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Varina H. B.

Master of Psychology,

Senior Lecturer at the Department of Psychology

Bohdan Khmelnytskyi Melitopol State Pedagogical University

Kovalova O. V.

Doctor of Psychology,

Professor at the Department of Psychology

Bohdan Khmelnytskyi Melitopol State Pedagogical University

FEATURES OF THE USE OF AUGMENTATIVE AND ALTERNATIVE COMMUNICATION METHODS IN PSYCHOLOGICAL SUPPORT OF CHILDREN WITH AUTISM SPECTRUM DISORDER

ОСОБЛИВОСТІ ВИКОРИСТАННЯ МЕТОДІВ ДОПОМІЖНОЇ ТА АЛЬТЕРНАТИВНОЇ КОМУНІКАЦІЇ В ПСИХОЛОГІЧНОМУ СУПРОВОДІ ДІТЕЙ З РОЗЛАДОМ АУТИЧНОГО СПЕКТРУ

У статті проаналізовані та обґрунтовані особливості імплементації сучасних методів допоміжної та альтернативної комунікації в процес психологічного супроводу дітей з розладом аутичного спектра. Сучасний досвід показує, що в умовах раннього втручання розвиток дітей з розладом аутичного спектра набуває стійкої позитивної динаміки. Надання допомоги дітям з розладом аутичного спектра найбільш успішно здійснюється у парадигмі комплексного супроводу. У дітей з розладом аутичного спектра порушення в галузі соціальної комунікації та прагматики мови зустрічаються у всіх без винятку, незалежно від віку та рівня розвитку. Аналіз поглядів різних дослідників на проблему комунікації та розладів мовлення у дітей з розладами аутистичного спектра, говорять на користь того, що введення засобів альтернативної та допоміжної комунікації являє собою ефективне втручання, що дає швидкі результати і позитивно позначається на розвитку комунікації та мови. Кращий результат досягається в ситуації, коли оточення дитини підтримує практику використання засобів альтернативної та допоміжної комунікації, вміє правильно реагувати на комунікативні ініціативи дитини, створювати ситуації, в яких вона могла би використовувати засоби альтернативної та допоміжної комунікації і проводити навчання в процесі повсякденної взаємодії. Відповідно, авторами статті актуалізується питання пошуку альтернативних можливостей побудови комунікативного простору між дитиною та батьками, а також впровадження методів допоміжної комунікації за допомогою сучасних мобільних додатків та пристроїв. При виборі засобів додаткової комунікації оцінюється рівень комунікативного розвитку, комунікативні можливості та здібності дитини. В рамках емпіричного дослідження продемонстровані позитивні результати впровадження сучасного програмного забезпечення для мобільних пристроїв з метою оптимізації побудови конструктивного комунікативного простору між дитиною з розладом аутистичного спектра та значущими дорослими.

Ключові слова: альтернативна комунікація, допоміжна комунікація, розлад аутичного спектра, диспраксія, комунікатор, соціальна ситуація розвитку, жестова мова.

The article analyzes and substantiates the peculiarities of the implementation of modern methods of auxiliary and alternative communication in the process of psychological support of children with autism spectrum disorders. Modern experience shows that in the conditions of early intervention, the development of children with autism spectrum disorder acquires stable positive dynamics. Assistance to children with autism spectrum disorder is most successfully provided in the paradigm of complex support. In children with autism spectrum disorders, disorders in the field of social communication and language pragmatics are found in all without exception, regardless of age and level of development. An analysis of the views of various researchers on the problem of communication and speech disorders in children with autism spectrum disorders suggests that the introduction of alternative and auxiliary communication means is an effective intervention that gives quick results and has a positive effect on the development of communication and language. The best result is achieved in a situation where the child's environment supports the practice of using alternative and auxiliary communication tools, knows how to respond correctly to the child's communicative initiatives, create situations in which he could use alternative and auxiliary communication tools and conduct training in the process of everyday interaction. Accordingly, the authors of the article actualize the issue of finding alternative opportunities to build a communicative space between the child and parents, as well as the implementation of auxiliary communication methods using modern mobile applications and devices. When choosing means of additional communication, the level of communicative development, communicative capabilities and abilities of the child are assessed. As part of an empirical study, the positive results of the implementation of modern software for mobile devices are demonstrated in order to optimize the construction of a constructive communicative space between a child with autism spectrum disorder and significant adults.

Key words: alternative communication, auxiliary communication, autism spectrum disorder, dyspraxia, communicator, social development situation, sign language.

