

*Autaeva A.<sup>1</sup> Bekmurat A.<sup>1\*</sup>*

*<sup>1</sup>Abai Kazakh National Pedagogical University,  
Almaty, Kazakhstan*

## **APPLIED ASPECTS OF WORKING WITH CHILDREN WITH AUTISM SPECTRUM DISORDERS BASED ON ABA THERAPY**

### *Abstract*

The proposed article presents a theoretical overview of the problem of autism and ABA therapy as a method of correction. Currently, insufficient assistance to children with autism has become a global problem. This is due to the growth, as the number of children with this disorder is growing every day. According to modern researchers, various forms of early autism occur in 1 out of 100 children. In addition, there is an increased frequency of this developmental disorder. ABA therapy is widely known as a safe and effective correction of autism spectrum disorder. The principles and methods of applied behavior analysis can contribute to the development of basic skills in children with autism, such as communicating with people, handling, self-service, understanding words spoken face to face, as well as complex skills such as verbal speech, reading and understanding the point of view of another person (mental model). This article attempts to describe the features of applied aspects of applied behavior analysis with a theoretical justification of autism disorder and ABA therapy.

**Keywords:** autism spectrum disorders, autism, correction, ABA therapy, applied aspects.

*Аутаева А.Н.,<sup>1</sup> Бекмурат А.Т.<sup>1\*</sup>*

*<sup>1</sup>Казахский национальный педагогический университет имени Абая,  
г. Алматы, Казахстан*

## **ПРИКЛАДНЫЕ АСПЕКТЫ РАБОТЫ С ДЕТЬМИ С РАССТРОЙСТВАМИ АУТИСТИЧЕСКОГО СПЕКТРА НА ОСНОВЕ ТЕРАПИИ АВА.**

### *Аннотация*

В предлагаемой статье представлен теоретический обзор проблемы аутизма и терапий АВА как метода коррекции. В настоящее время недостаточное оказание помощи детям с аутизмом стала мировой проблемой. Это связано с ростом, так как количество детей с таким расстройством растет с каждым днем. По данным современных исследователей, различные формы раннего аутизма встречаются в 1 случаях из 100 детей. Кроме того, наблюдается повышенная частотность данного нарушения развития. АВА-терапия широко известна как безопасная и эффективная коррекция расстройства аутистического спектра. Принципы и методы прикладного анализа поведения могут способствовать развитию у детей с аутизмом базовых навыков, таких как общение с людьми, обращение, самообслуживание, понимание слов, произнесенных лицом к лицу, а также сложных навыков, таких как вербальная речь, чтение и понимание точки зрения другого человека (ментальная модель). В этой статье делается попытка описать особенности прикладных аспектов прикладного анализа поведения с теоретическим обоснованием расстройства аутизма и терапии АВА.

**Ключевые слова:** расстройства аутистического спектра, коррекция, АВА терапия, прикладные аспекты.

*А.Н. Аутаева,<sup>1</sup> А.Т. Бекмурат<sup>1\*</sup>*

*<sup>1</sup>Абай атындағы Қазақ ұлттық педагогикалық университеті,  
Алматы қ., Қазақстан*

## **АВА ТЕРАПИЯСЫ НЕГІЗІНДЕ АУТИЗМ СПЕКТРІНІҢ БҰЗЫЛЫСЫ БАР БАЛАЛАРМЕН ЖҰМЫС ІСТЕУДІҢ ҚОЛДАНБАЛЫ АСПЕКТІЛЕРІ.**

### *Аңдатпа*

Ұсынылып отырған мақалада қазіргі таңда түзету мәселесі әлемдік деңгейге айналған аутизм спектрінің бұзылысы және түзету әдісі ретінде АВА терапиясы жөнінде теориялық шолу жасалған. Жаһандық даму барысында аутизм спектрінің бұзылысын түзету әлемдік проблемаға айналу себебі,

