

Aneta Lew-Koralewicz, PhD, <https://orcid.org/0000-0002-4193-7014>  
College of Social Sciences  
Institute of Pedagogy  
University of Rzeszów

## A functional communication training for developing verbal behavior and treatment of challenging behavior in individuals with autism spectrum disorders

### Trening komunikacji funkcjonalnej w rozwijaniu zachowań werbalnych i terapii zachowań trudnych osób z zaburzeniami ze spektrum autyzmu<sup>1</sup>

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**Abstract:** Communication problems are one of the symptoms of autism spectrum disorders. Challenging behaviors may be a form of communication with the environment, and when other forms of communication are not available, they may be the only way to meet their needs. The purpose of this article is to demonstrate the potential use of functional communication training in reducing problem behaviors of individuals with ASD, as well as developing acceptable ways of communication. In a research process based on behavior analysis, the method of single-subject experiment with multiple-baseline design was used. The results of the study show that the research participants developed communication skills on the basic level, and the frequency of their challenging behaviors has significantly decreased.

**Keywords:** functional communication training, challenging behavior, autism spectrum disorder, verbal behavior

**Abstrakt:** Zaburzenia procesu komunikowania się stanowią jeden z symptomów spektrum autyzmu. Zachowania trudne mogą stanowić formę komunikowania się z otoczeniem, a w sytuacji, gdy inne sposoby komunikacji są niedostępne, mogą one być jedynym sposobem realizacji potrzeb. Celem artykułu jest ukazanie możliwości wykorzystania treningu komunikacji funkcjonalnej w redukowaniu zachowań problemowych osób z ASD, jak również rozwijaniu akceptowalnych sposobów porozumiewania się z otoczeniem. W procesie badawczym bazującym na założeniach analizy zachowania, posłużono się metodą jednopodmiotowych schematów badawczych, wykorzystano plan eksperymentalny wielorakich pomiarów poziomu wyjściowego. Rezultaty badań ukazują, że badane osoby rozwinęły umiejętności komunikacyjne na podstawowym poziomie, a częstotliwość ich zachowań trudnych znacząco się obniżyła.

**Słowa kluczowe:** trening komunikacji funkcjonalnej, zachowania trudne, zaburzenia ze spektrum autyzmu, zachowania werbalne

### Introduction

Effective support for people with autism spectrum disorders requires taking into account all developmental areas in which there are deficits. This is due to the clinical picture

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<sup>1</sup> Artykuł w języku polskim dostępny jest na stronie:  
<https://www.stowarzyszeniefidesetratio.pl/Presentations0/2021-4Kora2.pdf>

of the disorder characterized by delays in the development of multiple basic functions. The level of a person's skills and the severity of disorder significantly differentiate the level of functioning of individuals with autism, including their communication and adaptive skills. Developing communication with the social environment, as well as regulating behaviors problem, are goals of supporting people with ASD in their daily life. These activities make a significant contribution to regulating the relationships of people with ASD with those around them and consequently promote social inclusion.

### **1. Functional communication intervention for individuals with autism spectrum disorders**

A distinctive feature of people with ASD are communication problems (Winczura, 2008; Pisula, 2014). Language development in children with ASD is in many cases significantly delayed, and about 50% of them fail to acquire speech. Individuals who develop expressive speech may have difficulty with fluency and use language in a non-functional, stereotypical or ritualistic way. There are often difficulties with spontaneous communication, and communication efforts are often more instrumental than focused on interaction. Sometimes, the children do not respond to other people's speech, which can be connected with significant deficits in their receptive language skills (Sigafos, O'Reilly and Lancioni, 2009). Analyses of both linguistic and communicative competence indicate a lack of variety in individuals with ASD in their ability to communicate with their social environment. The ability of children with ASD to communicate and use language depends on their intellectual and social development, as well as the severity of the disorder (Bobkowicz-Lewartowska, 2014). According to the DSM-5, communication skills are one of the variables that determine the severity of autistic disorders (Morrison, 2016). A similar differentiating system was adopted in the ICD-11 (<https://icd.who.int/en>). Therefore, verbal and non-verbal competences differ to a large extent, and thus people with ASD require different levels of support (Danon-Boileau, 2006).

