subject reveals self-determined behavior as a manifestation of purposeful actions of self-construction and self-management. "Telosponding" (Rychlak, 1984, P. 115–150) implies selection of the determinants of one's behavior as a choice of one's own actions in the space of the possible, where life activity manifests itself in the coordinates of the potential of self-realization and the result depends on the individual as a "doer".

The "activity" aspect of self-determination focuses on the fact that it is the individual who translates possibilities into reality. Only the individual can determine for oneself what one considers as opportunities, what one invests resources in, how one prioritizes. So, **the next (second) level** of self-determination (fig. 1) is directly related to the feeling that my behavior is chosen by me and not imposed by external forces. It is identified by one's ability to manage oneself. Freedom at this level is the freedom to choose what to do and how to do it. It is directly connected with self-awareness, the ability to interrupt the stimulus-response chain, to create a pause in which we can make conscious choices about our reaction (May, 2013). The important thing to note is that the self-determination of this level is largely conditioned by the characteristics of goal-directed activity, the belief in the possibility of changing what is there. The feeling of freedom and the belief in the ability to change or realize something exactly determine the degree of autonomy of the Subject, who is ready to determine one's own actions on the basis of desires and the meaningful goals, to enter into a system of conscious self-determination of one's own activity (Rychlak, 1979, 1981) That is, the "activity-based" nature of self-determination allows us to designate **the second level as the level of purposeful self-determination**, where **choice** is a tool for achieving a goal, where the degree of involvement of regulatory mechanisms, volitional and reflexive processes in self-determined behavior plays a crucial role. The "activity" aspect of self-determination emphasizes that it is only the individual oneself who translates possibilities into reality (Leontiev, 2019).

Finally, another aspect of self-determination is the value-semantic dimension of personality freedom. Saying that self-determination is a mechanism for the realization of freedom it would be unfair to limit freedom of choice to the phenomenologically experienced control over one's own behavior. E. Fromm (1990, 1992, 2012) points out that freedom is not a trait or disposition but an act of self-emancipation in the decision-making process. This is a dynamic, flowing state.

Freedom derives from the fundamental anthropological abilities of the individual for self-distancing (taking a position in relation to oneself) and self-transcendence (going beyond oneself as a given, getting over oneself). That is why one is free even in relation to oneself, free to rise above oneself, to go beyond oneself. It is the freedom from “being just that, the freedom to become another” (Harre, 1983, p. 94).

Therefore, **the highest (third) level of self-determined** behavior (fig. 1) is related to the special meaning aspects of one's own life: understanding and self-defining the limits of one's capabilities, a conscious attitude towards one's life, which is mediated by value-based (“what for?”, “why?”) self-management. The meaning aspect of freedom in this case becomes a “higher regulating instance” (Leontiev 1999, 2000), which allows the Subject to free itself from the determining influence of lower levels, to transcend them.

In order to make the transition, a person needs to be aware of what is happening, to be aware of the factors influencing behavior and of what is decisive in liberation from their influence. However, it is important to be aware not only of what is, but also of what is not yet there – to be aware of the possibilities and possible futures. So, the meaning essence of self-determination is an expression of free will, which consists in the awareness of one's own goals and desires; the forces and actions influencing them; the here-and-now possibilities and resources (external and internal) available to achieve goals and realize plans; the consequences that they entail; and in giving a value basis to choices, without which freedom loses all meaning. **Meaningful self-determination** is supported by the socio-cultural structures of human freedom (Lee, 1986), so the third meaning level of self-determination is a level of **value and moral regulation**, connected with the realization of free will and awareness of what choice I make and why. Its essence is primarily determined by setting boundaries for oneself.

It is important to highlight that the three described levels of self-determination are not mutually exclusive and should rather be considered as complementary substructures, which evolve during the personality development.

## Discission

The analysis of theoretical background for the research of personality self-determination has led us to conclude that this phenomenon is complex and multifaceted, and that its description is ambiguous. Self-determination is defined, on the one hand, as an innate basic need of the individuum (in the theory of E. Deci and R. Ryan) and, on the other hand, as a complex mechanism of subjectivity formation and a way of realizing personality freedom (D. A. Leontiev). The various manifestations of the phenomenon of human self-determination can be observed in everyday life at the level of motivation, self-regulation of behavior and activity, but they are also found when moving to a deeper existential level of personality analysis, when considering the essential aspects of human intentionality and freedom as a given of being. The presence of complex, varied and multi-level forms of self-determination is, from our point of view, conditioned by the processual nature of personality.

In most of the contemporary Russian academic works on the topic, there is a contradiction between the theoretical justifications offered by the authors for the phenomenon of self-determination and the chosen methodology of empirical research. Despite the wide variety of theories and concepts that explain the nature and mechanisms of self-determined behavior, we can currently state that there is no developed construct or comprehensive models of self-determination that

can serve as the basis for the creation of our own research methodology in domestic psychology.

The complementary model of self-determination that we propose allows to integrate existing theoretical approaches to the study of this phenomenon by level considering the system of individ's, subject's and personality characteristics.

### **Conclusion**

The evolution of self-determination mechanisms in the life process contributes to the development of more complicated forms of self-determined behavior. This suggests that self-determination is a cross-cutting process. Being an innate property of personality, it transforms into different forms during ontogenesis, ranging from the basic principles of functioning of a complex open self-organizing system and a set of basic psychological needs of the organism to complex processes of meaningful self-determination. In the process of complicating, developing and gaining experience of interaction with the environment, self-determination is transformed into a complex multi-level system of conscious attitude towards oneself and the world. From this perspective, the three levels of self-determination are a manifestation of the trinity of individuum, Subject and personality.

We can summarize the results of the theoretical analysis and modelling in the following highlights:

- self-determination is a multilevel dynamic system that provides energy, purposeful and meaningful activity for the personality and specifies the relative freedom in realizing one's own life aspirations;
- the complementary model of self-determination reveals the organization of self-determined human behavior on three main levels: as an individuum (spontaneous self-determination), as a Subject (purposeful or "activity-based" self-determination), and as a personality (meaningful self-determination);
- at the level of spontaneous self-determination there are the basic principles of existence of living systems, which indicate the ability to self-organization and self-development; at the "activity-based" level there are the volitional processes of self-regulation, which characterize the ability to manage oneself; the meaning level includes value and moral regulation.

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Complementary model of personality self-determination

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## Research Article

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# Metacognitive Determination of Effective Parameters in Programmers' Activity

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## Abstract

**Introduction.** Currently, information-related activity studies based on computer technologies and the identification and explanation of its cognitive and metacognitive determinants are of particular relevance. In this respect, it is objectively necessary to converge research in two important areas – metacognitivism and the psychology of professional information-related activity. This study is the first to identify and interpret the fundamental patterns of the deterministic influence of metacognitive factors on the effective parameters of information-related activity, including the optimum type dependency between metacognitive factors and efficiency.

**Methods.** The sample (n = 210) consisted of programmers of various profiles and levels working in Yaroslavl, Moscow, and Rybinsk. The study used psychodiagnostic procedures, including the Complex Inventory of Metacognitive Potential (CIMP) developed by the authors and methods developed in metacognitivism. **Results.** The findings indicated that the deterministic influence of metacognitive potential on the effective parameters of programmers' activity was essentially diverse in terms of degree and direction. It synthesized both positive and negative characteristics, ultimately determining the complex and nonlinear nature of this influence and the presence of the optimum type dependency between the severity of metacognitive potential and efficiency.

**Discussion.** The results are interpreted from the perspectives of metacognitivism and the basic perspectives of the psychology of information-related professional activity. Finally, the conclusion was that the negative influence of metacognitive factors on effective parameters of activity is determined by a combination of their direct and indirect impacts on the implementation of activity and particular functions to ensure their performance.

**Keywords:** metacognitive qualities, metacognitive potential, programmers' activity, reflexivity, information activity, voluntary regulation, activity quality, performance, efficiency

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## Introduction

The subjective determinants of professional activity are one of the most important and traditional, i.e. classical problems in psychology, especially applied psychology. During its development, significant results have been obtained, and many explanation concepts have been formulated that reveal and explain the patterns of influence of these determinants and the individual psychological qualities of the subject on the main parameters of professional activity. However, like other 'classical' problems, this problem retains a long-term relevance, gains a new sound in each historical period, presents itself in a new light, and reveals additional aspects. This is very typical of this problem. The fact is that the 'world of professions' is dynamic and its changes lead to the emergence of a new type and class of fundamental professional activity. At the present stage of development, these transformations in the world of professions, referred to the phylogenesis of activity (Karpov & Len'kov, 2006), have led to the formation of a new class of activity – the *subject-information* type of activity. The future is that it raises the issue of its priority study and in particular question of identifying the specific characteristics of its subjective determinants.

Moreover, ideas about the category of subjective determinants of activity are being developed and expanded, and their new types and classes are explained. Therefore, as the complexity of an activity increases, relatively complex subjective factors in general and individual characteristics in particular play an increasingly decisive role in ensuring its final results. These include such qualities that are still insufficiently studied in the context of professional activity research and, especially information-related professional activity – subjective determinants of metacognitive nature. Therefore, the need to include new categories of subjective factors (personal metacognitive characteristics) and to reveal their functional roles in the implementation of professional activity becomes increasingly urgent. It is particularly important for types of activity that are relatively complex and cognitively saturated. This is first and foremost manifested in actions belonging to the class of subject-information, which are implemented on the basis of computer technology. Therefore, the mutual orientation of two important trends is clearly explicated – the development of forms and types of activity and the need to reveal the most complex determinants of activity itself, not only cognitive, but also metacognitive.

Nevertheless, the implementation of this objective logic (the gradual convergence of the two directions indicated) is still in the early stages and its synthesis is a task that has not yet been solved, rather than a reality that has already taken place. The most general characteristics of the current state of the problem are as follows. *Firstly*, the subjective determinants of the professional activity are well studied in detail and in accordance with various paradigms, in terms of many kinds and types of this activity. For example, there are paradigms such as the approach of professionally important qualities, competence-based approach, paradigm of knowledge, skills, and abilities, structure-level approach, etc.

*Secondly*, these approaches, although of course, to varying degrees, are also applied to activities in the IT sphere. Thus, we should note in this regard the work on the professionography of IT activities and the implementation of competent approaches to specific information-related activity

(Karpov, 2021; Plotkina, 2010). Other important personal and professional qualities of IT specialists, particularly programmers, have also been studied (Demidenko & Eratina, 2021; Zhurina, 2019; Orel, 2007). Consequently, the main cognitive properties of this profession have been identified: hyperconcentration, a high level of code immersion, introversion, low socialization, formalization and thinking schematization (Leksunin, 2012). In addition, the following skills necessary to develop programmers' thinking have been differentiated (Demidenko, 2021; Bakunovich & Stankevich, 2018): the ability to establish an analogy between familiar and new; the ability to focus on long-term tasks; the ability to use developments efficiently; the ability to predict various scenarios for the development of events; the search for refactoring; concentration; introversion; rationality; perfectionism; gadgetmania.

In addition, the concept of soft skills as important subjective determinants of information activity has been developed in accordance with the competency-based approach. At the same time, their relatively constant sets are differentiated, including the following components: communication skills, social intelligence, teamwork, critical thinking, customer-oriented thinking, self-regulation, decision-making, time management, emotional intelligence, work under uncertain conditions, introspection, and self-reflection. At the same time, these approaches are generally not sufficiently implemented in relation to the IT sphere and programmers' activity.

Thirdly, this also includes the class of metacognitive personality characteristics, which has already been partially studied in relation to certain types of activity, but has not yet been implemented to a lesser extent in relation to IT activity, not only in professional activity, but also in the educational field. Therefore, it has been studied in terms of leadership and organizational activity (Karpov, 2018), certain health professions (Welch, Young, Johnson, & Lindsay, 2018), certain military disciplines (Fedorishin, 2020) and university education (Abdelrahman, 2020; Allon, Gutkin, & Bruning, 1994). At the same time, if we systematize and generalize recent studies on professional groups, it turns out that they are more often conducted with representatives of subject-specific professions – teachers, doctors, managers, etc. (see, for example, Gutierrez de Blume & Montoya, 2021).

Research on the metacognitive determination of professional activity for professions of object-related and especially information-related types is relatively rare and very fragmentary. For example, some studies involve so-called 'novice programmers' (e.g., Rum & Ismail, 2016), but actually college or university students studying an information-oriented specialty (e.g., 'computer science') and a programming course. For example, Prather et al. (2018) provides a short overview of such studies. These include metacognitive knowledge, declarative knowledge, procedural knowledge, conditional knowledge, metacognitive regulation strategies (Borkowski & Muthukrishna, 1992), information management strategies, understanding monitoring, metacognitive participation in activity, and self-assessment strategies (Flavell & Miller, 1993). In general, in relation to the field of IT, we can say more categorically that these studies are thus far isolated and severely fragmented (Dori, Mevarech, & Baker, 2018; Mariano, Figliano, & Dozier, 2017; Card, Moran, & Newell, 1983; Craig, Hale, Grainger, & Stewart, 2020).

Furthermore, we should note that all these studies are mainly conducted within the framework of the broad theoretical framework, in line with modern metacognitivism in general and one of its most important problems related the explication of its content and definition of its boundaries. In this regard, the most important concepts have been developed, revealing the content and organization of the metacognitivism subject area. First of all, we should note among them the

hierarchical model of metacognitive processes by M. Ferrari (Ferrari & McBride, 2011); the theory of cognitive metaoperators by D. Dörner (Dörner, 1978); the concept of cognitive monitoring by L. Nelson and L. Narens (Nelson, 1996); the concept of metaregulatory functions by M. Lefebvre-Pinard (Lefebvre-Pinard, 1983); the concept of the structure of metacognitive experience by M. A. Kholodnaya (Kholodnaya, 2012); and the theory of metaarchitectonics of consciousness by E. Blacky and S. Spence (Yzerbyt et al., 1998). More specific concepts related to the study of a specific metacognitive process are also presented (A. Brown, J. Borkowski, J. Flavell, R. Kluwe, J. Metcalfe, R. Paris, E. Madigan, E. Tulving, etc.) (Anderson, 1985; Borkowski & Muthukrishna, 1992; Flavell & Miller, 1993; Kluwe, 1982; Metcalfe & Eich, 2019; Tulving, 1985; Splichal, Oshima, & Oshima, 2018).

At the same time, because of the significant theoretical results obtained in these fields, the role of metacognitive factors in the organization of activity is less obvious. Of course, this situation must be overcome and the task of investigating personal metacognitive qualities as subjective factors influencing the activity of the IT industry should be a priority. Therefore, this task was the main objective of the study, aimed at identifying and explaining the role of metacognitive determinants in the effective parameters of programmers' activity as the main representatives of the IT sphere.

## Methods

### *Examination and measurement procedure*

To achieve this objective, we need to obtain two main empirical data sets – (a) data on individual measures of the severity of the main metacognitive qualities as subjective factors determining activity and (b) data on indicators of highly effective activity parameters, including quality and performance parameters, i.e. their accuracy and quantitative characteristics. At the same time, considerable methodological and conceptual difficulties have already been encountered in collecting empirical data. Thus, when solving the first of these tasks, there is a complex and still unresolved problem of determining the most representative metacognitive characteristics in terms of their determined role in activity. Furthermore, the problem is to determine these qualities that need to be investigated. The problem of transitioning from determining their summarizing and complex influence on activity to identifying their integrated influence is also important.

Therefore, as a major diagnostic tool to determine the overall metacognitive determinants, this study used a technique that examines the totality of metacognitive determinants in their complexity and structure – **Comprehensive Inventory of Metacognitive Potential (CIMP)**. We have previously developed this inventory to be applied in the field of IT activity. We described its detailed characteristics (Karpov, 2021; Karpov & Karpov, 2022); its main characteristics are as follows. Firstly, it enables the diagnosis of a wide range of basic personal metacognitive qualities, taken precisely in its entirety. Secondly, it helps identify the complexes in which they are synthesized according to the principle of similarity in their functional roles (subsystems). These subsystems include, in particular, subsystems that provide metacognitive monitoring, metaregulatory control, metacognitive organization of declarative and procedural knowledge, metacognitive control of emotional and motivating factors, and communication determinants of activity (eight basic subsystems). Consequently, they form the most integrated regulatory structure – the metacognitive sphere of personality. We emphasize in particular that the methodology applied is not only complex in terms of the extensive coverage of a large number of individual metacognitive qualities,

but also in terms of the complexity of other methods used in its development, i.e. those that demonstrate the greatest validity and are considered to be the most reliable. These methods are used to diagnose the following qualities: individual measures of metamemory according to Metamemory in Adults, MIA, inventory by R. Dixon and D. Hulstsch (Dixon & Hulstsch, 1983); level of meta-planning according to D. Everson (Tobias & Everson, 2002); degree of metacognitive behavior development according to La Cost inventory (in A. V. Karpov, 2015); level and type of knowledge metacognitive monitoring according to the Metacognitive Awareness Inventory (MAI) (Schraw & Dennison, 1994); processes of metacognitive inhibition, which aim at minimizing metacognitive monitoring (Karpov, 2018).

Furthermore, considerable difficulties in the operation and determination of the main effective parameters of the activity (quality and performance, i.e., accuracy and speed parameters) must be taken into account and overcome. In fact, because of the specificity of this activity, it is fundamentally difficult to implement it in the IT field as a whole and one of its main activities – programmers' activity. Finally, they are determined by the ambiguity and uncertainty of the concepts of the result of this activity and, more importantly, of *what* must be considered as its quality indicators and efficiency indicators. Moreover, in the IT sphere itself, the problem is not clearly resolved, nor is the problem of their relations with each other. This difficulty is also due to the lack of a clear content definition of these parameters. However, they are even less accessible for operationalization and therefore to quantitative explanations. Finally, it is also important that the boundaries between these activities are conditional and mobile. For example, it is known that the high initial quality of the code, which practically eliminates errors and ensures that there is no need for improvement, is at the same time not only a quality parameter but also an activity speed parameter, as it reduces the actual time spent on the entire activity. In addition, the ability to meet the time parameters of the sprint (i.e., the time limits for performing tasks) is not only a realistic time parameter for activity effectiveness, but also a quality indicator. In this activity, the known conflicts between accuracy and speed parameters are largely reduced, making the relationships between them more complex and indirect.

Despite the need to implement all these concepts, the following methodological technique has been developed and implemented in this study. It is the synthesis of the traditional method of expert assessment and the technique of expert checklist, which dates back to research conducted in line with Scandinavian activity theory and in the context of HCI (Engeström, Miettinen, & Punamäki, 1999; Bødker & Klokrose 2011); its essence is as follows. On the basis of preliminary pilot studies and the implementation of focused interviews and activity sounding methods (Karpov, 2015), the basic indicators of the qualitative and quantitative parameters of activity were identified. Then, we differentiated the indicators in which they were explicated and, accordingly, could be diagnosed. Finally, we formulated questions to facilitate this process and synthesized them into a questionnaire-type inventory. Finally, according to the psychology of professional activity, the most universal and integral effective parameter is efficiency, which, as a derivative of the first two parameters, is not their simple superposition, but a more complex phenomenon.

Thus, the inventory consists of three groups, aimed at determining quality and performance parameters and the efficiency of programmers' activity. Annex 1 provides the text of the inventory.

In addition, given that the most difficult task was to determine the effectiveness of programmers' activity (which was further strengthened by the lack of methodological tools), the study used one of the few existing methods – a questionnaire by A. Nikitin (2010).



On the one hand, the heads of the departments where the surveyed programmers worked, played the role of operational experts, which was a prerequisite for the validity of the export procedure. On the other hand, employees of the same status as the persons examined also acted as experts. At the same time, an important but not always consumed circumstance should be realized - as pointed out (Kolb, Kolb, & McIntyre, 1984), the degree of adequacy and accuracy of employees' qualifications assessment by their closest colleagues is generally very high and can reach 90-95 %. Each employee was evaluated by three experts, and the results were averaged.

### **Study sample**

The sample (n = 210; 149 men, 61 women) consisted of programmers of different profiles and levels (application programmers, system programmers, graphic programmers, database engineers, quality assurance specialists, front-end developers, back-end developers, full-stack developers, desktop developers, 1C developers, web developers) from three Russian cities (Yaroslavl, Moscow, and Rybinsk) aged 21-64 years: < 31 years old – n = 92 (43.80 %), 31-45 years old – n = 86 (40.91 %), > 45 years old – n = 32 (15.23 %). Besides, the sample included the heads of services and departments in which the surveyed programmers worked (n = 51, aged 39-55 years).

### **Results**

Table 1 shows the results of the assessment of the parameters of quality and performance of activity and its integrated efficiency indicator, depending on individual levels of the development of meta-cognitive potential (MP).

**Table 1**

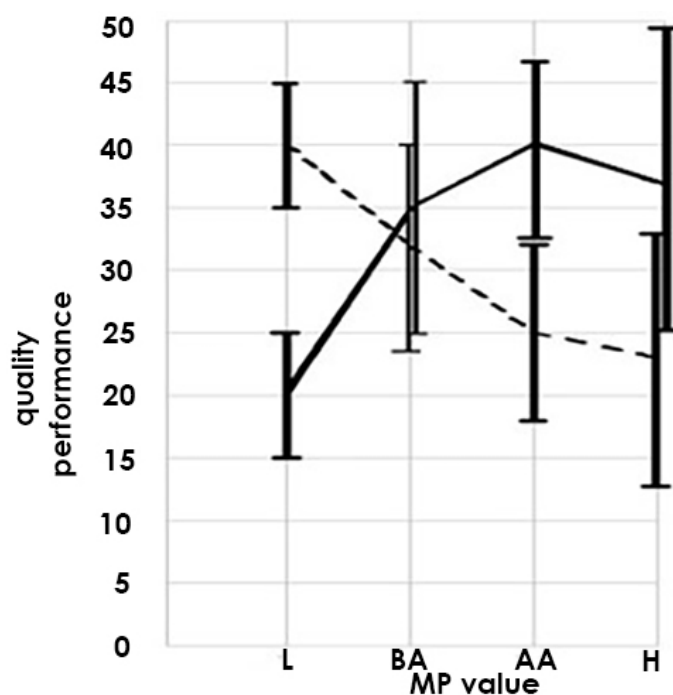
*The result of evaluating the activity parameters*

Level of MP	Low (L)	Below average (BA)	Above average (AA)	High (H)
Quality evaluation	20.12 (5.67)	35.77 (5.70)	40.02 (7.74)	37.43 (5.23)
Performance evaluation	40.09 (6.20)	47.00 (7.73)	25.11 (6.94)	23.01 (6.01)
Efficiency evaluation	35.03 (4.10)	60.21 (7.11)	75.43 (5.80)	65.67 (5.82)

In the subsequent processing, the one-way analysis of variance (one-way ANOVA) was used, and the following subgroups were identified based on the levels of MP development, which corresponded to different values of the severity of the metacognitive potential: low (< 180 points), below average (180-280 points), above average (280-380 points), and high (> 380 points). At the same time, each subgroup contains approximately 25 % of the subjects of the group considered. The Games-Howell test was used to perform several comparisons which did not require equal subgroup sizes and variances; the Kruskal-Wallis test was used to construct graphic dependencies. Furthermore, we presented all these data graphically. Therefore, Figures 1 and 2 show the dependency of performance and activity quality values, as well as activity efficiency on individual level of MP severity, respectively.

**Figure 1**

*Dependency of the quality (solid line) and performance (dotted line) of activity on the value of MP*

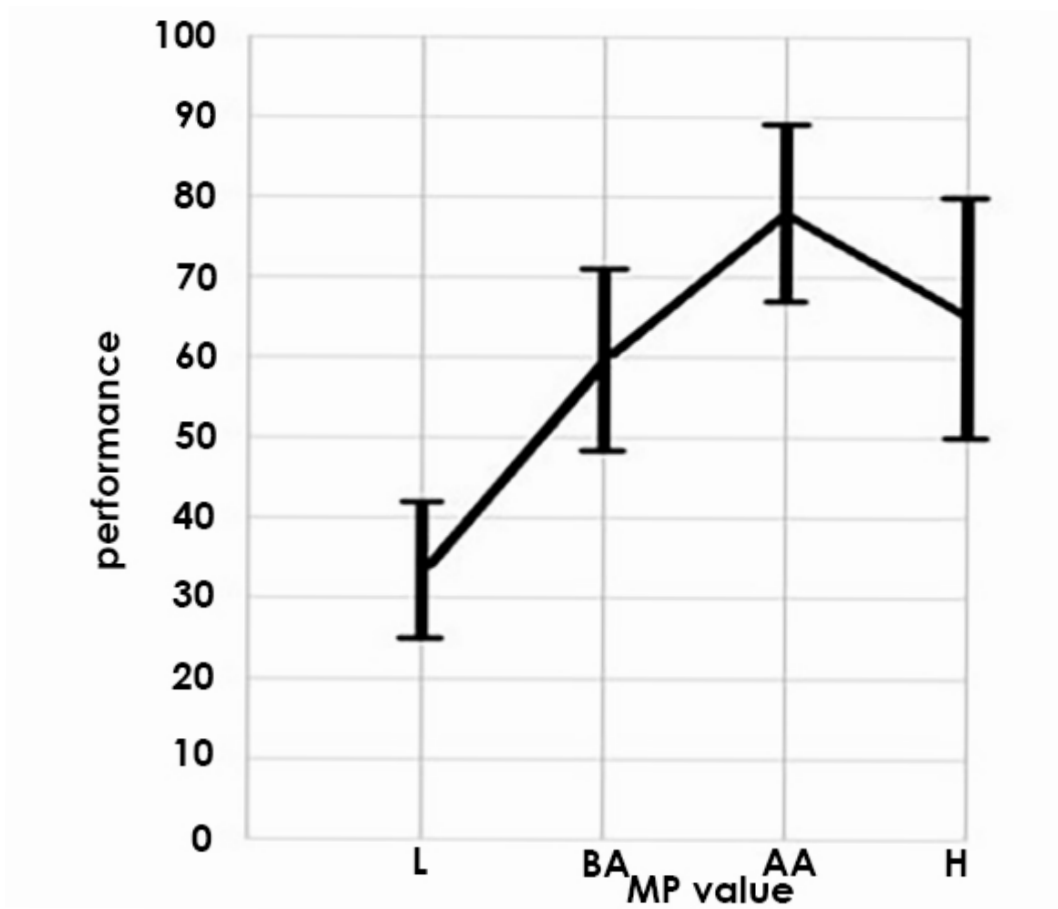


*Note. The ordinate axis shows the values of the expert assessment methodology*

The analysis of the results shown can clarify the following facts. First, in terms of quality and performance parameters, a scenario of the most general plan is revealed, in which there are in fact certain relationships between them and the individual levels of MP severity. Secondly, these dependencies are generally nonlinear, which indicates their complex nature, albeit indirectly. Thirdly, these dependencies are largely opposite. If the first one explicates positive dynamics, the second one explicates negative dynamics more generally.

**Figure 2**

*Dependency of the efficiency of activity on the value of MP*



*Note. MP value: L – low, BA – below average, AA – above average, H – high.*

These results enable us to clarify another important fact. The highest values of the efficiency parameter are associated with relatively high MP (in the subgroup with above average values of MP), not with minimum or maximum MP values. Therefore, the greatest efficiency is achieved in individuals with some intermediate, although, we repeat, quite well-developed MP level. Therefore, not only a low level of MP severity is associated with relatively low efficiency (which is quite understandable), but the highest level also causes a decrease in efficiency (which is less clear and requires a special explanation). This proves that there is a dependency of an optimum type, rather than a maximum type between the variables, as we previously predicted.

## Discussion

The results presented above enabled us to establish the following main features and regularities.

*First*, the circumstance that was stated above as a general assumption as an initial one was confirmed with a sufficiently high degree of clarity. It is based on the fact that there are quite natural connections and dependencies between the individual measure of the severity of MP and the two main effective parameters of activity (quality and performance). In the most general and fundamental terms, this indicates that the metacognitive qualities themselves, as well as their integrative effect – a measure of the severity of MP, are indeed significant determinants of effective parameters of activity.

*Secondly*, these two dependencies are characterized by fundamental commonality and even more obvious differences. On the one hand, their commonality is that both are usually not directly proportional, but nonlinear, which shows their complex and indirect nature. However, the differences in the dependent variables identified are more obvious: if the first variable is positive, the second one explicates the negative dependency dynamics. At the same time, we should note that, in general, both are well in line with the similar dependency established in the psychology of professional activity regarding the two main effective parameters – performance and quality. Furthermore, their overall interpretation should be similar to that previously made. The dynamics identified is not as pronounced as previously discovered, so they are unique in terms of characteristics of many other types of activity. Furthermore, with regard to quality parameters, it slightly changes its general form, changing from a maximum type dependency to an optimum type dependency. Overall, however, when comparing them, we revealed the most general circumstance, i.e., between these two parameters, there is a reciprocal relationship, which manifests itself in the dynamics of mutually opposite transformation.

*Thirdly*, synthesizing all these results, as well as supplementing them with the data presented in Fig. 2, we should explicate the circumstance of the generalized plan. This is the result of a very clear relationship between the individual level of MP severity and the most common integral effective parameter (efficiency). Furthermore, contrary to the a priori prediction and theoretical expectations, it is not the maximum type dependency, but the dependency of the *optimum* type with the characteristics of the reverse U-shaped curve. As mentioned above, this means that the maximum efficiency of activity is associated with an intermediate MP value. Not only low (natural), but also high (less obvious) severity of MP is the reason for a decrease in the effectiveness of this kind of professional activity.

High MP values are objectively associated with significant reflexivity. In addition to the direct negative effects – inhibitors – and even blocking the cognitive functions (especially the key characteristics of creativity, independency, and constructiveness in decision-making), it has a unique indirect influence. Thus, reflexivity is 'related' to many of these individual qualities which are 'contraindications' of many kinds of professional activity, especially complex and cognitively saturated (especially neuroticism, sensitivity, rigidity, development of psychological defenses, etc.). Similar dependencies were found in the previous study of the effectiveness of the most important professional activity, the leadership activity, associated with the intelligence level (Ghiselli curve, (Ghiselli 1963)).

In the same context, we should mention such functionally similar phenomena as the effect of the metacognitive loop (Metcalf, 2019); the phenomenon of paralysis-by-analysis (Kolb et al., 1984); the phenomenon of 'metacognitive perfectionism' (Kluwe, 1982); the phenomenon of a moratorium of reflexivity (Karpov, 2021), the effect of hypercontrol (Karpov, 2022); and

the phenomenon of metacognitive blockade, etc. They indicate that the metacognitive control of activity functions, being generally positive over a sufficiently large interval of its measure, can, however, be transformed into its opposite. In fact, the situation is similar to the concept of 'double-function operation mode' (Karpov, 1980). In general, the implementation of activity functions and cognitive functions is guaranteed in particular in parallel with the metacognitive functions behind this implementation and in some cases comes first. This situation requires the redistribution of common cognitive resources to implement metacognitive control and has a negative impact on the implementation of the main activities and tasks. Furthermore, we have found that the relationship between the level of MP and the important cognitive processes such as thought depends on the type of optimality (Karpov, 2021). Thus, not only low MP values but also high ones are counterproductive, especially under very severe conditions of professional activity.

Obviously, the main and fundamental reason for all these similar patterns is the fact that the deterministic influence of metacognitive factors in general, and in particular the impact of reflection on performance parameters, structural components and processes supporting them, is not only complex, but also internal contradiction. It is ambivalent in its direction. On the one hand, it has a positive facilitating effect, which leads to the extension of the functional abilities of the subject and the realization of its resource functions. This is exactly what occurs when the MP values are average and above average (see Fig. 2). On the other hand, it can also have the opposite effect – negative effect that inhibits the functional ability of the subject. This is associated with high MP values. In other words, its impact is essentially *diversified* depending on its specific measure of severity and its degree of representation in the situation. As this measure increases, it changes from positive to negative.

*Fourthly*, it should be taken into account that we have previously established an overall similar dependency of the optimum type with respect to another main type of professional activity – management (which, in addition, belongs to another type of activity – subject-subject). In addition, it is also explicated in relation to a number of other types of activities – in particular, education, operator activities, etc. It is therefore of a very general nature, as Karpov demonstrated (2015). Here are two important conclusions. On the one hand, the discovery of a new type of activity – information-related activity – increases the extent of its generalization and consequent importance, as a fundamental invariant regularity in the organization of activity as a whole. On the other hand, its establishment in relation to itself is an additional new result that extends the general idea of metacognitive regulation of information activity. At the same time, through this prism, a deep commonality of basic means and mechanisms for organizing fundamentally different kinds and even types of activity is revealed, which are means of their metacognitive regulation and are therefore conscious and arbitrarily controlled. It is also important that they are precisely located at the consciousness and therefore the highest level of their organization, which is crucial for their effective parameters in general and especially efficiency.

*Fifthly*, when interpreting the data obtained, it is also necessary to take into account the most important and specific features of computer technology. A closer examination reveals a kind of non-reflexive specificity of such a technology, the computer technology, which manifests itself in many important aspects. Firstly, the specificity of this activity lies in its highly pronounced algorithmic characteristics, which is largely contrary to the variability in the organization and behavior of the activity itself.

All of this leads to the 'machine-like' and formalized nature of this activity, which is antagonistic to reflection as a 'purely human' quality. The specific characteristics of this activity include not only large amounts of information, but also high dynamic characteristics, which require processing speeds, content changes and rapid implementations. This in turn results in the objective removal of the possibility of reflection breaks and successive metacognitive monitoring. Moreover, it began to act here, even negatively, as it prevented the execution of major functions of activity. In this respect, there is even a work rule established empirically – 'consciously accelerate' – which is equivalent to the same arbitrary minimization of the phenomenon of reflexive control and non-reflexive. In this regard, it is necessary to point out one of the important means of its organization established and interpreted in modern cognitive psychology – the so-called cognitive control blockade heuristics (Anderson, 1985; Metcalfe & Eich, 2019).

However, this type of blockade can be implemented not only in 'primary' cognitive processes, but also in secondary (metacognitive) ones and in a much more pronounced and subjectively distinct form. The essence of such a 'secondary', i.e., a metacognitive 'blockade', is that the metacognitive processes themselves act as a means of inhibition or even 'rejection' of the correct means of reflection. Finally, the direct interaction between the subject and object in the process of activity takes place almost entirely with a 'non-animate' entity – the computer. This stimulates the development of professional deformations, including isolation and introversion in IT specialists, and reduction of communication contacts. In this respect, Zakhur stated that "programmers have incorporated a distant metaposition to everything" (Zakhur, 2018).

## Conclusions

The following main *conclusions* can be drawn by summarizing the results of the analysis above. *Firstly*, metacognitive qualities are indeed important and complex factors in the effective parameters of programmers' activity and should therefore be interpreted as important factors that form the general composition of their subjective determinants.

*Secondly*, there are certain correlations between the individual MP severity measure and the main resulting parameters of this activity (quality and performance), which explicates the invariant nature of the determinative role of metacognitive factors. These are the opposite directions of the two main parameters. With regard to quality parameters, this dependency is usually direct; with regard to performance, it is opposite.

*Thirdly*, there is a dependency between individual measures of MP severity and the most generalized effective parameter (efficiency) that have optimum type characteristics. This means that the maximum efficiency of activity is associated with a sufficiently high but average MP value.

*Fourthly*, the deterministic influence of MP on the effective parameters of programmers' activity is fundamentally different - not only in degree, but also in direction and character. The combination of positive and negative characteristics ultimately determines the complexity and nonlinear nature of this influence and the content and type of the most common dependency – the efficiency of activity depends on the degree of its development.

*Fifthly*, there is a fundamental commonality not only in the nature of the dependency in specific activity, which occurs not only in other types but also in other kinds of activity, but also in the basic causes and factors underlying them, and thus explaining them.

*Sixthly*, the negative effect of metacognitive factors on the effective parameters of activity depends on a combination of their direct and indirect impact on the implementation of activity

and certain functions supporting it. The direct effect is that these functions are generally and particularly inhibited, and this manifests itself in the phenomenon of cognitive and metacognitive blockade. The indirect effect is to facilitate the negative impact of several other important factors. This explicates not only the internally contradictory but also complex nature of its determinative impact on the main effective parameters of the activity.

### **Conclusion**

Metacognitive qualities have a significant and complex effect on the resulting parameters of information activity. Individual metacognitive potential measures and the main effective parameters of information-related activity – quality, performance, and efficiency – are closely related. The main regularity of the correlation between metacognitive potential and effective parameters of activity is the optimum type dependency, based on a combination of facilitating and inhibitory effects of the subject's metacognitive potential on the implementation of activity.