Problem statement. Autism spectrum disorder (ASD) is quite common today. Every year, the number of children suffering from this disorder increases worldwide. This fact is confirmed by statistics. In America and Europe, this problem appeared long ago. Therefore, conditions are created for such children that allow them to be full members of society. Ukraine and neighboring countries have faced the problem of finding ways to socialize and adapt children with ASD relatively recently, which falls on the period of formation and development of inclusive education in Ukraine. Children with ASD have problems in social interaction and communication. They do not always fully perceive and understand the processes of social interaction, poorly or not at all understand the causes and consequences, and not always in the process of communication can express their desires and needs. Although they often show awareness, and in some areas can even surpass their peers, but in real situations of human communication they can not adequately show their communication skills. At the same time, when they find themselves in an unpleasant situation, they are unable to use their language appropriately. These children do not use their ability to speak in order to interact, but resort to short-term communication. In the process of communication they feel in danger, react irritated and impulsively. From the outside it seems that they behave like "little children", that is, moan, cry, run away or react aggressively. Instead of functional verbal communication, such children use other strategies, such as irritation, screaming, crying, avoiding communication, etc.

That is, in order to effectively help children with autism spectrum disorder, we must become "translators" for them and try to translate situations that they do not understand into a form that they understand. The experience of working with such children has shown that the most acceptable form for them is visual sensations, that is, sensations created or caused by images, as they are closer to people with autism spectrum disorders than concepts expressed in words. According to scientists, the presence of autism spectrum disorders leads to special difficulties in building a correctional approach, developing pedagogical conditions, forming a cognitive component, socialization, learning behavior. N. Bazyma's research studied psychological and pedagogical conditions and correctional and developmental methods of forming speech activity in children with autism spectrum disorders of senior preschool age. Researcher L. Rybchenko focused on the process of organizing correctional work with children with autism spectrum disorders in preschool and school special and inclusive educational institutions. Scientist T. Skrypnyk devoted her monograph to the phenomenology of autism, developed a comprehensive program for the development of children with autism spectrum disorders. The scientific works of K. Ostrovska identified the main problems of psychological assistance to children with autism spectrum disorders. Researcher V. Tarasun developed a textbook on the concept of development, education and socialization of children

with autism spectrum disorders. D. Shulzhenko described the genesis of concepts and categories of autism spectrum disorders [1]. However, the issues of general ideas about the content of the communicative sphere, the relationship of its structural components, the consistency of diagnostic tools remain open.

The purpose of the article is to analyze and justify the effectiveness of the existing methods of auxiliary and alternative communication in psychological support of children with the disorder of the autistic spectrum.

Results of the research. Over the past two decades, scientists have made great progress in understanding social interaction and communication impairments in children with ASD, resulting in a greater emphasis on early development of communication and social skills in diagnosis. In the two main diagnostic manuals (DSM-IV and ICD-5), the main symptom is communication impairment, but social interaction, body language and facial expressions are put in the first place.

Most parents of autistic children begin to suspect that something is wrong with their child when they see a delay in language development or regress. Problems with communication, that is, with understanding language and its development, are often cited as one of the main causes of severe behavioral disorders in people with complex forms of autism and mental retardation. The lack of clear, spontaneous speech at the age of five is considered a reason for an unfavorable prognosis for the future. Of course, communication and communication impairments are at the heart of autism. Although all people with autism spectrum disorder have communication impairments, the degree and nature of these impairments can vary considerably and it will be a long time before they can be classified and their causes understood. It is estimated that around one third or one in two children and adults with autism do not have a language. However, recent research suggests that the real numbers are much lower, somewhere between 14-20% among those who have been able to get into an early intervention programme. Tager-Flusberg and Joseph distinguish between two possible scenarios in which a child with an autism spectrum disorder may develop a communication disorder: impairment on the background of normal language development (without obvious disorders of sound order, syntax and morphology, with an age-appropriate vocabulary) and impaired language development, characteristic of other specific language development disorders [6]. Another potential subgroup may be thought of as a child suffering from verbal or articulatory dyspraxia. Children with dyspraxia have a disorder of movement regulation, which also affects the ability to mimic. Recent studies on the role of "mirror neurons" in the parietal and frontal frontal lobes may shed light on the relationship between motor control and imitation, as well as on the possible connection with the development of intersubjectivity of perception.