The contemporary approach to speech development and communication in children with ASD, based on applied behavioral analysis, is largely inspired by Skinner's analysis of verbal behavior. In his analysis, he does not focus on the linguistic aspects of communication, but classifies communication skills according to their function. Functional communication relates to behaviors that are effective in enabling children to express their needs and interact with their social environment. Verbal behavior in Skinner's concept is shaped by interaction with other people, because the act of communication is reinforced by the interlocutor's reaction. According to the multimodal approach to communication, verbal behavior can take on any form of expression. Children can use vocal responses, picture

exchanges, sign language or gestures, or use voice or text output devices (Sigafos et al., 2009; Rodriguez, Fisher and Kelley, 2012).

Developing functional communication is an important element of interventions aimed at people with ASD because it gives them a tool to communicate their own needs and feelings, and allows them to develop relationships with other people, as well as reduce the severity of problem behaviors, such as tantrums or aggression (Sławek, 2019).

## 2. Challenging behavior and the communication process

Challenging behaviors are one of the most serious barriers to the therapeutic process, and constitute a challenge to the family and the professionals working with the individual who exhibits them. They are defined as *episodes or patterns of behaviour which present significant risk of harm or restriction to an individual and the people around them and are likely to be severely detrimental to the quality of life experienced by those individuals and the people around them* (Hanbury, 2016, p. 15). Definitions of challenging behaviors by different authors emphasize similar characteristics. They concern the threat that the behavior poses to the person who manifests it and their environment, the impact of the behavior on the development and acquisition of new skills, and the limitations to which the person manifesting challenging behavior is exposed in various areas of life (Emerson, 2001; Leaf, McEachin, 2017).

Typically, intervention is reasoned when the behavior:

- poses a risk of physical harm to the child and/or others;
- interferes with the child's ability to learn new skills;
- limits the child's ability to access less restrictive environmental conditions,
- increases the likelihood of intrusive interventions, such as exclusionary time-out, restraint, or management of behavior through medication;
- limits the child's access to reinforcement,
- inhibits social interactions (Kenzer, 2014, p. 76).

Challenging behaviors can have a varied topography. The most common forms of challenging behaviors displayed by individuals with ASD include stereotypical, disruptive (tantrums, yelling, not following rules), aggressive, self-injurious, and destructive behaviors. Their prevalence in people with ASD is much higher than in people with other disabilities (Hong, Dixon, Stevens, Burns and Linstead, 2018).

Challenging behaviors can be caused by a variety of factors, including environmental as well as biological factors. (Koritsas and Iacono, 2012). One hypothesis that explains the occurrence of difficult behaviors is the communication hypothesis (Carr and Durand, 1985), which was adopted as the basis for the considerations conducted in this study. According to the hypothesis, it should be assumed that challenging behaviors can be a form of communication. Aggression, tantrums or self-aggression may have similar functions to

socially acceptable forms of verbal and nonverbal communication. This kind of behavior occurs in people whose level of functioning combined with environmental factors prevent them from developing adaptive means of gaining attention or support from their environment.

Crying and screaming represent one of the earliest and most primal forms of communication. As a child grows, they learn other more effective and socially approved forms of ensuring their needs are met. If development is delayed and children do not acquire new skills, they use forms of behavior typical of earlier stages of development to cope with different situations. Challenging behavior can be seen as one means of communication with others or interaction with people. Severe challenging behavior, especially aggression, tantrums and self-injury, most often generate reactions from others and are thus reinforced. These behaviors may occur when an individual is trying to communicate with their environment, and either does not have the skills to communicate in an acceptable way or is not motivated to communicate differently (Kenzer, 2014). Challenging behaviors analyzed from this perspective may have adaptive functions. They provide access to important reinforcements of a social or material nature and, from the child's perspective, are an effective strategy for adapting and coping with various situations in life. It must be assumed that challenging behaviors are adaptive in that they are a means to communicate (Mace, Lalli and Shea, 1992; Leaf and McEachin, 2017). Obviously, in a broader perspective, these behaviors constitute a significant social problem that requires intervention.

Functional Assessment of challenging behavior is a critical component of effective therapeutic intervention for assisting children with ASD. This approach is used to explain why the individual's challenging behavior is occurring. From a behavioral analysis perspective, the function of the behavior is to gain or avoid the attention of others, to access or escape from things or activities, self-stimulation, or to avoid pain and physical discomfort (Suchowierska, Ostaszewski and Bąbel, 2012).