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### Annex 1

	Inventory items	1	2	3	4	5
1	He/she is characterized by the ability to clearly formulate goals					
2	He/she performs tasks faster than most other employees					
3	He/she performs tasks better than most other employees					

	Inventory items	1	2	3	4	5
4	His/her code quality is characterized by adequate implicit expectation					
5	He/she often fails to meet deadlines for tasks					
6	He/she is capable of non-standard solutions and finds new ways to perform tasks					
7	He/she adequately assesses the complexity of tasks					
8	He/she requests more time for tasks					
9	He/she has extraordinary results in work					
10	He/she responds constructively to blocking processes that affect the 'health' of the product					
11	He/she rarely performs tasks in time					
12	His/her colleagues often seek advice from him					
13	He/she performs almost all tasks at the average level of effort					
14	He/she adequately estimates deadlines, completes tasks in time					

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	Inventory items	1	2	3	4	5
15	He/she systematically assumes leadership roles in a team					
16	His/her products have few features that have been rejected or returned for revision					
17	He/she achieves goals through overtime work					
18	He/she knows how to make right decisions					
19	He/she worked a long time in the company					
20	He/she knows how to manage time and give proper priority to complete work in time					
21	He/she has a long IT product uptime					
22	He/she is characterized by a small number of defects found during the product operation					
23	He/she is characterized by a rapid meeting deadlines					
24	His/her colleagues highly appreciate him/her as a specialist					
25	He/she possesses perseverance and discipline					
26	He/she makes mistakes due to failure to meet deadlines					
27	He/she maintains high quality even when tasks become more complex					

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	Inventory items	1	2	3	4	5
28	He/she can understand the code of someone else					
29	He/she is characterized by a large number of tasks completed per working day/hour					
30	He/she has great learning abilities; quickly absorbs new knowledge					

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The experts worked in accordance with the following instructions: "Please evaluate whether the following statements correspond to the employee. The more fair it is, the greater the evaluation should be. Evaluating options: 1 – it does not seem to correspond at all; 2 – it is more likely not corresponding; 3 - I cannot say for sure; 4 – it is rather corresponding than not corresponding; 5 – it is fully corresponding. Items 1, 4, 7, etc. assess quality; items 2, 5, 8, etc. assess performance; items 3, 6, 9 assess efficiency. Items 5, 8, 11, 23 and 26 are reversed.

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#### Author Contribution

**Anatolii Viktorovich Karpov** developed the research concept and supervised the study on the basis of metacognitive methodology for the development of the issues of information-related activity, contributed to theoretical generalization of the results.

**Aleksandr Anatol'evich Karpov** developed the research concept using the methodology of metacognitivism, processed data, and interpreted the results.

**Yuliya Vladimirovna Filippova** contributed to the experimental design of the study, carried out the empirical study using the Complex Inventory on Metacognitive Potential, collected the data, and interpreted the results.

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#### **Conflict of Interest Information**

The authors have no conflicts of interest to declare.

Kira V. Telminova

The role of a public organization in the socialization of lifelong disabled persons...

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CORRECTIONAL PSYCHOLOGY

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## Research article

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# The Role of a Public Organization in the Socialization of Lifelong Disabled Persons and those who Became Disabled in Adulthood

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## Abstract

**Introduction.** The purpose of the study is to identify the role of a public organization in the socialization of lifelong disabled persons and persons who became disabled at the age of majority. A review of similar scientific papers has shown that this aspect of the socialization of disabled people remains almost without the attention of researchers. At the same time, in our opinion, a differentiated approach to the study of the socialization process of disabled people, including an in-depth analysis of the formation of socio-psychological personality characteristics, contributes to improving the quality of research on socialization issues. This determines the novelty of the presented work and can also facilitate improving the effectiveness of practical measures and, in general, all the activities of the public organization of disabled people. **Methods.** The research method is an unstructured interview that reveals the motives for the entry of persons with different disability onset times into a public organization of disabled people, the dynamics of their socio-psychological state and social behaviour – both in the organization and outside it. The unstructured interview procedure was a conversation about the importance of the activities of a public organization for a person. An optimal atmosphere was provided for the free formulation of their experience. **Results.** The study result was the understanding that, in the activities of a public organization, lifelong disabled adults receive a new social experience that contributes to a reassessment and correction of their social and physical capabilities. It was found that for persons who have become disabled at the age of adulthood, a public organization forms a social environment that allows them to continue the labour stage of the socialization process. **Discussion.** A public organization acts as a space for the formation and development of socio-psychological qualities (mainly contributing to the communication capabilities of the individual). The public organization makes it possible to realize the socio-psychological qualities of lifelong disabled adults in general. For persons who have become disabled at the age of majority, a public organization is a significant element of the socialization institute, based on which socio-psychological qualities are implemented.

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**Keywords:** socio-psychological qualities, personality potential, public organization, social institute, socio-cultural programmes, tourist programmes, socialization of disabled people, type of attitude to illness, socio-cultural rehabilitation space, social well-being of a disabled person

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## Introduction

In the process of socialization of disabled people, a significant place is occupied by the activities of public organizations. It is the associations, unions and organizations created by people with disabilities that assume the functions of social institutions that are inaccessible or difficult to access for disabled people. Social skills and competencies are formed and implemented in them, the process of professional and creative realization takes place, and strategies for integration into an open society are developed and implemented.

Another significant factor in the creation of public organizations (Khoroshilov & Ilzher, 2019) is the perception of social change: that is, the presence of a cognitive alternative to the intergroup relations that have developed in society, which are assessed as unfair, serves as one of the primary 'triggering' factors of collective behavior, which has been empirically confirmed (van Zomeren et al., 2008). In this context, their goal will be "to express an attitude toward sociocultural changes, to promote or hinder them" (Kelly & Breinlinger, 2012; Smelser, 2011).

Legislation at various levels defines the concept of a public association of disabled people. Thus, following Article 71 of the UN Convention on the Rights of Persons with Disabilities (concluded in New York on 13.12.2006), the state 'undertakes to implement a national policy of prevention, treatment, restoration of health, and inclusion in the normal life of the society of disabled people and supports their families and associations of disabled people.' As follows from clause 2.1. of Article 2 of Federal Law No. 7-FZ of 12.01.1996 (ed. dated 02.07.2021) On Non-Profit Organizations: These are "organizations ... carrying out activities aimed at solving social problems and developing civil society in the Russian Federation". According to paragraph 1 of Article 33 of Law No. 181 – FZ of 24.11.1995, On the Social Protection of Disabled People in the Russian Federation, "public associations established and operating to protect the rights and legitimate interests of disabled people, providing them with equal opportunities with other citizens, is a form of social protection of disabled people".

The activities of public organizations are regulated by the following Federal Laws:

- Constitution of the Russian Federation.
- The Civil Code of the Russian Federation.
- Federal Law No. 95-FZ dated by July 11, 2001, On Political Parties.
- On Public Associations dated 19.05.1995 No. 82-FZ.
- On Freedom of Conscience and Religious Associations dated 26.09.1997 No. 125-FZ.
- On Charitable Activities and Volunteerism (Volunteering), dated 11.08.1995 No. 135-FZ.
- On Trade Unions, Their Rights and Guarantees of Activity, dated 12.01.1996 No. 10-FZ.
- Order of the Ministry of Justice of the Russian Federation dated 06.10.1997 No. 19-01-122-97 On the Rules for Considering Applications for State Registration of Public Associations.

The relevance of the study of the role of a public organization in the socialization process of disabled people is reflected in the works of many Russian authors. Gostev and Bodrikova interpret the concept of 'public association of disabled people' as "a non-profit formation organized by persons with disabilities, as well as individuals representing their interests, on their initiative and voluntarily for the implementation of common tasks to ensure life" (Gostev & Bodrikova, 2015, p. 24). Continuing the definition, the cited authors emphasize that the organization "allows the interchange of many vital resources between a disabled person, society and the state, which makes them equal and dependent on each other subjects and thereby leads to a reduction of contradictions in the process of social management" (Gostev & Bodrikova, 2015, p. 42).

N. N. Shentseva and A. Y. Davydova conclude that grouping people with disabilities by similar characteristics contributes to "identifying specific psychological problems and determining the most effective ways to work with them". It "... can significantly improve the quality of life of these people, reveal their social and personal potential, reduce the psychological distance between them and society" (Shentseva & Davydova, 2013, p. 89). The authors identify the following situations as objects of socio-psychological research on disability:

- temporary maladaptation.

- acute post-traumatic condition.

2. Acquired disability after the age of 18 (with an injury experience of more than one year) is characterized by:

- stable situational maladaptation.

- lack of productive strategies of behaviour in a difficult life situation.

- low motivation for social and professional rehabilitation.

3. Disability since childhood is characterized by:

- stable maladaptation.

- defects of socialization due to exclusion from social life.

- personal characteristics caused by family overprotection with complete or partial absence of social interaction skills, skills of independence and self-regulation, and psychological complexes of various types (Shentseva & Davydova, 2013, p. 93).

It seems to be that such a detailed description of the object of socio-psychological research on disability contributes to its in-depth analysis. The study object is lifelong disabled adults and persons who have received a disability at the age of majority (injury experience of more than three years). During the study of the socio-psychological characteristics of the designated categories, we came to two main conclusions. *First*. At the heart of the socio-psychological characteristics of lifelong disabled adults is the attitude to the disease, the formation of which, in turn, occurs in the family and is a consequence of parental attitudes. *Second*. The socio-psychological characteristics of persons who have become disabled at the age of majority are not based on the type of attitude to the disease. Socio-psychological personality traits formed outside the onset of disability, such as sociability, group behaviour style and others, form the type of attitude to the disease (Telminova, 2021, p. 189). At the same time, studies of the influence of the time of onset of disability contribute to the study of the conditions for the formation, content and manifestation of forms of socio-psychological characteristics of a person with a disability, therefore, this topic has become the object of our research (Telminova, 2022, p. 175). The above brings us to the need for a detailed definition of the public organization's role in the socialization process of lifelong disabled persons and disabled people who have been injured in adulthood.



## Methods

The respondents of the study conducted by the author were members of the Novokuznetsk city public organization of disabled ARSDP (further NSO ARSDP). The sample size is 200 people, which is 10% of the general population, which includes 2,000 people who are officially members of the NSO ARSDP. Lifelong disabled adults (100 respondents) and persons who became disabled at the age of majority (100 respondents) are equally represented. The nature of the task determines the choice of qualitative research methods, particularly, the included observation and unstructured interview (Semenova, 1998; Belanovsky, 2001). Table 1 shows common answers to interview questions.

## Results

**Table 1**

*Results of an unstructured interview The Role of a Public Organization for People with Different Injury Onset Times*

Lifelong disabled adults		Persons who became disabled at the age of majority	
What were your needs when you joined the organization			
Age 25–35	Age 36–49	Age 25–35	Age 36–49
Find a social circle after graduation	The desire to participate in solving social problems	Find a social circle after receiving a disability	Find a social circle after receiving a disability. The desire to participate in solving social problems
Which NSO ARSDP programs are most important to you			
Age 25–35	Age 36–49	Age 25–35	Age 36–49
Siberian Robinsonade PWD CFI Carnival Night	PWD CFI Carnival Night Spring Cocktail	Siberian Robinsonade PWD CFI Carnival Night	PWD CFI Family Hearth

Lifelong disabled adults	Persons who became disabled at the age of majority
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How often, when participating in NSO ARSDP programs, do you take on the role of a team leader and / or act as an assistant for program organizers

Age 25–35	Age 36–49	Age 25–35	Age 36–49
I am more often acting as a leader in projects	I am an active co-organizer of projects	I am more often acting as a leader in projects	I am increasingly acting as an organizer of programs

Participants in NSO ARSDP programs are always very different in terms of diseases – did you need time to get used to the peculiarities of other people's health

Age 25–35	Age 36–49	Age 25–35	Age 36–49
There were no difficulties, because there is a lot of experience in communication in rehabilitation centers			

What has changed in your life after participating in NSO ARSDP programs?

Age 25–35	Age 36–49	Age 25–35	Age 36–49
I gained self-confidence, found new friends.	There was a place for self-realization	Easier to accept the situation of disability	Easier to accept the situation of disability. I have found my own social circle, and there are opportunities to improve the social situation of disabled people.

What would you add to the work of a public organization

Age 25–35	Age 36–49	Age 25–35	Age 36–49
I would increase the number of projects and activities	I would increase the complexity of sports and creative projects	I would like to include the organization in all-Russian projects	

Having analyzed the importance of public organization in the process of socialization of lifelong disabled adults, two main aspects can be distinguished. First, in the process of socio-cultural and tourist programmes, new social experience is gained, and one's social and physical capabilities are reassessed. This reassessment occurs due to a change in group expectations, which, unlike the usual conditions (family, educational, or work collectively), expand the space of self-realization of the individual (due to the variety of tasks facing the group) and increase the degree of her responsibility for the actions performed (because the result of these actions affects the whole group as a whole). Second, the social experience gained during the programmes contributes to the correction of such sociopsychological qualities as conformity, unrealistic self-esteem, and egocentricity, which, in turn, contributes to the process of correlation of one's social potential with the possibility of its realization in society and, as a result, increases the degree of involvement of the individual in various social institutions. It can be noticed that at the personal level, a hedonistic present is being formed, characterised by: "happiness (...) relatively patient and calm" (Zimbardo, 2009, p. 330). The main factor of collective action is identity (Klandermans, 2014; Tajfel, Turner, 1986), in our case, social status, etc. In the context of personality and society, new paradigms of perception of society are developing. In particular, an understanding can be built that 'I am an attitude to another, whose life I am trying to preserve without this attitude, I lose the ontological and ethical basis of myself' (Butler, 2015). It is also important to note the importance of the socialization process of such a factor as collective experience (Emelyanova, 2016, p. 1), (Marcinkovskaya, 2016, p.10), (Lipatov, 2015, p.146), which includes:

- 1) a dynamic unit of mutual identification of a person and a group, combining cognitive and affective components);
- 2) typical emotional and semantic attitude of people to society and culture;
- 3) a complex linguistic sign mediating social cognition and behavior.

For persons who have become disabled at the age of majority, a public organization forms a social environment that allows disabled people of this category to continue the socialization process, or rather its labour stage (according to Andreeva, 2001). Since the nature of the programs has similarities with the organization of the labour process, which is expressed in the fact that it involves the formation of small groups and the formulation of tasks that require collective solutions, persons who have become disabled at the age of majority have the opportunity to reproduce the system of social ties due to its active activity in the program space.

A public organization performs a socializing function for people with different onset times of disability when the space of tourist and socio-cultural programs forms an environment in which a person has the opportunity to acquire and assimilate social experience (while working in a small group on solving a particular task), as well as reproduce a system of social connections (during the presentation of a realized task) Consequently, NSO ARSDP programs are part of the socialization process. At the same time, we agree with Maximova E. V. that "the purpose of socio-cultural rehabilitation of people with disabilities is to restore the foundations of being, individual and social subjectivity and reasonable sufficiency in human needs to meet the requirements of social life to overcome his life difficulties" Maximova, E. V. (2017b, p. 94).

## Discussion

Analyzing the attitude of persons with different times of onset of disability to a public organization and their role in it, we note the validity of A.V. Okatov's theses regarding the essence

of the organization and the levels of its activities for the persons who are part of it. The author notes that “any public organization arises around an ideal basic model” (Okatov, 2006, p. 12). A. V. Okatov identifies three primary levels of the spiritual life of society, on the basis of which the activities of public organizations of socio-cultural orientation are realized:

1. At the first level, “public associations act as leisure institutions that perform a civic function and the function of intercultural interaction with its cultural and educational, propaganda, recreational and health-improving and consolidating aspects”.

2. The second level assumes that a public organization “becomes a way and condition for structuring their members into a socio-cultural community.” At the same time, it implements the following functions:

- the option of expanding the quantitative volume of the organization and maintaining its members.
- the option of socialization and resocialization.
- worldview function.
- communicative and cognitive function.
- the option of maintaining a moral and psychological atmosphere.

3. The third level “integrates the organization, consolidates it with society as an independent socio-cultural entity with social structurality and predictability in actions” (Okatov, 2006, p. 22).

The results of our study show that for people with different onset times of disability, in most cases, the second level is relevant, assuming socializing functions. At the same time, according to the results of the included observation, it was found that for lifelong disabled adults aged 25 to 35 years, in general, a neutral and indifferent attitude towards formal membership in a public organization is characteristic. About 3% of this category do not formally belong to it, do not have a membership, but at the same time take part in its activities. Approximately 5% are not just activists of the organization but are part of its management staff. After 35 years, there is a return of interest in this category to formal membership in an organization: in most cases, this is due to the fact that a person, as a rule, cannot achieve the desired level of professional self-realization and strives for career growth within a public organization.

Persons who have become disabled at the age of majority, as a rule, perceive membership in a public organization as more responsible, and for them, it, in most cases, replaces official employment, and the organization itself is the main institution of socialization.

The majority of respondents from both groups to the question “How often, when participating in NSO ARSDP programs, do you take on the role of team leader and / or act as an assistant for program organizers” chose the second option. Fifteen percent of lifelong disabled adults aged 25 to 35 have identified themselves as leaders in the age of 36–49 years this percentage increases to seventeen percent.

In the category of respondents under 25 years define themselves only as active participants of programs. Among people who received disability at the age of majority (there is no separate age division in this matter) about nineteen percent assess themselves as a team leader in the process of conducting a tourist or sociocultural program. That is, the majority of respondents identify themselves as “assistant to program organizers” at the same time actually executing leadership functions.

In the course of joint activities within the framework of the implementation of sociocultural and tourism programs, persons who have received a disability at the age of majority act as agents

of secondary socialization for lifelong disabled people. This happens as a result of the fact that lifelong disabled people evaluate and then partially adopt the attitude toward the situation of limited opportunities, common to those who received disability at the age of majority. They are characterized by a higher level of social adaptation. That is, the space of sociocultural programs of the Nefteyugansk city organization of the All-Russian Society of the Disabled People (NSO ARSDP) forms a social environment that allows people with different time of obtaining disability to overcome the low level of sociopsychological adaptation.

Talking in tone with A. A. Dargan, we believe that the social well-being of a person with a disability, among other things, includes "assessment of oneself as a person with disabilities" (Dargan, 2015, p. 115). At the same time, as a rule, the everyday social environment of a disabled person (both at the social level and at the family level, regardless of the date of disability onset) does not fully provide them with social realization and social responsibility. According to the results of the interview, the majority of respondents, especially in the group of lifelong disabled people, note that there is a tendency to reduce their responsibility for certain areas of activity in family and social relations. In particular, working disabled people quite rarely manage to improve their professional level through advanced training or programs of improvement. This happens because an employer is rather still focused on the presence of restrictions and not inclined to expand the professional duties of an employee with a disability in most cases. Decreased responsibility and the prevalence of the "follower" role are also characteristic of family relations. A significant percentage of lifelong disabled respondents (40 %) indicated that they live with their parents. They noted a significant influence of parental attitudes and expectations in their daily lives. That is, people with disabilities face the expectations of the reference groups that reduce their social activity, which leads a person to only partial socialization. In this regard, we agree with A. A. Dargan, that the participation of disabled people in the activities of public organizations "affects the choice of disability models and strategies for integration into society by people with disabilities and, as a result, social well-being" (Dargan, 2013, p. 99).

Considering public organization, E. R. Yarskaya-Smirnova notes that in the case when "the solution of many vital issues is in the hands of the disabled themselves, who, while uniting in an organization, can achieve much more than if they act alone"; in organizations of people with disabilities, as in no other, "the «personal» becomes «political»", because the difficulties caused by the situation of limited opportunities motivate the individual to transform the social environment, extrapolating their own experience of overcoming difficulties (Yarskaya-Smirnova, Naberushkina, 2004, p. 202). Consistent with this thesis, let us consider the difference in the meaning of a public organization for people with various disabilities on the example of the NSO ARSDP.

First of all, according to A. V. Starshinova, it is of interest that the most common type of work of a public organization of the disabled is sociocultural rehabilitation, which is "the core of the rehabilitation process, passing through all types of rehabilitation". The thesis is substantiated by the following conclusions of A. V. Starshinova:

1. "Creativity is the «norm of life»... there feedback is also possible: with the help of creativity it is possible to restore health as the norm of life. While returning the body to the state of creative search, one should expect that the body, as an integral system, will begin to harmonize itself, getting rid of the pathology or compensating for it" (Starshinova, 2018, p. 287).
2. "The organization of leisure is important for the development of the knowledge and skills of

a disabled person, increasing their subjectivity, expressed in the ability to be independent, take responsibility for life, make choices and realize themselves”.

3. “Adjustment/adaptation to new life circumstances is one of the components of rehabilitation, in particular, sociocultural rehabilitation...”. In turn, “social adaptation as a process of adaptation to the rules, the system of values and norms, the practice and culture of society or its individual systems, allows one to integrate a disabled person into the social environment, becoming the part of it” (Starshinova, 2018, p. 288).

Considering the practical activities of the NSO ARSDP, we focused our attention on its sociocultural and tourism projects. In their implementation a significant part of the process of socialization of the members of the organization takes place. Many researchers outline the importance of using sociocultural technologies to actualize the personal potential of disabled people. In particular, A. A. Dallari defines that “the introduction of disabled people to culture is a process that helps to meet the needs of the individual in spiritual and personal growth, that is being a means of rehabilitation education for the disabled, ensuring their diversified development and successful adaptation to social environment” (Dallari, 2020a, p. 3).

The orientation of the sociocultural activities of the NSO ARSDP on the personality, on their creative potential, makes the social rehabilitation process (and, ultimately, socialization) more individually centered and, as a result, more effective.

The main factor is that, with social experience on creative (in fact, model) platforms, a disabled person now has the opportunity to further develop not only within the framework of rehabilitation programs, but in those areas of society where they is motivated to develop (getting an education, working, building own family, etc.). Rehabilitation is expressed in the development of creative abilities, the person's manifestation as a subject of cultural activity. In the activity, the main focus is not on the final result or the piece of art made by a person, but on the dynamics of socio-psychological changes that have occurred to them in the course of immersion in sociocultural activity. The locus of attention of the individual is shifting from physical limitations to the realization of one's social and creative potential. That is, we consider the sociocultural rehabilitation space as a complex of sociocultural programs and projects aimed at unlocking the rehabilitation and creative potential of the disabled person, with an appropriate set of programs that meet the needs of disabled people in a variety of sociocultural activities.

The sociocultural rehabilitation space has been created by the NSO ARSDP programs, which include:

- 1) “Family Hearth”: a creative competition among families that include the disabled persons.
- 2) “Spring Cocktail”: a festive program consisting of creative performances presented by district and youth organizations of the NSO ARSDP.
- 3) “Carnival Night”: a New Year's Eve game involving teamwork in creative workshops (theatrical, musical, handicraft, dance).
- 4) “PWD – CFI”: an analogue of the TV game.

The conceptual basis of the NSO ARSDP programs is the formation of small groups and teamwork on the received task. Let us consider the socializing impact of the sociocultural programs of the NSO ARSDP on the example of the “PWD – CFI” game. The need for this form of event is due to the disabled people's need in active leisure activities. In this context, the definition of “sociocultural animation of the disabled” is applicable. L. V. Tarasov understands it as “the process of emotional and semantic development of the personality of each individual, due to an increase

in their creative activity, as well as the formation and development of the personality through involvement in objective and reflective activities using means of culture and art" (Tarasov, 2005, p. 11). The most urgent problem for people with disabilities is the lack of communication, which leads to inhibition of the process of passing the main social roles. Almost all communication links are reduced to relationships within the family and fairly regulated communication in educational and medical institutions; that narrowness of the communicative space does not contribute to the process of active socialization of the disabled people (Telminova, 2021, p. 98). According to L. V. Tarasov, the way out of this situation is "the organization of the infrastructure for the implementation of the individual's spiritual needs: communication, activity, knowledge, and creativity, using animated psychological and pedagogical technologies" (Tarasov, 2005, p. 9). This infrastructure replaces inaccessible (or hard-to-reach) institutions of socialization for a person with a disability and "actualizes the creative potential, interpersonal interaction and the spiritual unconscious of the individual by creating special psychological and pedagogical conditions for interpersonal communication" (Tarasov, 2005, p. 9). The infrastructure arises in the process of preparing and holding PWD – CFI games: an informal environment allows persons with disabilities (depending on the time of their onset) to form or implement communication skills, which, in turn, is the main component of the socialization process.

Let us move on to the consideration of the NSO ARSDP "Siberian Robinsonade" tourist action in the context of the socializing role of a public organization. The action program involves the formation of a team whose tasks include independent living in tourist conditions, the active participation of an entire team in sports, intellectual and creative competitions. The team consists of people aged 18 to 35 with various types of disabilities (with the exception of mental illness, epilepsy, and diabetes), participation in the team without people with disabilities is not provided.

The "Siberian Robinsonade" tourist action is a multirehabilitation project aimed at developing the potential of a person with disabilities. The conditions of a campground, tourist life, and, most importantly, the acquisition of the skills of participation in team and teamwork, allow a person to expand the range of social skills, try themselves in various social roles. The main sociopsychological difficulty of people with MSDs (musculoskeletal system) is the lack of social experience and limited space for social interaction and self-expression. It should be noted that while both problems are relevant for children with disabilities, people who have been injured as adults are more in need of expanding the space of social self-expression and growth, since when disability occurs, many public institutions are inaccessible to people with disabilities (Telminova, 2012, p. 1–2). By expressing themselves in communication, engaging in a variety of activities, people with different onset of disability adjust their self-esteem, reconsider their attitude to existing physical and socio-psychological limitations.

The NSO ARSDP "Siberian Robinsonade" action combines all types of social and rehabilitation impact of tourist activities (according to A. M. Akhmetshin):

- social and communicative: a change in the circle and nature of communication, activities in small groups.
- social and domestic: activities aimed at organizing life in a tourist trip.
- social and environmental: a possibility to master technologies for effective functioning in various habitats.
- social and cultural: communication with those "outside the family circle"; acquaintance with new cultural, historical and natural values; competitions, evenings, songs, etc.

– social and psychological correction: a change in the social role (role transition from "the ward" to the active member of the team), a decrease in rental attitudes; change in self-esteem and point of view on the degree of restrictions created by the defect; etc. (Akhmetshin, 2004, p. 25–26).

We agree with the conclusion of A. A. Dallari: "the tourist team, like any social group, is an independent factor that determines the impact on the personality of a disabled person... requires significant physical and psychological efforts from them for successful social integration" (Dallari, 2020b, p. 5). In our opinion, this thesis reveals the socializing nature of the "Siberian Robinsonade" tourist action.

According to the study results, we can say that tourism acts as a cultural socialization not only for wheelchair users (Maksimova, 2017a), but also for people with different time of onset of disability and its medical genesis (Maksimova, 2017a, p. 106).

### **Conclusions**

- At the heart of the socio-psychological characteristics of lifelong disabled adults is the type of attitude to the disease.
- For persons who have become disabled at the age of majority, the type of attitude to the disorder is based on the existing socio-psychological personality traits formed outside the onset of disability, such as sociability, stress tolerance, etc.
- For lifelong disabled adults, public organizations are a space not only for implementation but for the formation of socio-psychological qualities.
- For persons who have become disabled at the age of majority, a public organization acts as a socialization institution in which the socio-psychological qualities of the individual are manifested.

Based on the results of the study, we came to the following conclusions. For lifelong disabled adults, public organizations are a space not only for realization, but for the formation of socio-psychological qualities. For people who become disabled at the age of majority, a public organization acts as an institution of socialization, in which socio-psychological qualities are expressed. In our opinion, the effectiveness of a public organization of people with disabilities is determined by whether its programs form a space in which it is possible to acquire and assimilate social experience. Based on such experience, the active further entry of a disabled person into various social environments, when it fully implements the functions of the socialization institution, can be achieved.

### **Limitations**

Due to the study object, the limitations are related to the fact that there is no separate consideration for the aspects of entry into a public organization of adults who have received a disability for three years. We believe that this topic should become the object of a separate study, since special attention must be given to the specifics of the initial period of injury, during which the personality adapts to the status of "disabled".

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The author has no conflicts of interest to declare.

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## **A Child with ASD in Kindergarten: Resources for Teachers' Psychological Readiness**

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### **Abstract**

**Introduction.** This paper presents a new look at the issue of training preschool teachers and examines the practical training of psychology and education professionals for working with children with autism spectrum disorders (ASD). In recent years, the number of preschools with compensatory groups has increased by an average of 30% over the past decade, requiring the creation of the conditions for the education and development of children with ASD. This study aims to determine the resources of teachers' psychological readiness to work with children with ASD in preschool educational institutions. **Methods.** The study used an analysis of psychological and educational literature, regulatory documents for the organization of the education process and psychological and pedagogical support for children with ASD, as well as an author questionnaire containing 8 questions that assessed psychological and educational knowledge, level of knowledge, difficulties and the necessary support for teachers working with children with ASD. The study included 60 preschool teachers working with children with ASD. The **results** of the survey identified specific aspects of teaching in working with children with ASD and the difficulties in organizing teacher work for compensatory groups. The most difficult is the transition from the theoretical knowledge of children with ASD to practical work with this category of children. **Discussion.** This study confirms previous findings that teachers working with preschoolers with ASD lack special knowledge and skills to deal with these children's problems and improve their skills. **Conclusion.** Based on the results obtained in this study, it is possible to establish a trajectory for the professional training of teachers and educators working with children with ASD and to include the module aimed at forming systemic theoretical knowledge of developmental disabilities and practical skills in working with modern technologies to teach and educate this category of children and to interact with parents in the university curriculum for future teachers.

**Keywords:** children, preschool age, educational psychology, developmental disorders, autism spectrum, autism, mental health, teacher, teacher readiness, compensatory orientation

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## Introduction

The monitoring conducted in 2020, coordinated by the Department of State Policy for the Protection of Children's Rights of the Ministry of Education of the Russian Federation together with the Federal Resource Center for the Organization of Comprehensive Support for Children with Autism Spectrum Disorders (Moscow State University of Psychology and Education), has provided data on the total number of individuals with autism spectrum disorders (ASD). Thus, 32,899 individuals have been diagnosed with autism spectrum disorder. According to the indicators, the number of individuals diagnosed with ASD increased by 42% compared to the previous year (2019). Furthermore, during the monitoring process, data on the number of individuals with ASD receiving education at all levels in the Russian Federation were collected. Thus, 8089 children (24.5%) receive education services at the preschool level (according to the 2020 statistical analysis report on the number of children with autism spectrum disorders in the constituent entities of the Russian Federation, URL: <https://autism-frc.ru/education/monitoring/1265>).

The problems of ASD research are first and foremost related to the constant revision of the content and essence of this group of disorders. In some descriptions, the main focus is on communication disorders and the age at the start of ASD, while in other descriptions, the focus is on understanding this group of disorders caused by distortions and imbalances in the work of the central nervous system. However, the expansion and revision of ASD signs and characteristics enable us to examine individual cases of developmental disabilities in children with ASD in order to fully prepare individual pathways for psychological and educational support (Lauritsen, 2013). The prevalence rate of ASD requires a study of the dynamics of the integration and adaptation of children with ASD to real conditions. Teachers need to apply various methods and working techniques to show the effectiveness of the socialization of children in this group (Sunagatullina, Pustovoitova, & Yakovleva, 2019). An important criterion is to develop strategies for interaction between specialists and teachers (Hart Barnett & O'shaughnessy, 2015). Education professionals should constantly expand their existing experience, improve their practical skills, and constantly learn about the differences between ASD and other developmental disabilities, as well as social support for children with ASD (Able, Sreckovic, Schultz, Garwood, & Sherman, 2015).

We should note that autism spectrum disorder (ASD) is a developmental disorder that causes a wide range of problems related to social interaction, communication and behavior. The 11th revision of the International Classification of Diseases (ICD-11), published in January 2021, defines ASD as a lack of the individual's ability to initiate and maintain two-way communication, i.e. limited or repetitive behavior that is unusual for a specific age or the individual's developmental situation. Authors and researchers studying the support of children with ASD at various stages of social adaptation have identified the main characteristics that determine this type of dysontogenesis (Nikol'skaya et al., 2005; Nikol'skaya, & Baenskaya, 2017; Nikol'skaya, Baenskaya, & Guseva, 2019; Frith & Happé, 1994; Frith, 2003):

- The child does not hear the interlocutor and does not understand speech.
- The child does not notice the interlocutor and does not look into the eyes.

- The child makes monotonous and stereotyped movements.
- There are obsessions and rituals in the child.
- The child has problems with toilet, eating, and sleep.
- The child does not feel pain or cannot understand where it hurts.

For the adaptation and socialization of children with ASD in preschool age, the most effective is the possibility of cooperation intervention and communication between children and educators, children and parents. The mutual social interaction between specialists, parents, and children usually provides the best results (Tachibana et al., 2017). Knowledge of ASD and the methods of working with children in this group can help diagnose and identify the number of children who need constant help and work to correct their mental development. For example, the Centers for Disease Control in the United States published data on the number of children with ASD, which occurs in 44 children aged 8 and is 4.2 times more common in boys than in girls (material from the Centers for Disease Control and Prevention, URL: <https://www.cdc.gov/ncbddd/autism/features/new-autism-spectrum-disorder-report.html>).

The data published in 2021 indicate a significant increase in the number of children with ASD. In 2020, according to the results of the analysis of the data from the above-mentioned monitoring in Russia, it has been found that there is a problem with teaching staff working with children with ASD. The identified problem is related to the training of various specialists working with this category of children, as 24448 teachers need to undergo appropriate advanced training for their activities. The authors examine aspects of the professional competence of teachers working with children with ASD (Tsyurul'nikova, 2016; Khaustov, 2020). It is shown that the socialization of children with ASD can only be performed in systemic and multidisciplinary work of doctors, psychologists, speech pathologists, and teachers (Nesterova, Aisina, & Suslova, 2016; Platokhina, & Abashina, 2018). The training process for working with children with ASD is particularly difficult, especially in terms of the technological component of the professional competence process of a teacher (Platokhina, & Dudnikova, 2016).

The inclusion of children with ASD involves a mandatory and systematic solution to educational tasks, taking into account the specificity of each child's development, which leads to the formation of the ability to belong to a group and to reduce the manifestation of the negative consequences of imbalances in development. (Adelova, & Dyboshina, 2018). A structural and functional model of comprehensive support for pre-school children with ASD is presented, which reflects the special conditions for ensuring their success in learning during the transition from one educational level to another. Comprehensive support for children with ASD in accordance with the requirements of the Federal State Education Standards contributes to the idea of organizing affordable and high-quality preschool education and the successful socialization of this category of children, taking into account their health status (Nigmatullina, Vasina, & Mukhamedshina, 2021). E. A. Chereneva and E. A. Volodenkova (2016) presented an inter-departmental model for organizing a system of support for children with ASD in the Territory of Krasnoyarsk, describing technologies for inter-departmental cooperation between researchers and practitioners from Russia and abroad in the development of children with autism, as well as the experience in the development of parental initiatives and the training of professional staff to work with children with autism.

Complex models are developed to take into account the complexity and psychological characteristics of working with children with ASD. Recent research suggests that teachers often face psychological obstacles to working with distorted mental development, including negative attitudes and beliefs, and fragmented images of children with autism (Menshchikova, & Pogorelov, 2017). Teachers' psychological

ability to work with children with autism implies the existence of creative orientation and interest in overcoming the negative consequences and correcting ASD (Lobanov, 2022). The above points out that the teacher's personality and competence are factors that have a positive or negative attitude towards inclusive education for children with autism. The following factors were identified as positive factors: awareness, teacher specialized training, interaction with other experts on ASD issues (Aisina, Nesterova, Suslova, & Khitryuk, 2019). In particular, competent teachers and practitioners work with ASD in four main areas – professional knowledge, knowledge of the individual development paths of a particular learner, desire for self-development, and knowledge of the application of generally accepted practices and technologies. With a high demand for specialists in the field of work with DSA, there are global problems related to the lack of educators, teachers, mentors, inadequate training and awareness of personnel in this regard (Teo, Lau, & Then, 2022). In addition to the knowledge component, when preparing an educator or teacher, it is necessary to take into account the formation of teachers' readiness for inclusion, a value-oriented attitude towards educational activity, the adaptability and effectiveness of the application of professional activity strategies. In the process of teacher training and advanced training, it is important to focus on the systematic training of teacher personality in activities and the development of a conceptual model of teacher personality in educational activities (Mazilov, & Kostrigin, 2022).