бұндай бұзылысы бар балалардың саны күн өте артуда. Қазіргі заманғы зерттеушілердің пікірінше, ерте жастағы аутизм спектрінің бұзылысы әртүрлі формалары 100 баланың 1 жағдайында кездеседі. Ал АВА терапиясы аутизм спектрінің бұзылысын қауіпсіз және тиімді түзету ретінде кеңінен танымал. Қолданбалы мінез-құлықты талдаудың принциптері мен әдістері аутизмі бар балалардың адамдармен қарым-қатынас орнатуға, коммуникация жасауға, өзіне қызмет етуіне, қаратылып айтылған сөздерді түсінуіне және имитация сияқты негізгі дағдыларды, сондай-ақ вербалды сөйлеу, оқу және басқа адамның көзқарасын түсіну (ақыл-ой моделі) сияқты күрделі дағдыларды дамытуға ықпал ете алады. Бұл мақалада аутизмі спектрінің бұзылысы мен АВА терапиясын теориялық негіздеп, қолданбалы мінез-құлықты талдаудың қолданбалы аспектілерінің ерекшеліктерін сипаттауға тырысады.

**Түйін сөздер:** аутизм спектрінің бұзылысы, түзету, АВА терапиясы, қолданбалы аспектілер

**Basic provisions.** Applied Behavior Analysis (ABA) is a scientific discipline that uses behavioral aspects to change problematic behavior into socially significant behavior [1].

The U.S. Department of Health recommends ABA as the primary intervention method for children with ASD. Since then, interventions based on the ABA method have been recognized as necessary for both medical care and education. ABA was routinely recommended to people with autism spectrum disorders. ABA programs are funded by the public health system in most states (in 38 states as of November 2014) by federal organizations such as the Pension and Medical Insurance Fund. as well as many multinational companies, for example, JPMorgan Chase & Co., Microsoft, Apple, Goldman Sachs, Intel, etc. ABA is not a rigid, once and for all established set of prescribed procedures; rather, this discipline is based on the systematic application of methods that can change behavior, and these changes must be measurable, calculated, analyzed and reproduced, as well as socially significant. ABA includes a wide range of techniques on a general conceptual basis that can be applied in various combinations depending on the context of the situation, while at the same time not contradicting the latest achievements in other fields of science, for example, medicine, biology, neurology. The effectiveness of ABA programs confirmed by numerous scientific studies [2], including: more than 2000 studies with one participant, including the replication phase; randomized Controlled Trials (RCT); meta-analyses; sequential meta-analyses; article reviews based on standardized analysis; research in the field of neuroplasticity; assessment of the social significance of the conducted research; analysis of economic significance

In Canada, there are also widely available services that provide ABA programs, but the prevalence of these services varies widely in different provinces. (Autism Society Canada 2010; Autism Now 2014). Unlike the countries of North America, in Europe the state does not provide financial support for interventions based on the principles of applied behavior analysis. Of course, it cannot be said that the formation of the ABA in the USA did not meet obstacles in its path. However, the work of a large professional community of behavioral analysts contributed to overcoming misconceptions about ABA therapy and the widespread dissemination of the method. In Europe, numerous proofs of the effectiveness of behavioral techniques are often simply ignored, and an article in the journal Autism Europe is indicative in this regard.

ABA therapy is widely known worldwide as a safe and effective treatment for ASD and other mental developmental disorders. The principles and methods of applied behavior analysis can promote shared attention by developing basic skills such as listener behavior and imitation, as well as complex skills such as verbal speech, reading and understanding another person (mental model).

We tried to evaluate the applied aspects of working with children with ASD based on applied behavior analysis (aba therapy).

**Introduction.** Autism spectrum disorder is considered a developmental disorder of a neurological nature that affects a person's ability to think, perception of the environment and attention to it, as well as social skills and human behavior.

However, society is not fully aware of the differences between the terms autism and autism spectrum disorder. These two terms only apply to the same person, assuming that the terms are not different. But these terms have their own difference, the limit of use. Awareness of them would allow children with autism spectrum disorders to understand the state of mind, understand thoughts, and know needs.