### **3. Functional communication training**

One of the many intervention strategies for developing communication (Sipowicz, Podlecka and Pietras, 2019; Lew-Koralewicz, 2020) based on the functional approach, is functional communication training (FCT). This method was described by Carr and Duran (1985) as a procedure for replacing challenging behavior with an alternative mode of communication that serves the same function as the difficult behavior. During this intervention, the person with the problem behavior learns to make a communicative response that is functionally equivalent to the challenging behavior. Assuming that the behavior has a communicative function, it is appropriate to teach the person a form of communication that is more adaptive and effective, and allows the incorrect response to be

replaced (Didden, 2007; Miltenberger, 2008; Powers, Palmieri, D'Eramo, Powers, 2011). FCT is most often used for problem behaviors maintained by social reinforcers. In this case, FCT consists of teaching an individual acceptable communicative responses which allow them to request attention. In the case of problem behavior that has the function of escaping from demands, FCT may consist of developing socially appropriate means for an individual to ask for a break and escape (Didden, 2007).

Functional communication training proceeds in stages consisting of:

- identification of the reinforcement sustaining the challenging behavior,
- identification of alternative communication behaviors,
- creation of situations that provoke the problematic behavior,
- shaping appropriate communicative responses using prompts and reinforcement

(Ringdahl, Kopelman & Falcomata, 2009).

Selecting appropriate communication behaviors is the basis of effective communication training. When choosing a modality, it should be assumed that the target behavior should involve less effort than that put into the challenging behavior. In addition, the message should be easy to read by listeners who are in contact with the child, which will guarantee more reinforcement of the correct communicative behaviors. Also, the method of communication should be simple and as quick as possible for the client to learn. Teaching the individual an appropriate means of obtaining reinforcement enables them to increase their control over meeting their needs, which can improve the child's functioning and reduce the motivating operation that causes problem behavior (Rodriguez et al. 2012). Functional communication training can be effective when used as the only element of behavioral intervention, but it is recommended that it be used along with other procedures, especially extinction. In some cases, it may be insufficient on its own for changing a challenging behavior to a communicative behavior (Weiss, Fiske and Ferraioli, 2009).

Due to deficits in their language development, children with ASD should acquire different classes of verbal behaviors. Primarily, they must be taught to express their wants, needs and feelings, initiate conversations, and respond to messages or attempts at interaction initiated by others. Based on the functional approach to language and communication development, the intervention process should include different classes of communicative behavior such as mands, tacts, echoics and intraverbals (Sigafos et al., 2009). Each of these behavior classes includes a number of specific skills. Mands include detailed skills such as: requests for preferred items, access to preferred activities, assistance or support, providing information, or refusing non-preferred items or suggestions. Tacts include naming objects or activities, identifying features of objects and describing observed objects or events. Examples of echoic responses may include imitating speech, but also manual or graphic signs for communication. The class of interverbal responses may include answering questions or conducting a conversation. (Sigafos et al., 2009).

#### 4. Method

The theoretical basis of the research is functional analysis, understood as the science of environmental variables and their relationship to behavior. The purpose of this study is to determine the effectiveness of functional communication training in reducing challenging behaviors and developing communication in children with ASD. Based on an analysis of the literature, it was assumed that there is a relationship between the manifestation of challenging behaviors in children and the level of their communication skills. The research was conducted based on the methodological principles of functional analysis - a single-subject research design was used, which involves multiple observations of one person over a period of time (Creswell, 2013). In single-subject experimental designs, one or more independent variables are manipulated for each individual, usually in a repeated-measures design, to observe changes in behavior relative to changes in the environment (Białaszek and Ostaszewski, 2008). A multiple baseline design was used. This involves determining the level of initial behavior for different individuals in the study, and introducing an intervention for the first individual and then for subsequent individuals (Shaughnessi, Zechmeister and Zechmeister, 2007). Graphic data presentation and visual data analysis is the basic method of inference (Cooper, Heron and Heward, 2007; Białaszek and Ostaszewski, 2008).

Observation of the participants' behaviors was conducted during diagnostic and therapeutic sessions for the first 2 months of the intervention. Two standardized tools were used in the process of evaluation (VB-MAPP, QABF). A functional analysis of the challenging behaviors was also conducted using the direct method.