Despite the diversity of language abilities in children with autism spectrum disorder, disorders in the field of social communication and pragmatics of language are found in all, without exception, regardless of age and level of development. According to Wetherby,

impairments in social communication occur in two main areas: the capacity for joint attention; the ability to use and perceive symbols. Since joint attention develops before the first words appear, impairments in this area can be considered more fundamental, and a number of longitudinal studies provide evidence for a link between joint attention and language development. According to Wetherby's work, "impairments in the initiation and maintenance of joint attention have a cascading effect as language learning occurs through the child's modeling of words that belong to the joint attention domain." Wetherby believes that disabilities in imitation and ability to learn through observation are another reason why people with autism spectrum disorder have trouble using symbols. Impairments in understanding and using symbols in people with ASD relate to understanding the behaviour of others, copying and using the behavioural patterns of others, and the ability to make sense of a situation from context. Because children are often diagnosed with autism at the age of 3-4, scientists have little information on how language development takes place among younger children. Retrospective studies based on the study of parental accounts and/or videos taken during childhood, along with the study of the development of children at risk, show that all showed a severe delay in the development of both expressive and receptive communication [7].

Another common phenomenon described by about 25% of parents of children with autism spectrum disorder is the loss of language skills after the child has already mastered a few words. Lord, Schulman and DiLavore write that this pattern is unique to autism and cannot be attributed to normal developmental delays [4]. Chawarska hypothesized that these early language-like vocalizations disappear because children with autism spectrum disorder lose the connection between the sound of a word and its symbolic meaning. A number of longitudinal studies of language development in children with autism spectrum disorders suggest that progress in each domain will follow the same scenario as in a normotypic child [2]. However, the discourse of a child suffering from autism spectrum disorders is also characterized by a few specific deviations. One of the most common is the development of echolalia, which may be immediately or delayed. Though in certain situations echolalia may occur as self-stimulation, in all cases it can also be a communication tool. In the early stages of speech development, echolalia can be a child's only means of communication. Tager-Flusberg found that with the start of intervention in children with autism spectrum disorder and Down's syndrome, the number of echolalia drops rapidly [6]. Another characteristic of language development disorders in children with ASD is the problem of deiosis, or, as is often said, the inability to use pronouns. Such features as a reduced ability to regulate the volume of speech and inability to intonate correctly, which is especially exacerbated by stress, also pose a big problem for a person with autism spectrum disorder, although at this stage they are practically not studied. Summing up, we can say that according to the research, the difficulties faced by people with autism are

caused not only by social problems, but also by disorders affecting the basic aspects of sound production.

Fewer studies have examined language understanding in people with autism spectrum disorder, although the inability to understand spoken language and respond appropriately is a serious symptom. According to Tager-Flusberg, children with autism often "have difficulty associating a word with what it means, but in principle have only a small understanding of all possible modes of social interaction, so that normative children maintain acquired language skills and master more complex linguistic constructions". The pragmatic structure of language has been studied in many different ways. At different levels of language development, children show a fairly similar pattern. Ghaziuddin and Gerstein suggested that people with Asperger's syndrome are not very good at maintaining sequence in conversation, and often talk too much. Ramberg, Ehlers, Nyden, Johansson, and Gillberg found that children with autism spectrum disorder have an impaired ability to maintain turn-taking in conversation [3]. Tager-Flusberg and Anderson write that children with autism have difficulty processing new information and often speak out of turn. The vast majority of cases of dialogue initiation over the number of responses were found in the study by Bishop, Hartley, and Weir. Tager-Flusberg suggested that the main difficulty lies in establishing and maintaining turn-taking in conversation – what is called the ability to sustain dialogue. Although the basic urge to communicate is intact, people with autism often have impairments in participating in communicative interactions, which involve discussing and sharing information together [6].

All nonverbal communication systems are called alternatives, but another form of communication can be used either as a complete alternative to speech or as a supplement to it. It is relevant in the absence of oral discourse and implies mastering a completely different communication system, where nonverbal means of communication (objects, photographs, icons, gestures) are of special importance. Alternative communication means that a person communicates directly with the caller without using the language. Auxiliary communication is requested by persons with insufficiently trained oral discourse, who need additional adequate support, accompanying their own discourse. It is represented by a system of methods, on the one hand, designed to help children with autism spectrum disorder to survive a long period of absence of speech, contributing to its acquisition. On the other hand, augmentative communication facilitates the understanding of verbal messages of persons with severe language impairments and provides them with more effective interaction with others.

A large number of children with autism spectrum disorder do not speak verbal language, and some children in this category have not developed communication skills. When choosing the means of additional communication, the level of communicative development, communicative capabilities and abilities of the child are assessed. Therefore, it is necessary to observe the child in different situations; to discuss what

communicative actions the child performs in everyday life, during games, communication; to analyze which repetitive actions can be interpreted as signals of the child's desires and needs. Communication assistive devices have been used for a long time. However, interest in the development and use of communication assistive devices has increased especially since the advent of high-tech assistive devices [5]. There are stationary and portable (portable) technical communication devices. Technical means of communication are also called speech computers, or tokers / talkers (Talker).