Based on this information, we can consider the history of Autism Spectrum Disorder from the general concept of Autism. The term "autism" was first coined (since 1908) by Eigen Bleuler, a swiss psychiatrist, and was used to describe patients with schizophrenia who were particularly self-absorbed. The term autism,

which Bleuler used, comes from the Greek word *autós*, which means "himself". It was intended to describe the "isolated self" that he saw in people with schizophrenia. [3] In fact, these diagnoses are different, since a child with Autism has no hallucinations, illusions, they do not use speech to convey their irrational thoughts, because they often do not use speech at all. In addition, children with Autism have stable symptoms throughout their lives, and the diagnosis of "schizophrenia" usually implies periods of remission.

In 1943, a doctor named Leo Kanner conducted observations of groups of children who were previously considered mentally retarded. He noted that the children had difficulties in social interaction, anxiety when deviating from the usual way of life, echolalia, limited repertoire of spontaneous activity, but at the same time good intellectual potential, good memory, hypersensitivity to sensory influences. Kanner coined the term "early childhood autism" to describe the totality of symptoms in the children he studied [4].

Early childhood autism began to attract researchers from the field of psychology and psychiatry. In 1967 psychiatrist Bruno Bettelheim wrote that autism has no organic basis, but is the result of the upbringing of mothers who consciously or unconsciously did not want their children, which in turn led to restraint in relations with them. He claimed that the main cause of the disease was a negative parental attitude towards infants at critical early stages of their psychological development [5]. But Bernard Rimland, a psychologist and father of a child with autism, disagreed with Bettelheim. He could not accept the idea that the cause of his son's autism was either his parental mistakes or the mistakes of his wife. In 1964, Bernard Rimland published the work "Infantile autism: the syndrome and its consequences for the neural theory of behavior", which indicated the direction for further research [6]. At that time, in 1980, the diagnosis of infantile autism was first included in the Diagnostic and Statistical Manual of Mental Disorders (DSM); the disease was also officially separated from childhood schizophrenia. In 1987, the DSM replaced "infantile autism" with a broader definition of "autistic disorder" and included it in the revised third edition. Back in 1944, German scientist Hans Asperger described a "milder" form of ASD, which until today was known as Asperger's syndrome. He described cases with boys who were very smart, but had problems with social interactions. He noted that children had difficulties with eye contact, stereotypical words and movements, as well as resistance to change, but at the same time they had no shortcomings in speech and language education. Unlike Kanner, Asperger also noted problems with coordination in these children, but at the same time more abilities for abstract thinking. In 1994, Asperger's syndrome was added to the DSM, expanding the diagnoses of the autistic spectrum, thus including more "mild" cases. Collectively, until today, the following categories have been used to describe ASD: childhood autism; atypical autism; hyperactive disorder with mental retardation and in combination with stereotypical movements; Asperger's syndrome; nonspecific pervasive developmental disorder; Rett syndrome; childhood psychosis.

People in education, medicine and society are unable to distinguish between the terms AUTISM and AUTISM SPECTRUM DISORDER. Simply put, autism is a general concept. The use of this term causes many obstacles. This is because a child with one autism spectrum disorder is completely different from a child with another autism spectrum disorder. If these two children were diagnosed with autism, we would say that they both have the same perception of the environment, interests, social skills and behavior. However, the two children have different abilities. Therefore, the most correct, more accurate term to describe these children is AUTISM SPECTRUM DISORDER. After all, the word "spectrum" is used in this term. That is, if we want to name the spectrum of blue: blue, light blue, deep blue, red-blue, etc. All of those are types of blue. Similarly, it shows that the level of children in diagnosis is different. And it is clear that the developmental work will be different depending on the level of the child.

In 2022, the World Health Organization (WHO) published the International Classification of Diseases of the 11th revision (ICD-11). In this classification, only one term was used to describe autism, this is the *autism spectrum disorder* and their degrees.