VB MAPP - The Verbal Behavior Milestones Assessment and Placement Program by Sundberg (2015) is an assessment tool used to evaluate milestones of development, barriers and transition. The study used the first part of the questionnaire on the assessment of developmental milestones, which assesses 16 developmental spheres using the Early Echoic Skills Assessment subscale. The Milestones Assessment has three levels; Level 1 (0-18 months), Level 2 (18-30 months), and Level 3 (30-48 months), but it can be used for older children with delayed development. The study was conducted twice - the first before the intervention began and the second four months after the intervention started.

QABF - Questions About Behavior Function by Matson and Vollmer (1995) is a standardized tool for the indirect functional assessment of challenging behavior. The measurement tool consists of 25 items, and assesses 5 functions of behavior: attention, escape, physical, tangible and nonsocial. Information is provided by a person who has known the child and his/her behavior problems for at least 6 months. The study used the Polish version of the tool adapted by Lew-Koralewicz and Gagat-Matuła (2021). The study was implemented during the diagnostic process preceding the intervention.

Another tool was a self-administered challenging behavior assessment worksheet in which, depending on the topography, the challenging behavior duration or the number of behaviors was counted, and the antecedents and consequences were noted.

The study used functional communication training, conducted through incidental teaching methods and, to a lesser degree, discrete trial training. The functional communication training was used along with extinction, which involves withholding negative reinforcement in the cases discussed. Negative reinforcement is defined as *involves the removal, delay or decrease in intensity of an unpleasant stimulus, which results in the response becoming stronger or more likely to occur* (Tavris et Wade, 1999, p. 543), in other words, the behavior is followed by the removal of an aversive stimulus, increasing the probability of that behavior (Gerrig, 2014, p. 159). The functional communication training was initially conducted using the Picture Exchange Communication System (PECS) methodology, with the Mówik app introduced later.

## 5.Participants

Alan is an only child, growing up in a nuclear family. At the age of 3 years and 4 months the boy received a diagnosis of autism spectrum disorder and began the therapeutic process. He lives in a small town and attends a special needs preschool. Initially, the boy attended a mainstream kindergarten, but due to the lack of specialist treatment and increasing behavioral difficulties, his parents decided to transfer him to a special kindergarten, where he received proper therapeutic support.

The child's development was delayed. An assessment of the boy's skills level was conducted using the VB-MAPP diagnostic tool. In the first study, which assessed developmental milestones, Alan scored only 16.5 out of a possible 170 for his age range. The boy achieved the highest scores in visual perceptual and matching, as well as listener response and play. However, the level of skills in these areas was well below the age norm. The lowest scores were in language and communication skills.

The boy did not develop expressive speech, and while he occasionally vocalized, these behaviors were not associated with communicative intent. Alan also had significant difficulties in imitation, which translated into problems in acquiring the new skills shaped by this learning mechanism. Detailed results obtained during the first examination are presented in Figure 1.

A significant problem were the boy's challenging behaviors, which occurred during therapeutic activities, but also at kindergarten and in the home environment. Alan repeatedly engaged in challenging behaviors during the classes such as tantrums, during which he screamed, cried and used physical aggression consisting of squeezing the therapist's hands or face.