The BIGmack communicator is a simple auxiliary technical communication device with speech output, which is often used when entering into communicative interaction. With its help, you can record and store in memory voice messages lasting up to 20 seconds.



Fig. 1. Communicator "BIGmack"

Communicator "Aladin Talker" – combines picture symbols of communication of the program "Boardmaker" with electronic speech output. On the individually composed on-screen control panels, the displayed speech units are assigned to pictures or symbols. One of the symbols can also reveal the next level. So, for example, the symbol for food can be assigned to the message "I want to eat" with the disclosure of the level with the image of different dishes, so that a child who does not speak can then tell what he would like to eat. The presence of the Zebulon module in the Aladin Talker communicator allows the use of an on-screen keyboard with speech output. Thanks to this, users who have a written language can operate with an unlimited vocabulary. The main advantage of "Aladin Talker" at the symbol level is the direct relationship between the picture and the meaning. In addition, the on-screen control panel can easily accommodate digital photos.

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Fig. 2. Communicator "Aladin Talker"

High-tech assistive devices. Apps for smartphones and tablets "Communicator DAR". "Communicator DAR" was developed by Belarusian specialists for children and adults with autism. This software uses an alternative way of communication based on pictures, as a result of which even people who do not speak can express their desires, understand what is expected of them, develop language and successfully interact with other people. The program allows you to use graphic symbols (pictures) for communication, understandable to any person. Each image denotes a concept (emotions, movements, etc.) and has a voice accompaniment. "Communicator DAR" can be used by children from three to four years old.

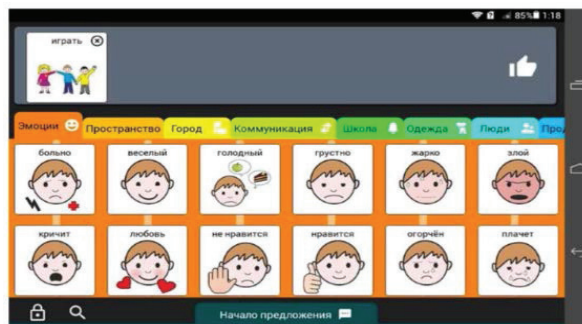


Fig. 3. "DAR Communicator"

"Understand me" application. The "Understand Me" application is an artificial substitute for speech for people who do not speak or for those whose speech is not well understood by others. With the help of voiced and expressive icons, not only children, but also adults, who for various reasons are deprived of natural speech, will be able to become clear in expressing their needs and desires. The icons are voiced by a professional speaker. Designed for use in cases such as: alalia, aphasia, anarthria, autism, cerebral palsy, Down syndrome, stroke and others. Can be used on almost any smartphone.

"PECS" for tablet and smartphone on Android and iPad. "PECS" cards on the tablet are very convenient to use, especially since modern devices respond to the user's action almost instantly, and the applications themselves are distinguished by incredible functionality and user-friendly interface.

Benefits:

- user-friendly and intuitive interface, calm color scheme;
- a database of more than 9000 high-quality images arranged by categories;
- the ability to create and edit categories, as well as delete unnecessary ones.
- the ability to swap categories and pictures, which facilitates the use of the program by a child with mental retardation;
- the ability to capture images from the device's camera and add them from the peccs cards in the base of the application.

JABtalk Program.

Benefits:

- convenient navigation, intuitive for the child.
- composing sentences from individual words.
- the ability to download pictures from the device gallery, take photos from the device camera, as well as download images from the Internet directly without leaving the application.
- the ability to sound pictures (recording your own audio words using a microphone or automatically formatting text to speech. Grouping words into categories, the ability to create and delete categories.
- the ability to resize pictures, as well as set different sizes for the screen in landscape and portrait mode.

In the empirical study, the following methods were used in the process of diagnosing the communicative sphere in children with autism spectrum disorders.

1. Vineland Adaptive Behavior Scale (VABS).
2. To determine the level of speech development, the method "Determination of speech disorders in children with autism" was used.

The obtained diagnostic results allow us to draw a conclusion about the general picture of disorders, the preservation of mental functions and the depth of the child's lesion. The analysis of the data obtained during the diagnosis of the child on the Weiland scale is carried out in comparison with the normative indicators on the scales (Fig.2). The range of norms is from 85 to 115.