A comprehensive work with teachers and their training are linked to systemic problems faced by specialists. For example, psychological and pedagogical barriers have been identified that hinder the professional growth of educators working with preschools with ASD, including the lack of teacher readiness to work with ASD, the lack of teacher involvement and the lack of cohesion of the teaching team, the difficulties inherent in the teaching of students with ASD, factors associated with the limitation of teaching time and resources, and administrative decisions that do not contribute to professional development and the insufficient methodological support of teachers.

The most difficult obstacle, according to educators, is the lack of professional preparation to work with ASD, which leads to other problems (Wilson & Landa, 2019). Educators need the support of experienced educators, colleagues and mentors, as well as opportunities to acquire practical skills and exchange experiences in other schools and institutions aimed at overcoming ASD and correcting developmental distortions (Corkum et al., 2014).

It was also concluded that Russian teachers, as well as foreign educators, have created myths about the work with children with ASD (Aisina, Nesterova, 2019; Aisina, Nesterova, Suslova, & Khitryuk, 2019), among which the idea of high intellectual abilities or talent of children with ASD was the most common. Considerable gaps have been identified in the organization of educational conditions for teachers, parents and children with ASD. Thus, the greatest difficulties have been observed in competences, lack of knowledge of working methods and skills to overcome behavioral and speech disabilities in children with ASD. At the same time, teachers indicated that they were internally ready for professional development and work with children with ASD (Manelis, Medvedovskaya, & Subbotina, 2014).

Therefore, difficulties in working with children with ASD include (a) doubts about competence in interaction with this group of children, (b) difficulties in working with parents of children with ASD, and (c) lack of support from specialized specialists, tutors, etc. (Aisina & Nesterova, 2019).

In one way or another, all teachers and preschool education specialists will deal with the development and education of a child with ASD, since at present almost all groups have a child with this type of dysontogenesis. Therefore, training to improve specific skills and awareness

of ASD should be given priority. Faced with the issues of ASD in practice, teacher must be prepared to create the best educational conditions for children. The effectiveness and efficiency of a competent teacher's educational activity will help maintain psychological stability and reduce the risk of emotional exhaustion (Pettersson Bloom, 2021). Professional burnout and loss of interest in working with children with special educational needs are caused by a lack of support for teachers in psychological, pedagogical and methodological terms (Semenova & Semenova, 2019).

Consequently, the aspect of organizing the educational activities of teachers in the preschool organization within the compensatory group for children with ASD has not yet been fully disclosed. This study aims to identify the characteristics of teacher work in the compensatory group of a preschool education organization (e.g. a group of children with ASD).

## Methods

To achieve the objectives, the following tasks were identified as the ones: (a) to determine the difficulties of teachers working in compensatory groups (with children with ASD) in public preschool education institutions; (b) to determine the basic problems, identify the characteristics of the education process, and to determine the need to design university training modules for future teachers working with children with AIDS. The study used the survey method. The survey was conducted on the Google Forms platform, which is the most preferred for the study of teachers working with children with ASD due to its versatility and the ability to collect a sufficient amount of data in a short period of time.

The survey included 60 female teachers aged 20 to 65 (23.3% aged from 41 to 45 years; 15% aged from 31 to 35; 15% aged from 36 to 40; 15% aged from 46 to 50; 13.3% aged from 20 to 25 years; 10% aged from 51 to 55 years; 1.7% aged over 60 years) who worked with children with ASD in compensatory groups of preschool educational institutions (PEI) in Kazan. Education: 56.7% of teachers had pedagogical education, 25% of teachers had education in defectology, 15% of teachers had psychological and pedagogical education, and 3.3% of teachers had psychological education.

The study included 2 stages.

**Stage 1** – Preparation. In the first stage, we developed the research design, formulated the objectives and research questions, determined the samples, and developed the survey. The survey included a few rather extensive questions. The survey took into account basic teacher education. The questionnaire addresses all the necessary aspects of the content of the teaching work on developmental disorders in ASD - psychological and teaching knowledge, assessment of current training levels, difficulties and support needed for teachers working with children with ADD.

**Stage 2** – Collecting, processing and analysis of empirical data. The diagnosis materials helped to understand the existing experience of interaction between teachers and the specific area of the development of children with ASD, which can help to further develop an algorithm for updating the content for the preparation of future teachers.

*Research questions:*

1. What is your education?
2. How old are you?
3. What is your position in an educational institution?
4. What is your teaching experience?
5. What is your experience of working with children with special needs?
6. What is autism spectrum disorder (ASD)?



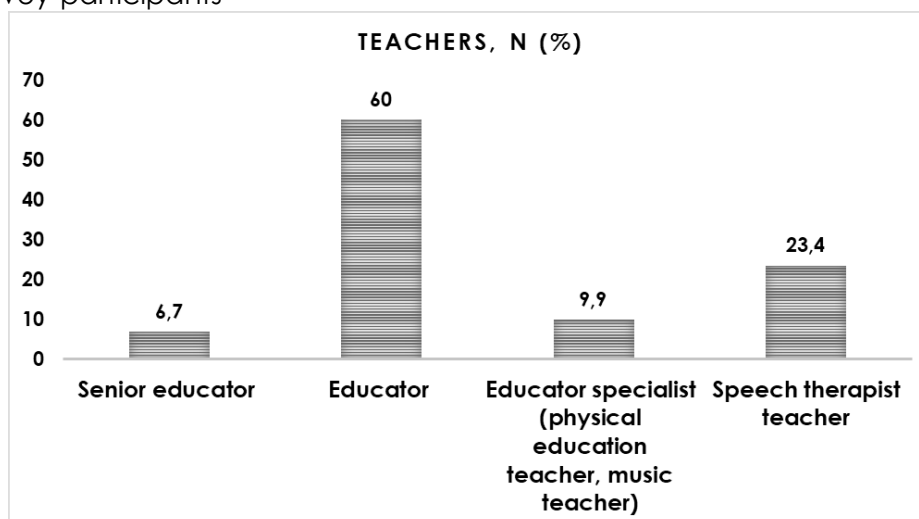
7. What is the classification of ASD syndromes according to K. Gilbert and T. Peters (1998)?
8. Can you describe technologies that can correct disorders in communication and social spheres in the development of children with ASD?
9. What is the non-drug therapy for ASD?
10. What are the methods recommended to work with children with ASD?
11. Can you identify the most effective forms of work with parents who have children with ASD?
12. What is the work with parents of children with ASD?
13. How to organize the education process for children with ASD?
14. Do you have difficulties working with children with ASD?
15. What support do you need for working with children with ASD?
16. Why did you decide to work with children with ASD?
17. Do you believe it is necessary to gain knowledge about the characteristics of working with children with ASD in the training process of the university pre-school education programs?
18. What experts do you work with when implementing the education process with children with ASD in a team?

## Results

The survey showed that the majority of teachers who work in compensatory groups (with children with ASD) are preschool teachers and speech therapists. Most teachers have little work experience (up to 6 years). Another interesting question is how many years of total experience have the survey participants worked with children with developmental disabilities. The results showed that 56.7% had up to one year of work experience, 33.3% performed this activity from one to three years, 5% - four to six years. Only 5% of the participants have been working with children with special needs for more than 10 years. Figures 1, 2 and 3 show the distribution of the number of teachers by these parameters.

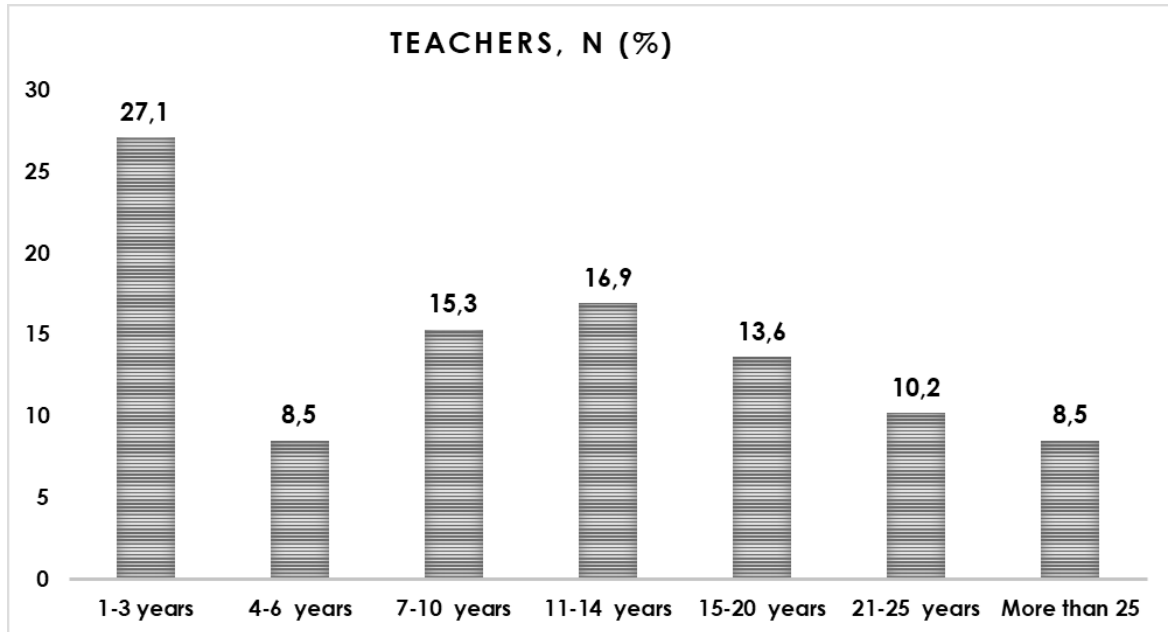
**Figure 1**

Position of survey participants



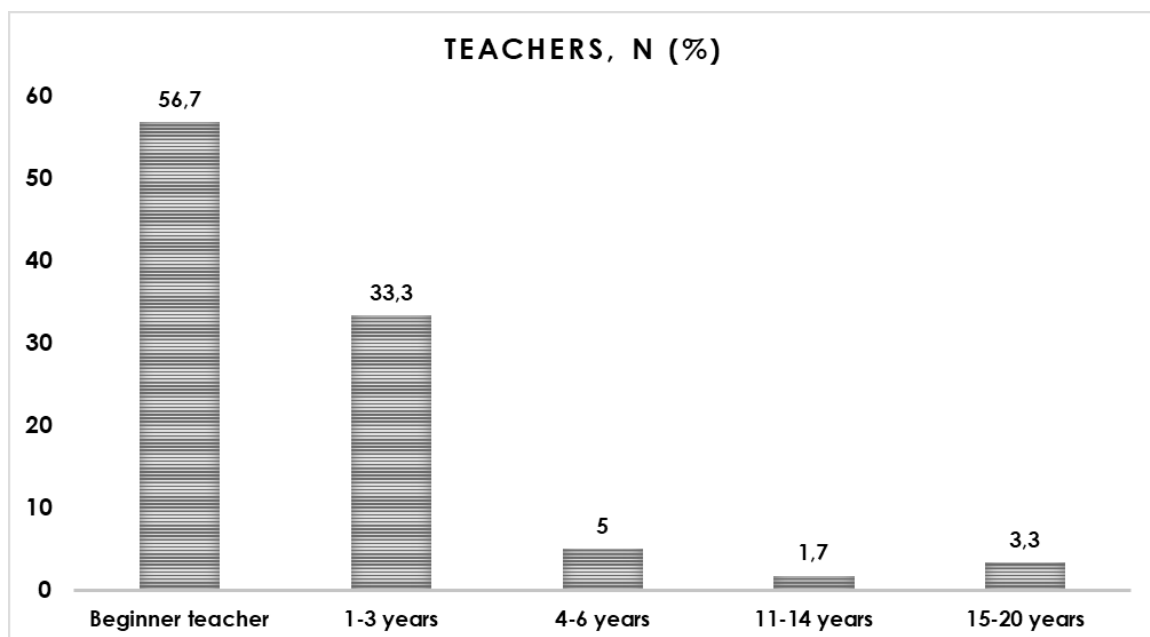
**Figure 2**

*Pedagogical work experience*



**Figure 3**

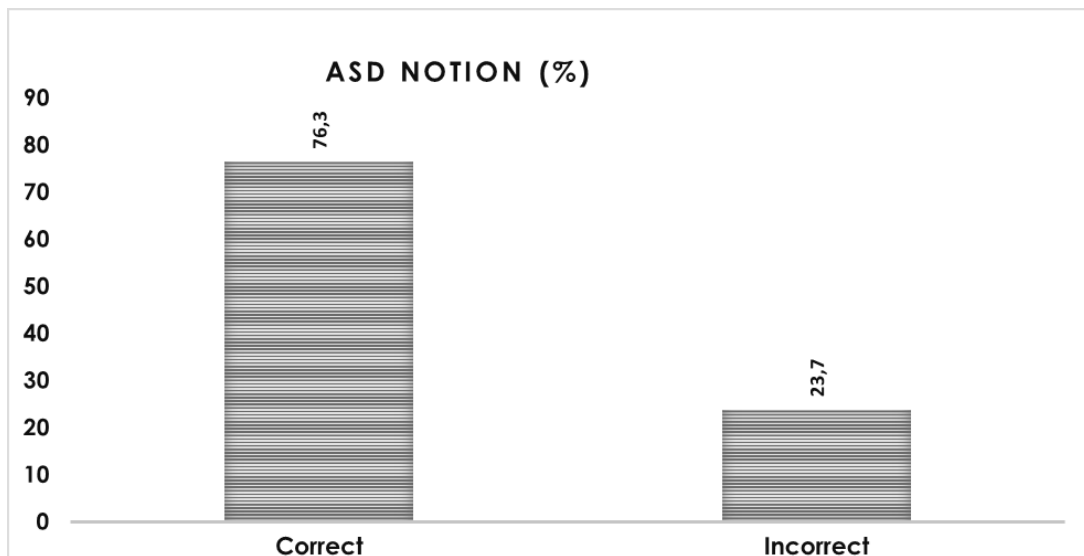
*Experience of work with children with developmental disabilities*



The positive result of the survey is that the majority of the respondents revealed sufficient theoretical knowledge of ASD and the essence of non-drug therapy for ASD. We can talk about a high degree of theoretical training regarding the knowledge of the criteria, classifications of ASD, and the main technologies for non-drug work in this type of dysontogenesis (Fig. 4, Fig. 5).

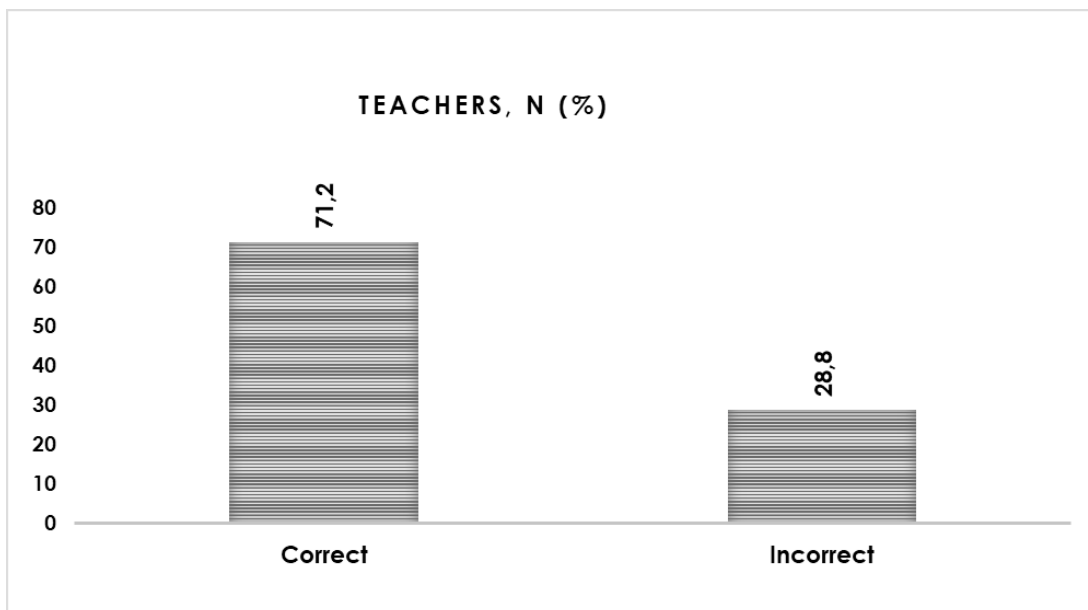
**Figure 4**

*Theoretical knowledge. Definition of RAS*



**Figure 5**

*Theoretical knowledge. Non-drug therapy for ASD*



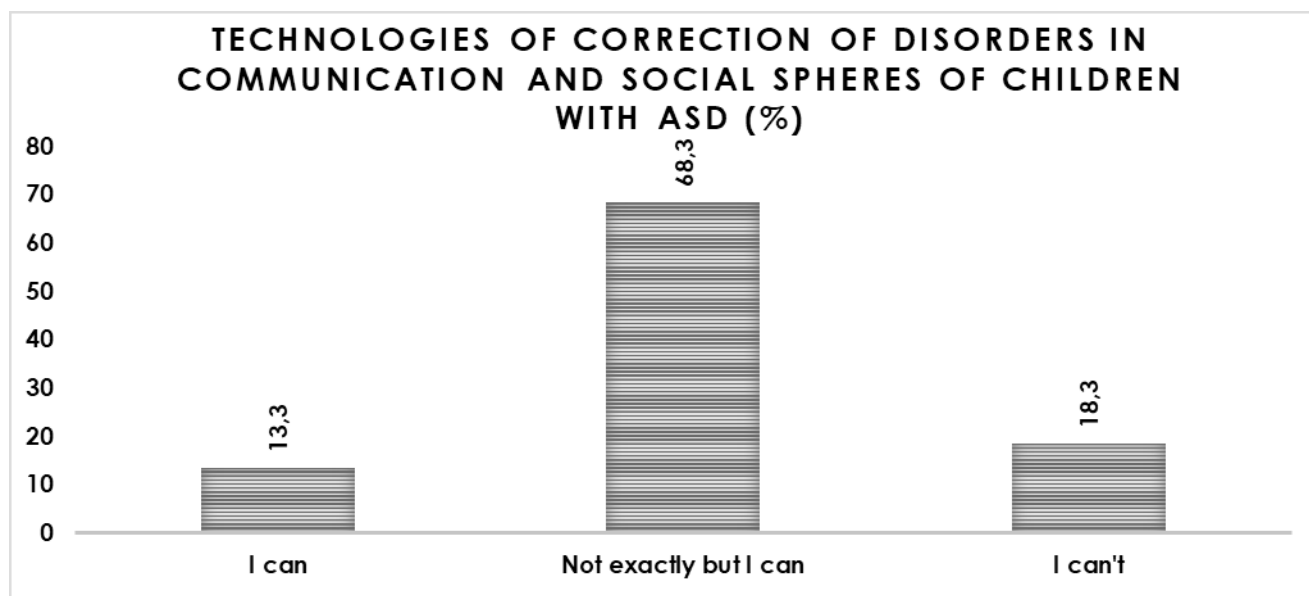
Let us consider the results of the survey on the orientation of teachers and their knowledge of the application of modern practices and methods of work with children with ASD and their parents. Only 13.3% of respondents could name the work technologies that could be used to correct communications and social spheres (Fig. 6).

When selecting methods for working with children with ASD, 10% of teachers chose holding therapy, which is not recommended for use in this category of developmental disorders because of its unproven effectiveness (Osin & Ustinova, 2020); 11.6% of teachers chose the DIR/Floortime intervention; 76.6% - picture exchange communication method (PECS); and 93.3% - ABA therapy (fig. 7).

The teachers' knowledge of the effectiveness of interaction and work with parents of children with ASD was not sufficient (35%). Most teachers (56.7%) doubted their ability to properly determine and apply psychological and teaching methods to families (Figure 8). Most teachers were aware of the methods of working with children with ASD, but only a minority of respondents could independently identify the focus of the methods on a particular problem. The greatest difficulties were observed in working with parents.

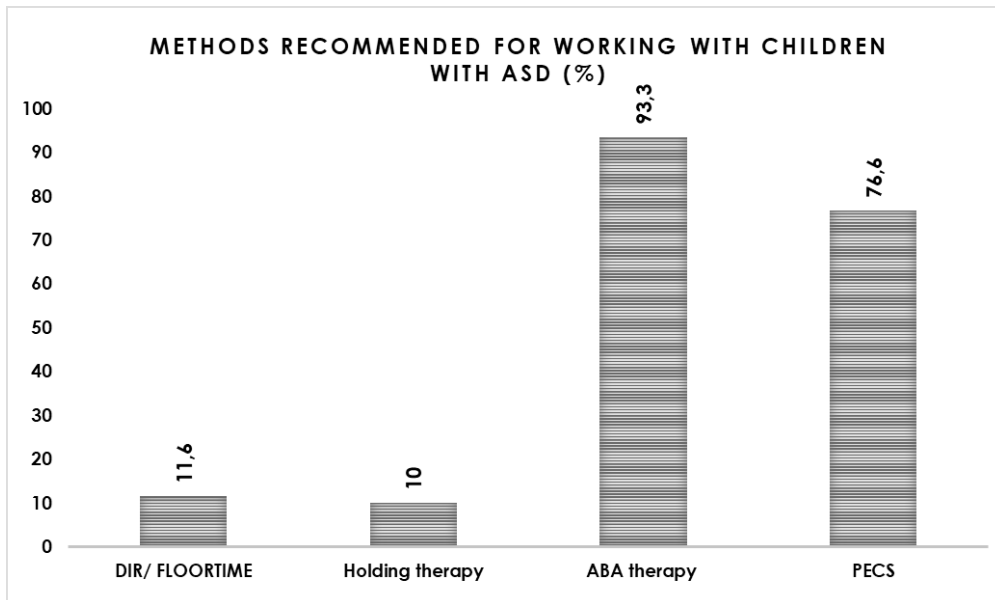
**Figure 6**

Theoretical knowledge of correction technology for communication and the social sphere



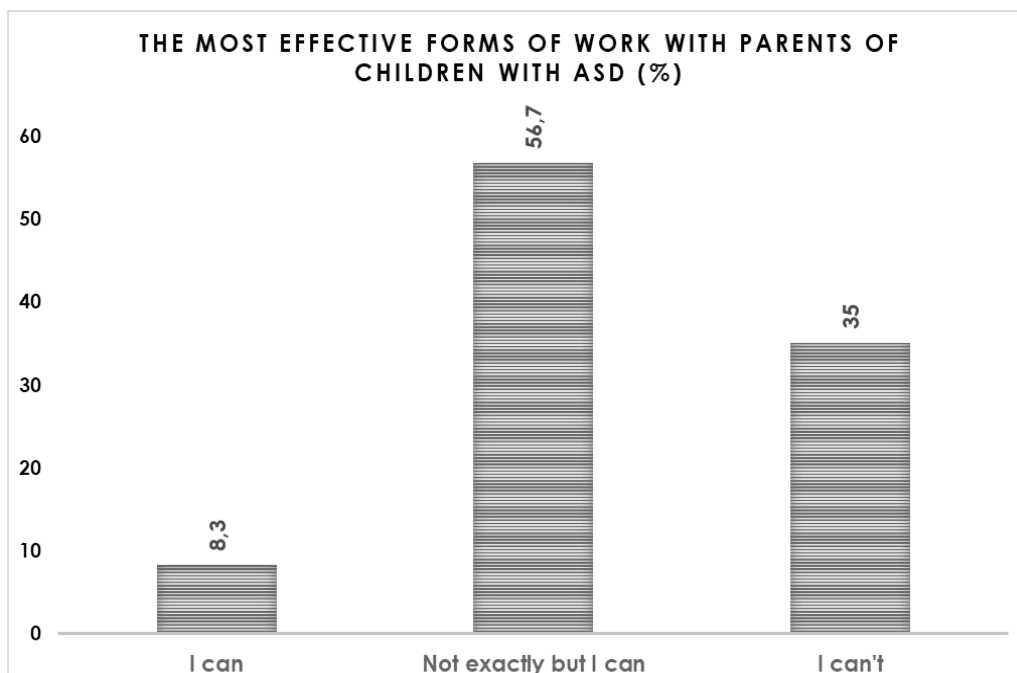
**Figure 7**

*Theoretical knowledge of the methods of correction of developmental disorders in children with ASD*



**Figure 8**

*Answers to the question, "Can you identify the most effective forms of work with parents of children with ASD?"*



Let us examine teachers' assessments of the difficulties and specificities of the educational process in working with children with ASD. Most teachers found it difficult to work with children with ASD or occasionally encountered difficulties (95%). Only 5% of the respondents coped (dealt) with children' disharmonic development and the correction of disorders associated with ASD (Fig. 9). The complexity of the practical application of theoretical knowledge and its the connection with practice is the most insurmountable for teachers.

**Figure 9**

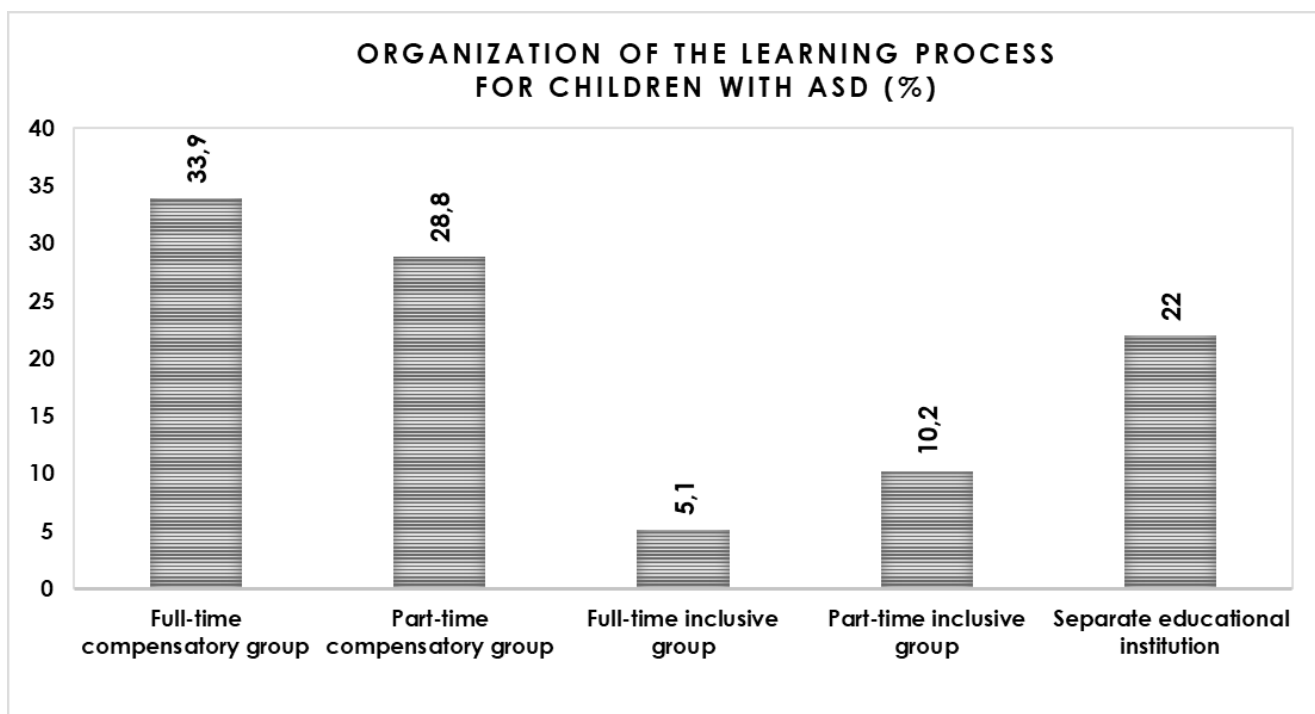
Answers to the question, "Do you have difficulties in working with children with ASD?"



According to 33.9% of the teachers interviewed, the education process of children with ASD should be organized in full-time compensatory groups; 28.8% of teachers believe that children need to be taught in part-time compensatory groups; 5.1% of teachers believe that children need to be taught in full-time inclusive groups; 10.2% of teachers believe that children need to be taught in part-time inclusive groups; and 22% of teachers believe that children need to be taught in a separate educational institution (Fig. 10). As can be seen from the responses of teachers, there is a dispersion of opinions. Teachers rely on their personal work experience and personal preferences in choosing the form of organization of the learning process and correcting the development of children with ASD.

**Figure 10**

*The teachers' opinion on the organization of the educational process*



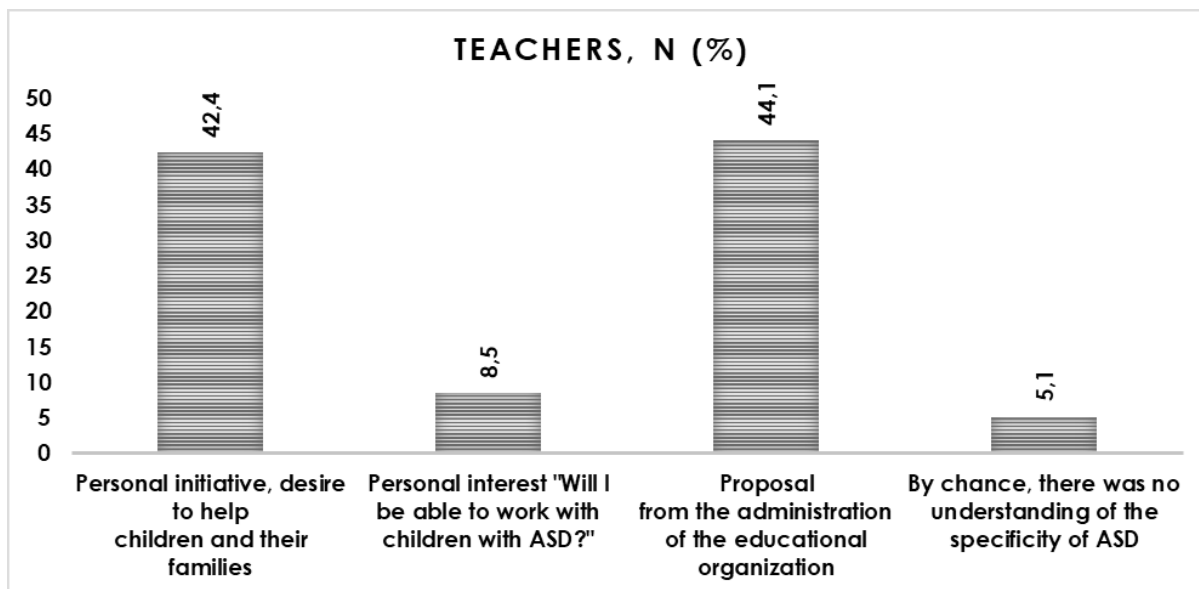
In the study, we found what contributed to the teachers' choice to work with children with ASD, including personal initiatives (42.4%), motivational proposals from the administration of the educational organization (44.1%), personal interests (8.5%). In our study 5.1% of teachers agreed that they did not know the specificity of working with children with ASD (Table 11). In other words, half of the teachers were motivated and possessed a professional interest in working with this category of children.

Finally, let us summarize the results and point out the most important points of the study.

According to the survey, 88.3% of teachers indicated that they needed to learn about the specificity of working with children with ASD in the training process. Teachers need first and foremost methodological support, which is confirmed by 71.2% of teachers' answers; 18.6% of respondents believe that administrative support is necessary. Furthermore, 10.2% of teachers need psychological support (Figure 12).

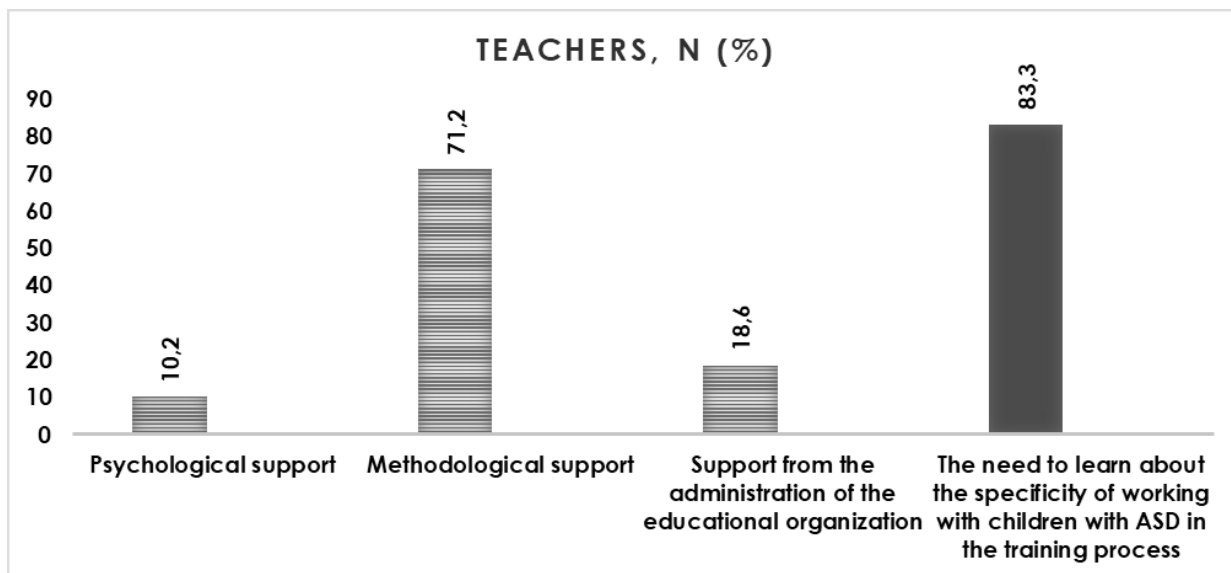
**Figure 11**

*Motivation to work with children with ASD*



**Figure 12**

*Types of support needed for teachers working with children with ASD*



## Discussion

A study of the staff of the compensatory groups showed that there were no severe staff shortages, and several teachers worked in the group for children with ASD: educators, speech



therapists, psychologists, and specialists (physical education teacher, music teacher). Motivation for participating in the survey and the results show teachers' interest in the need for professional growth, especially young professionals working with children with ASD. The specificities of the work of teachers with children with ASD include having theoretical knowledge of autism spectrum disorders and a relatively high level of training skills for their practical application. In general, teachers have knowledge of modern special diagnosis methods, correctional methods, development and educational methods and training programs. Participants in the study are able to develop and implement individual correctional programs for children with ASD and create the necessary special conditions for the educational process. These programs were introduced into the work of teachers in groups of children with ASD. At the same time, of course, an important feature of preschool teachers is the psychological readiness to work with children with ASD.

The psychological readiness to work with children with SSD involves a combination of internal and external conditions and the teacher's personal qualities. Psychological readiness to work with children with ASD involves the formation of cognitive, voluntary and emotional characteristics that constitute a system of important professional qualities of a teacher.

However, teachers in compensatory groups with children with ASD have difficulties in working. The system of organizational conditions has been successful, but to date it is only in the initial phase, because teachers and parents of this category of children face several problems. Children with ASD have the opportunity to attend preschools, but for various reasons children do not receive high-level professional pedagogical help and support. The results of the study indicate some of them. For example, we identified the lack of deeper practical knowledge, special abilities, and abilities for working with children with autism. We concluded that both teachers and parents were still in a situation of insufficient psychological and educational support. In this respect, we should emphasize that the purpose of compensatory groups is to organize educational activities, because working with children with ASD is not only to provide care for children with special needs, but also to support the child during mental and personal development. In order to improve the effectiveness of the educational process for children with ASD in compensatory groups, we offer the following recommendations:

- Creation of a free learning platform for the continuous education process of teachers working with children with ASD;
- Creation of a psychological support system for teachers working with children with ASD;
- Expansion of training programs for future educators and teachers of the direction of "Preschool education";
- Development of advanced training courses and professional retraining as part of support and education for children with ASD.

### **Conclusion**

Therefore, in this paper, we (a) described the relevance of the study of the psychological readiness of teachers and specialists working with children with developmental disabilities (children with ASD); (b) analyzed the results of the survey on theoretical and practical professional training of educators, teachers and specialists working with children with ASD; and (c) identified positive aspects of teacher professional development and the main difficulties of working in compensatory groups for children with ASD.