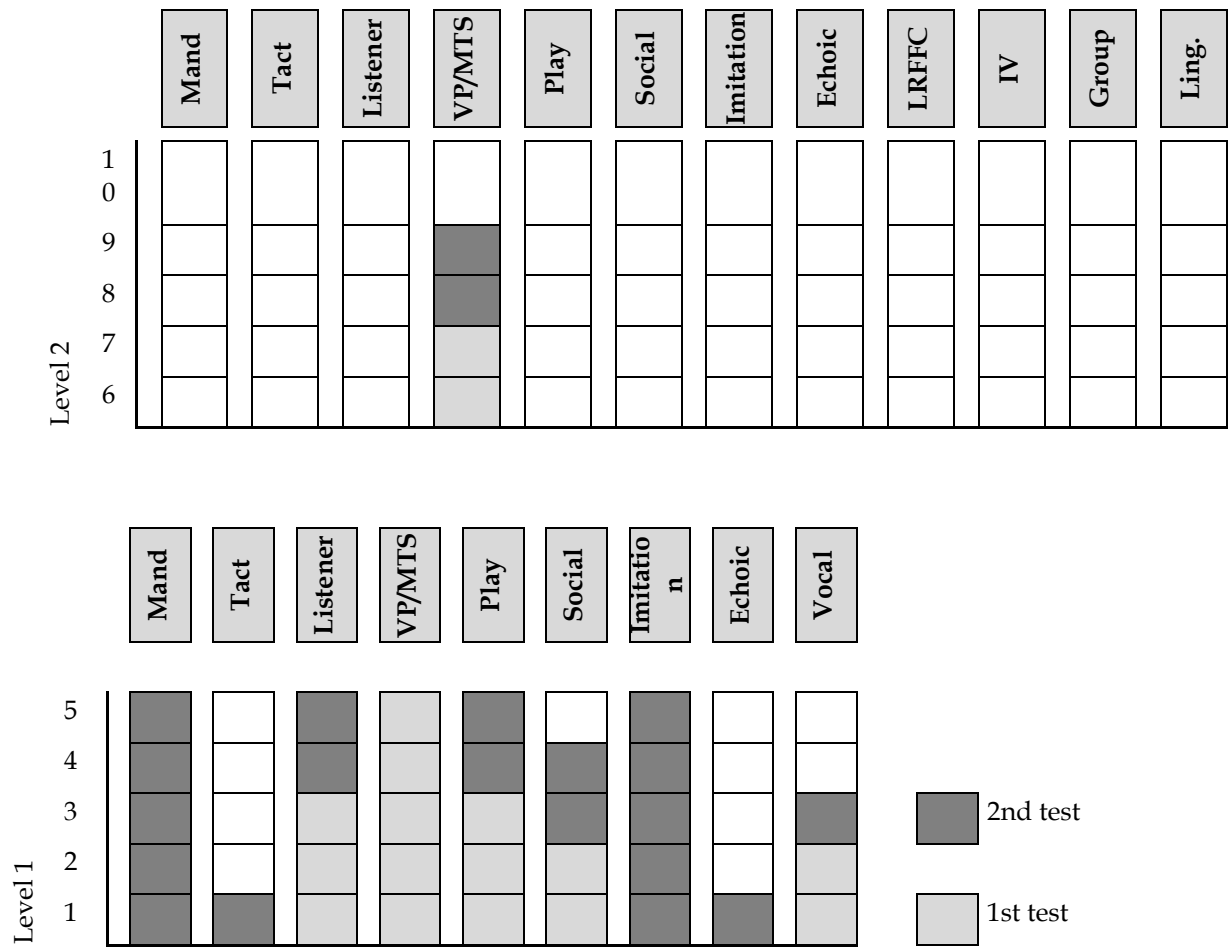


Figure 1: VB-MAPP Results - Milestone Assessment - Alan's I and II test

Kacper is a 7-year-old boy brought up in a nuclear family. He attends a special school - a class for people with autism. The boy's level of functioning assessed with the VB-MAPP before the intervention indicated a low range of skills in particular developmental areas.

In the study, the scales for 4-year-old children were used because due to his lowered cognitive functioning, the boy did not exceed this level of development. Kacper scored 50 points out of 170 in the first examination before starting the therapeutic activities. The most highly developed domains were listener responding, tact, visual perceptual skills and matching-to-sample, linguistic structure and math skills. Despite basic language skills, the boy did not use speech for communication purposes.