Autism spectrum disorder in ICD-11

*06 Mental, behavioral and neurodevelopmental disorders*

*6A02 Autism Spectrum disorder*

Description: Autism spectrum disorder is characterized by a permanent deficit in the ability to initiate and maintain mutual social interaction and social communication, as well as a number of limited, repetitive and inflexible patterns of behavior and interests. The disorder occurs during the developmental period, usually in early childhood, but symptoms may not fully manifest until social demands exceed limited capabilities. Deficits are serious enough to cause disturbances in personal, family, social, educational, professional or other important areas of functioning and, as a rule, are of a comprehensive nature and are observed in all areas of an individual's functioning, although they may vary depending on the social,

educational or other context. People on the spectrum demonstrate a full range of intellectual functioning and language abilities.

Categories of Autism spectrum disorder:

6A02.0 Autistic spectrum disorder without intellectual development disorder and with mild or absent functional language disorder

6A02.1 Autistic spectrum disorder with intellectual development disorder and with mild or absent functional language disorder

6A02.2 Autistic spectrum disorder without intellectual development disorder and with functional language disorder

6A02.3 Autistic spectrum disorder with intellectual development disorder development and with a violation of the functional language

6A02.4 Autism spectrum disorder without intellectual disability and with the absence of a functional language

6A02.5 Autism spectrum disorder with intellectual disability and with the absence of a functional language

6A02.Y Other specific autism spectrum disorder

This category of "other specific" is residual.

6A02.Z Autism spectrum disorder, unspecified

This category of "unspecified" is residual.

One of the worldwide concerns is that the number of children with ASD continues to grow worldwide. In Asia, the average number of children with ASD before 1980 was 1.9 per 10,000 children, and increased to 14.8 between 1980 and 2010 [7]. According to the World Health Organization estimates [March 30, 2022], autism is present in about 1 child out of 100 worldwide.

According to the Republican Scientific and Practical Center for Mental Health, more than 9,000 patients are under dynamic observation with ASD - as of October 14, 2022. In 2018, a total of 4707 cases of ASD in children were detected; 2019 - 5193; 2020 - 6771; 2021 - 8796.

At the same time, we are talking about an average indicator, and the prevalence rates of autism recorded according to various studies vary in a wide range. Nevertheless, according to the results of some reputable controlled studies, the real figures are much higher. The prevalence of autism in many low- and middle-income countries is unknown.

Despite significant economic and social costs, there are limited treatment options to alleviate symptoms associated with ASD, including both symptoms related to diagnostic criteria and those considered a function of concomitant mental and medical conditions that are known to exacerbate the severity of the manifestation. While there are promising indications for new treatments for autism, a recent systematic review has shown that while many children with ASD are treated with medical intervention, there is minimal evidence to support the benefits of most treatments. There are many problems associated with determining effective methods of treating ASD. Systematic reviews emphasize the possibility that genetic, environmental, cognitive and social heterogeneity of the ASD phenotype leads to high variability of the studied samples, which reduces the potential effect of intervention. Other factors contributing to difficulties in identifying effective treatments include small sample sizes, the absence of study participants with significant impairments, and the use of outcome indicators that are not uniformly accepted or used as intended. Cross-cultural differences, including what may be considered deviations from typical behavior in a certain culture, but not in another culture, further complicate the search for treatment options among the population with ASD.

Behavioral intervention, conducted from an early age using an intensive format, is currently an effective method of correction.

The main goal of any technique aimed at correcting autism spectrum disorder (ASD) is to improve the quality of life of a child, as well as the acquisition of skills that allow a child with autism spectrum disorder to overcome obstacles on the way to learning and independent life. One of the most effective and applied methods to achieve these goals is Applied Behavior Analysis or ABA-therapy.

The United States Surgeon General, Center for Disease Control, National Autism Center, Muskie School of Public Service and the Maine Department of Health and Human Services consider ABA therapy in correctional work for children with autism as the only method of efficacy proven by its qualitative research.

**Materials and methods.** ABA is based on experimentally derived principles of behavior, such as operant conditioning (Skinner, 1938). In B.F. Skinner's behavior analysis (1938, 1953), human behavior can

be analyzed within the framework of the three-term randomness of operant conditioning, which includes events preceding behavior (antecedents), behavior itself and stimuli that follow behavior (consequences).

