

EDUCATION & INTERVENTION METHODS  
МЕТОДЫ ОБУЧЕНИЯ И СОПРОВОЖДЕНИЯ

**Development of Parents' Competencies for Online  
Kindergarteners, Built on the Principles of the Pyramid  
Approach to Education**

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The study shows the influence of education and feedback on the development of the competencies of parents supervising the distance learning of children with autism spectrum disorders (ASD) in the online kindergarten format. The paper presents materials of an empirical study involving five mothers and nurses accompanying children. The measurements of the three competencies of parents as tutors were carried out within one month and were made before and after teaching the parents the basics of ABA (applied behavior analysis) methods. We used the methodology of teaching parents behavioral skills BST (behavioral skills training). Parental training resulted in changes of parental competencies showing as improvements of percent ratios of correct reactions to a total number of samples regarding three critical competencies of parents as tutors: providing reinforcements, prompts, maintaining requests of children. It was found that trained parents of children with ASD are more effective at improving skills of their children than before training. Collaboration with families of children with ASD and the adaptation of parental education help families to be more successful in their daily work with their children, acquire new skills, and improve the quality of life of their families.

**Keywords:** autism spectrum disorders, applied behavior analysis for parents, behavioral skills training, role-based training.

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**Развитие родительских компетенций в формате онлайн  
в детском саду, построенном на принципах пирамидального  
подхода к образованию**

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Показано влияние обучения и обратной связи на развитие компетенций родителей, имеющих детей с расстройствами аутистического спектра (РАС), в процессе сопровождения ими дистанционного обучения детей в формате онлайн в детском саду. Представлены материалы эмпирического исследования с участием пятерых матерей и нянь, сопровождающих детей. Замеры трех компетенций родителей как тьюторов проводились в течение одного месяца и делались до и после обучения родителей основам прикладного анализа поведения. Использована методика обучения родителей поведенческим навыкам BST (behavioral skills training). В результате обучения наблюдалось изменение компетенций родителей: улучшены показатели процентного соотношения правильных реакций к общему числу проб в практике освоения трех навыков: предоставления поощрений, подсказок, развития коммуникативных инициатив. Выяснено: обученные родители детей с РАС более эффективно работают по улучшению навыков у детей, чем до обучения. Сотрудничество с семьями во время онлайн-обучения детей и обучение родителей как тьюторов помогает им быть более успешными в повседневной работе с детьми, приобретать новые навыки, улучшать качество жизни семьи.

**Ключевые слова:** расстройства аутистического спектра, прикладной анализ поведения для родителей, обучение поведенческим навыкам, ролевые тренинги.

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## Introduction

In the 12 months leading up to the introduction of quarantine measures in March 2020, a group of children attending «My Planet» learned new skills through the Pyramid Approach to education. This approach, described in the book by E. Bondi “The Pyramidal Approach to Education” [3], consists in consistent adherence to nine key components of the process: reinforcement systems, functional goals, functional communication, work with contextually inappropriate behavior, lesson plans, teaching strategies that include prompts, error correction, generalization and data collection. All nine elements are combined into a pyramid structure, as a metaphor and a simple visual model for the proposed approach. During the implementation of the pyramidal approach in the activities of the ABA-kindergarten «My Planet», teachers and tutors were trained the general principles of this approach, and in particular, each of the nine elements of the pyramid. However, the changed working conditions during the pandemic (COVID-19) presented new challenges to the staff of the ABA-kindergarten.

During work on this manuscript, the format of education services changed significantly in the whole world due to the pandemic (COVID-19): many cities, regions and even countries had to comply with new rules and regulations requiring staying at home and working remotely. Applied behaviour analysis (ABA) specialists also had to adapt their programs to an online training format. As a result, many specialists engaged with a reality of distance work have encountered a need to shift the

focus of their attention from direct interaction with children to work with their caregivers: parents, babysitters, grandmothers and grandfathers. That is, it was necessary to change the behavior of accompanying adults, which would affect the behavior of children [13].

After the start of distance working during the first weeks of the quarantine, the specialists of “My Planet” ABA center confirmed their concerns that cooperation [1] and instructional control is problematic with the child in online format and these processes should be organized with the help of an adult caregiver accompanying the child during an online session [2]. Thus, the authors of the study were faced with the task of teaching adults accompanying children in online classes. We began to look for suitable methods for training accompanying persons, and selected the most popular and widely used tool for training the skills of personnel working in the field of applied behavior analysis is the tool method BST (behavioral skills training) or behavioral skills training [4; 8]. This method has proven to be advantageous both in research and in practical work with adults.