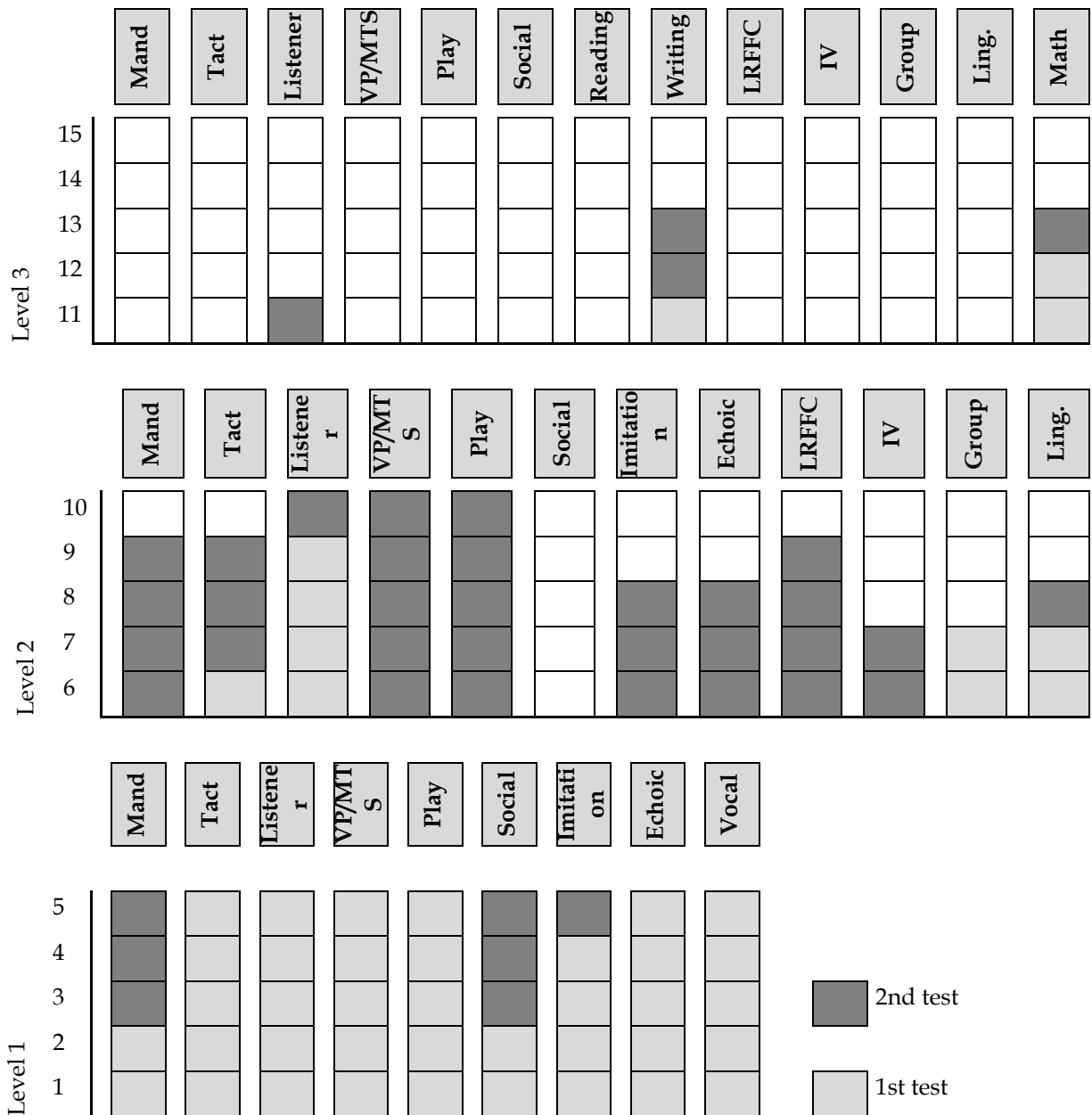


Figure 2: VB-MAPP Results - Milestone Assessment - Kacper's I and II test

The difficult behaviors observed in Kacper are mainly self-aggressive - hitting his chin with his hand, or hitting his head on the table/desk with simultaneous loud squeaking. Occasionally, there are behaviors of a self-stimulatory nature, such as motor mannerisms, but these were not assessed.

## 6. Functional assessment of challenging behavior and selection of intervention procedures

In the process of assessing the function of the difficult behaviors, two methods of diagnosis were used - indirect, consisting of obtaining information from parents about behavior problems (the QABF difficult behavior function questionnaire was used) and direct, consisting of observing the child during individual classes and, in the case of Alan, also in the preschool environment. The functions of the participants' challenging behaviors were assessed by analyzing the QABF questionnaire, as shown in Figure 3.