ABA is the application of the principles of operant conditioning to enhance socially acceptable behavior through reinforcement and reduce maladaptive behavior through suppression or punishment [8]

To become a behavioral analyst, you need to complete training modules in International organizations such as BACB and IBAO. The Behavioral Analyst Certification Board (BACB) has been a leader in the field of behavioral analyst certification for more than two decades. BACB is a non-profit corporation that was established in 1998 to meet the professional certification needs identified by behavioral analysts, governments, and consumers of behavioral analytics services. BACB's mission is to protect consumers of behavioral analytical services by systematically establishing, promoting and disseminating professional standards of practice.

IBAO (International Behavior Analysis Organization) is an international behavioral analysis organization created with the aim of establishing and maintaining educational standards and ethical application of behavioral strategies.

Certification of behavioral specialists ensures educational standards, practical application of ABA and consumer protection worldwide. For certifications in these organizations, students are trained. One of such organizations is AzbukaABA, where the lecturer is Zuhra Izmailova Kamar, who teaches Applied Behavior Analysis and prepares students for the exam. As a practical base for students, the Center "Rostock", which is located in the city of Almaty, acts together with AzbukaABA Zuhry Kamar. The course of study with Zuhra Izmailova Komar consists of 7 modules:

1. Basic concepts and principles of applied Behavior Analysis.
2. Functional Analysis Of Behavior. (Behavior assessment).
3. Application of behavioral intervention.
4. Research.
5. Ethics.
6. Dedicated to additional topics in the PAP and a deeper study of already mastered concepts.
7. Supervision.

The second organization of courses on Applied Behavior Analysis is the Project "Autism, correctional work", where the lecturer is Julia Erts. The practical base for students is the Center "Our sunny World" in Moscow. The course of study at Julia Erts consists of 5 modules:

1. Basic principles and methods of applied behavior analysis (ABA).
2. Methods of assessment and development of speech skills in children with ASD.
3. Functional analysis and methods of behavior correction.
4. Supervision of behavioral programs and evaluation of the effectiveness of intervention.
5. Ethical and professional standards of practice and supervision.

Due to the fact that the BACB organization from January 1, 2023, applications for certification in the BACB will no longer be accepted from individuals living outside the United States and Canada. Students from CIS countries got the opportunity to be certified in IBAO organizations. The above courses from the authors Zuhra Kamar and Julia Erts, although they have some differences, they completely coincide and are registered in IBAO organizations, and students after completing training, 1000 hours of work under supervision, 50 hours of work supervising other students, 12 hours of continued training and passing the exam receive an international certificate "International Behavioral Analyst"

Behavioral interventions based on ABA often include conducting functional analysis to determine the prerequisites and consequences of a child's behavior, selecting "target behavior" based on the child's individual skills and difficulties, measuring the child's current level of behavior as a baseline, and finally implementing behavioral intervention to increase socially acceptable behavior and/or reduce maladaptive behavior. During the intervention, behavior is continuously measured to determine the effectiveness of the intervention, and, in general, after the intervention is completed, generalizations of acquired skills in various settings, among people and materials are evaluated. In addition, follow-up data is often collected to assess generalization and maintenance of behavior (i.e., intervention success).

*Intervention strategies based on applied behavior analysis:*

*Discrete Trial Training (DTT)*

DTT and ABA are not synonymous, because in DTT it is the application of ABA principles in a structured environment in order to teach specific skills. A "discrete trial" refers to a small block in which an

adult (e.g. a child's teacher) provides a discriminating stimulus, which is then followed by the child's reaction and reinforcement of the reaction immediately after the child's reaction [9]

#### *Incidental Teaching (IT)*

One of the alternative training procedures that facilitates the initiation and generalization of skills is episodic training. The term "casual learning" refers to learning that focuses on direct learning of children whenever a child shows interest in learning materials or motivation to request a subject or activity in a natural environment [10]

#### *Pivotal Response Training (PRT)*

PRT is a naturalistic behavioral intervention based on ABA principles and developed by Lynn and Robert Kelers and Laura Schreibman at the University of California (UCSB) [11]. PRT focuses on key responses, such as motivation, responsiveness to multiple signals, self-management and self-initiation, instead of teaching individual target behavior one by one and sequentially, as is done in DTT.