The fact is that the BST tool allows you to train a team not only in classroom training, but also strengthens their skills through numerous role-based trainings [7], and, importantly, by providing individual corrective feedback to each participant.

Parsons, Rollyson [9–11] have described a real data-based protocol for preparing personnel working with adults with special developmental characteristics. BST is a method of training of students, personnel, parents and others who learn new skills from behavioural specialists. Doctor

Miltenberger defines BST as a process used to teach new skills, including instruction, modelling, role playing, and feedback [9; 10]. The protocol includes six steps with each step being important in teaching new skills to parents:

- Step 1: Describe a target skill to the parent;
- Step 2: Provide a brief written description of a skill;
- Step 3: Demonstrate the target competence to the parent;
- Step 4: Practice the target skill (role training for the parent);
- Step 5: Provide feedback to the parents during training;
- Step 6: Repeat steps 4 and 5 to achieve mastership.

## Methods

Educating of adult caregivers using the BST tool

The work was performed for one month during online sessions in a group of children that previously attended in-person sessions at the ABA kindergarten of “My Planet” center. Zoom online platform was selected for sessions. The children attended online kindergarten for two hours three times per week in the morning. The schedule of an online session included standard activities of the children in an in-person kindergarten before quarantine, but in short format: communication group, music, adaptive physical exercises and working with a speech therapist. According to the work conditions, an accompanying adult had to be present with the child during each session; the adult would comply with instructions of a group leader helping his or her pupil to perform the tasks. Observing the activities of accompanying adults during the first week of the quarantine, we noted three critical competencies of an adult as a tutor of a child with ASD: providing reinforcements [14], prompts and developing the request skills in children by supporting their communicative initiatives. The participants had most issues in mastering these skills, thus, they were selected as the key work areas.

The experiment included five adult caregivers: three mothers and two babysitters. Quantitative analysis with Excel software package was used for data collection.

After sessions in children, online training for adult caregivers [12] was conducted once a week for each competence in order to acquire new skills in this area. BST (behavioral skills training) was used for training.

Parents and babysitters were trained in each competence using this method with a subsequent feedback. Practically this was arranged as follows:

Step 1. The class teacher of the kindergarten group described the target skill orally to a group of parents before the session (*Tabl. 1*). In this example the advisor described the need to provide prompts to kindergarten pupils and briefly described the application of the procedure and explained how to step down on prompts during skill mastering.

Step 2. The class teacher provided a brief written description of a skill as an instruction for parents. The written description had to be simple enough for a parent to understand it without any previous education;

Step 3. The class teacher with the child demonstrated the target skill of providing prompts. This skill was first presented during parental training at a separate session, and the advisor then recorded a video model of the skill with the child and distributed the video to parents for review;

Step 4. The parents practiced the new skill directly with their children during educational sessions in the online kindergarten. The class teacher observed the parents' performance during online sessions in children;

Step 5. The parents were provided feedback immediately during practice with their children and after the education session in a private chat. The class teacher explored possibilities for social reinforcement (praise) of the correct tutor reactions and provided criticism or corrective feedback at a recommended ratio of – to praise [6];

Step 6. Steps 4 and 5 were repeated at the workplace to achieve mastership. The target criterion was achievement by parents of an 80% proportion of correct reactions for all attempts [4].

Table

The description of the BST, Behavioral Skills Training procedure

BST STEP	Description	Activity	Parental training timing
STEP 1	Describe the target skill	Task description – learn to provide prompts	During children session. Later in parents chat
STEP 2	Provide brief written description of the skill	Online training for parents. Written instructions – what prompts are, types of prompts, how to step down on prompts	During online training for parents
STEP 3	Demonstrate the target skill	Video examples ( <i>tutor with his/her child</i> )	During online training for parents
STEP 4	Practice the target skill (role training)	Prompts checklist	Check lists filled in by parents and trainers
STEP 5	Provide feedback during training	Feedback for each parent after training	Review of the video with the parents after the session
STEP 6	Repeat steps 4 and 5 to achieve mastership	In process, continuously	

## Results

The experiment showed improved development of three selected competencies for caregivers of children during online sessions of ABA kindergarten: skills of providing reinforcement, providing prompts an engaging in communication.