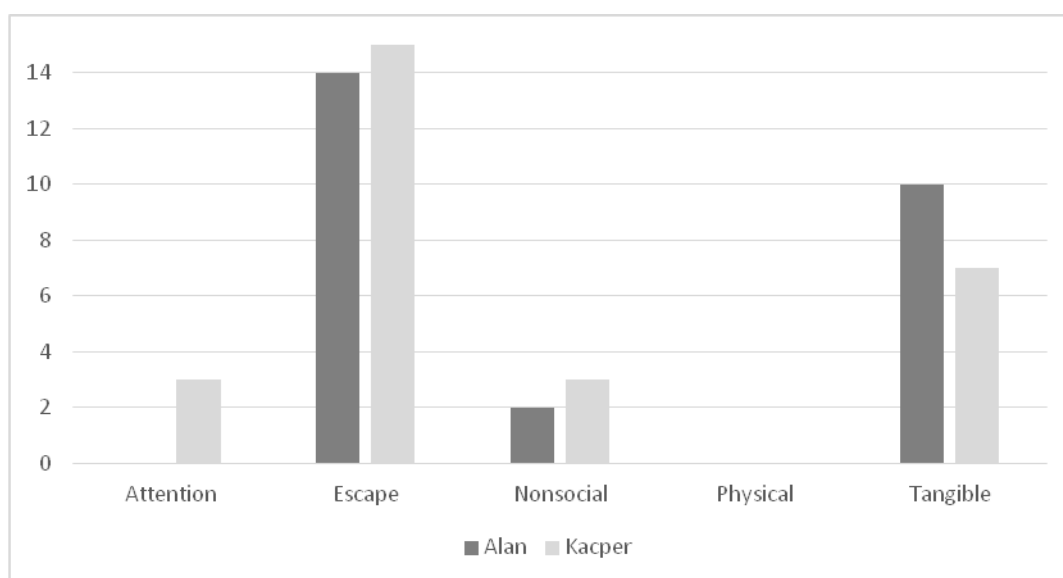


Figure 3: Functions of respondents' challenging behaviors

As can be seen from the data presented in the graph, the boys' challenging behavior had mainly an escape function, i.e. it was mediated by negative reinforcement - they could avoid non-preferred activities or tasks. In addition, the problem behaviors had an object function - they were aimed at obtaining preferred items. To a much lesser degree, the challenging behaviors were associated with self-stimulation.

Observation of the boys during class confirmed the results obtained with the QABF. In the case of Alan, the function of the behavior was to escape from situations that were uncomfortable for the boy, especially when introducing new educational aids or objects that the boy was not familiar with. The boy also reacted with screaming and/or aggression when he wanted to get his preferred object, most often toys: bubbles, sensory balls, dougholine, musical instruments or animal figurines; or when he lost the opportunity to play with an object.

An extended interview with the parents regarding the challenging behaviors and ways of responding to these behaviors provided an insight into the learning history of the challenging behaviors. The most common reaction of both parents and teachers to Alan's crying was negative reinforcement, which consisted of stopping the boy's non-preferred activities and withdrawing from tasks that caused him to cry or be physically aggressive. Difficult behaviors thus became a way for Alan to avoid a task, but also to communicate: "Leave me alone". This message enabled the boy to avoid unpleasant or aversive situations and to obtain preferred objects or activities. The boy learned to get his needs met through yelling and aggression, and these methods were effective with his parents, as well as with some teachers.

The observation of Kacper's behavior in various situations during the classes made it possible to confirm the hypothesis which assumed that difficult behaviors are maintained by negative reinforcement. This helped the boy to avoid non-preferred tasks, mainly those related to reading and sentence structure building. In addition, challenging behavior often acted as a "Give me" message, especially when the boy's attempts at verbal communication were not met with understanding by those around him. Kacper often squealed and hit himself when he received a different game or toy from the therapist than he expected, or a different kind of food from his parents than he asked for. His impaired articulation made it impossible for his parents and therapists to understand him, which resulted in frustration and an increase in undesirable behaviors connected with the lack of fulfilled expectations.