### Limitations of the study

During the survey, the teacher's desire to answer questions anonymously emerged, with some questions being excluded. This study provides a short list of questions. To design training programs and develop a system of psychological, pedagogical and methodological support for teachers, more teachers should be interviewed, more detailed surveys should be carried out, and research methods should be expanded (including psychodiagnostic tests, solution of pedagogical problems, pedagogical experimentation, and observation). In further research on this subject, we plan to work with future teachers and determine the readiness to work with children with ASD among students in teaching, psychological education, and psychological directions.

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#### Author Contribution

**Irina Alexandrovna Nigmatullina** contributed to the experimental design of the study and prepared the manuscript for publication.

**Valeria Alexandrovna Stepashkina** wrote the overview part of the article and prepared the text of the manuscript.

**Lilia Danilovna Pavlova** conducted empirical research and collected data.

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# Implementation of the Theory of Gradual Formation of Mental Actions in the Format of a Distance Lecture

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## Abstract

**Introduction.** The article deals with methodological and conceptual issues of the implementation of the theory of gradual formation of mental actions by P. Ya. Galperin in the conditions of distance learning in higher education. We have analyzed for the first time the potential of P. Ya. Galperin's theory of the gradual formation of mental actions for methodological support of distance university lectures and described the vectors of its transformation in connection with the electronic learning format. **Methods.** The study material was lectures conducted on the YouTube platform. The study participants were students and teachers from Bunin Yelets State University who gave them batch lectures using the YouTube service. The method of active interviews with students and teachers was applied as a research tool. The results were processed using a meaningful content analysis. **Results.** It was found that both the advantages and disadvantages of distance lectures reflect the psychology of assimilation of mental actions described in P. Ya. Galperin theory. Thus, to meet the quality standards of education, the content of the educational materials presented in the lecture must meet the requirements of the third type of learning, according to P. Ya. Galperin. The generality and completeness of the educational material should be ensured, subject to the condition that the volume of the educational material does not exceed the traditional lecture's volume. **Discussion.** The results obtained indicate that the distance learning form does not exclude the successful application of the fundamental provisions of the theory of the gradual formation of mental actions, which once again proves the importance of this theory for building successful learning technologies regardless of the learning format. In the context of the development of this theory, the opinion is expressed about the need to teach students the technique of processing the written form of a distance lecture, translating it into a mini-abstract format.

## Keywords

gradual formation of mental actions, higher education, distance lectures, educational content, learning motivation, mental effort, presentations, paper notes, active interview, learning theory

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## Introduction

Theoretical and methodological issues of distance learning in higher education institutions have been the subject of teachers' and psychologists' studies for several decades. However, before the COVID-19 pandemic, the advantages of distance learning and its technological aspects were mainly considered (Titova, Talmo, 2015). The global transition to the distance learning format has caused organizational and methodological shock almost all over the world. The term "crisis learning" appeared in the scientific literature, which actually meant the requirement to rethink the new format of learning not so much in terms of advantages as in terms of disadvantages. One of the significant obstacles to achieving distance learning quality in many countries has become the technical inadequacy of the educational process, low internet speed, and information illiteracy of both separate students and some teachers. It is not surprising that most of the articles on higher education problems during the COVID-19 period are devoted to the technical aspect of distance learning organisation (Bataineh, 2021; Cristóvão & Massinga, 2021; Essel, 2021).

However, the impendency of the distance learning format under conditions of coronavirus pandemic contributed to the revision of the organization demands of education and the improvement of computer literacy, which required a reassessment or refinement of scientific theories in the field of education and upbringing, taking into account modern realities. Thus, when studying the educational aspect of learning, the limitations of the distance format were revealed concerning the peculiarities of the impact on the student's personality. In particular, attention is focused on the problems of socialization and personal development since distance learning contributes to the isolation of students and teachers (Garanina et al., 2021).

Many works note the problem of remote content quality, including university lectures. This problem has not been solved meaningfully for a long time and facilitates the use of formal recommendations that are not based on scientific knowledge. For example, recommendations on the use of individual achievements of particular teachers were obtained by trial and error (Hollweck & Doucet, 2020; Johnson et al., 2021; Trombly, 2020). Part of the research focuses on secondary aspects of the educational process, for example, gender differences in the perception of content broadcast in a remote format (Hsiao, 2021). It does not fundamentally solve either the methodological or theoretical problems of modern distance learning. However, the part of scientific research contains mainly general messages about the freedom of teaching and the greater possibility of teachers' creativity in the distance learning format, not supported by scientific ideas (Trends in Digital Education, 2021).

Meanwhile, works are of interest in which questions are raised about the application of long-known learning concepts - the concepts of Bruner and Vygotsky - in the organization of distance learning at a university (Garg, Dhariyal & Newlands, 2022).

In Russian psychology, the theory of the gradual formation of mental actions has long been recognized and implemented not only in school, as it was at the initial stage of testing this theory (Galperin, 1985; Talyzina, Volodarskaya, Butkin, 2019; Talyzina, 1990; Selevko, 2005), but also in higher education (Golovanova, 2020; Potorochin, 2018). Thus, B. I. Khoziev reveals the potential

of the theory of phased formation in higher military education (Khoziev, 2012), and A. Podolskij considers this concept more globally, in the long term, as a basis for the development of learning competencies of the XXI century (Podolskij, 2020). In Western psychology, it is argued that the legacy of Galperin represents an invaluable potential for educational research and practice as an analytical resource. The theory provides an understanding of how students and teachers participate in the processes of learning, teaching, and development (Engeness & Lund, 2020; Lund & Engeness, 2020).

However, the problems of distance education in the context of the implementation of gradual formation theory at the university are considered meantime only in the field of correcting students' learning motivation (Ilyasov, Aslanova, Anerzhanova, 2020). It makes the problem of applying the theory of P. Ya Galperin in the course of distance learning relevant.

We have identified the following research objectives:

1. Identification of the significance of the provisions of the gradual formation of mental actions theory of P. Ya. Galperin for methodological support of distance university lectures.

2. Identification of ways to transform the theory of gradual formation of mental actions in connection with the distance learning format.

## Methods

The study methods were an active interview and a meaningful content analysis of the responses received during the interview. An active interview differs from a regular interview in the possibility of clarifying the answers of the respondents in the direct communication process.

We used the following active interview questions:

1. What, in your opinion, is the advantage of distance lectures?

2. What, in your opinion, is the disadvantage of distance lectures?

Sample group

The study involved 2 groups of respondents.

The first group consisted of 100 second-year students aged 19-20 years. Among them were 81 girls and 19 boys from different educational fields at Bunin Yelets State University, who listened to batch lectures on the YouTube platform.

The second group included 14 teachers of Bunin Yelets State University, who gave batch lectures on the YouTube platform.

The peculiarity of remote lectures on the YouTube platform is that they are as public as possible. Almost anyone who has followed the link on the university website in open access can be a listener. At any time, any employee of the university, including those performing control functions (the head of the department, an employee of the educational department, a delegate of the rector's office, or even the Ministry and Federal Education and Science Supervision Service, and also teachers from other universities) can join the students. It carries a great responsibility on lecturers. They should realize their own scientific and methodological potential at a high level in each lecture. As it turned out during our pilot survey, unlike teachers who used other communication systems, for example, the Zoom programme, lecturers who conducted classes on the YouTube platform reflected more reflexively not only the technical and ethical aspects of distance learning but, first of all, its methodological and conceptual problems. Because of this, as experts in assessing the advantages and disadvantages of distance lectures as an educational product, we selected teachers who gave lectures using YouTube.

The study was conducted from May 2021 to June 2021.



## Results

When processing the survey results, we did not consider arguments concerning the technical and organizational aspects of remote lectures – situations of communication blocking, the ability to attend online lectures even during illness, features of academic ethics, the possibility of imitation of participation in classes, and protection from coronavirus infection, although they were reflected in the reports of students.

We were interested in aspects related to the specifics of the learning methodology. In addition, when processing interview materials, our goal was not so much to identify the statistically most important advantages and disadvantages of distance lectures from the students' point of view, but also to identify as many **elements** of their advantages and disadvantages as possible. We proceeded from the fact that not all students will be able to reflect some psychological and pedagogical features of distance learning due to differences in the level of psychological and pedagogical qualification. Therefore, we analyzed and considered even individual opinions that did not fit the general context.

The analysis of students' responses to the interview questions is presented in the tables below. Table 1 records the arguments of students in favour of distance lectures.

**Table 1**

The advantages of a remote lecture (content analysis of student interviewing)

Content of the argument	Positive responses, %
The presence of a display that makes the material visual	100
The presence of visual examples in the form of pictures, videos, etc.	100
Effective use of study time: there are almost no deviations from the work programme, only the material that is needed to prepare for the exam or test is given	32
More visual information: since the visual analyzer is the leading one, this contributes to better assimilation of the material	42
The ability to technically record a lecture for revisiting	73
Ability to copy a presentation	65
Save time, as you do not need to draw diagrams and tables on the board	31
The names of scientists and scientific terms are sometimes worse comprehended, and with the advent of visual presentations, there are fewer such errors	18
The quality of the lecture is better if the teacher comments on the text of the presentation that appears on the screen	89

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The most obvious advantage for most of the respondents was the presence of visual presentations (100%). Furthermore, the quality of the presentations has become one of the criteria for a high-quality lecture. It is not surprising that the lack of presentation material was observed as a distinct lack of distance lectures (72%) (Table 2).

**Table 2**

*Disadvantages of Distance Learning (content analysis of student interviewing)*

Content of the argument	Positive responses, %
The style of the lecture, when the teacher simply reads the text without comments	72
If the material is unclear, the teacher refers to the textbook	38
The volume of material given in lectures has increased	12
Screenshots of lectures are not enough to prepare for an exam or a test, then you need to rewrite them, and it takes more time	34
Tougher ethical framework for asking clarifying questions immediately during the lecture, because they do not want to distract the teacher	68
The lack of live communication, the teacher is perceived more as a translator of knowledge, not an interlocutor.	100
Since the teacher does not see the students, he cannot control the pace of the lecture, so there are problems with taking notes	15
In a situation where one teacher gives lectures and another conducts seminars, problems arise when interviewing material that was not presented at the lecture. In this case, the motivation to listen and inscribe lectures disappears	8
In the absence of self-motivation to study, there is a temptation to get distracted	42
The moment was not clear at the beginning: What to focus on - the teacher's speech or the text of the presentation?	23
The technique of working with a remote lecture was unclear: What is better: screenshot or notes?	33

In the context of the theory of gradual formation of mental actions, visual presentations can be considered as a way of organizing an indicative basis for action and even as a materialized stage of assimilation of action. In this regard, a lecture with well-structured visual material, of course, contributes more to primary orientation and primary assimilation of the material than just a verbal text or a verbal text illustrated on a blackboard during a lecture in the classroom. Lectures on the YouTube platform according to the teachers participating in the survey, required more work in this aspect than classes in the Zoom programme since they were public. They should have been understandable to both students and other persons accessing this content.

Meanwhile, according to the theory of gradual formation, the orienting basis of action appears to be more productive if general knowledge is presented in it. This point was reflected in the interviews with the students (Table 2). Lectures that focused on memorization of the material or reference to the textbook in case of uncertainty (the first orientation type according to P. Ya. Galperin) were defined as "difficult to perceive" by 38% of the students in the study (Table 2). We found that understandable and effective lectures were those that first presented students with general knowledge for study, then with cases illustrating it (the fourth orientation type). Alternatively, the solution of cases can be discussed at the seminar (the third orientation type). Contrariwise, the students noted the difficulty in perceiving lectures on subjects where this technique was not used, and mostly specific knowledge was given instead. Specific knowledge tends to be hard to generalize on one's own. As an example, we can take legal disciplines, where there were many references to specific regulations.

A slightly different perspective compared to the students' interviews was also revealed in the problem of learning, which piqued our interest in the context of Galperin's theory. The results of the survey of this part are presented in Tables 3 and 4.

**Table 3**

*Strengths of a distance lecture (interviews with teachers' content analysis results)*

Argument content	Positive responses, %
More structured study material	50
Greater demonstrativeness of study material	71
Opportunity to provide more study material	78
Flexibility (everyone can study as much as they personally needs to master a course)	14
The responsibility and significance of professional activity in a situation of greater external control increased the teacher's self-esteem	42
To repeat the previous material required for a new lecture, it is enough to include files from previous presentations	42

**Table 4**

*Weaknesses of a distance lecture (interviews with teachers' content analysis results)*

Argument content	Positive responses, %
The absence of a teacher's control; the absence of dialogue between the teacher and students, the lack of the opportunity to discuss the issues under consideration	100
Inability to determine the level of primary assimilation of new material	100
Students take screenshots of the presentation, which contains the main material on the lecture' topic, but they do not listen to a teacher's explanations	42
Methods of preparing and conducting distance lectures require additional costs from a teacher	71
A student themselves must have great self-organization and diligence	50
The difficulty of motivating the listeners of a lecture	64
The increased load on working memory and attention	21

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The main strength of online lectures on the YouTube platform was recognized as a teacher's special responsibility for selecting the content of lectures. Furthermore, as noted by the participants, an increase in the responsibility and importance of professional activity in a situation of greater external control caused the teacher's self-respect to grow. It can be claimed that addressing this feature of a distance lecture can serve as an incentive in the development of the theory of gradual formation. It can cause the emergence of new arguments to support the motivational component of learning. Self-respect required from the teacher a presentation of study material that could motivate the student to attend distance lectures, regardless of attendance control.

Meanwhile, teachers' opinions were divided on the amount of material allowed in the format of a distance lecture. That is, the majority of teachers (78%) viewed the increase in the amount of content of study material that can be read remotely as a strength. In principle, that position corresponds to the provisions of the theory of gradual formation of mental actions, since a larger amount of material ensures the action completeness. 32% of the teachers considered this feature as a weakness, since there was actually an increase in the amount of information by approximately 25–30% in a distance lecture, which caused a load on working memory and attention. From the theory of gradual formation point of view, the arguments of this group of teachers correspond to the characteristics of mental action, such as awareness and reasonableness. These characteristics are easier to implement with a smaller amount of lecture material. Therefore, a certain balance must be observed between the desire to give detailed material in a lecture and the ability of students to comprehend it within the lecture time.

In general, the analysis of interviews with teachers highlighted the problem of distance lectures from the other side, from the educator's perspective. Furthermore, the problem of copyright compliance for intellectual property, which is an author's lectures, was raised. Emphasis was placed on the problem of protecting the right to one's own image in the form of permission or prohibition to use it during the broadcast of lectures. These problems are actively discussed in the scientific community (Barbierato et al., 2021).

## Discussion

The subject matter in the students' answers to the interview questions was the question of the need to take notes of the lecture material if they already have a presentation. This question has already been raised by other authors, but no science-based answer was received, although the researchers drew attention to the fact that the paper notes, in particular compiled by the student personally, are essential for mastering study material (Macedo-Rouet et al., 2009; Rensaa, 2014). In our study, some of the students wrote the presentation text into a notebook, some of the students printed the presentations or stored them on their smartphones. In fact, from the point of view of the Galperin theory of gradual formation of mental actions, we were talking about the organization of the external speech stage in the form of written speech. The external speech stage and the stage of written speech corresponding to it ensure the development of mental action, when none of the elements that require the transition to the internal plane disappears. Ultimately, it determines the completeness of mastering knowledge. It turned out that those students who rewrote the text of presentations (of course, except for examples) showed higher results in mastering the material. Russian researchers have already mentioned this on the example of laboratory classes: skipping the external speech stage in university education affected the quality of assimilation of the material (Katashev, Ulrikh, 2012).

However, the students noted that the rewriting process made the lecture work more laborious and time-consuming. At this point, one of the problems of distance lecture appeared as a marker. On the one hand, its text can be 'downloaded' in full format, on the other hand, simply reading a 'downloaded' lecture does not ensure the completeness of mastering knowledge. This fact allows us to recall the instructive speech of the outstanding Soviet psychologist A. R. Luria on the rules for a student to work with the text of a lecture. Obviously, in distance learning, students need to work with the typed text of a lecture or presentation in a certain way. The way

that they can, having highlighted the main, translate it into a model (short summary) format, as A. R. Luria had been doing it, studying at the medical institute. This model allowed him to graduate successfully in three years instead of six. He traditionally told first-year students about this at their first lecture at the Faculty of Psychology of Lomonosov Moscow State University and demonstrated his scheme models, accumulated from detailed lecture notes (according to the personal experience of the authors). From the theory of gradual formation viewpoint, here the wrapping knowledge mechanism is manifested, which is necessary for the knowledge to pass into the plane of consciousness systematically, with the least losses.

As far as is known, the weak point of the theory of the gradual formation of mental actions is the conceptual defect of the first stage – the motivational stage. In psychology, types of learning motives are traditionally studied, including those that consider them in relation to different developmental ages (Budyakova, Pronina, 2020). However, the problem of motivation in distance learning remains relevant, as evidenced by the work of Russian scientists, adherents of the Galperin theory of gradual formation (Ilyasov, Aslanova, Anderzhanova, 2020). In our study, ambivalence was revealed in the assessment of this component of learning: some of the students indicated that being focused is better precisely on distance lectures, since home conditions are more comfortable, and others noted that when studying at home, motivation for perseverance during a lecture decreases. The proportional ratio is approximately the same: 38% of the students were for the home version, 62% for the classroom. This aspect requires special analysis and needs to be studied further.

The motivational aspect was also relevant to teachers. The technology of conducting lectures on the YouTube platform does not allow to see the students, which, especially at the beginning of the course, stimulated the lecturers to look for techniques that would increase interest to the lecture. This was reflected in the selection and demonstration of visual material in the form of pictures, photographs, videos, its presentation in a problematic form and inclusion of special mini tasks and cases in the texts of lectures for further processing at seminars. In that case, the advantage of the remote format, which includes the presentation of study material as a mandatory component that has a greater stimulating power, was clearly expressed, in contrast to lectures in the usual mode, when one can simply dictate the text without showing a presentation.

Meanwhile, the fact of dispersion of students' attention when using online learning was stated in the literature, but its causes were not analyzed (Liao, Wu, 2022; Al-Mamary, 2022).

Our study made it possible to determine some of the reasons for attention dispersion, based on the provisions of the theory of gradual formation of mental actions. As a rule, the absence of direct contact did not allow one to identify aspects of the topic content that were difficult to understand. In this case, as it turned out, it is better not to artificially increase the amount of theoretical material. In this sense, the desire of some teachers not to increase the amount of theoretical material, filling the excess time of online lectures with illustrations and learning cases instead, can be considered one of the options for a deeper provision of mastering the orientation basis of action at the materialized stage or at the stage of perceptual action. This is important in the absence of normal contact with students, which provides in the format of a regular lecture, with included problematic issues, the level of primary assimilation of the material, sometimes even at the stage of loud speech.

## Conclusion

Therefore, the following conclusions can be drawn:

1. The distance learning format not only does not reduce the importance of the theoretical postulates of the concept of P. Ya. Galperin, developed for traditional teaching methods but, on the contrary, shows its undiscovered potential;
2. The psychological meaning of paper lecture notes lies in an easier transition from the materialized form of the orientation basis of action to the external speech and mental forms;
3. An increase in the amount of study material during a distance lecture can contribute to dispersion of student attention.

Therefore, the theory of gradual formation of mental actions reflects the mechanisms of assimilation of scientific knowledge so well that it is also in demand in modern distance learning technologies. It was perfectly applicable under the conditions of 2021–2022, and it can also be successfully applied now (in 2023) if a distance lecture is needed. At the same time, there are certain methodological aspects of the implementation of the theory of P. Ya Galperin on modern technological platforms that require further study.

In conclusion, we can state that the theory of P. Ya Galperin has already been called a theory that is ahead of its time (Stepanova, 2006), and in the age of complete informatization, this definition once again confirms its accuracy and relevance.

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#### Author Contributions

**Angelica Nikolaevna Pronina** formulated the concepts, prepared the theoretical justification of the study; summarized the results; finalized the text.

**Tatyana Petrovna Budyakova** conducted a theoretical analysis of the sources; prepared the theoretical justification of the study; analyzed and summarized the data.

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THEORY AND METHODS OF TRAINING AND EDUCATION

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## Research Article

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# Investigating Demotivating Factors in Learning English for Specific Purposes at a Higher Education Institution

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## Abstract

**Introduction.** The countries using English as a foreign language have invested many efforts to improve the effectiveness of English teaching and learning for the communicative purposes. Currently, English for specific purposes (ESP) have been integrated and categorized in the programs at the tertiary level in Vietnam. The aim of the present study is to determine four major demotivating factors affecting Vietnamese tertiary students' ESP competence to meet the requirements of their future jobs. **Methods.** A mixed-methods approach was employed at a higher education institution to ascertain the liability of the findings. Particularly, the study involved 357 tertiary students participating in the survey questionnaire, 14 teachers of English and 85 students took part in semi-structured interviews. The researcher-made instruments met the high range of Cronbach confidence level ( $\alpha = 0.76 - 0.95$ ). **Results.** The results indicate that students have a high motivation in learning ESP for their prospective careers; however, they have disappointed feelings about the teacher-related factors, infrastructure-related factors, and university/faculty-related factors according to the outcomes from the student survey questionnaires. Besides, the findings from teachers' and student semi-structured interviews also assert that ESP language teaching and learning does not match their expectations. **Discussion.** It is implied that this research results might be beneficial for school administrators to formulate ESP supportive policies, for teachers to change their pedagogical methodology, and for students to develop their learner autonomy in ESP acquisition.

**Keywords:** demotivating factors, English teaching, higher education, tertiary level, language learning, mixed-methods approach, motivation, expectations, semi-structured interviews, pedagogical methodology

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## Introduction

Teaching and learning ESP rather than general English (GE) or English for Academic Purposes (EAP) has become a focal concern in the field of English language teaching (ELT). In its essence, English has shown continued impacts on the global integration in that it has become the means of international communication or commonly so-called lingua franca. ESP language learning and teaching, to a certain extent, stems from the enormous changes and massive economic development thanks to the far-reaching consequences of globalization, which highlights the growth of multinational capitalism of some global superpowers such as Britain or the US. These countries have an age-old accumulation of immigration from different countries; therefore, they need to employ one common language to exchange information in their daily lives and at work. In addition, ideologies of growth and the longing to facilitate international communication, giving opportunities for knowledge expansion have formulated the influential motivation in ESP's establishment. In its essence, ESP learners are not acquiring the language for general educative purposes or for the understanding of literature in which they study mostly the structure of one language, but rather a means to acquire some specialized knowledge or set of skills which inquire the modification of the practical knowledge of relevant fields (Vakilifard, Ebadi, Zamani & Sadeghi, 2020). In other words, context and content play crucial roles in ESP pedagogy because context refers to what situation learners would be using the language skills and content implies what he or she needs to achieve through one language (Benahnia, 2017; Wahyunengsih, 2018). In practice, many ELT educators (Dja'far, Cahyono, Bashtomi, 2016; Lebedev & Tsybina, 2018; Martinović & Poljaković, 2010) have perceived ESP as a radical break with a world-wide educational trend of change. As noted in the study of Negova and Umarova (2022), the finding asserts that ESP is widely recognized as sustained growth and has made a substantial contribution to the field of ELT. With the aim to meet the communication needs of rapidly industrializing nations, overcome local barriers in terms of communication, commonly by utilizing 'global' languages like English as a substitute for local languages, and stimulate the growth of multinational conglomerates, ESP is thought to be functioned as more efficient, being targeted to the specific needs of the learners for their workplaces or academic settings (e.g., Starfield, 2016; Tahririan & Chalak, 2019; Wahyunengsih, 2018).

Obviously, one of the most remarkable factors highly influencing language teaching and learning processes accounts for student motivation. Asijavičiūtė and Ušinskienė (2014) state that motivation enables ESP students to be more achievable and competent in their learning outcomes. Motivation could be regarded as a driving force, determining human's behavior; thus, research on second language (L2) in general and ESP motivation is to highlight the need analysis of learner's desire to keep his or her determination on acquiring the target language. However, motivation to learn ESP is obstructive due to its nature such as peculiar writing conventions and exclusive glossary, which is so-called demotivating factors in ESP language learning and teaching studies and is often ignored in the research field. In its essence, demotivation is possibly interpreted as the negligence of adequate motivation to perform a specific goal. Vakilifard et al. (2020) opine that demotivation refers to the state in which a lack of motivation results from the specific external causes. As a result, demotivating factors hinder learners' learning motivation and result in unsuccessful competence of ESP proficiency. Consequently, understanding demotivating factors in ESP teaching and learning helps both teachers and learners aware of the risks that weaken student motivation. There is a number of demotivating factors in ESP learning and teaching, including

student-related factors, teacher-related factors, infrastructure-related factors, and university/faculty-related factors. These factors explain the reasons why students commonly regard de-motivation as a teacher-owned problem due to partially inappropriate teachers' behaviors. Consequently, demotivation probably leads to negative impact on students' ESP learning outcomes. In a similar vein, Dörnyei and Ushioda (2021) assert that demotivation can have a negative impact on the learners' attitudes and behaviors, ESP learning outcomes, and teachers' motivation. In other words, ESP teaching and learning under the demotivated condition brings about the low achievement of expected learning outcomes. As such, successful ESP language learning requires serious avoidance of demotivating factors. Although there are some studies (e.g., Navickienė, Kavaliauskienė & Pevcevičiūtė, 2015; Nikolaeva & Synekop, 2020; Vü, 2012) investigating student demotivation in ELT, no study has examined ESP demotivating factors influencing learners' expected learning outcomes in a single study. Dörnyei and Ushioda (2021) regard demotivation as "another side of motivation" (p. 138), so one way to increase the quality of ESP language learning and teaching in foreign countries is to familiarize learners with demotivating factors in acquiring ESP subjects. By investigating demotivating factors of ESP learning and teaching, the results are served as useful references for language teachers or researchers who are concerned deeply about ESP language learning and teaching. This study attempts to address the following questions:

1. What typical features cause the demotivating factors on students in ESP courses?
2. What are teachers' and students' perspectives towards the demotivating factors of ESP courses?

## **Literature Review**

### ***English for Specific Purposes***

ESP concentrates on ELT as a L2 or foreign language in which learners' expectations can be fluent in using English in a particular field of work. Traditionally, the acquisition of English was almost encouraged by the ability to communicate across languages fluently to exchange daily information, often referred to GE, in its early days. This has been further developed and classified as subject matters such as English for academic purposes (EAP), English for occupational purposes (EOP), English for vocational purposes (EVP), English for medical purposes (EMP), English for business purposes (EBP), English for legal purposes (ELP), and English for sociocultural purposes (ESCP) (Canarana et al., 2020). Notably, Starfield (2016) indicates that ESP is assumably viewed as an approach to ELT in which all decisions as to contents and methods are subject to the learners' reasons for acquiring ESP. As such, learners' intention of ESP acquisition is not a matter of either understanding English variations or science words and grammar for scientists or even investigating the differences from any other kinds of English language, but it possibly concerns what learners want to be fluent in using ESP, its range of knowledge, and abilities to help them get fluent in a respective specialized area such as legal English. Sharing the same opinion as Starfield (2016), Lebedev and Tsybina (2018) argue that ESP should be categorized as an approach to language learning, so they refute to consider ESP as a product. In other words, ESP does not belong to any sort of languages or reading materials, it is seen as an approach to language learning, which is constructed to satisfy learners' demands. Besides, Mauludin (2021) assumes that generally learners merely study English to fulfil their dreams of knowing English language or English culture, but they acquire English for study abroad or work purposes in the global environment. In addition, Didenko and Filatova (2017; p. 2) investigate the definition of ESP by identifying its differences of

the four absolute and two variable characteristics. Particularly, teaching and learning ESP has four absolute characteristics of (1) aiming to match the requirements of learners, (2) content relations (i.e., the themes and topics) to disciplines, occupations and activities, (3) focusing on the language appropriate to those activities in syntax, lexis, discourse, semantics, and analysis of this discourse, (4) reflecting the contrast to GE. ESP possibly, but not necessarily, consists of two variable features, namely the restriction as to language skills to be learned (e.g., reading only), and not being taught according to any preordained methodology. Overall, acquiring ESP can be simply assumed as the use of a certain variety of English applying for a specific context to satisfy the needs of learners as the guiding principle proposed for ESP (Flowerdew, 2012). In other words, needs analysis and curriculum in ESP are central to design any courses within the ESP context.

### ***Demotivation***

“To demotivate” in Oxford Advanced Learner’s Dictionary, v. 10<sup>th</sup> defines “to make somebody less keen to work or study”. In this regard, the feeling of demotivation occurs when someone does not really want to complete one activity or make their great effort to do it because they recognize that there are not beneficial returns in this action. Zoghi and Far (2014) regard demotivation as a lack of motivation deriving from one individual’s sentiments of incompetence and powerlessness when confronting with an activity. Similarly, Vũ (2012) identifies four sources of learners’ demotivation as follows:

- Learners confess to lack the merit and ability to accomplish a special activity.
- Learners recognize the ineffective learning strategies.
- Learners realize to set too high expectations for their learning outcomes.
- Learners get depressed feelings of their attempts to achieve their objectives.

According to Dörnyei & Ushioda (2021), they emphasize that demotivation stems from particular external influences which decrease or weaken the motivational basis of a behavioral aspiration or an ongoing activity. Hence, demotivation is probably defined as the negative counterpart of motivation. Take a demotivated learner for example, demotivation emerges when he or she has lost his or her interest for some reasons, which derives from various sources of demotivation. Similarly, a teacher who cannot put his or her class under control or works with a boring textbook may experience some demotivated feelings. However, not all the researchers agree with this viewpoint. Mauludin (2021) argues that Dörnyei and Ushioda (2021) constrain the boundary of demotivation definition to only external factors, he asserts that internal factors such as self-confident reduction and negative attitude are also regarded as demotivating factors in the ESP learning process in addition to external factors. Then, they suggest the need to extend Dörnyei and Ushioda’s definition of demotivation (2021), including both external and internal factors which discourage motivation during the process of ESP teaching and learning. Generally, the loss of interest in ESP learning can be originated from different causes of demotivation such as teachers and their pedagogical practices, learners themselves, learning conditions like physical conditions, and ESP curricula.

### ***Demotivating factors***

In fact, ESP teachers usually confront the pressure to teach well because they have to be well-prepared for their lesson plans regarding subject expertise. Although there has been cooperation between teachers of English and specialized teachers, sometimes there still exist many obstacles in conveying lesson contents to students in a really effective way. Actually, teachers of English are

not intensively trained in these specialized majors so that many teachers are probably passive and lack confidence while delivering specialized content to students. Factors that reduce motivation in learning are those causing a decrease in an individuals' motivation to study and work. Unmotivated learners used to be encouraged, but in some situations, for unwanted objective reasons, they lost motivation. Diminished motivation can occur when an individual has another choice or when they are distracted. For example, a student, instead of going to school, decides to stay at home to play games. Therefore, demotivation can be understood as a result of reducing or weakening a learner's interest and motivation and has some characteristics of both internal and external factors.

Harmer (2010) emphasizes four factors which might be discouraging to the learners' motivation, namely physical conditions, method of teaching, teaching staff, learning atmosphere. Hosseinpour and Tabrizi (2013) investigated demotivating factors in EFL in an Iranian context regarding seven factors including a) inadequate facilities, b) reduced self-confidence, c) class characteristics, d) lack of purpose to study English, e) teaching methods, f) teachers and teaching styles, and g) negative attitudes toward English and the culture of English-speaking countries as demotivators. The results point out that low proficient learners perceive reduced self-confidence and negative attitudes more demotivating than their classmates at other levels of proficiency. Following the above research, Han, Takkaç-Tulgar & Aybirdi (2019) conducted a study to measure six demotivated constructs such as teachers, characteristics of classes, experiences of failure, class environment, class materials, and lack of interest affecting Turkish EFL tertiary students' ELT. The results indicate that students report negative attitudes of the classmates, teacher-related factors, personal issues, class characteristics, test anxiety, failure experiences, and education system. This research, however, does not compare teachers' perspectives to highlight the students' viewpoints. Similarly, Tran and Moskovsky (2022) examined Vietnamese EFL teachers' perceptions of student-related demotivating factors, and the ways these factors influenced teachers and their teaching. The study employed semi-structured interviews with 30 participating EFL teachers from 14 universities in Vietnam. The results proved that student limited English proficiency, negative attitudes towards English and English language learning, poor classroom performance, and low academic achievement are considered as the most potent student-related demotivating factors for Vietnamese EFL teachers, which heavily has a number of negative consequences for teachers' emotions, behaviours, and attitudes. This study also has a delimitation when there is a limitation of respondents involving in the study. In fact, there are several demotivating factors in learning English in general and ESP in particular. The factors that cause the loss of interest in acquiring ESP can stem from internal or external sources. In the present study, the demotivating factors investigated are mainly from the learners, the teachers and the infrastructure (Sakai & Kikuchi, 2009).

With the previous theoretical knowledge, the study is sure to contribute the overall views on the matter of demotivating factors in ESP teaching and learning.

## **Methods**

### ***Research design***

The mixed-methods research is basically designed to conduct a cross-sectional study of 357 representative students, who enroll ESP courses – typically legal English subject – at a higher education institution in Vietnam. Approximately 5.000 students at Hanoi Law University (HLU) constitute the study population; however, the researchers are, within the constraints of time and

money, unable to collect information from all the population, so Cochran's (1977) formula is used to select a sample of 357 respondents with  $e = \pm 5\%$ . For the ease and convenience, the questionnaire is implemented by the active Google form link, which is sent to the participants' addresses within a period of two weeks. For the semi-structured interviews, they are conducted over the phone with the 85 student participants and 14 teachers, following a permission of recording the interviews for the single purpose of transcribing the response for this study. Then, two sources of data are addressed by IBM SPSS v.25 application for the questionnaire, and NVivo application v.12 for the interview recordings. The researchers exploit the results from two sources consolidate the validity of the research findings.

### **Participants**

The research respondents are those at HLU registering legal English credits as the partial fulfillment of the bachelor's requirements. To choose the representative sample of the large population, Cochran's (1977) formula with  $e = \pm 5\%$  is applied to get the respective samples of 357 over the population of about 5.000 HLU students.

$$n = \frac{z^2 (p \cdot q)}{e^2}$$

Where:

$n$  = number of items in samples

$z^2$  = square of confidence interval in standard error units

$p$  = estimated proportion of success

$q$  =  $(1-p)$  or estimated the proportion of failures

$e^2$  = square of maximum allowance for error between true proportion and sample proportion, or  $z_p$  squared.

Regarding gender participation in the survey questionnaire, the research involves 133 male students accounting for 37.3%, and 224 female ones equivalent to 62.7%. When concerning the residence, 160 participants equal to 44.8% come from the rural areas, next 134 respondents from the urban areas, and 63 students same as 17.6% from the mountainous areas. Additionally, the research investigated number of years students have studied English, the results reveal that 290 students making up 81.2% have studied English for under 15 years, 41 participants, corresponding to 11.5% have learnt English for under 20 years, and 26 respondents just like 7.3% have acquired English for under 10 years. Concerning the student major, the majority of students is non-English major students ( $n = 325$  participants, same as 91%), while 32 students equivalent to 9.0% are English major students. In regard with the level of student motivation towards ESP, mostly 274 students representing 76.8% feel motivated to study ESP, similarly 71 students accounting for 19.9% perceived highly motivated, and only 12 participants similar to 3.4% find little motivated.

To assure the liability of the research, the respondents checked courtesy request at the end of the questionnaire to participate in a semi-structured interview over the phone for about 30 minutes. As a result, 85 students accepted to be involved. Besides, 14 teachers of English willingly joined in the semi-structured interviews to get the overview of the matter concerned.

### ***Research Instruments***

The research employed the researcher-made questionnaire basing on the factual and behavioral criteria recommended by Dörnyei and Taguchi (2010). For the survey questionnaires, they included 4 groups with 80 statements equally dividing in these factors, namely teacher-related factor, student-related factor, infrastructure-related factor, and university/faculty-related factor. For the semi-structured interviews, they comprised of 20 questions for student interview, together with another 20 ones for practitioners' interview. The questionnaires were constructed internally before they were sent to 4 experts on legal English language teaching and legal practitioners for content validation. After that the questionnaires were fine-tuned properly before implementing a dry run among a group of 30 students and 5 teachers of English to validate the strengths and weaknesses. The researchers retained the statements according to the range of confidence level ( $\alpha = 0.76 - 0.95$ , fairly high; Cronbach, 1951). The final survey questionnaires included 15 teacher-related factors, 14 student-related factors, 12 infrastructure-related factors, and 10 university/faculty-related factors. For semi-structured interviews with students and teachers, 10 interview questions for students, and 8 ones for ESP instructors were selected. Finally, the final versions were again sent back to 4 experts to examine and validate the liability.