During training of the reinforcement skill (*Tabl. 1*), the participants have agreed that the target criteria of the skill would be the following: 1. Reinforces held by the parent during the session, 2. control of the child's access to reinforcement by the parent, 3. differential reinforcement, 4. timely reinforcement. The class teacher performed a quantitative assessment of the pre-specified criteria during session observing the parents' behavior during online kindergarten session.

*Fig. 1.* shows the change in the percentage of correct reactions in the parent in all four pre-specified criteria of providing reinforcement to their pupils. On average, the percentage of correct parental responses in this skill in the group of parents increased from 8.3% to 75% after applying the BST training.

During prompting training (*Fig. 2.*), only one criterion, timely prompting, was chosen to simplify the experiment, although this skill includes a more complex sequence of an adult's behaviour. The data show an increase in the percentage of target reactions (timely prompting) from 61,6% to 85%, in parents of the online kindergarten group as a result of completing the training module on correct prompting. As with the previous skill, the parents were provided with a regular feedback regarding this skill after each online session.

During the mand (request) skill training (*Fig. 3*) the parents were trained to create a situation for developing communicative initiatives in children: visible but inaccessible reinforcement, creating an interest in this reinforcement, creating transitional requests, such as

requests for some objects to perform any kindergarten activities.

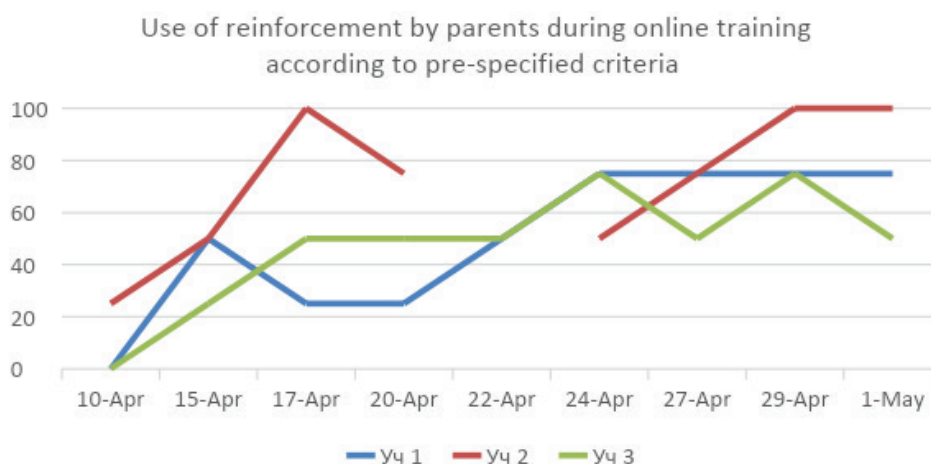
The data of *Fig. 3* reflect the improvement in the number of requests in children of an online kindergarten group in order to create communicative situations with their parents and babysitters as a result of completing the training module for request skills and providing feedback for parents during skill training with their children. As can be seen from the graph of communication initiatives, the number of children's requests (mands), as a result of the creation of communicative situations by their parents, in one month of online classes, increased from 16.4 requests to 28.2, in one lesson. The increase is over 58%, which is a significant difference.

BST protocol is usually applied for training of parents during hands-on training in a situation that is different from everyday activities. Classroom sessions during traditional training are not enough. Auditory training should be followed by hands-on training with a feedback. In this case the skill is summarized and the behavioral pattern is reinforced. This is what we obtained as a result of the experiment.

## Discussion and Conclusions

This work was focused on the need for engaging parents of children with autism in the system of distance education for their children. The influence of parental training on the level of parental competencies of a tutor and on children's communicative skills was studied using pre-specified criteria.

At the beginning of the study, the authors agreed that the skills of parents as tutors accompanying children will be identified, and from these, three competencies will be identified that need to be improved. These skills were the



*Fig. 1.* This graph shows the percentage of correct reactions in parents in all 4 criteria of providing reinforcement to their children: 1. Reinforcers held by the parent during the session, 2. control of the child's access to reinforcement by the parent, 3. differential reinforcement, 4. timely reinforcement. The data show an increase in the percentage of target reactions (use of reinforcement), from 8.3% to 75%, in caregivers in an online kindergarten group