#### *Verbal Behavior (VB)*

Verbal behavior (VB) is based on the principles of ABA, but is focused on the acquisition of functional language skills in children with ASD. VB is based on the analysis of B.F. Skinner's verbal behavior. Skinner classified verbal behavior by basic functional units (i.e. verbal operants), such as manda, tact, echo, and introverbal.

#### *Picture Exchange Communication System (PECS)*

The Picture Exchange Communication System (PECS) was developed by Frost and Bondi (1994) as a complementary and alternative approach to communication for those children with ASD who have limited or no verbal communication skills. PECS training can be divided into six stages [12].

The Association for Science in Autism Treatment (2020) reported the results of several studies, according to which, when ABA interventions are intensive (about 20 hours a week) and at an early age (up to 4 years of age), significant progress is achieved in development and, more it is important that there is a significant decrease in the need for special services throughout the life of an individual.

According to the results of the above studies, ABA therapy is an effective method of correcting autism spectrum disorders. Behavioral aspects play an important role in the implementation of ABA therapy.

Applied aspects imply the direct work of a behavioral analyst and a child with ASD. After identifying the lack of certain skills in a child through diagnosis and testing by such speech and social interaction skills assessment programs as VB-MAPP or ABLLS-R [13], which an individual program is compiled for the child. This program will describe in detail all the applied methods of correction and introduction of missing skills in a child or changes in maladaptive behavior.

The main applied aspects in Applied Behavior Analysis are such practical skills for teaching children with ASD as:

- Functional Behavior Analysis (4 types of behavior functions)
- Differentiated reinforcements (DRA, DRO, DRY, etc.)
- Listener behavior (imitation, execution of instructions)
- Visual perception (sorting, matching)
- Reinforcement, punishment and quenching (dealing with consequences)
- Functional communication training (verbal behavior)
- Functional game (a game appropriate to the child's age)
- Parking (pair trust)
- Formation of phrasal speech and many others.

**Results and Discussion.** In the article we will describe 3 types of the above-mentioned applied aspects that are used in the ABA center "Rostock" by behavioral analysts working with children with ASD.

*Functional analysis* is used to generate and test hypotheses specific to the appropriate and inappropriate behavior of an individual by direct manipulation of previous and subsequent events in a natural or analog environment. If the function(s) have not been defined or the behavior has multiple motivations during the functional analysis, interventions can be implemented that may affect multiple functions. One of the activities that is flexible for solving a variety of functions that support target behavior is functional communication training (functional communication training) [14].

Functional analysis methods are an effective means of identifying functional relationships between behavior and the environment. These methods have been applied to the complex behavior of children with ASD and other emotional and behavioral disorders. The methodology of functional analysis can include both social and academic behavior and usually consists of repetitive and direct measurement of behavior in various environmental conditions. The information obtained is used to develop interventions aimed at eliminating such behavior. For example, inappropriate behavior can act as a form of nonverbal

communication to request specific preferred outcomes (for example, attention from someone, access to a material object, avoidance from an activity or situation) [15].

The procedure during the functional communication training consists of a functional analysis of the target behavior and the identification of those variables that support this behavior. Also, depending on the academic and social skill of the child, choose independent variables instead of dependent ones. One of such examples from the experience of working at the Rostock Center, Marlene, 7 years old, Autism Spectrum Disorder, no speech. Auto aggressive behavior of "biting yourself by the brush", the function of this behavior is access to the desired. When Marlene wanted to watch the tablet, he bit his hand. This behavior was fixed at home. At the center, we taught Marlene how to submit the "Picture Exchange Communication System". During the manifestation of auto aggressive behavior like "biting the brush", we blocked this behavior, physically prompted Marlene to pick up a card with a tablet image, then hand this card to a behavioral analyst and subsequently receive a tablet.

When Marlene showed an independent reaction in this procedure, the behavior of "biting the brush" disappeared, moreover, Marlene began to show a spontaneous reaction with other objects like water, chocolate, walking, etc.