### ***Research Procedures***

Having prepared the proper research instruments, and the permission to conduct the study, the researchers composed an email embedded with an active link to a Google Form, then the questionnaire was sent to the participants' email addresses. The questionnaire including the researchers' instructions, articulated the objectives and relevance of the study, assured anonymity, and gave participants the option of discontinuing participation in the study. The respondents were expected to return the questionnaire within two weeks after the email was sent. Simultaneously, a contact number was also provided in case a respondent had any questions. Participants agreeing to participate in the semi-structured interviews expressed their availability over the phone for about 15 minutes. After two sources of the research instrument were selected via a snowball sampling technique during the time schedule, the researchers implemented the process of data screening together to obtain the desired sample size. Then, the appropriate data was treated by IBM SPSS v.25 application for the questionnaire, and NVivo v.12 application for the interview recordings.

### ***Data analysis***

The data was collected, tabulated, analyzed, and interpreted for the purpose of descriptive statistics. Specially, frequency count and percentage were utilized to treat the respondents' profiles. Descriptive statistics was employed to address Likert-scale statement to find out the means and standard deviations relevant to the interval scales such as very low (1.0 – 1.80), low (1.81 – 2.60), moderate (2.61 – 3.40), high (3.41 – 4.20), and very high (4.21 – 5.0). To verify the different perspectives of the respondents in terms of 4 ESP demotivating factors, ANOVA was utilized to test the disparity. To ascertain the accountability of the qualitative data, NVivo v.12 application was employed to address the frequency of occurrence of the respondents' perspectives in the semi-structured interviews.



## Results and discussion

To investigate the particular features leading to the demotivating factors for students in ESP courses, Table 1 illustrates respondents' viewpoints about the teacher-related factors. In general, they have negative perspectives towards this aspect. The role of ESP teachers is to provide learners with practical knowledge thanks to teachers' tactful use of pedagogical strategies to activate student language learning motivation stemming from psychological quality teachers help students to recognize the necessity to achieve L2 learning objectives. As glimpsed from Table 1, the respondents do not feel satisfied with teachers' ESP equivalent knowledge because teachers in charge of these courses seemingly fail to explain or supply learners with sufficient understanding of respective knowledge about the equivalent information. As clearly reported in the previous studies (e.g., Ahmadi & Bajelani, 2012; Han et al., 2019; Wahyunengsih, 2018), the specialized knowledge about one field has been required and highlighted as teachers have to understand the core of the subjects that they are teaching in order for them to help students comprehend what aspects of ESP mention. In addition, students reflect that teachers have not exploited teaching aids or realia effectively to support the effectiveness and practicality of ESP teaching and learning. Typically, the participants reveal that teachers in ESP classrooms are not very good at developing student learner autonomy, which empowers learners with the ability to improve their own ESP knowledge, this result is somewhat similar to the research finding of Mauludin's study (2021). Currently, students are encouraged to promote the learner autonomy not only in ESP fields but also other subjects at the tertiary level. Thanks to the availability and ubiquitous Internet innovations, students are able to utilize the Internet applications to address their own concerns relative to their ESP difficulties. This reflection is also reported in the previous studies (e.g., Sandra & Ismail, 2016; Giang & Tuan, 2018; Tuan, 2021) which assert the impacts of utilizing the Internet on students' English competence. Regarding teacher-related factors, students express their discontented remarks on teachers' classroom management styles. It can be stated that the way teachers interact with students has, to a certain extent, influenced student learning outcomes, which can be found in the previous studies (e.g., Jean-Louis, Céline, Cynthia & Marcel, 2018; Tuan, Huong & Minh, 2021; Tuan, Lan, Huong & Minh, 2022) confirming the student achievements heavily resulting from how teachers work with their students. Therefore, it is concluded that teacher-related factors have not come up to student expectations.

**Table 1**

*Student perspectives towards teacher-related factors*

Teacher-related factors	N	Mean	Std.Deviation	Description
1. Use of technology (slides, computer assisted learning, showing videos, etc.) in the ESP course motivates me and affect my learning	357	3.12	.704	Moderate
2. I think the instructor used a useful and practical lesson plan	357	2.51	.523	Moderate

Teacher-related factors	N	Mean	Std.Deviation	Description
3. I like the innovative pedagogical method used by the instructor to teach ESP.	357	2.02	.675	Low
4. I think the material used in the class is useful and it includes appropriate topics	357	2.12	.629	Low
5. The teachers do not provide ESP handouts before/after lessons.	357	3.83	.822	High
6. The teachers do not guide searching/ reading more documents/provide documents and websites relating to the lessons in ESP class.	357	3.02	.548	Moderate
7. The teachers do not communicate with students during the learning process with the relevant knowledge of ESP.	357	2.90	.655	Moderate
8. I like the atmosphere of my ESP class thanks to instructors' active classroom management	357	3.01	.770	Moderate
9. Teachers do not update the lectures in ESP classes according to the current situations.	357	4.03	.689	High
10. Teachers only give priority to good students, not interested in the others in teaching ESP classes.	357	3.10	.883	Moderate
11. Teachers do not answer all the students' questions during the learning process relating to the ESP knowledge.	357	4.06	.716	High
12. Teachers teaching ESP classes do not guide students to self-study ESP knowledge basing on the assistance of information technology.	357	3.93	.609	High
13. Teachers often fail to explain the difficult ESP terminologies due to their lack of respective knowledge about the equivalent reference.	357	4.00	.670	High

Teacher-related factors	N	Mean	Std.Deviation	Description
14. Teachers do not help students improve their four basic English skills – reading, speaking, listening and writing, together with ESP terminology. They just try to follow the preset syllabuses.	357	2.91	.825	Moderate
Valid N (listwise)	357			

Table 2 reveals the student perspectives towards student-related factors. As clearly seen from Table 2 student intrinsic motivation to study ESP generally shows high extents. However, one of the remarkable demotivating factors blames for their lack of respective knowledge to fully understand what is stated in L2 specialized texts ( $M = 3.85$ ;  $SD = .810\%$ ). To address this problem, it is possible for ESP teachers to reconsider their curriculum by collaborating with other related majors. As claimed in teacher-related factors, students do not highly value the usefulness of ESP materials and appropriate topics ( $M = 2.12$ ), this proves that student background knowledge related to ESP themes should be relevant, which is also consistent with the findings of Martinović and Poljaković (2010), and Vü (2012). For the intrinsic motivation, learners surely realize the necessity of the advantageous ESP competence for their future positions. This state of student readiness is very essential in that students realize their potential fully and are able to visualize themselves doing a certain job in the future ( $M = 3.84$ ). This point is somehow different from Navickienė et al. (2015), in which they disclose that learners are vague about their reasons to participate in an ESP course. Furthermore, ESP demotivating factors possibly derives from the cultural dissimilarity in equivalent lexical meanings when students find it hard to convert between source language and target language so that this disparity may yield much hinderance for students to communicate in ESP fields, which also shares similarities in the previous studies (Han et al., 2019; Vakilifard et al., 2020; Tran & Moskovsky, 2022). Overall, students recognize the benefits of a good command of ESP for their prospective working positions, they find it difficult to master ESP words and comprehend clearly ESP texts.

**Table 2**

*Student viewpoints on student-related factors*

Student-related factors	N	Mean	Std. Deviation	Description
1. I find it challenging to study ESP as my background knowledge relating to ESP themes is not adequate.	357	3.85	.810	High
2. I find it too hard to understand ESP due to my poor command of general English.	357	3.23	.589	Moderate

Student-related factors	N	Mean	Std. Deviation	Description
3. I take ESP course because I like English and I enjoy learning English	357	4.06	.728	High
4. Learning ESP is important to keep updated and informed of recent progress in my field of study.	357	3.92	.811	High
5. Learning ESP is important to me because I could be offered with a prospective and international position.	357	3.84	.656	High
6. Students in ESP classes do not have the same general English level, which demotivates the competitive learning atmosphere.	357	3.78	.785	High
7. Whenever I think of my future career, I imagine myself using ESP to deal with my potential responsibilities.	357	4.11	.614	High
8. Learning ESP can be important to me because I think it will someday be useful in getting a good job.	357	3.65	.652	High
9. I can imagine myself having a scientific discussion in English in my future job.	357	4.07	.722	High
10. I cannot understand the meanings of ESP words because ESP words are not equivalent to Vietnamese language.	357	3.81	.752	High
11. I find it too hard to remember ESP words and their pronunciation.	357	3.87	.822	High
12. I can imagine myself speaking English with international experts or colleagues concerning ESP knowledge.	357	2.75	.702	Moderate
13. The things I want to do in the future require me to use my ESP knowledge.	357	3.82	.724	High

Student-related factors	N	Mean	Std. Deviation	Description
14. I imagine myself as someone who is able to have a scientific talk or presentation in English in an international event	357	3.32	.642	Moderate
15. Learning ESP is important to me to understand the professors' lectures and knowledge relating to all subjects in my classes	357	4.13	.812	High
Valid N (listwise)	357			

When considering infrastructure-related factors, the respondents express their dissatisfaction with the availability of equipment reserved for ESP teaching and learning as displayed in Table 3. In fact, ESP is regarded as challenging for most foreign language learners; thus, infrastructure reserved for ESP teaching and learning must be well-equipped to come up to student expectations. As ESP is designed for practicum situations, mooted activities are frequently employed, which requires infrastructure such as labs, libraries, or practicum rooms to have special investments. Apparently, the results in Table 3 present that infrastructure for ESP teaching and learning is still modest, which might have negative impacts on ESP learning outcomes.

Together with infrastructure, other indoor or outdoor class activities involving ESP have not satisfied students. For example, students complain about not reserved space for ESP practice in the labs ( $M = 3.57$ ;  $SD = .727\%$ ), or not enough ESP reference books in the library ( $M = 3.84$ ). Therefore, to get the most efficiency, ESP teaching and learning require modern and advanced infrastructure. These infrastructure-related factors have not mentioned thoroughly in other studies before.

**Table 3**

*Student stances on infrastructure-related factors*

Infrastructure-related factors	N	Mean	Std. Deviation	Description
1. Projectors or teaching aids for ESP do not come up with students' expectations.	357	4.08	.521	High
2. The topics presented in the ESP class discouraged me to participate actively as there is no availability of ESP teaching realia to accompany with.	357	3.72	.614	High
3. I think class activities and my participation in the ESP class (for example presenting in English language) motivate me and affect my learning	357	3.01	.521	Moderate

Infrastructure-related factors	N	Mean	Std. Deviation	Description
4. ESP textbooks used in the ESP classes are not updated regularly.	357	4.13	.619	High
5. The library does not have enough ESP textbooks for students to borrow.	357	3.84	.902	High
6. The lab does not provide reserved space for ESP practice.	357	3.57	.727	High
7. ESP language laboratory facilities do not equip enough for students to practice.	357	3.63	.524	High
8. Modern equipment with the internet connection are not allowed students to use without the consent of teacher-in-charge.	357	2.84	.831	Moderate
9. The library does not have enough ESP reference books such as ESP dictionaries	357	3.64	.628	High
10. The library does not link and share online resources with other libraries at a national and international scale.	357	2.06	.602	Low
11. Practicum rooms reserved for teaching and learning ESP are not adequately updated.	357	3.87	.915	High
12. I think the topics covered in the ESP course are rudimentary and boring, not much practical.	357	3.95	.737	High
Valid N (listwise)	357			

Table 4 presents the supportive factors that are also considered as demotivating factors in ESP teaching and learning. In general, the participants assume that university/faculty-related factors should be changed to give more assistance to improve the efficiency of ESP teaching and learning. Table 4 investigates the internal and external issues; that is, the connectedness of ESP program with inside and outside institutions. Consequently, the respondents recognize that in-house supportive programs have not been given enough priorities when designing an ESP course. It is important to conduct a need analysis to see what ESP students actually want to achieve after

the course so that university/faculty may have a clear orientation exchanging with students on effective ESP learning methods. Compared with Lebedev and Tsybina’s result (2018), the aspect of this research finding is somewhat similar to them; however, their finding only mentions the need analysis, not for what purpose. Besides, the investment in updating ESP textbooks, modernizing ESP teaching facilities or inviting educational experts on ESP teaching has yet to be properly taken care by university/faculty administrators. In regard to external factors, the results indicate that the practicality of the ESP courses is questionable and does not match student expectations. Likewise, they are longing for more collaborative activities or exchange programs with domestic or international universities regarding the use of ESP in practice. Furthermore, intern or apprentice programs using ESP knowledge are necessary for students to measure the extent they have gained from ESP courses. Generally, students expect to receive more practical supports from their university/faculty to enable them to get better learning outcomes from acquiring ESP courses.

**Table 4**

*Student opinions on university/faculty-related factors*

University/faculty-related factors	N	Mean	Std. Deviation	Description
1. The university/ faculty does not really show interest and invest in ESP teaching facilities properly.	357	3.22	.632	Moderate
2. The university/ faculty does not have any discussions or orientation on ESP learning methods.	357	3.62	.791	High
3. The university/ faculty does not change/ improve the ESP textbooks to suit the reality.	357	4.05	.647	High
4. The university/ faculty has not been able to arrange a class-specialized teacher.	357	2.11	.891	Low
5. The university/ faculty has not organized extra-curricular activities to practise ESP.	357	4.15	.621	High
6. The university/ faculty does not organize collaborative activities with other universities or institutions regarding ESP	357	4.42	.671	Very high
7. The university/ faculty does not have any exchange programme with international universities or higher education institutions.	357	4.50	.818	Very high

University/faculty-related factors	N	Mean	Std. Deviation	Description
8. The university/ faculty does not invite current experts on ESP outside school to teach ESP programs.	357	2.19	.698	Low
9. The university/ faculty does not send ESP students to do an internship course at working institutions.	357	4.62	.775	Very high
10. The university/ faculty does not organize regular job fairs to connect between job hunters with ESP graduates.	357	4.04	.941	High
Valid N (listwise)	357			

Table 5 presents the results of the student semi-structured interviews, which is manipulated by NVivo. As glimpsed from Table 5, the interviewees are likely to express their negative perspectives, so the results are somehow similar to that in the survey questionnaire. Nearly two thirds of the participants think that the ESP courses are not very helpful, which indicates that ESP courses should be done more to satisfy learners' expectations. The inefficiency of ESP courses may come from the poor need analysis, low motivation, lack of ESP textbooks or materials, and inadequate infrastructure. Moreover, the participants believe that ESP courses should have practical apprentices at intern places so that they can apply what they have gained theoretically into real situations. Some previous qualitative studies using some kinds of interviews (Johnson, 2015; Mousavi, Gholami & Sarkhosh, 2019; Nikolaeva & Synekop, 2020) have emphasized the necessities of bridging what ESP theoretical knowledge into practicality. Furthermore, students really want to have a deep background knowledge of respective knowledge of respective subjects to understand ESP fields. They also confess that they do not change much their practical skills and sub-skills in using ESP due to the improper impacts of teachers, infrastructure, and administrative policies for ESP.

**Table 5**

*Summarized analysis of student semi-structured interviews (manipulated by NVivo)*

When participating ESP courses, you	N	Opinion	Frequency	Percentage (%)
1. Perceive the usefulness of the ESP courses	85	Yes	28	32.94
		No	57	60.05
2. Experience unwillingness to take ESP courses as the partial curriculum requirements	85	Yes	61	71.76
		No	24	28.24



When participating ESP courses, you	N	Opinion	Frequency	Percentage (%)
3. Have high motivations for taking ESP courses	85	Yes	30	35.30
		No	64	64.70
4. Realize effective ESP course contents and course materials	85	Yes	35	41.18
		No	50	58.82
5. Have practical apprentices at internship places	85	Yes	21	24.71
		No	64	75.29
6. Want to have experienced ESP teachers	85	Yes	39	45.88
		No	46	54.12
7. Develop fundamental ESP basic skills	85	Yes	19	22.35
		No	66	77.65
8. Improve skills and sub-skills in using ESP competence in practice	85	Yes	26	30.59
		No	59	69.41
9. Want good infrastructure supporting for ESP self-studying references	85	Yes	18	21.18
		No	67	78.82
10. Undergo lack of background knowledge to understand technical terms.	85	Yes	66	77.65
		No	19	22.35

Table 6 overviews the results from teachers' semi-structured interviews, which is handled by NVivo application. Specially, most teachers want to develop student ESP knowledge at the tertiary level rather than GE which seems to be relevant as English has been taught as EFL since the primary level. As such, there is no need to further improve GE at the tertiary level ( $n = 12$ ). This notion is also in line with the finding of Zoghi and Far (2014), which emphasizes the necessity of mastering ESP for school leavers to use at their prospective jobs. Another aspect teachers' remark is not mixing ESP and GE curricula in one program ( $n = 8$ ; 57.14%). As mentioned before, most teachers desire to teach only ESP at the tertiary level. Regarding teachers' qualifications, most teachers agree to have formal qualifications related to the ESP subjects ( $n = 9$ ; 64.29%). This finding might be different from that in Canarana et al.'s study (2020), they argue that teachers should have to prepare well before their lessons, they do not need to be trained in specialized subjects. In reality, understanding a piece of information in ESP is much challenging because it might involve in many collaborative specialized fields, which demand having a good background knowledge to grasp the meanings thoroughly. In order to inscribe students' memory of ESP competence, teachers have to adjust their pedagogical approaches in teaching ESP via providing more mooted circumstances. The application of ESP knowledge into mooted events enables students visualize what they might do with their ESP ability in the future. Additionally, the supportive actions of administration leaders are very necessary according to the teachers. The schools need to not only invest monetary

schemes in ESP facilities or training courses relative to ESP enhancement programs, but encourage ESP teachers to participate in teachers' exchange programs or have specialized career development strategies for them. Overall, teachers recognize inappropriate investments of the schools for ESP, which is, to a certain extent, similar to the student evaluations.

**Table 6**

*Summarized analysis of teachers' semi-structured interviews (manipulated by NVivo)*

What are your opinions of	N	Opinion	Frequency	Percentage (%)
1. Developing ESP knowledge at the tertiary level rather than improving general English language skills.	14	Yes	12	85.71
		No	2	14.29
2. Organizing mootng circumstances relative to ESP instead of tedious theoretical lectures.	14	Yes	11	78.57
		No	3	21.43
3. Total ESP curriculums better than mixed general English and ESP curricula.	14	Yes	8	57.14
		No	6	42.86
4. Reserved facilities for teaching and learning ESP classrooms.	14	Yes	13	92.86
		No	1	7.14
5. ESP teachers with respective formal qualifications relating to subjects.	14	Yes	9	64.29
		No	5	35.71
6. More inviting present practitioners in teaching ESP.	14	Yes	11	78.57
		No	3	21.43
7. Overseas exchange programs in ESP.	14	Yes	8	57.14
		No	6	42.86
8. University administrators promoting ESP with incentive schemes.	14	Yes	14	100
		No	0	0

### **Conclusion**

English has obviously proved its influential role as a medium of international communications. Currently, the global integration creates more opportunities for multinational companies or organizations to cooperate together, which places a great demand for the tertiary education to keep renovating training programs to meet the requirements of international working cooperation.

The most common problem in EFL countries is that English is learnt mainly for communicative purposes in some contexts. From the findings of this paper, it is concluded that students have high motivational aspects to acquire ESP, the main demotivating factor possibly comes from the student lack of background knowledge of respective specialized subjects, which deters learners from understanding fully what ESP texts denote or communicating confidently where they have to use ESP. For teacher-related factors, learners think that teachers should not only have qualified with ESP but also get formal qualifications in respective areas. In addition, teachers are expected to give students more chances to practice ESP in mooted circumstances instead of giving theoretical lectures. For assistive infrastructure-related factors, students feel not much satisfied as the infrastructure is not reserved for ESP teaching and learning. Remarkably, library sections, language laboratory equipment or practicum rooms for ESP have not adequately taken into consideration. For the last supportive university/faculty-related factors, students want to receive more assistance from administrative leaders in terms of ESP related policies. Students really want to have ESP orientational discussions at the beginning of their programs, they also hope to participate in ESP exchange programs with other domestic and international institutions. Besides, ESP courses should be conducted more at intern or apprentice places for students demonstrating their ESP language skills. In this study, to strengthen the liability of the research findings, semi-structured interviews with students and teachers are also carried out. The results indicate that there are somehow similarities between the outcomes of the teachers' and student semi-structured interviews and that in the student survey questionnaires.

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#### Author Contributions

**Giang Nguyen Dang** planned the original draft of the study and wrote the text of the study.

**Tuan Van Vu** wrote the text of the study, was responsible for review and editing.

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## **Socioeconomic Risk Factors for Postpartum Depression and Postpartum Post-Traumatic Stress Disorder**

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### **Abstract**

**Introduction.** Postpartum depression and postpartum post-traumatic stress disorder (PTSD) are common disorders during perinatal period. They can significantly reduce the quality of life of the mother and have long-term consequences for her psychological well-being and her child's development. This is the first study where socioeconomic characteristics, namely family's economic status, place of childbirth, and the type of childbirth healthcare plan for childbirth, are explored in the context of elevated risk for postpartum depression and PTSD in the Russian sample. **Methods.** The study included 2,579 women aged 18–43 years who gave birth within 12 months prior to the survey. Depression was assessed using the Edinburgh Scale of Postpartum Depression and postpartum PTSD was measured using the City Birth Trauma Scale. In addition, information on demographic and obstetric characteristics was collected. **Results.** Statistically significant differences were found in the severity of symptoms of postpartum depression ( $F = 13.678$ ,  $p < 0.001$ ) and postpartum PTSD ( $F = 10.235$ ,  $p < 0.001$ ) depending on the economic status of the mother. There were also significant differences in the severity of symptoms of postpartum depression ( $F = 10.780$ ,  $p < 0.001$ ) and postpartum PTSD ( $F = 10.410$ ,  $p < 0.001$ ) depending on the type of childbirth healthcare plan (childbirth in a specialized maternity care hospital under state insurance/childbirth in a specialized maternity care hospital with a paid contract and option for a birth team of choice/home birth). There were no differences in the severity of symptoms of either postpartum depression or postpartum PTSD depending on the place of childbirth (rural area, urban settlement, city) ( $F = 0.021$ ,  $p = 0.979$ ,  $F = 0.685$ ,  $p = 0.504$ , respectively). **Discussion.** The results of this work are consistent with previous studies in Russia and other countries, indicating the importance of socioeconomic factors in the etiology of postpartum depression and PTSD. The development of mental health support programs for women with low economic status during pregnancy, childbirth, and postpartum period may become promising avenues for the prevention of postpartum depression and PTSD.

**Keywords:** postpartum depression, socioeconomic factors, social factors, economic status, perinatal disorders, maternal depression, childbirth experience, perinatal period, risk factors

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## Introduction

Perinatal period is associated with an increased risk of developing mental disorders (Pawluski, Lonstein, Fleming, 2017). One of the most common and dangerous disorders is postpartum depression (PPD). According to statistics, 10 to 26% of women experience PPD (Shorey et al., 2018). According to our previous studies in Russia, the prevalence of the disorder is up to 30% (Yakupova & Suarez, 2021). PPD is associated with increased risk of suicide (Shi et al., 2018; Mangla, 2019), difficulties in bonding between mother and child (Oyetunji & Chandra, 2020), shorter breastfeeding period (Silva et al., 2017). Infants of women with PPD are significantly more often have health problems, sleep disorders, and delayed motor, cognitive, linguistic, social, and emotional development (Slomian et al., 2019; Aoyagi & Tsuchiya, 2019).

Risk factors for PPD include a history of depression, emotional and physical abuse by a partner, belonging to an ethnic minority, poverty and financial difficulties, unwanted pregnancy, and traumatic birth experience (Perry, Ettinger, Mendelson, Huynh-Nhu, 2011; Thomas & Schetter, 2022; Choi, Mersky, Janczewski, Goyal, 2022; Cankaya & Atas, 2022). Many studies have noted that the lack of social support can increase the risk of depression (Abenova, Mysayev, Kanya, Turliuc, Jamedinova, 2022; Shin et al., 2020).

According to the review studies, post-traumatic stress disorder (PTSD) following childbirth is as common as PPD, with prevalence ranging from 3 to 33% in different countries (Grekin & O'Hara, 2014; Dickmen-Yildiz, Ayers, Phillips, 2016). However, postpartum PTSD caught researchers' interest relatively recently (Grekin & O'Hara, 2014). Risk factors for postpartum PTSD include complications during childbirth, danger to the child's life, obstetric violence, low socioeconomic status, belonging to an ethnic minority, lack of access to high-quality medical care, lack of support during labor, fear of childbirth, previous traumatic experience (Freedman, Reshef, Weiniger, 2020; Dickmen-Yildiz, Ayers, Phillips, 2018).

Postpartum PTSD, as well as PPD, has negative impact on child's development and mother's life quality. Postpartum PTSD can affect the quality of daily functioning, the process of bonding, and the ability to cope with parental stress (Dekel et al., 2019; Romero et al., 2021). Similar to PPD, postpartum PTSD is associated with lower rates of breastfeeding (Cook, Ayers, Horsch, 2018; Garthus-Niegel et al., 2018) and difficulties in attachment formation between mother and child (Handelzalts et al., 2021).

As noted above, childbirth experience plays a significant role in the likelihood of developing PPD and PTSD. In addition to medical complications and a child's health problems, there are also psychological factors of traumatic birth experience. Thus, women who face obstetric violence during childbirth with multiple medical interventions are significantly more likely to experience symptoms of PTSD following childbirth (Yakupova & Suarez, 2022; Simpson & Catling, 2016;



Martinez-Vazques, Rodriguez-Almagro, Hernandez-Martinez, Martinez-Galiano, 2021).

Psychological safety and comfort during childbirth largely depend on the conditions of the childbirth facilities and the characteristics of the maternity care system. Russian maternal and child healthcare system is currently undergoing structural and value-based changes (Borozdina & Novkunskaia, 2022); it is becoming more humanistic and patient-orientated. The demand for agency on the part of patients is also increasing, with many women actively defending their rights during childbirth and making their needs visible (Kuksa, 2021; Ozhiganova, 2020). However, the opportunities for support during labor are still limited and the problems of ethical communication with patients is still present (Temkina et al., 2021). Furthermore, the presence of a doula or a private midwife during labor is available only with a paid contract with the maternity hospital (Kuksa, 2021). Moreover, the possibility of support depends significantly on the region and the particular maternity hospital where the birth takes place (Ozhiganova, Molodtsova, 2020; Kuksa, 2021). During the pandemic, opportunities to accompany pregnant women during labor were limited in even for the father of the child many maternity hospitals (Ozhiganova, Molodtsova, 2020). Such restrictions have negatively affected the mental health of mothers around the world (Gao et al., 2022).

To date, convincing evidence indicates the importance of supportive healthcare providers for a woman's satisfaction with childbirth and improvement of their outcomes (Futch Thurston, Abrams, Dreher, Ostrowski, Wright, 2019). It is also important to respect the childbirth plan, respond to a woman's requests, and include her in making decisions about childbirth (Hernandez-Martinez et al., 2019). The protective effects of psychological comfort and support during labor against postpartum disorders have been shown in multiple studies (Turkmen et al., 2020; Yakupova & Suarez, 2022; Falconi et al., 2022). However, often considering the woman's requests during childbirth and the possibility of support is available only when a paid contract is concluded in the maternity hospital (Kuksa, 2021). Thus, the role of socioeconomic factors in reducing the potential risks of postpartum disorders becomes evident.

Medical anthropologists are actively studying the transformation of the healthcare system and new patient needs. However, these changes remain outside the field of research of psychologists, and the question of their association with the psychological comfort of women remains open.

PPD and PTSD are complex conditions that are affected by many factors, both genetic and social. Both disorders have long-term consequences for mother's quality of life and her child's development. The childbirth experience plays an important role in the development of PPD and postpartum PTSD. It is important to investigate these disorders in the context of socioeconomic factors in Russia and consider the unique characteristics of its healthcare system. There are no such studies to date, and no opportunities to rely on any statistical data. They need to be obtained not only for the development of fundamental science, but also for consideration of possible practical applications, improvement of the maternity care system and perinatal support for women. The purpose of this study is to investigate the relationship between the risks of PPD and PTSD and the following variables: family income level, place of childbirth (city, urban settlement, or rural area), and types of childbirth healthcare plan (childbirth in a specialized maternity care hospital under state insurance, childbirth in a specialized maternity care hospital with a paid contract and option for a birth team of choice, home birth).



## Methods

### *Study design*

The study took place from May to September 2022. Women were invited to participate in the study via courses for expectant parents, parent communities, polyclinics, and maternity hospitals. The web-based survey was conducted using the 'Testograph' online tool. The study involved 2,579 women aged 18 to 43 years. The criteria for inclusion in the study were: age over 18 years, proficiency in Russian language, childbirth in Russia, and childbirth that occurred no more than a year ago. Exclusion criteria included age under 18, childbirth outside of Russia, more than a year since childbirth, and antenatal death of the child.

### *Ethical considerations*

The study was approved by the Ethical Committee of the Russian Psychological Society. Participation in the study was voluntary, and only women over the age of 18 were included. The survey was conducted online using the 'Testograph' platform. Prior to the survey, the participants confirmed that they were 18 years or older and provided informed consent to participate in the study.

## Methods

### *Socio-demographic and obstetric characteristics*

We asked the study participants to provide socio-demographic data: the mother's age at the time of the study, the child's age (months), the number of children, the status of family relations (married, cohabiting with a partner, single, divorced, in relationship without cohabiting), the level of education (primary, secondary, higher). We also asked the participants to mark the place of childbirth (city, urban settlement, or rural area) and indicate their family income level in comparison to other residents of the area they live in (low, middle, high).

Information about childbirth was collected: gestational week at birth, type of childbirth (vaginal birth, instrumental birth, emergency caesarean birth, planned caesarean birth), what was the type of childbirth healthcare plan (childbirth in a specialized maternity care hospital under state insurance, childbirth in a specialized maternity care hospital with a paid contract and option for a birth team of choice, home birth).

### *Postpartum depression*

PPD was measured using the Russian version of Edinburgh Postnatal Depression Scale (Cox, Holden, Sagovsky, 1987) in Yakupova's adaptation (2018). The scale consists of 10 statements, which are rated using a 4-point scale (from 0 to 3). Thirty points are the maximum score, and ten points are considered a cut-off point for clinically relevant symptoms of depression. The Russian version of the Edinburgh Scale demonstrated high reliability ( $\alpha = 0.87$ ) (Yakupova, 2018).

### *Postpartum PTSD*

To assess postpartum PTSD, we used the Russian version of the City Birth Trauma Scale (Ayers, Wright, Thornton, 2018) in Yakupova's adaptation (2020). The scale consists of 29 questions that meet the DSM-5 criteria. The respondent is asked to estimate the frequency of symptoms over the last week on a scale from 0 ('never') to 3 ('5 or more times'). A higher score corresponds to more pronounced symptoms of PTSD. Questions related to criterion A of the DSM-5 are evaluated as 'yes/no'. Stress, disruption of daily functioning, and possible physical reasons of the

symptoms of PTSD are evaluated as 'yes/no/partly'. The Russian version of the City Birth Trauma Scale demonstrated high reliability ( $\alpha = 0.89$ ) (Yakupova, 2020).

### **Statistical analysis**

We investigated the relationship between the severity of symptoms of PPD and postpartum PTSD and the level of education, marital status, place of childbirth, socioeconomic status, type of childbirth healthcare plan (state insurance, paid contract, home birth) and type of childbirth using ANOVA. We analyzed the correlation between symptoms of PPD and postpartum PTSD and the age of the participants, gestational age, time after childbirth (months), and the number of children using linear regression.

We studied the relationship between the place of childbirth, type of childbirth, socioeconomic status, and type of childbirth healthcare plan using Pearson's Chi-square.

All statistical procedures were adjusted for covariates: maternal age at childbirth, the level of education, marital status, the time after childbirth, gestational age, and the place of childbirth.

Statistical analysis was performed using SPSS Statistics 25 software.

**Table 1**

*Sample characteristics*

Characteristics	Study Participants (n=2579)		
	Mean/ N	SD/%	Range
Age	31.14	6.92	18-43
Education	Primary	44	1.7
	Secondary	185	7.2
	Higher	2350	91.1
Marital status	Married	2366	91.7
	Cohabiting with a partner	131	5
	Single	20	0.7
	Divorced	31	1.2
	Have a non-cohabiting partner	20	0.7

Characteristics	Study Participants (n=2579)		
	Mean/ N	SD/%	Range
Time since childbirth	5.48	3.51	0-12
Gestational age at birth	39.58	1.69	24.0-43.0
Type of childbirth	Vaginal birth	18.81	72.9
	Emergency caesarean birth	407	15.8
	Planned caesarean birth	227	8.8
	Instrumental birth	64	2.5
Place of childbirth	City	23.77	92.2
	Urban settlement	108	4.2
	Rural area	94	3.6
Number of children	1	1627	63
	2	700	27.3
	3+	252	9.7
	Childbirth in a specialized maternity care hospital under state insurance	1523	59.1
Type of childbirth healthcare plan	Childbirth in a specialized maternity care hospital with a paid contract and option for a birth team of choice	984	38.1
	Home birth	72	2.8
Postpartum PTSD scale	15.79	10.08	0-53
Postpartum depression scale	9.08	6.15	0-30
Socioeconomic status	Low	258	10.1
	Middle	1699	66.2
	High	607	23.7

## Results

The socio-demographic and obstetric characteristics of the sample are presented in Table 1 (Table 1).

Most of the participants are women with higher education, living in cities, and officially married. According to the postpartum depression screening scale, 37.4% have clinically significant depressive symptoms, 45.9% of study participants have severe symptoms of postpartum PTSD, and 16% of women meet all criteria for postpartum PTSD diagnosis according to DSM - V.

Symptoms of PPD and PTSD are significantly correlated ( $\rho = 0.651$ ,  $p < 0.001$ ). Furthermore, severity of PPD symptoms is negatively correlated with age ( $B = -0.071$ , 95% CI 0.15; -0.04,  $p < 0.001$ ) and gestational age ( $B = -0.065$ , 95% CI -0.37; -0.09,  $p = 0.001$ ). No significant associations were found between the time since childbirth and the symptoms of PPD. The level of education and marital status are significantly associated with the level of severity of symptoms of PPD ( $F = 9.712$ ,  $p < 0.001$  and  $F = 6.696$ ,  $p < 0.001$ , respectively). The lowest rates of PPD are observed among women who are married and have higher education (Table 2).

The severity of symptoms of postpartum PTSD negatively correlates with maternal age ( $B = -0.073$ , 95% CI -0.26; -0.08,  $p < 0.001$ ) and gestational age ( $B = -0.040$ , 95% CI -0.46; -0.01,  $p = 0.041$ ). The severity of symptoms of postpartum PTSD further significantly correlates with the time since childbirth: over time, the severity of symptoms increases ( $B = 0.122$ , 95% CI 0.23; 0.45,  $p < 0.001$ ).

**Table 2**

Mean values of postpartum depression and postpartum PTSD for the analyzed variables

Variables		Average PRD values (range 0-30)		Average PTSD values (range 0-53)	
			SD		SD
Marital status	Married	8.91	6.06	15.53	10.03
	Cohabiting with a partner	9.81	6.61	16.92	9.28
	Single	11.55	6.37	21.50	10.71
	Divorced	13.58	6.17	23.19	9.85
	Have a non-cohabiting partner	11.45	6.51	15.50	10.26
Education	Primary	11.25	6.47	18.70	11.68
	Secondary	10.66	6.40	16.04	10.90
	Higher	8.92	6.10	15.72	9.98

Variables		Average PRD values (range 0-30)		Average PTSD values (range 0-53)	
			SD		SD
Type of childbirth	Vaginal birth	8.67	5.96	14.90	9.85
	Instrumental birth	10.49	6.51	19.06	11.16
	Emergency Caesarean birth	10.03	6.39	18.48	10.31
	Planned Caesarean birth	10.09	6.49	16.98	9.60
Place of childbirth	City	9.04	6.12	15.77	10.04
	Urban settlement	9.21	6.36	14.81	10.18
	Rural area	9.15	5.96	16.35	9.96
Type of childbirth healthcare plan	Childbirth in a specialized maternity care hospital under state insurance	9.50	6.11	16.37	10.17
	Childbirth in a specialized maternity care hospital with a paid contract and option for a birth team of choice	8.54	6.11	15.10	9.82
	Home birth	6.61	5.48	11.36	8.67
Socio-economic status	Low	11.06	6.73	18.66	11.05
	Middle	9.03	5.97	15.40	9.70
	High	8.28	6.10	15.48	10.35

Marital status was also associated with the severity of symptoms of postpartum PTSD ( $F = 6.684$ ,  $p < 0.001$ ). Single women have the highest mean scores on the PTSD scale (Table 2). There were no significant associations between the level of education PTSD symptoms.