In the figure we can see that all the indicators studied by the Weiland scales "Communication", "Daily living skills", "Socialization", "Motor skills" in the respondent with autism spectrum disorder are below normal.

The results of Fedir's diagnosis according to the methodology "Determination of speech disorders in children with autism" are given in the summary table of assessment of speech disorders in autism (Table 1).

Table 1

Summary table of assessment of language disorders in autism

Score/points	Units					
	1 unit	2 unit	3 unit	4 unit	5 unit	6 unit
score by points	7	6	6	5	6	4
total score	34					

Analyzing the data obtained, we can conclude that a child with autism spectrum disorder has problems with: understanding the addressed speech, the formation of the constituent structure of the word, the pace of speech and the formation of the grammatical structure of speech. Thus, according to the results of the data obtained during the stating experiment, we conclude that the subject child with autism spectrum disorders has poorly developed skills to follow instructions, listen and understand what he heard, verbal and non-verbal skills, as well as low level of recognition and expression of emotions, insufficiently formed: positive perception of others, ability to share and cooperate with others, skills of establishing contact in socially acceptable forms, belonging to a certain social group, ability to follow social rules and norms. As part of the formative experiment, the "Constructor of phrases and answers" was developed and tested, the essence of which is that with its help a child with autism spectrum disorders learns to correctly build sentences, answer questions. It has been used in conjunction with sign language, the Makaton system, PECS cards, Aladdin

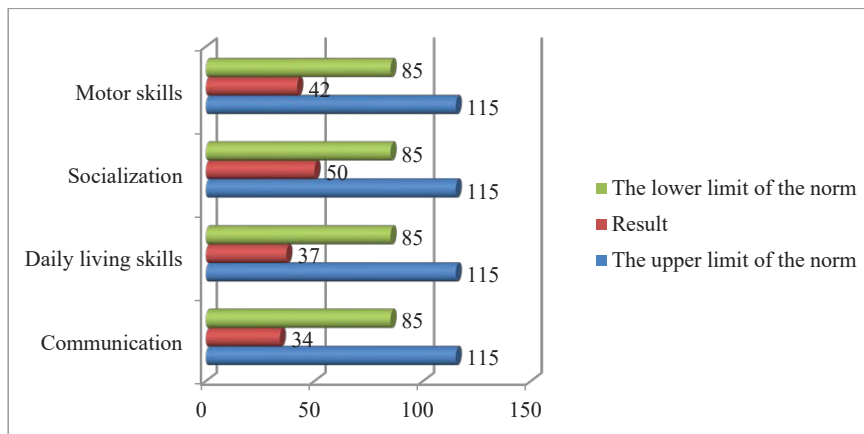


Fig. 4. Indicators of the formation of diagnosed skills according to the Weiland method

Token, DAR Communicator and a visual dictionary of social situations.

According to the results of the correctional work, the respondent's communication and social skills improved, with the help of sign language, the Makaton system, PECS cards and a visual dictionary of social situations, he learned to understand the emotions of other people, and also understood the spoken language. Prior to corrections, the child had problems with atypical behaviour. It has been used in combination with sign language, the Makaton system, PECS cards, Aladin Token, DAR Communicator and a visual dictionary of social situations.

Table 2

Method "Determination of speech disorders in children with autism". Indicators before and after correction

Score/points	Units					
	1 unit	2 unit	3 unit	4 unit	5 unit	6 unit
score by points before correction	7	6	6	5	6	4
score by points after corrections	6	5	5	4	4	4
total score before correction	34					
total score after correction	28					

Due to the implementation of a comprehensive integrative program of psychocorrection with the use of alternative and auxiliary means of communication, it was possible to partially overcome the violations in the formation of the constituent structure of the word and grammatical system of speech. "Constructor of phrases and answers" helped the child to understand the composition of sentences and taught him to answer questions.

Conclusions. Comparing the results of the two stages of the study on the Weinland scale, we obtained data showing an increase in the dynamics of indicators on the scales "Communication" and "Socialization". The child became better at recognizing and expressing emotions, expressing requests and desires.

Comparative analysis according to the method "Determination of speech disorders in children with autism", showed positive dynamics in the unit № 1 "Absence or slow development of receptive speech", unit № 3 "Lexico-grammatical speech disorders", unit № 5 "Phonetic speech disorders". The child began to better follow instructions, listen and understand what he heard, form sentences. The use of alternative and auxiliary means of communication contributes to the improvement of linguistic skills, making them more suitable for the process of communication, interaction, expression of their own needs and feelings, allows the child to share information, codify their ideas, that is, to develop communicative and adaptive potential.

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