*Differential reinforcement* is a procedure in which reactions corresponding to a predetermined criterion (form, frequency, duration, latent period or amplitude) are reinforced, and not corresponding ones are extinguished.

Differentiated reinforcement is used in shaping to develop new behavior, being one of the most well-known effective and widely used methods of weakening problem behavior. There are several types of differential reinforcement, depending on its characteristics and what it is trying to achieve: Reinforcement, punishment and quenching (dealing with consequences).

The main methods of influence are positive and negative reinforcement, quenching and punishment. In this case, reinforcement is considered as interaction with the help of stimuli for current behavior.

- Encouraging actions with a positive orientation is defined as positive reinforcement;
- Encouraging the absence of actions with a negative orientation is defined as negative reinforcement;
- In the absence of reinforcement of negative and positive actions, quenching occurs;
- Direct influence aimed at suppressing negative actions is a punishment.

*Functional communication training* is a procedure aimed at replacing undesirable behavior that has a communicative function with acceptable ways of communicating with the same function [16].

Stages of application of the method (algorithm of actions - briefly)

The functional communication training program consists of five stages:

1. Description of problematic behavior.
2. Identification of the function of problematic behavior.
3. Definition of substitution behavior.
4. Training in substitution behavior.
5. Fixing the replacement behavior.

*For example*, every time Yusuf sees a toy in Aitore's hands that he likes, he hits Aitore and takes the toy away.

Substitute behavior: teach Yusuf to ask for a toy and wait for an answer.

The replacement behavior should be:

- easy to perform,
- so that it can be easily learned,
- understandable to others.

Children who speak orally are usually taught to use words or phrases. In the absence of oral speech or in cases where it is not understood by others, alternative methods of communication are used, for example, gestures, the exchange of cards with images, speech-generating devices, and so on.

FC training is conducted at home and in public places (at school, kindergarten). It is important to teach skills that are reinforced in a natural environment, as this contributes to the generalization and sustainability of intervention results [17]

In the applied aspect of ABA therapy, the above methods of working with children with ASD have been repeatedly proven by scientific research to be effective and long-term in changing undesirable behavior to socially significant behaviors.

**Conclusion.** Applied Behavior Analysis is an interventional approach that has gained increasing popularity over the past decades due to its perceived effectiveness. In particular, ABA uses tactics based on behavioral principles that are applied to improve socially significant behavior, and experimentation is used to identify variables responsible for improving this behavior. Applied behavior analysis is a form of behavior modification that largely depends on external reinforcement, both positive and negative (operant

conditioning). ABA is designed to change or weaken behavior, as well as to improve speech, communication, social skills, attention, etc. in children with ASD. The basic principles of the ABA follow behaviorist theories that suggest that behavior is caused by external stimuli in the environment, so reward (external) will enhance behavior, and punishment (external) will hinder behavior.

The ABA is based on seven basic dimensions that were first outlined by Baer. These measurements include applied (enhance and improve the daily life of the student and those closest to the student), behavioral (the chosen behavior is observable and measurable), analytical (using data to make informed decisions), technological (procedures clearly and concisely so that others can accurately implement the procedure), conceptually systematic (interventions consistent with the principles outlined in literature and research), effective (interventions are effective when they improve behavior in a practical way), and generality (behavior change turns out to be stable over time and in other contexts besides just the learning environment. Indeed, the United States Surgeon General recognized ABA as the only method of treating ASD with known efficacy, which is confirmed by qualitative studies (Center for Disease Control, 2019; National Autism Center, 2015). Certification by the Board of Certified Behavioral Analysts (BCBAs; Behavior Analyst Certification Board, Inc.®. (BACB®), 2019), who often work with people with ASD, continues to increase, which is another indicator of the recognized popularity and effectiveness of ABA.