### **Place of childbirth**

There were no differences in the severity of symptoms of PPD and postpartum PTSD depending on the place of childbirth (rural area, urban settlement and city) ( $F = 0.021$ ,  $p = 0.979$ ,  $F = 0.685$ ,  $p = 0.504$ , respectively). However, there was an association between the place of childbirth and the type of childbirth healthcare plan (Pearson's Chi-square = 13.1,  $p = 0.011$ ). Childbirth with

a paid contract in the maternity hospital is significantly more likely to take place in cities (Pearson's Chi-square = 9.622,  $p = 0.008$ ).

### ***Delivery format***

We found significant differences in the severity of symptoms of PPD depending on the type of childbirth healthcare plan ( $F = 10.780$ ,  $p < 0.001$ ). The lowest PPD symptoms were in the group of women who gave birth at home (Table 2). A statistically significant association was also found between the symptoms of postpartum PTSD and the type of childbirth healthcare plan ( $F = 10.410$ ,  $p < 0.001$ ). The lowest postpartum PTSD symptoms were also observed in the group of women who gave birth at home (Table 2).

There is a significant association between the type of childbirth healthcare plan and type of childbirth (Pearson Chi-square = 28,873,  $p < 0,001$ ). Accordingly, home births are predominantly vaginal (Pearson Chi-square = 27,485,  $p < 0,001$ ). Differences in the types of childbirth, depending on whether they were provided with state medical insurance or with a paid contract with a maternity hospital, were not identified.

### ***Types of childbirth***

The severity of postpartum PTSD symptoms is significantly associated with the type of childbirth ( $F = 17,968$ ,  $p < 0,001$ ). The highest mean PTSD symptoms are observed in the group of instrumental birth and emergency caesarean birth (Table 2). We also found a relationship between the type of childbirth and the severity of the symptoms of PPD ( $F = 7,877$ ,  $p < 0,001$ ). The lowest mean PPD symptoms are observed in the vaginal birth group (Table 2).

### ***Socioeconomic status***

There were statistically significant differences in the severity of PPD symptoms depending on the socioeconomic status ( $F = 13,678$ ,  $p < 0,001$ ). The lowest mean PPD symptoms are observed in the group with high socioeconomic status (Table 2). Statistically significant differences were also found in the severity of postpartum PTSD symptoms, depending on the socioeconomic status of a woman ( $F = 10,235$ ,  $p < 0,001$ ). The highest mean postpartum PTSD symptoms are observed in the group with low socioeconomic status (Table 2).

## **Discussion**

The purpose of the study was to investigate the association between the risks of developing PPD and postpartum PTSD, obstetric characteristics, and socioeconomic factors. The main variables were the level of family income, the place of childbirth (city, urban settlement, or rural area), and the type of childbirth healthcare plan (state insurance, paid contract, home birth).

The majority of the participants of this study have higher education, live in cities, and are officially married. 37,4 % of women have clinically significant symptoms of PPD, 45,9 % have severe symptoms of postpartum PTSD, and 16 % of women meet all DSM-V diagnostic criteria for postpartum PTSD. Data on the prevalence of postpartum PTSD are generally consistent with statistics across European countries (Grekin & O'Hara, 2014; Dickmen-Yildiz, Ayers & Phillips, 2016).

The statistics of PPD are slightly higher than those globally. A meta-analysis of 58 studies shows an average prevalence of 17% for PPD for women without a history of depression, with figures reaching 26% in the Middle East and about 8% in Europe (Shorey et al., 2018). In the

systematic review by Gelaye, Rondon, Araya, and Williams (2016), it is shown that one in four women experience PPD in middle- and low-income countries. The high rates of depression in our study may be due to the nature of the sample. It is possible that women who suffer from depression are more likely to participate in the study. In addition, there are women with and without a history of depression in our sample, which can increase the statistics. At the same time, our data suggest that PPD symptoms are significantly lower among married women with higher education, who constitute the majority of the participants in our study. Thus, unmarried women with elementary and secondary education might have even higher PPD symptoms and they are the ones driving the statistics higher. In the absence of official statistics of mental disorders, it is difficult to speculate about the true extent of the PPD prevalence. However, the problem of mental health of mothers is evident.

According to the results of our work, the frequency of PPD is associated with the marital status of the study participants. Milder symptoms were observed among women with a partner (in a legal or civil marriage, also without cohabitation). More severe symptoms were observed in divorced or single women. These observations replicate previously found associations: the marital status of a woman was found to be a risk factor for PPD in several earlier studies from different countries (Akincigil, Munch & Niemczyk, 2010; Segre et al., 2007). However, recent studies that investigate marital status as a risk factor for PPD and other mental health problems, mainly focus on distinguishing between married and single mothers and assessing the contribution of the quality of their relationship with their partners, with a special emphasis on the latter. That is, an unsatisfactory relationship with a partner or spouse is considered a risk factor for PPD (Hutchens & Kearney, 2020). The current study methodology does not allow us to assess the differences in the qualitative characteristics of family and/or partnership relations among the respondents. However, given the relevance of the topic of mental disorders following childbirth and their association with sociodemographic characteristics, it is worth highlighting the contribution of this factor in future studies. A woman raising a child without a partner may face a greater burden of caring for her baby and solving all the family problems. In turn, this load is associated with higher risk of depression (Yakupova & Liutsko, 2020).

Educational status, which is one of the most commonly used indicators of socioeconomic status, can be associated with a variety of psychiatric disorders, including depression, PPD, and PTSD (Lorant et al., 2003). At the same time, the direct correlation between the level of education and the risk of PPD varies significantly (Lane et al., 1997; Anding, Röhrle, Grieshop, Schücking & Christiansen, 2016). It may depend on other factors, such as the time and place of receiving education and cultural and biological factors in general. However, the recent major work by Matsumura, Hamazaki, Tsuchida, Kasamatsu, and Inadera (2019) demonstrated that mothers' low education is an independent risk factor for PPD. The results of our study are in line with this evidence, as at lower levels of education (elementary and secondary), the prevalence of PPD was significantly higher than among respondents with a university degree. This association may be explained by women's lower awareness of mental disorders and opportunities for their treatment (Kondirolli & Sunder, 2022). There are studies that demonstrate the association of the level of education with the self-assessment skills (Lozupone et al., 2022). The level of education may also correlate with the socioeconomic status of a woman.

Our results further show statistically significant association between socioeconomic status and PPD. These findings are consistent with research data from different countries. Parental

depression is generally correlated with poverty-related stress (McDonald, Thompson, Perzow, Joos & Wadsworth, 2020; Wadsworth et al., 2011). Zhang et al. (2022) showed a significant relationship between PPD and low family socioeconomic status. Maternal hardship acted as a mediator variable between depression and low socioeconomic status. There is a probability that women with low socioeconomic status are more likely to experience difficulties in motherhood due to limited access to domestic comfort, childcare, healthcare and timely assistance, etc. The study by Rokicki et al. (2022) confirms the link between PPD, low socioeconomic status, and maternal hardship.

Our data also demonstrate significant association between a woman's low socioeconomic status and the increased risk of postpartum PTSD. Researchers identify socioeconomic status as a risk factor for developing PTSD (Freedman et al., 2020; Dickmen-Yildiz et al., 2018). Particularly, this association can be explained by cultural characteristics and characteristics of the healthcare system. That is, in Russia, women with high socioeconomic status more often live in cities and have greater access to high-quality healthcare. They can choose a maternity hospital. Moreover, paid contracts with maternity hospitals are more often registered in cities. In many maternity hospitals, individual birth support is available only with a paid contract (Ozhiganova & Molodtsova, 2020). Individual birth support is associated with greater birth satisfaction and reduced risks of psychological trauma (Hodnett, Gates, Hofmeyr, Sakala & Weston, 2011; Ulfeddottir et al., 2014). Furthermore, in large maternity hospitals in cities, humanistic and tactful communication with patients is developing more actively (Temkina et al., 2021). Proper communication with healthcare providers, support and comfort during childbirth are associated with a lower risks of developing PTSD following childbirth (Yakupova et al., 2022; De Schepper et al., 2016; Shiva et al., 2021).

Women with low socioeconomic status are statistically more likely to experience domestic violence and have a traumatic past experience (Satyanarayana et al., 2015; Goodman, Smyth, Borges, Singer, 2009), which are strong risk factors for both PPD and postpartum PTSD (Gelaye et al., 2016; Van Heumen et al., 2018).

Intriguingly, we did not find a significant association between the severity of symptoms of PPD and PTSD and the place where the birth took place: in the city, in an urban-type settlement, or in a rural area. Similar results were demonstrated by authors from India who studied postpartum PTSD (Shiva et al., 2021). However, UK researchers found a significantly higher risk of developing perinatal depression and anxiety among women living in rural areas (Ginja et al., 2020). In contrast, the group of scientists from Canada showed that women living in cities with a population of more than 500,000 people are significantly more likely to experience symptoms of PPD (Vigod et al., 2013). In high income countries, where childbirth is not only a medical event but also a normal social event in the lives of women who have choices of maternity care and childbirth settings, the place of birth might matter more than in middle- and low-income countries where childbirth is considered as a gynecological process requiring medical support (Ghanbari-Homayi et al., 2019). However, this ambiguity in the results also suggests that the relationship between PPD and postpartum PTSD with the place of birth is complex and mediated by other factors. In our study, we did not find a direct correlation between the place of birth and mental health problems after delivery, but we found a correlation between the place of birth and the type of childbirth healthcare plan. In turn, the type of childbirth healthcare plan was significantly correlated with the severity of symptoms of postpartum depression and PTSD. That is, the lowest risk of PPD and postpartum PTSD is observed in women whose births



took place at home, and the highest is in those whose births took place in the state maternity hospitals. These results are in line with previous work from Russia (Yakupova & Suarez, 2022; Yakupova, Suarez & Kharchenko, 2022), and global statistics (Furuta, Sandall, Cooper & Bick, 2016; MacKinnon et al., 2017; Rijnders et al., 2008), where the lowest risk of postpartum PTSD and other mental health problems after childbirth was observed in the group of participants who had a planned home birth. It is of importance that, according to qualitative studies, women are statistically significantly more likely to talk about their choice made in favor of a planned home birth after the first traumatic birth experience in a maternity hospital or other medical institution (Bernhard, Zielinski, Ackerson & English, 2014). In Russia, medical support for home births is still illegal, which presents high medical risks. Despite evidence-based healthcare data on home birth safety for women without known risk factors and their babies (Hutton, Reitsma, Simioni, Brunton & Kaufman, 2019; Reitsma, Simioni, Brunton, Kaufman & Hutton, 2020), the topic of home birth remains marginalized. Therefore, women who decide to have a home birth may be considered a special group, which is likely to be characterized by a special attitude toward childbirth and more thorough preparation (Ozhiganova, 2019). A more detailed study of the motives and methods of preparation for childbirth in women who decided to have a home birth may be a promising direction in the prevention of PPD and postpartum PTSD.

According to our results, postpartum PTSD was significantly associated with the type of childbirth. The highest scores were among women with emergency caesarean or instrumental vaginal birth. These findings are consistent with a previous study on a Russian sample (Yakupova & Suarez, 2022), indicating their reliability. Furthermore, these results are in line with studies from other countries. In the study from the United States of America, where instrumental delivery and emergency caesarean birth were included in the same category, there was a significant association of these types of childbirth and notable symptoms of PTSD after delivery (Dekel et al., 2019). In a study from Greece, women were significantly more likely to experience symptoms of postpartum PTSD if they gave birth via emergency caesarean (Orovou et al., 2020). Unexpected medical procedures during vaginal delivery and unplanned caesarean births can be traumatic experiences and become potential risk factors for postpartum PTSD due to their unpredictable nature, possible complications during delivery, potential danger to the baby, and the lack of awareness and preparedness of women to these birth outcomes.

#### Conclusion

Postpartum PTSD and postpartum depression are complex disorders with a number of risk factors that are related not only to complications during childbirth and physiological characteristics, but also maternal socioeconomic status and the conditions of childbirth. It is important to consider childbirth and postpartum period in the context of a biopsychosocial model. An important task of our society is the prevention of postpartum disorders and psychological support of socially vulnerable mothers (those who raise children without a partner, have a low socioeconomic status and level of education), and psychological education on postpartum disorders and providing comfort during childbirth for all women.

Therefore:

1. Symptoms of postpartum depression (PPD) are lowest in women with higher education and a registered marriage.
2. The type of childbirth is associated with perinatal disorders. Postpartum PTSD rates are higher in women who had instrumental and emergency caesarean births. Postpartum depression

rates are lower in women with vaginal delivery.

3. The mildest symptoms of PPD and postpartum PTSD were observed in the group of women who had a home birth.
4. High socioeconomic status is associated with lower PPD symptoms. Low socioeconomic status is associated with higher PTSD symptoms.

### **Limitations**

The first limitation of our study is the way the data were collected, namely anonymous online survey. Researchers and participants did not have interpersonal contact, which, on the one hand, may limit the level of participants' trust to the authors, and on the other hand, allowed them to share difficult experiences. Sadly, this effect cannot be ruled out. Second, all data were based on self-reports, without extracts from medical records and childbirth records provided by maternity hospitals. The rates of PPD and postpartum PTSD symptoms are screening rather than diagnostic tools. Finally, the third significant limitation relates to the characteristics of our sample, where most participants are married, have higher education, and live in cities. It limits the possibility to generalize our results to other populations. At the same time, the composition of our sample generally corresponds to the composition of Russian society: 57 % of citizens have higher and secondary education, less than 5 % have elementary education (Agranovich, Ermachkova & Seliverstova, 2019). Furthermore, according to 2021 data, 75 % of citizens live in cities (Website 'Rosstat', 'Demography' section (rosstat.gov.ru, rosstat.gov.ru/folder/12781)).

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## **Child-Parent Relationships and Individual Experience as Structural Determinants of Victimization in Adolescence**

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### **Abstract**

**Introduction.** There are not enough studies in the scientific literature that designate the specifics of the determinants of a particular type of victim behaviour. The study aims to examine the structural determination of the predisposition and realization of various forms of victim behaviour in adolescence by child-parent relationships and individual experience. For the first time, we analyzed the combination of social factors, which represents a holistic synthesis that directly ensures the realization of forms of victimization during adolescence. **Methods.** The study (total number of respondents – 340) involved young people aged 16 to 18 years, of which 191 were girls and 149 were boys. The study used the following methods: The Biographical Inventory for the Diagnosis of Behavioural Disorders (BIV) (Bottscher, Jager & Lischer, adapted by V. A. Chiker), Child-Parent Relations of Adolescents (CPRA) (P. Troyanovskaya), Technique to Study the Propensity to Victim Behaviour (O. O. Andronnikova). For data processing and analysis, Pearson's chi-square test and multiple regression analysis (stepwise regression) were used. The regression analysis shows the prognostic influence of the child-parent relationships models and social factors on the parameters that reflect the tendency to victim behaviour in young men ( $p < 0.000$ ). **Results.** The specificity of structural determinants (child-parent relations, negative experience in childhood) of various types of victim behaviour is revealed. The analysis of regression models allows us to conclude about the prognostic influence of social factors on the emergence of inclination for specific types of victim behaviour, taking into account the contribution of each factor to the overall system of determinants. **Discussion.** The use of the polysystemic principle made it possible to identify the mutual structural influence of social factors, exceeding their simple conjunction, on the inclination to implement specific forms of victimization.

**Keywords:** child-parent relationships, family upbringing, victim behaviour, individual experience, experience of violence, punishment, adolescence, determinants of victimization, negative experiences, polysystemic principle

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## Introduction

The issues of determining victimization in adolescence are especially relevant in the light of the challenges of modern society, when, on the one hand, there is a significant increase in the stress loads of social, psychological, and informational genesis, and on the other hand, the task of educating a new type of personality with a high level of psychological well-being arises.

Fairly large attention in modern Russian and foreign research is paid to the influence of child-parent relationships and the experience of feelings in childhood on the specifics of personal characteristics, self-perception, and behaviour of a person at a later age. The study of family predicates and correlates for the disturbance of self-attitude and social interaction, leading to victimization, has direct theoretical and practical significance.

In foreign psychology, interest in the family in the context of the emergence of destructive behaviour was manifested in the early theories of social disorganization (Gove & Crutchfield, 1982) and the model of T. Hirschi (Hirschi, 1969) about social ties. The influence of family on criminal behaviour and its changing with age was considered in the studies of T. E. Moffitt (Moffitt, 1993) and J. R. Patterson (Patterson & Yoerger, 2002). The authors analyzed the mutual conditioning of destructive behaviours of adolescents and the toughening of parental disciplinary strategies, leading to more severe punishments and less involvement of parents in the upbringing process, which, in turn, increased the risk of delinquent behaviour of adolescents, which persisted into adulthood (Ballano, 2019; Moffitt, 1993; Patterson & Yoerger, 2002).

In modern Russian psychology, the issues of the influence of the family and the specifics of child-parent relations on the child's destructive behaviour are covered in several scientific publications (Avdeeva, Khoffman, 2019; Belobrykina, Limonchenko, 2017; Ermolaeva, Smirnova, 2020; Kuznetsova, 2018). Thus, Ermolaeva and Smirnova (2020) note the importance of emerging deficits (for example, in emotional warmth, attention, contact, acceptance, etc.) in the behavioural strategies formation for the child and their personality. Special attention is paid to the style of parenting and the attitude toward the child in the family as a factor in the emergence of personal destruction and deviant behaviours of the child (Perevozkin, Andronnikova, Perevozkina, 2018).

According to researchers, the following can lead to the emergence of victim forms of behaviour and social failure in the future: alienation in the family (Kleiberg, 2018; Kuznetsova, 2018), punishment (Kuznetsova, 2018; Mwachofi, Imai & Bell, 2020), abusive treatment (Mwachofi et al., 2020; Schilling, Aseltine & Gore, 2007), lack of love and emotional intimacy (Sobol'nikov, 2016; Troshina, 2017), disturbance of effective communications (Rean, Konovalov, Novikova, 2015), low parental competence (Rudenskii, 2018), the inability of parents to adequately perform their functions (Biktagirova, Valeeva, Drozdikova-Zaripova, Kalatskaya, Kostyunina, 2019).

According to Russian and foreign authors, people who have been subjected to violence in their families will demonstrate several specific features that indicate victimization. As the most frequently observed symptoms, it is decided to allocate: emotional difficulties (panic, anxiety, depression, etc.), dissociative disorders, physical problems (increased growth of traumatization,

psychosomatic diseases, autoimmune disorders), self-esteem disorders, and much more (Cicchetti & Banny, 2014; Levenson, Willis & Prescott, 2016).

The study by Mwachofi, Imai & Bell (2020) was devoted to the investigation of the impact of childhood events on the mental health of North Carolina adults (19187 observations). It was revealed that adults with a low level of mental health and a tendency to depression with a significant ( $p < 0.001$ ) difference level in childhood experienced the following events: abuse by parents, divorce of parents, alcoholism or drug addiction of one parent, beating of one parent by another, fights between parents, mental illness of one of the parents, regular physical punishment or beating of children, sexual violence. These data are consistent with earlier studies by Schilling, Aseltine & Gore (2007), noting, in addition, the gender and ethnic difference in the influence of negative childhood experiences on the occurrence of antisocial behaviour, drug use, and a tendency to emotional disorders. Almuneef, ElChoueiry, Saleheen et al. (2017) studied gender differences in the impact of adverse childhood experiences on adult health in Saudi Arabia in a sample of 10156 people. The authors noted that the experience of violence in childhood in men is associated with the risk of alcohol consumption, while women who were abused in childhood are more prone to depression and anxiety.

Experiencing a victimizing traumatic experience in childhood has an extremely negative impact on self-attitude and self-concept. Galimzyanova (2006), studying the specifics of the self-concept of adults who were subjected to abusive treatment and punishment in childhood, notes the significance of differences in the structure of the self-concept of those who were subjected to violence from participants who do not have such experience. There are differences in self-image, self-attitude, degree of self-actualization, and the level of tension of the leading defence mechanisms. The author empirically identified the following key themes of the most significant childhood experiences: rejection by loved ones, forsakenness–abandonment, shame–humiliation, betrayal, and injustice.

Moagi, van Der Wath, Jiyane & Rikhotso (2021) investigated the impact of negative childhood experiences in the context of changes in sexual orientation. The authors note that in the group of people with homosexual orientation, the prevalence of adverse situations that occurred in childhood is significantly higher than in the heterosexual peers group.

Hughes et al. (2017) analyzed 37 studies examining the effects of various episodes of violence in childhood on the state of physical and mental well-being in adulthood. The authors note the patterns of relationships between the number of violent episodes, their typical distribution, and the specifics of the negative consequences of the victim plan that arise in adulthood. So, in the situation of having more than six episodes of violence in childhood, an adult further had an increased risk of insecure sexual behaviour, mental disorders, and alcoholism. In the presence of seven or more episodes of violence experienced in childhood, adults have a high risk of alcoholism, interpersonal violence, and self-injurious behaviour (Hughes et al., 2017).

Nurius, Green, Logan-Greene & Borja (2015) cite a study that allows us to conclude about the influence of toxic stressors experienced at an early age on parameters such as “perception of well-being”, “psychological stress”, and “disruption of daily activities”. The authors note that experiencing problems in childhood creates multilevel stress in a person, which leads to significant dysregulation of the hypothalamic-pituitary-adrenal axis of the brain, contributes to poor health, lower education, and lower socio-economic achievements in adulthood, destructive behavioural habits, emotional disorders (depression, anxiety, aggression, risk suicide). It can also lead to

limited protective relationships, creating a significant shortage of resources, threatening a person's adaptive abilities, and leading to pronounced victimization. Unfavourable situations at an early age, according to the authors (Nurius et al., 2015), serve as primary stressors that lay down disturbed patterns of interaction and inability to cope with secondary stressors, creating problems in many areas of life (in education, professional development, interpersonal relationships). The authors also noted the cascading effect of the increase in distress: the experience of traumatization received in childhood in a dysfunctional social environment leads to an increase in negative consequences for mental health, and reinforcement by secondary traumatization triggers processes that threaten mental health and social adaptation at the level of psychobiological mechanisms. This is confirmed by research by Larkin, Shields & Anda (2012).

Lehmann et al. (2020) in their studies note a disturbance in social engagement and attachment disorder in adopted children who have been abused by foster parents. Among the primary behavioural disorders, the authors note difficulties associated with attachment, inability to seek solace, inability to accept comfort, increased vigilance, lack of remorse, and lack of empathy.

Dowd (2019) notes the impact of childhood violence not only on the mental health and social well-being of an adult but also on the subsequent upbringing of their children and their health. The intergenerational effect of childhood trauma is also noted in their studies by other authors (McDonnell & Valentino, 2016; Schickedanz, Halfon, Sastry, & Chung, 2018). Thus, McDonnell & Valentino (2016) found patterns of maladaptive socio-emotional symptoms occurrence in children whose mothers experienced abuse in childhood. Schickedanz et al. (2018) note that parents who are abused in childhood are more likely to have children with behavioural and health problems. The authors investigate how the experience of violence in childhood affects parents' behaviour problems in their children. In the study, an unfavourable childhood experience of a parent was associated with hyperactivity, emotional distress, substance use, and behavioural disorders in their children. At the same time, the authors noted a stronger connection between negative childhood experiences in mothers than in fathers (Andersson, Annerbäck, Söndergaard, Hallqvist & Kristiansson, 2021). Although reliability of the intergenerational transmission of the trauma of violence and paternal influence is indicated (Schilling, Aseltine & Gore, 2007). Folger et al. (2018) note that maternal and paternal exposure to adverse childhood victimization experiences affects the ability to effectively solve problems, speech development delay, personal and social qualities and motor skills of their children.

Stoltenborgh, Bakermans-Kranenburg, Alink, and van IJzendoorn (2012), analyzing the prevalence of emotional and physical violence in several empirical studies, conclude that this problem is universal and requires special attention since violence mediates changes not only directly in a person but is also transmitted further through generations.

Therefore, the consequences of negative childhood experiences associated with violence, punishment, and the specifics of child-parent relationships do not disappear with age. In a situation of repeated victimization occurring in the family system, they destructively affect many aspects of life. However, there are not enough studies in the scientific literature that designate the specifics of the determinants of a particular type of victim behaviour. Our study aims to investigate the structural determination of predisposition and the implementation of various forms of victim behaviour in adolescence.

## Methods

According to our purpose, we conducted a study involving examination of the structural determination of predisposition and implementation of various forms of victim behaviour in adolescence.

The purpose of the study led to the formulation of the hypothesis, which consists of the assumption that the combination of social factors exceeds their simple conjunction and represents a holistic synthesis that directly ensures the implementation of victimization forms during adolescence.

Initially, 548 young respondents living in Novosibirsk participated in the study. The survey of the respondents was conducted in person in the format of blank tests. All respondents gave their voluntary consent to participate in the study and were acquainted with its objectives. At the first stage of the study, respondents were offered a questionnaire aimed at collecting socio-biological data, such as sex, age, the presence of siblings, the experience of cruel forms of punishment in childhood, and the experience of violence.

As a result of the analysis of the responses, it was found that 62% of the total sample (N = 548) of the respondents had experienced violence or punishment in an earlier period. This group of respondents (aged 16-18, the average age of the subjects was  $17.02 \pm 1.3$  years) made up an empirical sample (N = 340), which included 191 girls and 149 boys. At the same stage, the conjugacy of the nominative variables obtained from the questionnaire was analyzed according to the Pearson's chi-square test.

In the second stage, an empirical sample was tested using three questionnaires.

- The study of the influence of the social environment, social situation and biography, and family situation on the life path was carried out by means of the Biographical Inventory for the Diagnosis of Behavioural Disorders (BIV, Bottscher, Jager, Lische) (adaptation of Chiker, 2004). The methodology is a multidimensional personality questionnaire aimed at studying personality traits formed by the social environment, situation, and biography, revealing the influence of the family on the path of life.
- The study of child-parent relations was carried out using the Child-Parent Relations of Adolescents (CPRA) questionnaire by P. Troyanovskaya (CPRA) (according to Leaders, 2007). The methodology aims to study the picture of child-parent relations from the point of view of a teenager. The questionnaire can be used on the entire sample of adolescents and young people, taking into account the difference in age norms.
- To measure the predisposition and implementation of various forms of victim behaviour, the Technique to Study the Propensity to Victim Behaviour (Andronnikova, 2005) was used based on the norms for the adolescent sample. The technique aims to identify the propensity for five types of victim behaviour: aggressive, self-injuring and self-destructive, hypersocial, dependent and helpless, uncritical, and the degree of realization of internal victim potency in specific situations.

At the third stage, structural determinants were calculated using multiple regression analysis (step-by-step regression).

## Results

Analysis of the questionnaire in the first stage of the study (N = 548) showed that 62% of the boys and girls of the total sample experienced negative emotional experiences resulting from violence and cruel forms of punishment by parents or other people. The results of the application of

$\chi^2$ -Pearson showed that the presence of siblings is not associated with the experience of violence and punishment ( $p > 0.05$ ), as well as the conjugacy of sex and the experience of violence and punishment was not statistically significant ( $p > 0.05$ ). In this regard, only a group of respondents who had experienced violence and punishment in childhood participated in the further study. The analysis of the questionnaire data allowed us to identify the leading forms of punishment that the participants experienced: emotional violence (loud and aggressive shouting; public shaming; calling names) – 79%, physical punishment (a slap on the back of the head, a blow with a hand, slaps with a belt) – 55%; ignoring (refusal to talk, “pretended that I was not there”) – 23%; sexual (touching) – 9%. Furthermore, we did not divide the sample by types of violence, since many respondents have several types of violence. This study also did not take into account the factor of regularity of abuse and violence.

The use of multiple regression analysis (on a sample of 340 respondents) made it possible to identify six statistically significant models ( $p < 0.003$ ) in which the response variables were scales of the methodology for the study of propensity to victim behaviour and child-parent relationship (CPRA) and factors determining the influence of the social environment, social situation, and biography were predictor variables, the family situation on the path of life (BIV). The absence of multicollinearity was found for all models ( $p > 0.05$ ).

Table 1 shows the results for six regression models.

**Table 1**

Overall statistics of regression models

Statistics	I	II	III	IV	V	VI
Multiple R	0.823	0.529	0.698	0.812	0.782	0.823
Multiple R <sup>2</sup>	0.677	0.480	0.487	0.659	0.612	0.677
F	9.019	4.090	7.227	10.197	6.188	7.529
p	0.000	0.002	0.000	0.000	0.000	0.000
Std. Err. Est.	2.816	2.300	1.235	1.743	1.933	1.649

*Note. I – tendency to aggressive behaviour; II – tendency to self-injurious behaviour; III – tendency to hypersocial behaviour; IV – tendency to dependent behaviour; V – tendency to uncritical behaviour; VI – implemented victimhood.*

The regression analysis indicates the predictive influence of parent-child relationships models and social factors on the parameters that reflect the adolescents' inclination to victim behaviour. While, the multiple correlation coefficient, which is statistically significant ( $p < 0.000$ ), demonstrates the closest relationship between the set of predictors and the tendency to aggressive behaviour

( $R = 0.82$ ), to dependent behaviour ( $R = 0.81$ ), and to implemented victimhood ( $R = 0.82$ ). Moderate correlations were found between the set of social factors and the tendency to hypersocial behaviour ( $R = 0.69$ ), and self-injurious behaviour ( $R = 0.53$ ), with an error probability of less than 0,01%. Furthermore, the joint contribution of predictor variables in each model, ranging from  $R^2 = 0.53$  to  $R^2 = 0.82$ , reflects the structural determination of adolescents' victim behaviour forms by social factors. Consequently, in terms of the adolescents' victimhood forms conditioning, there are effects of "superadditivity", demonstrating the integration and structural property of the social factors' influence (Karpov, Perevozkina, Andronnikova, 2019). In this regard, it is important to record the formation of new trends enabling to go beyond the analysis of the individual influence of social factors on adolescents' victimhood and consider their joint structural determination instead.

## Discussion

Let us take a closer look at each model in turn. Thus, the tendency to aggressive behaviour is determined mainly by such scales as "exactingness" and "extroversion", which make the largest positive contribution ( $> 0.5$ ), as well as "parent's hostility towards their spouse", which makes a smaller, but also positive contribution (table 2). The greatest negative contribution is made by "satisfaction with relations with parents", "monitoring" and "control" as styles of parenting make a slightly smaller contribution.

**Table 2**

Results of the regression analysis for the dependent variable "Aggressive victim behaviour scale"

Predictors	BETA	B	t	p-value
Constant term		0.779	2.22	0.005
Extroversion	0.454	0.980	5.14	0.000
Relationship satisfaction	-0.467	-0.293	-3.84	0.000
Monitoring	-0.352	-0.304	-2.81	0.007
Exactingness	0.562	0.572	4.69	0.000
Hostility towards the spouse	0.213	0.299	2.39	0.020
Control	-0.270	-0.245	-2.28	0.026

Therefore, the assembly of excessive demands in parenting, the parent's ignorance of affairs and interests of the child, the lack of control from the parent, the open expression of hostility towards the other spouse, dissatisfaction with family relations among parents, and high impulsivity give rise to the manifestation of aggressiveness in the respondents' behaviour. This is expressed in the tendency of young people to provoke conflict situations, to implement antisocial activities in the form of aggression towards people around them, and violations of social norms and rules. In the behaviour of such respondents, irascibility and impatience, a desire to dominate and show violence, are often manifested. Our data are consistent with the study by Ermolaeva and Smirnova (2020).



Moreover, such mutual influence is in the nature of structural determination, since the coefficient of multiple determination ( $R^2$ ) is a clear indicator of the structure of the components and it is statistically significant. This means that victim behaviour in adolescence is not due to a single factor related to the family upbringing or the social experience of the young man, but to their combination.

The regression model for the dependent variable of tendency to self-injurious behaviour is formed by only the two predictors: extraversion (impulsivity) of young men and parental authoritarianism, making a positive contribution to the response variable (regression model) (table 3).

**Table 3**

Results of the regression analysis for the dependent variable «Self-injurious and self-destructive behaviour scale»

Predictors	BETA	B	t	p-value
Constant term		10.36	4.85	0.000
Extraversion	0.400	0.50	3.63	0.001
Authoritarianism	0.257	0.12	1.74	0.046

The complete and uncontrolled power of the parent over the child and the impulsiveness in the behaviour of the child themselves cause the manifestation of inconsiderate acts that harm both the subject and the people around. Causing damage to themselves by careless actions or intentionally, such respondents often provoke others to take active actions of a violent nature against themselves, sometimes without realizing their own actions. Primarily, this is the mutual conditioning of victimized auto-aggressive behaviour forms of the child and the tightening of disciplinary measures on the parent's behalf, which is consistent with the data from a number of studies (Ballano, 2019; Moffitt, 1993; Patterson & Yoerger, 2002).

The following statistically significant regression model demonstrates that the tendency to hypersocial behaviour is formed by five predictor variables, among which four make a positive contribution and one makes a negative statistically significant contribution (table 4).

**Table 4**

Results of the regression analysis for the dependent variable «Hypersocial behaviour scale»

Predictors	BETA	B	t(61)	p-value
Constant term		4.821	2.67	0.010
Extraversion	-0.582	-0.456	-5.55	0.000
Decision making	0.382	0.128	3.54	0.001
Parenting style	0.325	0.139	2.43	0.018
Acceptance	0.287	0.100	2.03	0.046

The greatest positive contribution to hypersocial behaviour variability is made by scales of “decision making” (0.38) and “parenting style” (0.33). A quite smaller contribution is made by “acceptance of the child” (0.29), and a significant negative contribution is made by “extraversion” (-0.58). This indicates that the interaction of excessive demonstration of love and attention by the parent, manifestations of neurotic uncertainty in decision-making and upbringing strategies, which is inconsistent in nature, destructive relationships between spouses, and low social activity of young men who prefer a reclusive lifestyle, lead to the manifestation of a hypersocial form of victim behaviour. This behaviour is characterized by the avoidance of a conflict by any means, even if it negatively affects the respondent themselves. Boys and girls with a hypersocial form of victim behaviour are characterized by anxiety and insecurity. They prefer to be in an unreal, fantasy sphere, as well as specifically organized social contacts.

The dominant statistically significant contribution to the tendency to dependent and helpless behaviour is made by a combination of such strategies of parental interaction with the child as a style of neurosis nature combined with parental uncertainty, rejection, and misunderstanding of the child’s feelings and needs, as well as conflicts between spouses (table 5).

**Table 5**

Results of the regression analysis for the dependent variable «Dependent and helpless behaviour scale»

Predictors	BETA	B	t(58)	p-value
Constant term		0.148	0.06	0.950
Parenting style	0.532	0.383	4.42	0.000
Parental uncertainty	0.461	0.360	5.12	0.000
Acceptance	-0.365	-0.214	-2.48	0.016

It is the influence of the spouses’ interaction style of neurosis nature that causes the manifestation of dependent and helpless behaviour in the subjects. It is accompanied by timidity, modesty, low self-esteem, compliance, a tendency to justify someone else’s aggression, cowardice, and the presence of a helpless state. The constant expectation of help from other people makes such a child dependent on others, which contributes to their involvement in crisis situations in order to obtain sympathy and support, which persists into older age. This conclusion correlates with the results of studies that consider anxiety and dependence as the main consequences of the parenting style of a neurosis nature and a violent attitude towards the child (Cicchetti & Banny, 2014; Levenson, Willis & Prescott, 2016).

A rather conflicting combination of predictors was found in the response variables in the tendency to uncritical behaviour model (table 6).