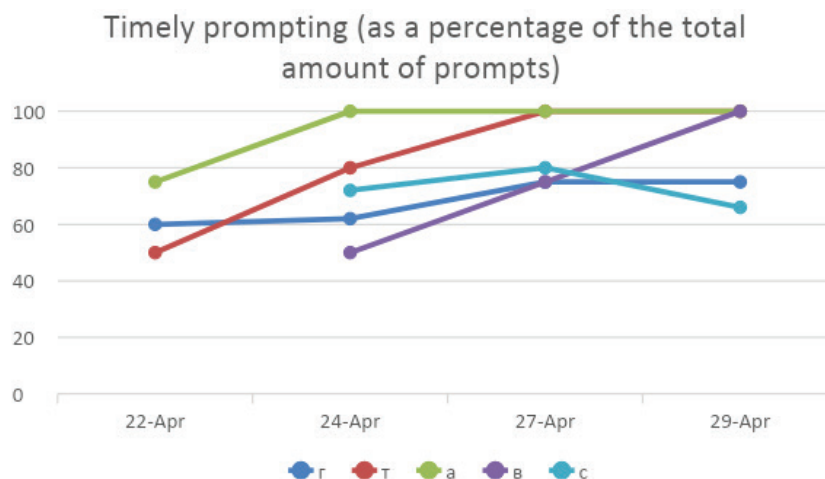


Fig. 2. The data show an increase in the percentage of target reactions (timely prompting) from 61,6% to 85%, in parents' behavior of the online kindergarten group as a result of completing the training module on correct prompting

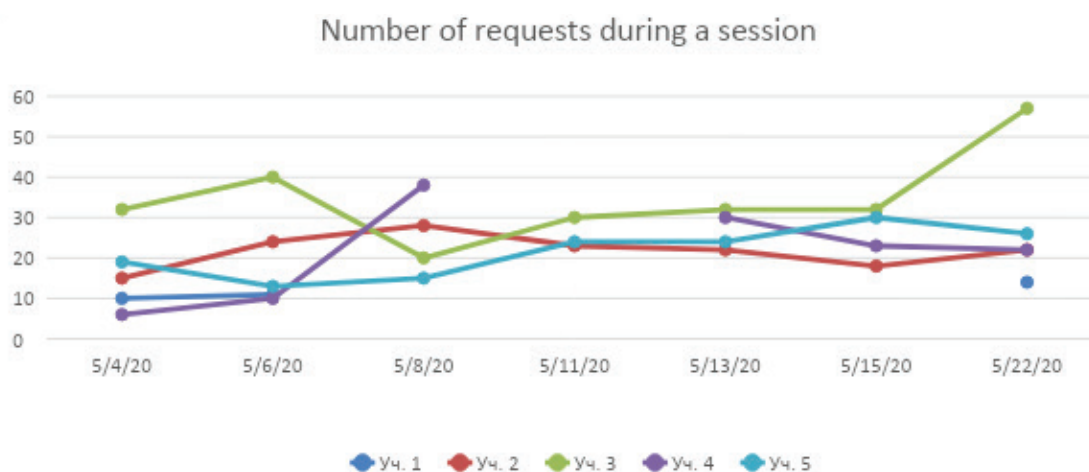


Fig. 3. The data reflect the positive change, an increase in the number of requests in children of an online kindergarten group in order to create communicative situations with their parents as a result of completing the training module for request skills

provision of prompts, the training of communication initiatives (requests) and the provision of rewards. Further, these competencies were intensively trained by parents, under the supervision of the online kindergarten staff, for one month. Based on the training results and individual feedback to each parent, We see a positive trend in the development of all three declared parental competencies (the skill of providing reinforcements, providing prompts, and developing communication initiatives) after training based on the BST protocol. In fact, the quarantine situation created a unique opportunity to see the interaction of children and parents at home and to train the skills of parents, which, in their opinion, began to be generalized by them not only for academic studies, but also for everyday communication of children and parents in other environments. (at home, on the street, in the community).

In the future, it is necessary to continue working on the formation of the skills of parents, as communi-

cative partners of children with ASD, both online and offline. After all, the skills generalized by the child in different environments, in kindergarten, at home, on the street, in society, as a result, become more functional, and in general, improve the quality of life of the family.

It is also important to further work on the issue of supporting the skills of children in an online format, in case of the repetition of epidemiological protection measures. It is necessary to check the hypothesis of the authors of the article that the children with ASD who studied in the online format more successfully coped with the kindergarten's working hours upon returning to the full-time kindergarten. This was indicated by the difference in skill scores of those children who studied online during quarantine and those who did not attend classes. However, this hypothesis needs more thorough elaboration in further research. ■

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