#### References:

1. Cooper J.O., Heron T.E. Heward W.L. *Applied Behavior Analysis Third Edition*. - Pearson Education. 2019 - p. 150
2. Keenan M., Dillenburger K., Röttgers H.R. *Autism and ABA: The Gulf Between North America and Europe* // *Rev J Autism Dev Disord* - 2015. - №2. – p. 167–183. <https://doi.org/10.1007/s40489-014-0045-2>
3. Ivanov H.Y., Stoyanova V.K., Popov N.T. *Autism Spectrum Disorder - A Complex Genetic Disorder* // *Folia Medica*. 2015. - №57(1) – p. 19-28. <https://doi.org/10.1515/folmed-2015-0015>
4. Fredrick S.S., Nickerson A.B., Sun, L. *ASD Symptoms, Social Skills, and Comorbidity: Predictors of Bullying Perpetration* // *Journal Autism Dev Disorder*. – 2023. - №53. – p. 3092–3102. <https://doi.org/10.1007/s10803-022-05612-0>
5. Taylor M.J., Rosenqvist M.A., Larsson H. *Etiology of Autism Spectrum Disorders and Autistic Traits Over Time* // *JAMA Psychiatry*. - 2020. - №77(9). – p. 936-943 <https://doi.org/10.1001/jamapsychiatry.2020.0680>
6. Goin-Kochel R.P., Fombonne E., Mire S.S. *Beliefs about causes of autism and vaccine hesitancy among parents of children with autism spectrum disorder* // *Vaccine*. - 2020. - Volume 38, Issue 40. - p. 6327-6333. <https://doi.org/10.1016/j.vaccine.2020.07.034>
7. Sun X, Allison C. *A review of the prevalence of autism spectrum disorder in Asia* // *Research Autism Spectrum Disorder*. – 2020. - №4. – p. 156–167. <https://doi.org/10.1016/j.psychres.2019.112679>
8. Luiselli, J.K. *Applied Behavior Analysis Advanced Guidebook A Manual for Professional Practice, 2nd Edition*. - Academic Press. 2023. – p. 136
9. Alberto P.A., Troutman A.C., Axe J. *Applied Behavior Analysis for Teachers, 10th Edition*. - Pearson. 2021. – p. 200
10. Blokdyk G. *Applied Behavior Analysis: A Complete Guide Edition*. – Emereo. 2020. – p. 145
11. Frost L., Bondy A. *A common language: Using B.F. Skinner's verbal behavior for assessment and treatment of communication disabilities in SLP-ABA*. *The Journal of Speech and Language Pathology* // *Applied Behavior Analysis*. - 2006. - №1(2). – p.103–110. <https://doi.org/10.1037/h0100188>
12. Bondy A.S., Frost L.A. *The Picture Exchange Communication System* // *Focus on Autistic Behavior*. - 1994. - №9(3) – p. 1–19. <https://doi.org/10.1177/108835769400900301>
13. Sallows G. O., Graupner T. D. *Intensive behavioral treatment for children with Autism: Four-year outcome and predictors* // *American Journal on Mental Retardation*. - 2005. - №110(6). – p. 417–438. [https://doi.org/10.1352/0895-8017\(2005\)110\[417:IBTFCW\]2.0.CO;2](https://doi.org/10.1352/0895-8017(2005)110[417:IBTFCW]2.0.CO;2)
14. Roane H.S., Fisher W.W., Carr J.E. *Applied behavior analysis as treatment for autism spectrum disorder* // *The Journal of Pediatrics*. 2016. - №175, p. 27–32. <https://doi.org/10.1016/j.jpeds.2016.04.023>
15. Dixon D.R., Vogel T., Tarbox, J. *History of Functional Analysis and Applied Behavior Analysis*. - Psychology. 2019. – p. 50
16. Bailey J.S., Burch M.R. *Ethics for Behavior Analysts. Third Edition*. – Routledge. 2016. – p. 46
17. Koegel R.L., Bharoocha A.A., Ribnick C.B., Ribnick R.C., Bucio M.O., Fredeen R.M., Koegel L.K. *Using individualized reinforcers and hierarchical exposure to increase food flexibility in children with autism spectrum disorders* // *Journal of Autism and Developmental Disorders*. 2012. - №42(8). – p. 1574–1581. <https://doi.org/10.1007/s10803-011-1392-9>