**Table 6**

Results of the regression analysis for the dependent variable «Uncritical behaviour scale»

Predictors	BETA	B	t(55)	p-value
Constant term		7.531	2.49	0.016
Extraversion	0.284	0.380	2.90	0.005
Acceptance	0.464	0.275	3.12	0.003
Monitoring	-0.829	-0.445	-5.67	0.000
Empathy	0.425	0.215	2.08	0.042
Satisfaction of the child's needs	0.774	0.388	5.09	0.000
Reward granting	-0.437	-0.428	-3.73	0.000
Authoritarianism	0.448	0.218	3.32	0.002
The child's image inadequacy	-0.290	-0.175	-2.49	0.016
Decision making	-0.243	-0.139	-2.19	0.033
Encouragement of autonomy	-0.299	-0.163	-2.38	0.021
Parenting style	0.363	0.265	2.65	0.011

Thus, on the one hand, there are scales in the regression that reveal positive parent-child relationships contentwise, such as acceptance of the child's emotions and image, empathy, satisfaction of the child's needs, and social activity of the child themselves. On the other hand, there are clearly expressed scales that contain a negative attitude towards the child in the form of a lack of encouragement for their actions, as well as a lack of autonomy in the child, a parent's demonstration of their own uncertainty in decision-making, their ignorance of the child interests, the parenting style of a neurosis nature, and conflicts between spouses. That disharmonious connection produces in the subjects a tendency to uncritical behaviour, characterized by incaution, carelessness, inability to correctly assess the situations of life in which they find themselves. Such a contradictory combined influence has been confirmed in our earlier studies (Andronnikova, 2005). Furthermore, it expands the study of the adaptation of older adolescents prone to risk (Sukhorukova, Koshenova, 2019).

Another regression model for the "realized victimhood" response variable appears to be as conflict and disharmonious (table 7).

**Table 7**

*Results of the regression analysis for the dependent variable «Realized victimhood scale»*

Predictors	BETA	B	t(54)	p-value
Constant term		3.354	1.22	0.008
Social activity	0.226	0.264	2.17	0.034
Parenting style	0.460	0.311	3.38	0.001
Parental uncertainty	0.331	0.242	3.52	0.001
Authoritarianism	0.376	0.169	2.43	0.019
Satisfaction of the child's needs	0.379	0.176	3.08	0.003
Monitoring	-0.429	-0.213	-3.36	0.001
The child's image inadequacy	-0.240	-0.134	-2.34	0.023
Decision making	-0.246	-0.130	-2.04	0.047
Cooperation	0.402	0.224	2.18	0.033
Encouragement of autonomy	-0.284	-0.143	-2.03	0.047

Just as in the previous case, one can observe the presence of scales that indicate the positive parent-child relationships, accompanied by negative parental strategies. Unconstructive ways of interacting with the child are manifested in the future in their inability to establish and maintain social contacts. Parents' lack of interest in the child's life, disregard of their independence, uncertainty in decision-making, and authoritarianism, lead in adolescence to a pronounced realization of victimhood in specific situations, including criminal ones. In the case of a combination of negative parent-child relationships with cooperation and satisfaction of the child's needs, respondents of adolescence show realized victimhood. It is characterized by the transformation of a young person into a victim of a crime or circumstances. The specificity of this regression model requires additional study, which indicates the prospects for the further research.

### **Conclusion**

The regression analysis demonstrates the predictive influence of social factors on the manifestation of victimhood among respondents during adolescence. As part of the research, we came to a number of significant conclusions.

First, there is the polysystemic principle. Each type of victim behaviour involves the combination of certain social factors in a hierarchical sequence, making a different contribution to the implementation of the tendency to victim behaviour.

Second, aggressive victim and uncritical behavioural forms, as well as realized victimhood, are more prone to the influence of the social environment and the family situation. Moreover, the last two forms are characterized by a combination of both positive and negative social factors, reflecting disharmony in parent-child relationships. For aggressive and self-injurious forms of victim behaviour, the common trigger is the impulsive nature of the child's temper. Together with authoritarianism, parental hostility, and a tendency to unreasonable punishment, it determines the manifestation of these types of victimhood.

Third, within the framework of multiple regression analysis, not only was the individual influence of the predictors on the response variable found, but also their mutual or even structural influence. In this case, the contribution of each social factor to the implementation of individual forms of victimization, as well as their joint influence on the response variable in the form of a multiple correlation coefficient, is clearly presented.

Fourth, in terms of the conditioning of the young men' forms of victim behaviour, there are effects of "superadditivity". It demonstrates the integration and structure of the influence of social factors and more family relations, which are of a conflict and disharmonic nature. Moreover, such mutual influence is in the nature of structural determination, since the coefficient of multiple determination is a clear indicator of the structure of the components and is statistically significant. In this regard, it is important to record the formation of new trends enabling to go beyond the analysis of the individual influence of social factors on adolescents' victimhood and consider their joint structural determination instead. Therefore, the hypothesis that the combination of social factors exceeds their separate presence and that the combination is a holistic synthesis that directly ensures the manifestation of victimhood forms is confirmed.

We outline further prospects for research. There will be a more detailed study of conflicting combinations of predictors found in response variables that mediate the tendency to uncritical behaviour and the realization of victim potential in the behavioural form in a particular situation.

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#### Authors Contributions

**Olga Olegovna Andronnikova** developed and formed the concept and design of the study, analyzed the literature, prepared a literature review, prepared and finalized the research part, interpreted the data obtained, conceptualized the conclusions.

**Yulia Mikhailovna Perevozkina** conducted research, developed the methodological component of the study, did quantitative and qualitative analysis of the data, formalized the results.

**Olesya Igorevna Leonova** conducted research, contributed to the processing of material, edited the article.

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**Conflict of interest information**

The authors have no conflicts of interest to declare.

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Measurement of conspirativistic mentality: primary psychometric verification of diagnostic methodology

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# Measurement of Conspirativistic Mentality: Primary Psychometric Verification of Diagnostic Methodology

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## Abstract

**Introduction.** The study of the specific features of the prevalence of belief in various conspiracies is an urgent problem of the crisis of our time. The available methods are mainly focused on the types of belief in conspiracies, but there is little attention given to holistic approach. We are the first to demonstrate on the Russian sample the developed new valid and reliable tools for identifying the features of the conspirativistic mentality of modern youth. **Methods.** The construct of the methodology is based on the stages of perception of belief in conspiracies and the allocation of significant attitudes – resistance to conspiracies, willingness to accept conspiracies on faith, the desire to look for the causes of conspiracies and evaluate the consequences and results of their impact on life. The methodological tools are presented by the author's methodology "Measurement of conspirativistic mentality", tested on 300 male and female respondents. The construct of the methodology has a two-factor structure, on one pole - readiness-stability in relation to the conspiracy, on the other - seeking-productive types. **Results.** Psychometric testing of the technique showed that men and women have different manifestations of a conspiratorial mentality. Men have a higher belief in conspiracies. Ready and productive types are closer to the zone of tradition, and stable and searching types are more in the zone of innovation. The constructive validity of the methodology was confirmed, and a high  $\alpha$ -Kronbach index was obtained, which indicates the internal consistency of the methodology. **Discussion.** The data obtained are combined with existing studies of certain aspects of conspirativism. We found confirmation of the following ideas: the sexual difference of the conspiratorial mentality, its personal identity, the specifics of orientation, connection with anxiety and basic fears. **Conclusion.** Preliminary psychometric verification of the methodology on a representative sample demonstrates its reliability and validity. The Further work will be aimed at modifying the methodology and comparing age groups.

**Keywords:** psychometric verification, methodology, conspirativistic mentality, belief in conspiracies, anxiety, personality traits, students, men and women, validity, reliability

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## Introduction

The presence of belief in conspiracy theories is today a persistent prejudice of a considerable number of the people on our planet (van der Linden, Panagopoulos, Azevedo & Jost, 2021; van Prooijen, Rodrigues, Bunzel, Georgescu, Komáromy & Krouwe, 2022; Arteev, 2022; Kazun, 2022).

S. Moscovici (1987) was one of the first to reflect the psychological aspects of the conspirativistic mentality and qualified the concept of "conspiracy" as some ideas that unite representatives of various social groups around the need to make a revolution in society. The authors define conspiracy theories as the "central prejudice of the paranoid style" of a person (Hofstadter, 1996; Brotherton, 2017; Sutton & Douglas, 2020). According to the authors' research, the conspirativistic mentality is higher in countries with low indicators on the democracy index (Economist) and the corruption index (Transparency International), it is characteristic of a society with a high degree of economic inequality (Imhoff et al., 2022). The digital revolution may have accelerated the formulation and spread of conspiracy theories.

**Conspiraciology** as a special type of discourse, which is often mixed with the detective one, contains an action-packed composition and a suspicious subject (Dmitrieva, Vanyushina, 2021), is a fake (imitation, implausible knowledge) (Swami, Furnham, Smyth, Weis, Lay & Clow, 2016).

**The subject of the conspiracy** is a real or illusory event, which is determined from the standpoint of various explanatory, causal threat schemes. **The conspirativistic mentality**, in our opinion, is a combination of values, meanings and significance of the conspiracy adept, aimed at the subject of the conspiracy, which is associated with special negative consequences for personal or public safety. According to Boltanski (2019), the subject of the conspiracy is a constructed reality. And the conspiracy theory is a "blind spot", since it cannot be unambiguously interpreted (Arteev, 2022). The subjects of a conspiracy can be either an individual or a group of people who are united by a joint conspiratorial activity or a common interpretation of the conspiracy theory.

Conspiracy theories are often directed at vulnerable groups of society and discriminate against them, they can ignore scientific data (Kirzyuk, 2021). The belief of certain groups of the population in conspiracy theories can provoke actions that polarize relations in society, which leads to serious consequences (Pishchik, 2019; Yablokov, 2020), such as political passivity, refusal from vaccinations, hostility to ethnic minorities, etc.

To study the phenomenon of belief in conspiracies, sociological surveys and a few methods are used to identify the spread of certain types of conspiracies, for example, Goreis & Voracek (2019); van der Linden, Panagopoulos, Azevedo & Jost (2021). We (Pishchik, Mutalimova, 2014; Pishchik, 2017) adapted the method for measuring belief in conspiracies (Imhoff & Bruder, 2014). The technique allows us to identify the types of belief in conspiracies represented in various social groups. Today, in connection with the pandemic period, we have added a vaccination clause to the method. There remained the problem of studying the general attitudes of readiness and unwillingness to accept faith in conspiracies. In this regard, *the purpose* of our research is to develop and conduct a primary (since we are only at the first stage of verification) psychometric verification of a new technique that allows us to identify an internal attitude of belief in conspiracies.

## Methods

If we proceed from the ideas and models of conspirativism (Swami, Chamorro-Premuzic & Furnham, 2010; Beemster, Bijleveld & Treur, 2021; Stasielowicz, 2022), then we can determine some stages of perception of conspiracy theories by people:

- Stage 1: detection and perception of information about conspiracy.
- Stage 2: emotional response and/or comparison of data with available information about the conspiracy subject.
- Stage 3: accepting information on faith or criticism, rejecting it.
- Stage 4: assessing or ignoring the consequences of this information.

Based on the data of these stages of the perceiving information process about the presence of a conspiracy, we assumed that it is possible to determine 4 types of attitudes towards conspiracies:

- Resistant to conspiracies.
- Ready to accept conspiracies.
- Searching for an explanation of conspiracies.
- Evaluating the impact of conspiracy theories on life.

Thus, there are 2 areas of difference between the main attitudes to the conspiracy: readiness / unwillingness; stability / instability; evaluating / not evaluating data; evaluating / not evaluating the result.

The presented attitudes can determine the type of conspiratorial mentality: ready, productive, seeking, stable.

- Productive – strives for finding meaning in random events, facts.
- Seeking – seeks to find an explanation to all contradictory events, facts.
- Ready – strives to determine order, harmony in events, facts.
- Stable – strives to be critical of existing events, facts.

In developing the methodology, we relied on the findings of studies about the relationship between personality traits (externality, authoritarianism, schizotypy, paranoia, narcissism, etc.) and belief in conspiracies (Swami, Chamorro-Premuzic & Furnham, 2010; Nestik, Deineka & Maksimenko, 2020; Stasielowicz, 2022).

Based on these ideas, a questionnaire was constructed (see Appendix), consisting of 16 points with 2 statements in each:

- Points 1 and 9 are related to the need to confirm the content of the conspiracy.
- Points 2 and 10 are related to the attitude to uncertainty in a conspiracy situation.
- Points 3 and 11 – to the resistance to belief in a conspiracy.
- Points 4 and 12 – to the choice of process or result in the conspiracy evaluation.
- Points 5 and 13 – to the self-assessment of their anxiety.
- Points 6 and 14 – to the attitude to the threats of the world.
- Points 7 and 15 – to the expectation of a threat from people.
- Points 8 and 16 – to the definition of the stability/instability of life on Earth.

The statements relate to each of the 4 types of conspirativistic mentality, determined by the key. The key is built on the principle of matching the item (attributing the statement to a certain type of installation) and assigning 1 point for it. In our research work, 2 tasks were set: to test a new method and to conduct its preliminary psychometric verification.

In the study, based on the concept of mentality (Pishchik, 2019), we put forward two hypotheses:

- H1 – the stable type of conspirativistic mentality is more in the innovation zone, and the ready

type is in the traditional zone.

– H2 – high anxiety is associated with a ready type of conspirativistic mentality.

Determining the plan of psychometric verification of the method, we relied on the logic of its implementation in similar works (Vergunov, Nikolaeva & Bobrova, 2019; Bazarov, Raikov & Shaikhutdinov, 2020; Kuzmina, 2021).

To validate and identify the reliability of the tool, we used a number of techniques. Firstly, the methodology for measuring the type of mentality (Pishchik, 2019). The methodology reveals the types of mentality with the poles tradition and innovation. Tradition presupposes temporality, inheritance, strict adherence to values and rules in social relations. Innovation leads to greater flexibility in relationships, individualization of rules, deviation from general principles and standards. Secondly, the following methods were applied: "Belief in Conspiracies" by Pishchik, Mutalimova (Pishchik, 2017), revealing various types of belief in conspiracies; the method of measuring Taylor's anxiety (Teilor's Manifest Anxiety Scale, 1953; adapted by T. A. Nemchinov and V. G. Norakidze, 1975) (Dermanova, 2002); the Freiburg FPI Personality Questionnaire of Fahrenberg, Zarg and Gampel (Fahrenberg, Hampel & Selg, 1994); a method for measuring values through fears (Pishchik, 2019).

To establish the normality of the sample distribution, the Kolmogorov-Smirnov single-sample criterion was applied. To test the reliability of the instrument, we used Pearson correlation analysis, Cronbach's Alpha; to determine factor validity, we used exploratory factor analysis, the Kendall W criterion.

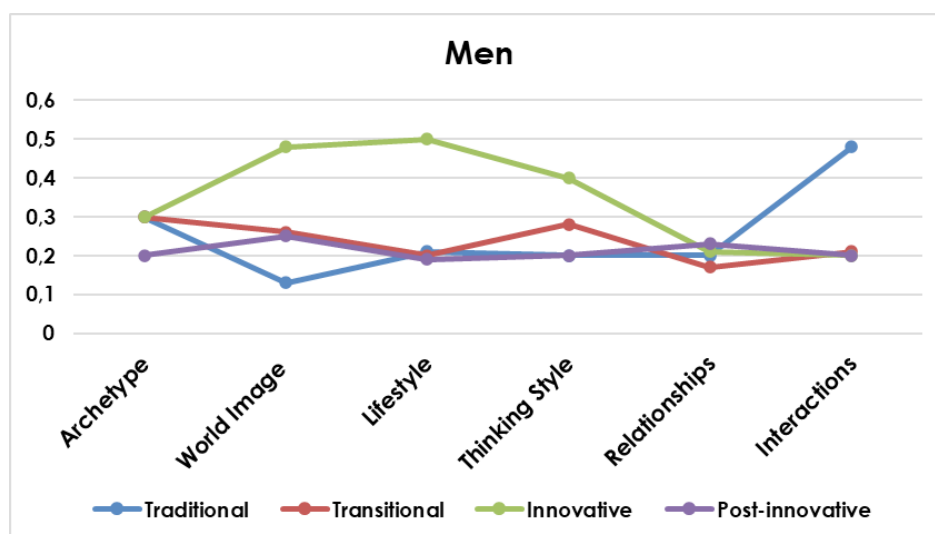
The randomized sample was represented by young men and women aged between 17 and 23 years, all were students of higher educational institutions of the city of Rostov-on-Don (Russian Federation). The sample size was 300 people (60% of them were women).

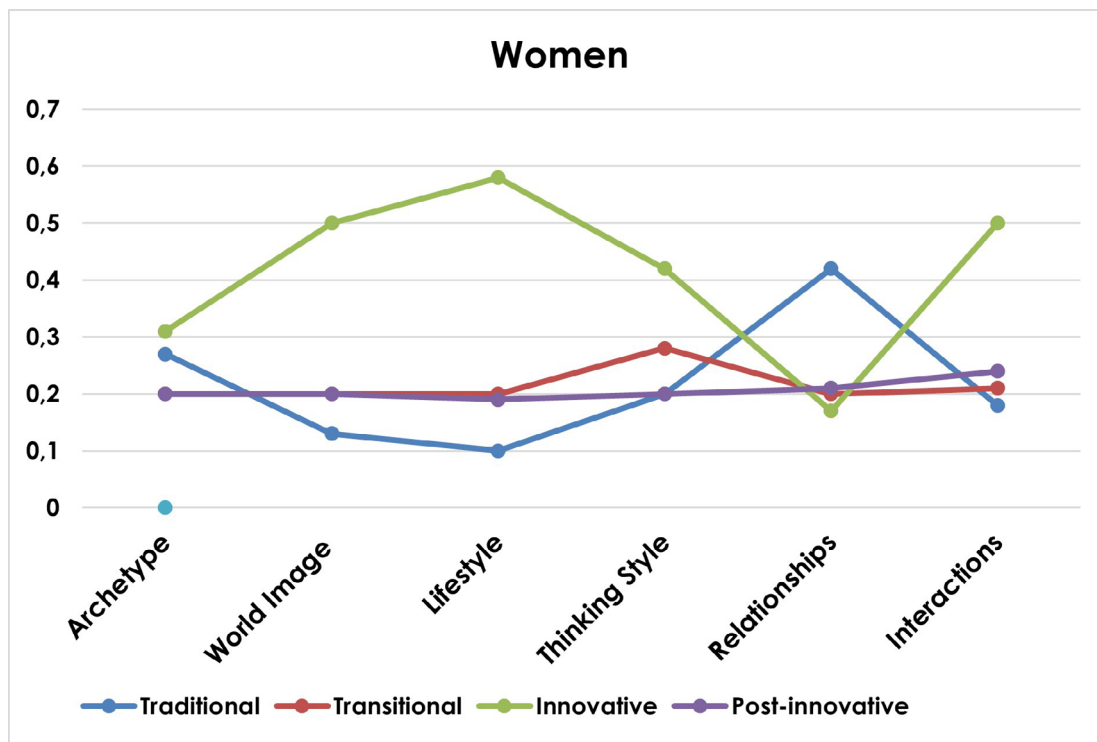
## Results

According to our data, the following components of mentality were represented in the group of men and women (Fig. 1).

**Figure 1**

*Components of mentality in the group*





The image of the world and life, interaction is in the innovation zone. Only in the group of women relationships are in the zone of tradition ( $U = 1930.0$ ,  $p = 0.009$ ). At the same time, traditional relationships are associated with an innovative archetype ( $0.168^*$ ), expressed more in women. The male group combines the archetypes of innovation, tradition and transitivity. In the group of men, the lifestyle is in the innovation zone and has fewer polarities, and in the group of women, the traditional lifestyle opposes the innovative lifestyle (which forms 2 poles).

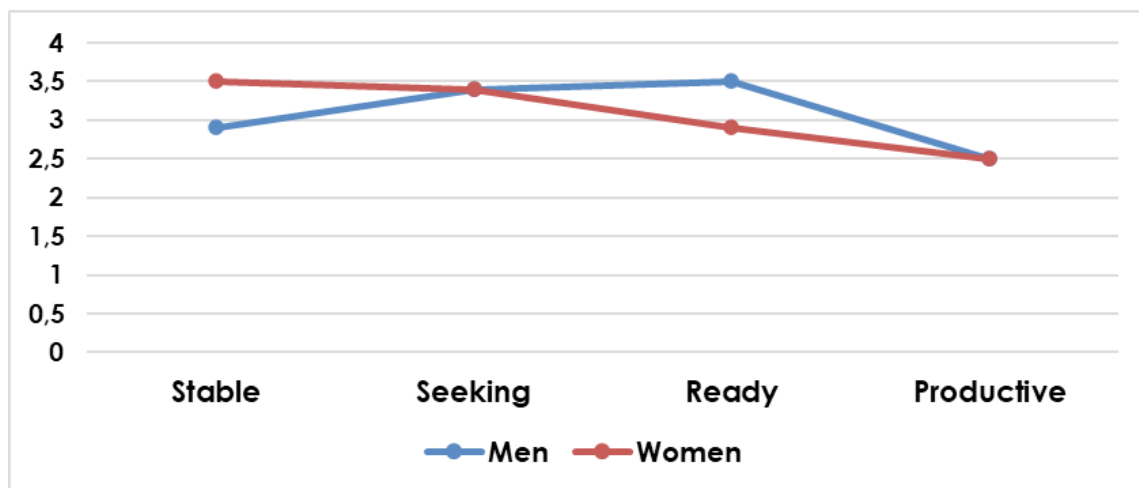
The innovative mentality is characterized by the following social choices:

- girls choose business partners (36.9%), girls are career oriented (65.2%), politicians are defined as corrupt (50.5%), wise means creating new things (55.9%), magic is attributed to healers (53.3%);
- the world is seen as chaotic (28.3%) and concrete (28%), dynamic (45.5%), uncertain (34.4%), a person is in the center of the world (61.3%), the world is seen as open (43%);
- situations develop (63.4%), respondents lead an active lifestyle (56.6%), focus on innovation (70.3%), life strategy – natural steps (42.7%), life is planned in some aspects (63.8%); money is the basis of the way of life (54.8%);
- they think extraordinary (42.3%), pragmatic (33%) and analytical (33%), they make decisions based on their own opinion (45.9%), the way of thinking is modern (35.8%), if they think, they live (70.6%);
- respondents are surrounded by: family (57%) and friends (37.3%), relations are peaceful (68.8%), indifferent (18.6%), men and women show freedom in relationships (46.2%), they are characterized by romanticism (26.2%), traditions (17.2%);
- interactions are aimed at profit (50.5%), at a specific goal (26.2%), at a common affair (15.8%),

- at friendly relations (63.4%), at support for successful people (53.8%), at support for those in need for help (30.1%);
- respondents note that "I am a real person (61.6%), timeless (19.4%), have a desire to achieve a lot (63.1%), create a new one (27.6%)", the meaning of life is money, career (54.1%), health, spiritual growth (22.6%), family, labour (20.1%).
- We identified the types of conspirativistic mentality (Fig. 2).

**Figure 2**

*Types of conspirativistic mentality*



In the group of men, there is a greater willingness to accept conspiracies on faith ( $U = 2416.0$ ,  $p = 0.001$ ). In the group of women, a stable type of conspiratorial mentality is more represented ( $U = 4686.0$ ,  $p = 0.001$ ).

The second most important type for both men and women is the seeking type. Very little attention is paid to the productive type. In the group of men, the type ready to perceive conspiracies is most prominent. In the group of women, a the most manifested type is the stable one, reflecting a somewhat detached attitude to the belief in conspiracies. To a lesser extent, the seeking type is expressed in both groups. It is associated with the search for an explanation for conspiracies. The least represented type in the groups is the productive type, for which the importance of the consequences of the impact of conspiracies on human life is high. This may mean that belief in conspiracies is interesting in itself and not everyone is interested in the consequences of their impact (for a detailed description of the types of conspirativistic mentality, see Appendix 1).

The internal reliability of the tool was determined by the internal consistency method by correlating all scales of the methodology with each other (Table 1). The distribution of values is normal across all scales (stable single-sample Kolmogorov-Smirnov criterion  $5.499E-7^1$ ; Seeking –  $1.057E-5^1$ ; Ready –  $1.940E-4^1$ ; Productive –  $4.547E-6^1$ ; the significance level is 0.05), so we applied the Pearson correlation coefficient.

**Table 1**

*The significance of the interrelationships of the methodology scales*

Types	Stable	Seeking	Ready	Productive
Stable	1			
Seeking	0,39**	1		
Ready	-0,52**	-0,25**	1	
Productive	-0,35**	-0,34**	0,42**	1

As we can see, the stable type is negatively interconnected with the finished type. This confirms our assumption about the juxtaposition of these types in a single continuum. Earlier we wrote about 2 areas of difference in the basic attitudes to the conspiracy. The close relationship of the stable type with the seeking one speaks of their inner closeness. Indeed, in order for a person to be stable, it is necessary to have complete information that the seeking type receives by searching for explanations, analyzing information. However, the productive type is negatively related to the seeking type, so the productive one is more focused on the consequences of conspiracy theories than on finding their explanations. The productive type is closely related to the ready one, which may indicate anxiety accompanying the ready type. The information about the relationship between anxiety and belief in conspiracies can be found in the works of Swami, Furnham, Smyth, Weis, Lay & Clow (2016).

We have calculated the Cronbach index, the results are presented in (Table 2).

**Table 2**

*Indicators of one-time reliability of the methodology*

Reliability statistics	
Cronbach's alpha	Cronbach's alpha on the bases of standardized elements
0,857	0,883



As we can see, the high values of  $\alpha$ -Cronbach (0.857 and 0.883  $\alpha$ -Cronbach based on standardized elements) demonstrate the internal consistency of the characteristics describing the object of study.

We found factor validity by means of exploratory factor analysis using the principal components method. Rotation method: Varimax with Kaiser normalization, rotation converged in 3 iterations (Table 3, Table 4).

**Table 3**

*The explained total dispersion*

Component	Initial eigenvalues			Sums of squares of extraction load			Sums of squares of rotation loads		
	Total	Dispersion %	Overall %	Total	Dispersion %	Overall %	Total	Dispersion %	Overall %
1	1.69	42.241	42.241	1	1.690	42.241	42.241	1	1.690
2	1.08	27.210	69.451	2	1.088	27.210	69.451	2	1.088
3	0.86	21.535	90.985	3	0.861	21.535	90.985	3	0.861
4	0.361	9.015	100.000	4	0.361	9.015	100.000	4	0.361

**Table 4**

*Rotated matrix of components, rotation converged in 3 iterations*

Types	Component	
	1	2
Stable	0.869	-0.130
Seeking	0.319	-0.758
Ready	-0.759	0.028
Productive	0.093	0.862

Analyzing the result, it can be assumed that the stable and ready types of conspirativistic mentality fell into one component-factor, since they are opposite poles of the conspirativistic mentality. Similarly, the seeking and productive types also fell into one factor.

The verification of the constructive validity of the methodology was carried out by comparing the results of our methodology with the results of other methods (according to the method of measuring the type of mentality; the method of measuring Taylor's anxiety). The correlation analysis showed that the types of conspirativistic mentality are particularly related to the structures of the organization of the mentality of groups (Tables 5 and 6).

**Table 5**

*Relationships of indicators in the group of men*

Components of mentality	ITM	TST	IIW	IR	PIA	HLA
Productive	-0.217**		-0.344**	0.246**	0.189*	0.337**
Stable	0.184*		0.241**	-0.215*		
Ready		0.161*	-0.150*			
Seeking	0.175*		0.284*		-0.149*	-0.343**

Note. \*\* – Correlation is significant at 0.01 (double-sided).

\* – Correlation is significant at 0.05 (double-sided). Accepted abbreviations: ITM – innovative type of mentality; TST – transitional style of thinking; IIW – innovative image of the world; IR – innovative relations; PIA – post innovative archetype; HLA – high level of anxiety.

It is noteworthy that the ready-made type of conspirativistic mentality, which is most pronounced in the group of men, is less combined with the innovative image of the world, but is combined with a transitional style of thinking. The transitional mentality is between traditional and innovative. This type is usually characterized by apathy, indifference, and to a greater extent externality, hence readiness to accept belief in conspiracies. A stable type in both women and men, is combined with an innovative mentality, an innovative image of the world. This type of mentality allows for the possibility of the most incredible, but events are taken for granted and few people take it for granted. The productive type is combined in men with the post-innovation archetype. It is the postinnovational type of mentality that is characterized by orientation towards the future, that is why the postinnovational type is more interested in the consequences of belief in conspiracies that are characteristic of the productive type. (Именно постинновационному типу ментальности характерна ориентация на будущее, то поэтому постинновационный тип в большей степени интересуют последствия веры в заговоры, характерные для результативного типа.)

Thus, the assumption that the stable type of conspirativistic mentality is more in the innovation zone, and the ready type is in the tradition zone, has found its confirmation (the H1 hypothesis is accepted).

Let's consider the results in a group of women (Table 6).

**Table 6***Relationships of indicators in the group of women*

Components of mentality	ITM	IIW	IR	TA	TST /L	HLA	PIIW
Productive	-0.167*	-0.355*	0.196*	0.253**		0.339*	
Stable		0.235**			/-0.178*		-0.243*
Ready					0.201*/		0.203*
Seeking		0.315*		-0.189*		-0.346**	

Note. Accepted abbreviations: ITM is an innovative type of mentality; IIW – innovative image of the world; IR – innovative relations; TA – transition archetype; TST/L- transitional style of thinking/lifestyle; HLA – high level of anxiety; PIIW – post innovative image of the world.

High anxiety is combined with the productive type in men and women, which is understandable, since the productive type is the most anxious of all types, but this cannot be said about the seeking type. That means that the H2 hypothesis is not accepted. The post-innovation image of the world, which aspires to tradition, is combined with a ready type, which is less pronounced in women. The innovative type of mentality and the image of the world are incongruous with the productive type of belief in conspiracies, which is associated with the transitional archetype. The searching type is combined with an innovative image of the world. The stable type decreases, and the ready type increases when there is the tendency to traditionalism (post-innovation image of the world).

When comparing the types of conspirativistic mentality and the types of belief in conspiracies, we obtained the following results (Table 7).

**Table 7***Correlations values of types and kinds of belief in conspiracies*

Indicators	Belief in political conspiracy	Belief in aliens	Belief in conspiracy, connected with vaccination	Belief in the end of the world	Belief in the world conspiracy	Belief in globalism
Seeking	-0.32*	-0.28*				
Productive	0.32*	0.31*	0.31*	0.33*		0.32*
Stable			0.32*			
Neuroticism	-0.68*					
Extraversion					0.66**	

The results demonstrate that the most connections with the belief in conspiracies were found in the productive type. The seeking type demonstrates negative connections with the belief in conspiracies, which can also be explained by its focus on revealing any secrets. The result of a connection of a stable type with a belief in vaccination can be a situational result, because the population has had a hard time surviving the pandemic. The relationship of the ready type with the types of belief in conspiracies was not found, but perhaps this fact indicates the willingness of this type to take many things on faith.

Belief in a political conspiracy was associated with such a personality trait as neuroticism; belief in a global conspiracy was associated with extroversion.

Then we compared fears and values (a method of measuring values through fears) and types of conspirativistic mentality (Table 8).

**Table 8**

*Interrelation of types of fears, values and types of conspirativistic mentality*

Type Values and fears	Ready	Seeking	Productive	Stable
Technological threats	-0.35*			
Epidemics scare	-0.31*			
Mystical experience	0.57*	-0.33*		
Mystical value	0.61*			
Losing yourself	-0.43*			
The value of other		0.34*		
Ecological crisis		0.32*		
Uncertainty cultures				0.32*
Lack of information				0.50*
Is afraid of everything new				-0.38*
The lack of ideals frightens				-0.50*
Is afraid to lose Another one				0.27*
Loss of meaning			0.46*	
Inability to make a choice			0.46*	
The impossibility of being in chaos			0.28*	
Fear of tradition loss			-0.55*	
The value of culture			0.39*	
The value of technology			0.34*	

Note. \*Correlation is significant at 0.05 (double-sided).

Analysis of the results of establishing links with fears and values shows that the ready type, having a mystical experience with high indicators of the "mystical value", attributes significance to conspiracies. For the seeking type, the value of the other is important, and he is puzzled by the salvation of the ecological system. The productive type is afraid of chaos, the inability to make a choice in a situation of threat and the loss of meaning of what is happening. The stable type is also oriented towards Others, in this sense it is close to the seeking type. The stable type is afraid of the lack of information and the uncertainty of culture, because it is more rational and adheres to cultural certainty.

### **Discussion**

Creating the methodology, we proceeded from the fact that it makes no sense to focus on a separate type of belief in a conspiracy, which is declared in the work (Sternisko, Cichocka & Van Bavel, 2020). It is important that by applying factor analysis, we have identified 2 factors of the model of conspirativistic mentality. A study by Swami, Chamorro-Premuzic & Furnham (2010) found a similar two-factor structure for measuring belief in various conspiracy theories regarding the terrorist attacks in September 11, 2001.

We have demonstrated differences in the severity of the types of conspirativistic mentality in men and women, which is confirmed in large-scale studies (Kleppestø et al., 2019; Nestik, Deineka & Maksimenko, 2020). The finished type was combined with the value of the mystical, which is confirmed in the studies (Ward, & Voas, 2011). Van Prooijen (2018), Stephens (2020) which pointed out that conspiracy beliefs can be caused by situational factors such as post-traumatic stress, anxiety and depressive reactions. A similar result we obtained in the question of connection of the ready type with the belief in a conspiracy concerning vaccination. The seeking and productive types are associated with high anxiety. The authors' research shows that "in a situation of anxious feedback, perceived intergroup anxiety significantly increases" (Khukhlaev & Bratkina, 2022, p. 84).

To establish connections with the types of conspirativistic mentality, we used a personality questionnaire (FPI), and it was found out that belief in conspiracy correlates with extroversion and neuroticism. However, today there are studies that show that none of the personality traits of the "Big Five" is associated with belief in conspiracy theories (Goreis & Voracek, 2019). At the same time, 12 personal indicators related to belief in conspiracies were found in the work of Stasielowicz (2022). In this regard, the question is relevant, did personality traits determine a tendency to conspirativism or did conspirativism actualize certain traits? For us, this question remains open.

### **Conclusion**

The initial test of our methodology of measuring the conspirativistic mentality showed its certain validity and reliability. The internal consistency of the methodology construct was found. The methodology, however, still needs to be improved to expand the scales.

We have obtained stable differences in the methodology based on the gender of the respondents. Thanks to the correlation and factor analysis and the establishment of links with other methods, we have received a meaningful filling of the scales of the methodology.

The methodology is characterized by ease of use and data processing. Further development and psychometric verification of the methodology may be associated with its approbation on age groups and evaluation by expert psychologists.

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## Appendix

### **Methodology**

"Types of conspirativistic mentality" (V. I. Pishchik) – working version.

### **Instruction manual**

"You are offered statements. It is necessary to choose the one closest to you, the one that you can attribute to yourself in situations of choice. In each item, you can choose only one option".

### **The methodology text**

1. A. It is important that any notion of the presence or absence of a conspiracy be confirmed (S).  
B. It is not important to confirm the notion of the existence of a conspiracy, especially if it is original in its essence (P).
2. A. Uncertainty about the existence of a conspiracy may irritate (St).  
B. Uncertainty about the presence of conspiracy usually invigorates me (R).
3. A. Stability in the world is important, especially with respect to established ideas about conspiracy (St).  
B. The world is changing rapidly, as well as ideas about conspiracy can change (R).
4. A. In any case, the result is important (P).  
B. The process of any case is more interesting than the result (S).
5. A. I worry about anything (P).  
B. I worry a little, it can be said, rarely (S).
6. A. Threats in the world can pass unnoticed (St).  
B. The threat in the world always exists and it is necessary to prepare for it (R).
7. A. Other people can harm me (P).  
B. Other people can bring me a lot of joy (St).
8. A. Life on planet Earth can stop (R).  
B. Life on planet Earth is eternal (S).
9. A. Published data must be confirmed (S).  
B. Published data does not necessarily have to be confirmed (P).
10. A. I am afraid of the uncertainty in the life of my environment (St).  
B. I am not afraid of the uncertainty in the life of my environment (R).
11. A. I don't believe in any conspiracies (St).  
B. There are some conspiracies that I believe in (R).
12. A. The result is always more important than the process (P).  
B. The process is sometimes more important than the result (S).
13. A. I am often called an anxious person (P).  
B. Anxiety is rarely inherent in me (S).
14. A. In the world there are many threats that need to be prepared for. (St).  
B. there are many threats in the world and it is impossible to prepare for them (R).
15. A. In difficulties with other people, it is important to understand how can this threaten me (P).  
B. If other people threaten me, we need to figure out and try to solve the problem (St).
16. A. We are hostages of the planet Earth (R).  
B. The Earth is our protective home (S).



**Key to methodology**

No of statement	Variants			
1, 9		а		б
2,10	а		б	
3,11	а		б	
4,12		б		а
5,13		б		а
6,14	а		б	
7,15	б			а
8,16		б	а	
<u>Total</u> <u>points</u>				
Types	Stable	Seeking	Ready	Productive

Each matching has 1 point.

Description of types:

- Stable – a person who is somehow detached about the belief in conspiracies.
- Seeking – a person who will seek an explanation for the conspiracies.
- Ready - a person who accepts conspiracies and believes in them.
- Productive – a person to whom the consequences of the effects of conspiracies on a person’s life are important.

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Measurement of conspirativistic mentality: primary psychometric verification of diagnostic methodology

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## School Bullying: Signs of Social Maladjustment in Offenders, Victims, and Victim-Offenders

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### Abstract

**Introduction.** The goal of the article is the analysis of social maladjustment among schoolchildren involved in bullying in different roles: «Offender», «Victim», and «Victim-Offender». The capabilities of the "Screening method for diagnosing propensity to extremism" (R. V. Kadyrov, T. V. Kapustina, E. V. Sadon, A. S. Elzesser) in a study of bullying are shown. The psychological features of the least studied role of "Victim-Offender" are revealed. **Methods.** The study involved 206 high school students aged 15–18 years. To identify groups of schoolchildren participating in bullying, the «Bullying situation at school» (V. R. Petrosyants) method was used, to determine the severity of social maladjustment – a «Screening method for diagnosing propensity to extremism» (R. V. Kadyrov et al.); the psychological characteristics of the groups were determined using the «Individual typological questionnaire» (L. N. Sobchik), and «Test of aggressiveness» (L. G. Pochebut). **Results.** Signs of social maladjustment were found in all groups involved in bullying, with the most acuteness in Victims and Victim-Offenders. Among the signs of maladaptation were identified: for Offenders – attention-seeking, preference for computer games with predominant components of violence, low mood, and loss of energy; for Victims – closedness and aloofness, low mood; for Victim-Offenders – enmity, sympathy for deviants, closedness. Victim-Offenders combine the maladjustment traits of both the initiator and the target of bullying. Statistically significant differences ( $p < 0.05$ ) in the psychological characteristics of bullying participants are determined. Compared with others, the Offenders group expressed such traits as spontaneity, aggressiveness, and nonconformity. Victims have expressed introversion, anxiety, self-aggression, and dependence, as well as a negative correlation with lability. No significant correlations were found for the Victim-Offender group. All bullying participants showed signs of social maladjustment – experiencing loneliness, a negative attitude towards others, and difficulties with trust. **Discussion of the results.** The results obtained are consistent with the facts noted by other researchers, such as the use of bullying by Offenders to increase their position in the informal hierarchy, their pronounced impulsiveness and desire for dominance; introversion, anxiety, and closedness in Victims; trust difficulties, introversion, anxiety, and hostility in Victim-Offenders.

**Keywords:** bullying, adolescents, maladjustment, Offender, Victim, Victim-Offender, aggressor, Screening method, diagnostics of maladjustment

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## Introduction

Social maladjustment contributes to the consolidation of maladaptive variants of personality traits that can be adjacent to accentuations, characterizing the manifestation of dysmorphophobia associated with a negative assessment of others (Yakimova, Kravcova, 2017) and personality disorders (Kudryavcev, 2019). This necessitates the study of signs of social maladjustment of a person experiencing a negative impact from the social environment.

Social maladjustment – is a disorder of integration into society, in which a person “is not able to satisfactorily meet the requirements and expectations that the social environment imposes on him and his social role, his leading activity in this environment” (Nalchadzhyan, 1988, p. 21). Social maladjustment is studied as a disorder in one or another complex of personally significant relationships (Varlamova, 2005), a negative psychological formation in the personality structure (Molodcova, 2017), as a system of deficits in the interactional mechanism of socialization (Kudryavcev, 2021). Social maladjustment is based on a personal trait that mediates the vulnerability of the individual in the process of socialization: accentuation, intrapersonal conflict, inadequate self-esteem, primitive psychological defenses, a tendency to alienation, increased anxiety, frustration, etc. (Molodcova, 2017). Social maladjustment can be a result of a negative impact of the environment on the personality.

Bullying is prolonged physical or psychological abuse by an individual or group against an individual who is not able to protect himself in this situation (Lejn, 2001). As of 2021, bullying in Russian schools can reach 40% of all students (Ivanyushina, Hodorenko, Aleksandrov, 2021). Susceptibility to bullying has a negative impact on the formation of personality since the formation of a personality structure and its character is largely the result of adaptation in society. As Ananiev (2010), “the transformation of interindividual connections that function in certain circumstances of life into intraindividual connections is a prerequisite for the formation of a personality structure and its character” (p. 265).

In several studies, the authors identified the psychological characteristics of a person with social maladjustment: disruption of relations with parents (Posohova, Kolpakova, 2020); hostility, feelings of inferiority, anxiety (Moskova, 2008; Hakimzyanov, 2020), a tendency to loneliness, apathy, and depression, devaluation of the meaning of life (Grishina, 2018; Moskova, 2008; Hakimzyanov, 2020).

The formation of the characteristics mentioned above can be mediated by participation in bullying not only in the role of Victims but also in the role of Offender or Victim-Offender. Thus, there is evidence that Victims of bullying are distinguished by a decrease in school well-being, loneliness and isolation (Hamel, Schwab, Wahl, 2021), high neuroticism and psychoticism (Machimbarrena et al., 2019), a decrease in self-esteem, a decrease in emotional intelligence (Estévez, Estévez, Segura & Suárez, 2019; Zych, Ttofi & Farrington, 2016), self-blame (Wójcik, Thornberg, Flak & Leśniewski, 2022), anxiety, depression, non-suicidal self-harm (Li et al., 2021; Myklestad & Straiton, 2021), elevated risk of suicide attempts (Koyanagi et al., 2019).

Similarly, loneliness with peers, isolation, high neuroticism, and psychoticism are characteristics of Victim-Offender. This group is found to have low levels of empathy (Zych, Ttofi & Farrington,

2016) and tendencies of moral alienation, which increases the willingness to engage in bullying against others (Falla, Ortega-Ruiz, Runions & Romera, 2020; Runions et al., 2019).

Research on Victim-Offenders in bullying also shows changes in personality traits due to social maladjustment: low levels of empathy (Zych, Ttofi & Farrington, 2016), decreased self-esteem in the academic and family spheres, increased anxiety in social interactions, difficulty regulating emotions (Estévez, Cañas, Estévez & Povedano, 2020). Bullying exacerbates pre-existing psychopathic traits such as callousness-unemotionality and impulsivity-irresponsibility (Orue & Calvete, 2019).

The purpose of this article is a comparative analysis of the signs of social maladjustment of personality in all bullying participants.

## Methods

The sample is represented by 206 high school students, including 83 boys and 123 girls, the age of the respondents is from 15 to 18 years. Respondents are students of grades 9–11 of secondary general education schools and private educational institutions in a few Russian cities: Moscow, St. Petersburg, Khabarovsk, Vladivostok, Ussuriysk, and Yeniseisk. The study involves the study of high school students aged 15–18 participating in bullying, so the selection of the sample was based on the principle of its availability. Different schools have different levels of bullying: from 0 to 40% (Ivanyushina, Hodorenko, Aleksandrov, 2021), therefore, regardless of the place of residence, the data of respondents were selected according to the criterion of participation in bullying.

In the first stage of the study, the general sample was divided into four groups based on the results of the analysis of the "Bullying situation at school" (Petrosyanc, 2011). Next, we applied: the "Individual typological questionnaire" (Sobchik, 2017), and "Test of aggressiveness" L. G. Pochebut (Pochebut, 2023), "Screening method for diagnosing propensity to extremism" to determine the form of social maladjustment (R. V. Kadyrov, T. V. Kapustina, E. V. Sadon, A. S. Elzesser) (Kapustina, 2022).

The author's Screening method for diagnosing propensity to extremism was developed to study destructive manifestations in students in an educational environment. The theoretical and methodological basis of the screening method is represented by a wide range of theoretical views on the social maladjustment of a person, studies of radicalization, and individual psychological characteristics of a person with extremist tendencies (Kapustina, 2022).

Extremist personality tendencies are a form of stable social maladjustment and characterize the orientation of the personality, represented by motives, interests, aspirations, beliefs, and ideals, the totality of which creates a predisposition to extremism in the educational environment. The analysis made it possible to identify the criteria for extremist tendencies, which formed the basis of the screening method: signs of depression, experiencing loneliness, declaring superiority, dehumanization, motives for revenge, and a positive attitude towards death. After adapting and validating the screening method, we continued to explore its capabilities by applying social maladjustment to a wider range of phenomena.

Indeed, the high severity of extremist tendencies does not mean that a person will commit an act of extremist violence. At the same time, feelings of loneliness, the motive of revenge as a reaction of anger in response to social failures, ideas about the futility of one's existence and the worthlessness of other people's lives, a compensatory declaration of superiority, the approval of violence and interest in murder and death - all this constitutes the social maladjustment of the individual and with inevitably creates risks of antisocial and/or self-injurious behavior.

It should be noted that the screening method does not have scales; it can only be used to assess the presence and absence of social maladjustment, as well as the degree of its severity. The screening method in the study of social maladjustment has several advantages: 1) veiled collection of information: the purpose of the survey is not obvious, which allows you to bypass the respondent's resistance; 2) high information content due to the use of various forms of questions: semi-closed with answer options, open questions, unfinished sentences; 3) the possibility of identifying various manifestations of social maladjustment through the analysis of answers to open questions.

When measuring personality traits and characteristics using questionnaires in psychology, it is customary to use an ordinal scale (Druzhinin, 2019), therefore, for statistical processing of the obtained data, non-parametric statistics methods were used – the median test, the Kruskal–Wallis test, and the Spearman's rank correlation coefficient. Data processing was performed in SPSS Statistica 10.0.

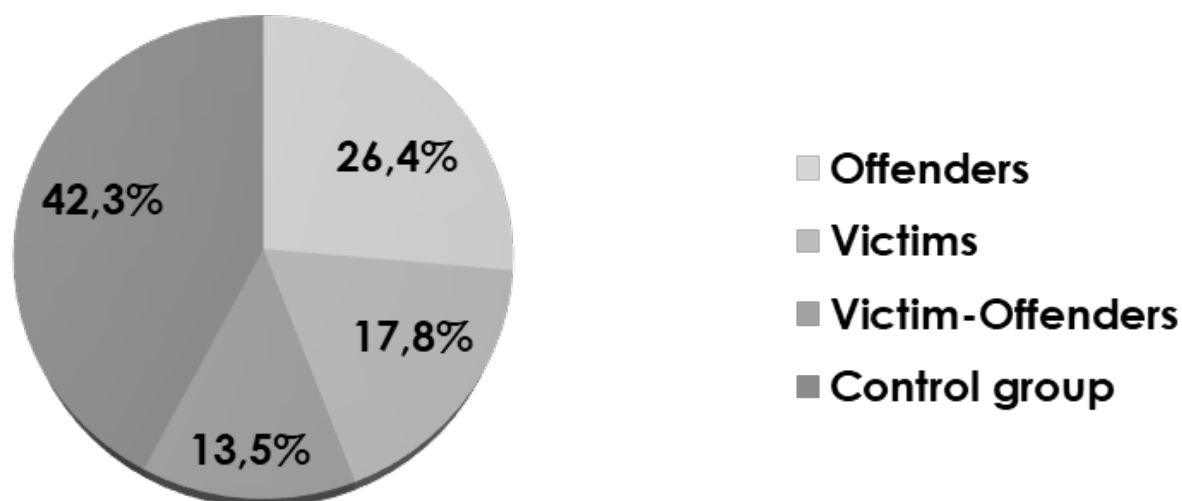
## Results

### ***Bullying situation at school***

According to the results of the “Bullying situation at school” method (Petrostyants, 2011), the following distribution was obtained: Offenders – 55 people (participated in bullying several times during the month), Victims – 37 people (experienced bullying two or more times during the month), Victim-Offenders – 28 people (were subjected to bullying and participated in it once or more within a month), the comparison group – 88 people (did not participate in bullying, were not subjected to bullying or were subjected to only once). The percentage of different groups of respondents is shown in Figure 1.

**Figure 1**

*Distribution within the sample according to the «Bullying situation at school»*



### ***Screening method for diagnosing propensity to extremism***

According to the results of the “Screening method for diagnosing propensity to extremism” (Table 1), it was revealed that **in the Victims group, the median indicators of the group exceed**

**the tested norm** ( $< 17$ ), which means that there is a tendency to social maladjustment, which may be the result of experienced psychological violence. For groups of Offenders and Victim-Offenders, the obtained values **do not indicate a formed propensity for social maladjustment, however, they exceed those of the comparison group.**

**Table 1**

*The severity of social maladjustment in schoolchildren involved in bullying*

Sample sizes Of/V/V-Of/No	The value of the Kruskal–Wallis test, H	p-level	Median Of/V/V-Of/No
55/37/28/88	46.59	0.0000	16/ <b>18</b> /16/10

Behavioral features were identified in the group of Offenders, Victims, and Victim-Offenders. To the question “Do you strive to stand out among other people? If yes, then how? In the Offenders group, 32 out of 55 respondents answered: “appear brighter” (4), “knowledge” (6), “appearance/clothes/image” (6), “jokes” (4), “character” (8), “to be a leader” (3), “do crazy stuff” (1). In the Victims group, almost half of the respondents (18 out of 37) reported that they strive to stand out: “sincerity” (7), “creativity” (5), “by soul” (6). In the Victim-Offender group, all respondents indicated that they did not seek to stand out from other people. In the comparison group, the answers were distributed almost evenly: most of the respondents (46) answered that they did not strive to stand out, and a smaller part of the respondents (42) gave differently directed answers, indicating a different degree of readiness to stand out, from low: “every person stands out with something” to high: “everyone”, “how can I surprise them, and so that they find the best qualities in me”.

The answers of the Offenders group may indicate the desire of some schoolchildren to take a certain status in the group, stand out and surpass their peers due to the image, character, and behavior that goes beyond social norms and rules, while in the explanations of the respondents of the Victims and Victims groups – Offender there are no such manifestations of demonstrative behavior.

In the key of the screening method, when assessing the severity of social maladjustment, the preference for genres of computer games is taken into account. All students in the Offenders group play computer games, the most common game genres are Shooter (15), Horror (11), and Stealth (14). Victim-Offenders also gave an affirmative answer, the most common genres being “Shooter” (8) and “Horror” (6). This indicates that Offenders and Victim-Offenders prefer games with violent elements. In the Victims group, most of the respondents (15) play computer games, the most popular genres are quests and puzzles (11), RPG (8), and Shooter (5). These are offline games for solving various puzzles and logic tasks, as well as role-playing games, in which you can choose a character and play on his behalf. The choice of offline games speaks to the introversion of Victims, and the choice of the RPG genre may indicate a tendency to distract from the problems in the virtual world and serve as a modern variation of dream retreat as a psychological defense. The Offenders' and Victim-Offenders' preference for games with a focus

on gun violence (Shooter) and shock content (Horror), as well as Stealth for the Offender group, indicates a greater interest in murder and death than the Victims.

To the question "Do you like people who..." many respondents in the Offenders group gave socially acceptable answers, for example, "They are distinguished by courage", "responsible", and "self-confident", however, there were two statements expressing adaptation disorders: "silent", "clowns". Victims also expressed socially acceptable judgments, except for the two responses "I don't like people". In the Victim-Offenders group, in comparison with the groups of Offenders and Victims, **the largest number of answers indicating problems with adaptation is presented:** "rejected" (3), "dislike" (3), and "no" (4). In the comparison group, such socially acceptable answers as "understanding" (8), "honest" (5), and others prevail.

To the question "Trust is...?" most respondents of all groups gave socially acceptable answers. However, in the group of Offenders, there were answers that trust is a "weakness" (2), and "it is not needed" (2). Also, in the answers of a third of the respondents of the Victim-Offender group, there are answers: "... I don't trust anyone" (1), "there is no trust" (4), and "no" (5). In the Victims group, there is a negative assessment of their social experience and fear: "what is not familiar to me" (3), "risk" (1). Respondents of the comparison group did not oppose themselves to others and did not demonstrate intolerance towards others. Thus, we can say that some Offenders, and Victim-Offenders, are forming **a position of refusal of trust, some Victims emphasize that trust is little known to them.**

The screening method offers a question aimed at self-assessment of extraversion/introversion: "Some people need to be among people because they need to interact with them, while others feel lonely among people. What category do you belong to?" In the comparison group, the desire to interact with others prevails (13). In the Offenders group, the majority of respondents also answered, "to the first" (14) and "something in between" (5), in the Victims group, the majority answered "to the second" (15), as did Victim-Offenders (12). This shows that the respondents of the Victims and Victim-Offender groups experience "loneliness in the crowd", their relationships with classmates are formal. The next questions "Is it easy to spoil your mood?" and "Do you often have a headache?" showed that Offenders' mood was "usually irritable" (9), "recently worsened" (7), "usually sad" (5), their head hurts "often" (15) and "recently very often" (5). In the group of Offenders, low mood, irritation, and physical discomfort associated with frequent headaches prevail. The majority of respondents noted a loss of interest in learning activities, the most common reasons being "stopped trying" (6), "laziness" (4), and "growing up" (3).

The mood in the Victims group has "recently worsened" (13), headaches are "sometimes" (12) and "often" (6), while learning difficulties have appeared due to a "lack of desire to learn" (7), "loss of interest" (3), "burnout" (2), "difficulties in the school curriculum" (2). This indicates a decrease in adaptive capacity. In the process of introspection of their past, present, and future, a subset of Victims' respondents labels their past and present as "meaningless" (14). This may indicate dissatisfaction with their school life, with what happened and is happening now in the classroom, about the accumulation of negative experiences.

In contrast, Victims-Offenders are in a "generally good (cheerful) mood" (9), with headaches "rarely rare" (13). For most schoolchildren in the comparison group, it is not easy to spoil the mood, headaches happen "sometimes" (12). The mood in these two groups is quite stable, and no physical ailments are observed. It can be assumed that participation in bullying in Victims-Offenders can perform a compensatory function.



So, the analysis of the respondents' answers allows us to note the signs of social maladjustment among the bullying participants. Offenders are dominated by the desire to attract attention, to demonstrate their advantages. Victim-Offenders and almost half of the Victims demonstrate closeness and aloofness. However, about half of the Victims are distinguished by their desire for authenticity and preserved self-respect and find an outlet in creativity. Offenders and Victim-Offenders prefer games with a predominance of violent components, which indicates a greater interest in the information space on the topics of murder and death than the Victims group. Victim-Offenders, to a greater extent than other groups, demonstrate hostility towards others, or sympathy for people with deviant, antisocial behavior. The position of non-confidence is found in the Victims and Offenders group, but it is most demonstrated by the Victim-Offenders. It can be assumed that the signs of social maladjustment, generated by the role of Victims, are combined with the maladaptation of the bullying initiator, and increase the rupture of ties between the individual and society. Victims and Victim-Offenders experience loneliness among their peers. Offenders and Victims have bad moods, and a breakdown, unlike Victim-Offender, which suggests that they have compensatory mechanisms that even out the emotional background but aggravate the processes of maladaptation.

### ***Individual typological features***

As shown by the statistical analysis of the methodology of individual typological characteristics of L. N. Sobchik using the Kruskal–Wallis test, there are significant differences between the four groups of the sample (Table 2).

**Table 2**

*Psychological characteristics of schoolchildren participating in bullying, according to the method of ITO by L.N. Sobchik*

Scale	Sample sizes Of/V/V-Of/No	Kruskal–Wallis value , H	p-level	Median Of/V/V-Of/No
Extraversion	55/37/28/88	8.44	0.0376	6/4/5/6
Anxiety	55/37/28/88	8.67	0.0340	6/6/6/5
Leadership	55/37/28/88	13.35	0.0039	12/10/10/12
Dependency	55/37/28/88	7.69	0.0528	9/11/9/9
Communication	55/37/28/88	8.87	0.0311	12/9/10/11

In the group of Offenders and schoolchildren who do not participate in bullying, there are high rates on the scale of extraversion and communicativeness, which is consistent with the self-assessment data of these schoolchildren obtained in the screening method.

Anxiety in the groups' Offenders, Victims, and Victim-Offenders is characterized by high rates (6 points). This indicates increased suspiciousness and timidity, which is one of the manifestations of social maladjustment. If bullying is indeed a compensatory strategy, Offenders tend to stand out and may choose to bully people who make them doubt themselves as Victims.

Significant differences were found on the leadership scale; in the median values, the Offenders and the comparison group had the most pronounced leadership indicators ( $H = 7.69$ ;  $p\text{-level} = 0.0528$ ). Apparently, in the process of social maladjustment that the desire for leadership takes the form of bullying. In this case, the desire for leadership turns into excessive self-confidence, and disrespect for others.

Significant differences were found on the dependency scale ( $H = 13.35$ ;  $p\text{-level} = 0.0039$ ); according to the median, the most pronounced indicators were observed in the Victims group. This indicates that respondents tend to avoid conflict and therefore need a benevolent social environment.

### **Test of aggressiveness**

The "Test of aggressiveness" technique by L. G. Pochebut (Table 3) showed that Offenders are characterized by a high degree of verbal aggression, which is consistent with the results of the method "Bullying situation at school".

**Table 3**

*Psychological characteristics of schoolchildren participating in bullying, according to the «Test of Aggressiveness»*

Scale	Sample sizes Of/V/V-Of/No	Kruskal–Wallis value , H	p-level	Median Of/V/V-Of/No
Verbal aggression	55/37/28/88	14.89	0.019	5/4/4/3
Emotional aggression	55/37/28/88	20.67	0.0001	3/3/5/2

High rates of emotional aggression in Victim-Offender indicate a tendency to emotionally distance themselves when communicating, experiencing suspicion, hostility, ill will, and hostility. This is consistent with the data of the screening method, which revealed an unfriendly attitude towards people in general, and a refusal to trust. Aggressive and hostile attitudes can be a defensive posture in connection with the bullying experienced, when Victim-Offenders openly express dissatisfaction, succumbing to provocations.

### **Correlation analysis**

Correlation analysis between the level of social maladjustment and other personal characteristics (Table 4) showed that social maladjustment correlates with such personal characteristics as spontaneity and aggressiveness in the Offenders group. This means that Offenders are impulsive, can commit rash acts, and strive to take a leadership position, quickly turning to verbal aggression.

**Table 4**

*Ch. Spearman's Rank correlation coefficient in the group of Offenders*

Indicators correlated with a propensity for social maladjustment	Sample size	Spearman's Rank correlation coefficient, R	p-level
<i>ITO (L.N. Sobchik)</i>			
Spontaneity	53	0.55	0.0054
Aggressiveness	53	0.56	0.0044
Nonconformity	53	0.61	0.0014
<i>Test of aggressiveness (L.G. Pochebut)</i>			
Verbal aggression	53	0.51	0.0123
Physical aggression	53	0.51	0.0124
General aggression	53	0.48	0.0219

A positive correlation with non-conformity reflects the desire of Offenders to defend their position even contrary to the generally accepted one. Together with impulsiveness and aggressiveness, non-conformity may indicate a potential conflict behavior. According to the "Test of aggressiveness" methodology by L. G. Pochebut, correlations with such scales as verbal aggression (R = 0.51; p-level = 0.0123), physical aggression (R = 0.51; p-level = 0.0124) and general aggression (R = 0.48; p-level = 0.0219). Consequently, with the growth of social maladjustment, Offenders become more aggressive, and attacks and insults become systematic.

In the Victims group, other correlations are identified between the severity of social maladjustment and psychological characteristics (Table 5). The severity of social maladjustment in the Victims group has a negative correlation with extraversion (R = -0.40; p-level = 0.0266) and a positive correlation with introversion (R = 0.50; p-level = 0.0033).

**Table 5**

*Ch. Spearman's Rank correlation coefficient in the Victims Group*

Indicators correlated with a propensity for social maladjustment	Sample size	Value of Spearman's Rank correlation coefficient in the Victims group, R	p-level
<i>ITO (L.N. Sobchik)</i>			
Extraversion	37	-0.40	0.0266
Introversion	37	0.50	0.0033
Anxiety	37	0.47	0.0068
Lability	37	-0.46	0.0076
Addiction	37	0.39	0.0322
<i>Test of aggressiveness (L.G. Pochebut)</i>			
Self-aggression	37	0.47	0.0057

Schoolchildren with social maladjustment may show shyness, and lack of sociability, and demonstrate a focus on themselves rather than on the environment. This can be explained by the fact that single school children become victims of bullying, and subsequently, their tendency to loneliness increases due to the consequences of psychological abuse: the accumulation of negative social experiences, and fear of trust. A positive correlation with anxiety may indicate that the aggressive behavior of peers entails a state of constant tension in anticipation of an attack, and an increase in suspicion and distrust of people. A negative correlation was found with lability ( $R = -0.46$ ;  $p\text{-level} = 0.0076$ ), which indicates the stability of mood and motivation in the Victims group. The positive correlation with dependence ( $R = 0.39$ ;  $p\text{-level} = 0.0322$ ) confirms that it is common for Victims to avoid conflict situations, they need to be in a safe environment. A positive correlation with self-aggression according to the "Test of aggressiveness" method by L. G. Pochebut indicates a weakening of the protective mechanisms of the psyche that occurs with the growth of social maladjustment, which leads to the use of various methods of auto-aggression.

No significant correlations were found for the Victim-Offender group. This can be associated with the heterogeneity of this sample, due to the duality of the roles occupied by the respondents.

For the comparison group, a positive correlation was revealed according to the method of individual typological features of L. N. Sobchik with an aggravation scale characterizing the desire to emphasize existing problems and their complexity ( $R = 0.32$ ,  $p = 0.0021$ ). Thus, in adolescents who are not bullied, with the growth of social maladjustment, the tendency to exaggerate the problems and complexity of their character increases. This can be explained by the oppressive emotional background that accompanies social maladjustment, which causes the growth of aggravation.

### **Findings**

Our data allow us to formulate the following generalized socio-psychological characteristics of three groups of schoolchildren involved in bullying.

Offenders are demonstrative, extroverted, striving for leadership, showing nonconformity, impulsiveness, increased anxiety, and aggressiveness. They often have a reduced, irritable mood, a condition with frequent headaches, and reduced performance. They prefer genres of computer games that are associated with violence. With the growth of social maladjustment, aggressiveness may increase, provoking further maladaptation.

Victims are uncommunicative, lonely, not prone to demonstrativeness, disappointed with the experience of social relationships, and may avoid trusting relationships, but need a benevolent social environment. A significant proportion of respondents formed a negative attitude towards others due to negative communication experiences. Victims are dissatisfied with their school life, their mood is predominantly sad, and there is a decrease in their working capacity. Difficulties in social adaptation are growing, increased anxiety makes you avoid conflicts, and with the growth of maladaptation, tendencies of self-aggression intensify.

Victim-Offenders show anxiety and suspicion, hostility, and emotional aggression, which prevents the establishment of relationships and leads to a lack of trust and loneliness. Prefer games with violent components. Have a stable mood, and do not experience deterioration in performance.

### **Discussion**

So, the results of the study showed that Offenders show demonstrativeness, extroversion, desire for leadership ( $H = 13.35$ ;  $p\text{-level} = 0.0039$ ), non-conformity ( $R = 0.61$ ;  $p\text{-level} = 0.0014$ ) these qualities with social maladjustment, they contribute to their manifestation in the role of aggressors. Indeed, offender students strive to avoid isolation, make friends, and take a high position in the team, and bullying is one of the ways to achieve this goal (Naumenko & Mozgovaya, 2021).

As social maladjustment increases, Offenders become more aggressive ( $R = 0.56$ ;  $p\text{-level} = 0.0044$ ), which, together with anxiety and impulsivity, can lead to psychological and physical violence. These results are consistent with other researchers' findings: bullying instigators are impulsive and have a strong need to dominate (Volk, Provenzano, Farrell, Dane & Shulman, 2021). So, one of the reasons for bullying is the desire of the individual to take a position of power and emphasize his superiority, humiliating the dignity of the Victims (Khaidov & Shalaginova, 2021). The use of ridicule, insults, and slander is a frequent occurrence among children and adolescents (Makarova, 2018).

Victims are introverted ( $R = 0.50$ ;  $p\text{-level} = 0.0033$ ), lonely, anxious ( $R = 0.47$ ;  $p\text{-level} = 0.0068$ ) and need a friendly environment. High anxiety ( $R = 0.47$ ;  $p\text{-level} = 0.0068$ ) in the Victims group is confirmed by data obtained in other studies (Skorobogatova, 2021). It is noted that Victims of bullying are closed in communication and are not ready to be active in the social environment (Hamel, Schwab & Wahl, 2021), which does not allow them to take stable positions in the classroom (Machimbarrena et al., 2019).

Victims have a negative attitude toward others and tend to avoid conflict. According to V. R. Petrosyants, Victims of bullying express a negative attitude towards violence and tend to avoid conflict with the instigators of bullying (2010). There is evidence that the experience of bullying at school age reduces personal adaptive potential, as well as indicators of self-esteem and self-acceptance with an increase in self-blame (Petrosyants, 2011). This may explain why social

maladjustment in Victims is associated with self-injury. The loneliness and tendency of Victims to avoid conflict increase the victimization of the individual (Machimbarrena et al., 2019), increasing the likelihood of being bullied again.

Victim-Offenders are introverted and have difficulty establishing trust. Victim-Offenders play a dual role, they are characterized by the stress of experiencing on both sides, and it can increase anxiety. Their anxiety and hostility can lead to suspicion and aggression. For this group, bullying can be both revenge on Offender (Estévez, Cañas, Estévez, Povedano, 2020) or displaced aggression on another, more harmless student (Reyes, 2022).

In general, the results obtained confirm the data of other authors that social maladjustment is more pronounced in Victims than in aggressors (Estévez et al., 2020).

### **Conclusion**

Thus, statistically, significant differences were found between the socio-psychological characteristics of different groups of schoolchildren involved in bullying, which allowed us to draw the following conclusions:

- 1) All participants in bullying – Victims, Offenders, Victim-Offenders - have signs of social adaptation disorders: experiencing loneliness, negative attitude towards others, and problems with trust, however, not everyone has social maladjustment. Harbingers of social maladjustment in Offenders are manifested in the desire for loneliness, disappointment in the experience of communication, difficulties in trust, hostility towards others, and the choice of asocial methods to achieve leadership positions. The rejection of close and meaningful relationships increases the likelihood of forming an antisocial identification and increases social maladjustment. At the same time, loneliness contributes to the breakdown of social ties and increases maladaptation. Signs of impaired social adaptation in Victim-Offender are manifested in a suspicious and hostile attitude towards people, and a tendency to reject trust. Probably, the opportunity to “recoup” allows them to maintain a stable mood but does not protect against discord in relations with the social environment.
- 2) The manifestation of social maladjustment in different groups of schoolchildren participating in bullying indicates its versatility and poses a difficult task of its psychodiagnostic assessment and psychological correction since the presented portraits of the personality of Offenders, Victims, and Victim-Offenders differ. At the same time, the psychodiagnostic suitability of the screening method for diagnosing propensity to extremism (R. V. Kadyrov, T. V. Kapustina, E. V. Sadon, A. S. Elzesser) for a wider range of problems of social adaptation should be noted, since it includes multidirectional diagnostic criteria that allow you to track signs of maladjustment in individuals who play different roles in bullying: Offender, Victim, Victim-Offender.
- 3) It has been substantiated that participation in bullying as an Offender, Victim, or Victim-Offender contributes to the appearance of signs of social maladjustment. At the same time, the signs we have identified are multidirectional, which makes it difficult to create correction programs, especially short-term ones. This makes it relevant to create a universal program of psycho-correction. We proceed from the position of S. L. Rubinshtein, who pointed out that a person’s self-determination is accomplished through the definition of one’s attitude toward other people (2019). Therefore, one of the targets of psycho-correction in case of maladjustment should be the formation of self-acceptance (increase in the level of

self-satisfaction) and acceptance of others (increase in the level of the need to communicate and carry out joint activities). These target points reflect the signs of social maladjustment and are associated with self-attitude as a reflection of the "Self-Other" interaction and can form the basis of a universal program for correcting maladaptation for individuals occupying different roles in bullying.

- 4) Based on the study, recommendations were developed for school teachers, drawn up in the form of a **memo** (Fig. 2). The memo includes descriptions of the behavioral aspects of Offenders, Victims, and Victim-Offenders, allowing you to recognize the phenomenon of bullying in the classroom at an early stage. Recommendations for actions in case of bullying are also presented. At present, the memo has been introduced at the International Linguistic School of Vladivostok.


**Figure 2**

*Translation of fragment of a memo for teachers*


**CHARACTERISTICS OF BULLYING**

1. BULLYING IS AGGRESSIVE BEHAVIOR, PURPOSEFULLY CAUSING HARM OR DISCOMFORT TO ANOTHER PERSON.
2. BULLYING IS SYSTEMATIC AND REPETITIVE BEHAVIOR.
3. IMBALANCE IN THE USE OF FORCES, WHEN THE VICTIM DOES NOT RESIST THE AGGRESSION DIRECTED AT HIM, A SITUATION OF INEQUALITY OF FORCES ARISES.


**TRADITIONAL ROLES FOUND IN BULLYING**



«OFFENDERS»  
(STUDENTS WHO PRESENT THEMSELVES AS PARTICIPANTS IN BULLYING)




"VICTIMS"  
(STUDENTS WHO REPRESENT A HIGH DEGREE OF TENDENCY TO BE A VICTIM)




"VICTIM-OFFENDERS"  
(COMBINES TWO ROLES)

EACH STUDENT IN ANY OF THE ROLES LISTED ABOVE HAS PSYCHOLOGICAL CHARACTERISTICS THAT NEED TO BE CONSIDERED BEFORE STARTING A CONVERSATION ABOUT BULLYING.



**"OFFENDERS"**

- AIMED AT HIGH ACTIVITY AND SOCIABILITY IN THE TEAM;
- STRIVE TO BE LEADERS IN THE GROUP;
- IN CASE OF A CONTROVERSIAL SITUATION, THEY TEND TO DEFEND THEIR OPINION UNTIL THE BEGINNING OF THE CONFLICT;
- THEY TRY TO STAND OUT AMONG THEIR PEERS. THUS, THEY CAN PUT THEMSELVES ABOVE OTHERS;
- IMPULSIVE, CAN MAKE RASH ACTIONS UNDER THE INFLUENCE OF EXTERNAL CIRCUMSTANCES;
- PRONE TO AGGRESSIVE MANIFESTATIONS (BOTH VERBAL AND PHYSICAL);
- HAVE LOST INTEREST IN LEARNING, PERFORMANCE IS DECREASED;
- PREFER VIOLENT GAMES, ON THE INTERNET, CHOOSE TOPICS RELATED TO CRUELTY AND DESTRUCTION.



**Limitations**

In this study, a sample has been collected that is sufficient to capture the trends in the distribution of signs of social maladjustment among schoolchildren participating in bullying, occupying the roles of Offender, Victim, and Victim-Offender. An increase in the sample can change the proportion of identified signs of social maladjustment within groups and reveal the internal heterogeneity of groups of respondents with a particular role in bullying. The limitations

of the screening method used should also be noted. The absence of scales makes the procedure for assessing the severity of certain criteria of personality maladjustment insufficiently formalized and, therefore, less accurate.

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**Tatyana Viktorovna Kapustina** developed of the research concept, processed statistical data, participated in writing the article, made scientific consultation, final approval of the article.

**Anastasia Sergeevna Elzesser** wrote the literature review on the topic of the article, participated in the interpretation of the data obtained, participated in writing the article.

**Lidia Viktorovna Mandrykina** collected of material, participated in the interpretation of the data.

**Anton Sergeevich Gaidai** analyzed and done the interpretation of the obtained data, participated in writing the article, translated the article into English.

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#### **Information about conflicts of interest**

The authors have no conflicts of interest to declare.