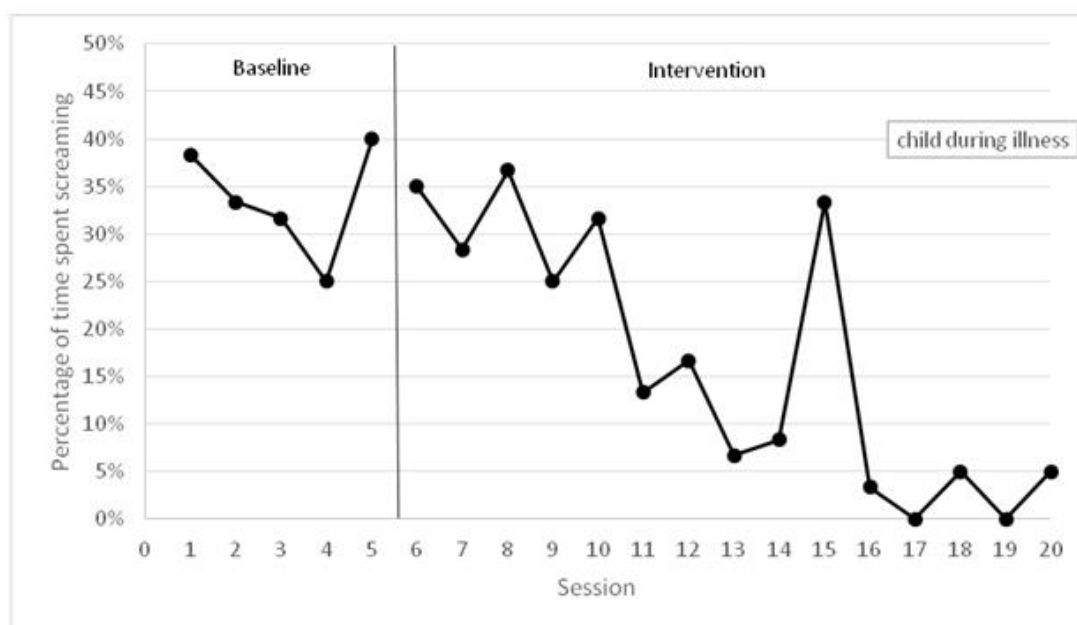
Lack of ability to communicate effectively with the environment significantly limited the boys' ability to meet their needs, which intensified frustration and thus the occurrence of difficult behaviors, which, due to reinforcement, became a way for them to regulate relations with their social environment. In order to reduce the challenging behavior, it is necessary not only to affect its manifestations, but first of all, if possible, to remove its causes. In accordance with the methodology of applied behavior analysis, it was decided to apply functional communication training combined with the extinction procedure.

Communication using PECS was introduced with both pupils, for Alan as a form of alternative communication and for Kacper as an augmentative communication. Based on observation of the participants' preferences, a system of reinforcement was established, which consisted in Alan's case of sensory toys, animal figures, dougholine and bubbles, and in Kacper's case of favorite snacks, 2 games and a sensory ball. At the same time, the extinction procedure was initiated, which consisted of preventing the boys from avoiding a task when the challenging behavior occurred. In Kacper's case, the level of difficulty of the tasks was initially reduced, and then, when the boy learned to use the "Pause" symbol, the appropriate level of exercise was returned, but the boy was allowed to ask for a break while completing the tasks. An activity plan was also introduced from the beginning of the intervention in the form of pictures of activities with Kacper, and from the 12th session with

Alan in the form of a board in the app. Figures 4 and 5 illustrate the reduction of the difficult behaviors in the first two months of the therapeutic interventions.

### 7. The process of reducing challenging behavior

In Alan's case, due to the topography of the behavior (crying combined with squeezing the therapist's hands and face), duration recording was used. The graph shows the percentage of the behavior in a 60-minute therapy session. As can be observed from the analyzed graph, over the interventions, Alan experienced a significant decrease in the duration of the challenging behaviors during class. From an initial level ranging from 25 to 40% of class time, the frequency of the challenging behaviors decreased to a level not exceeding 5% of class time by the end phase. A one-time increase in the challenging



behaviors was related to discomfort caused by a cold. Challenging behaviors still occur in non-preferred activity situations and occasionally when new learning material is introduced, Figure 4: Alan's modification of challenging behavior

but the boy calms down in a short period of time (less than 2 minutes) and attempts to complete the task. After completing the task, he may choose the next activity or play. During some therapy sessions, the challenging behaviors do not occur. Parental interviews indicate that the incidence of the challenging behaviors at home has decreased significantly.

The process of reducing Kacper's challenging behaviors is shown in Figure 5. In assessing the boy's behaviors, an event record was used (each incident of hitting combined with squealing was noted). Initially, this ranged from 21 to 39 hitting incidents in a 60-minute class period.

As can be seen from analysis of the frequency of the autoaggression incidents, the level of these behaviors began to decrease from the tenth session - after the fifth session from the implementation of the intervention and in the final phase there was an average of 5 incidents per session.

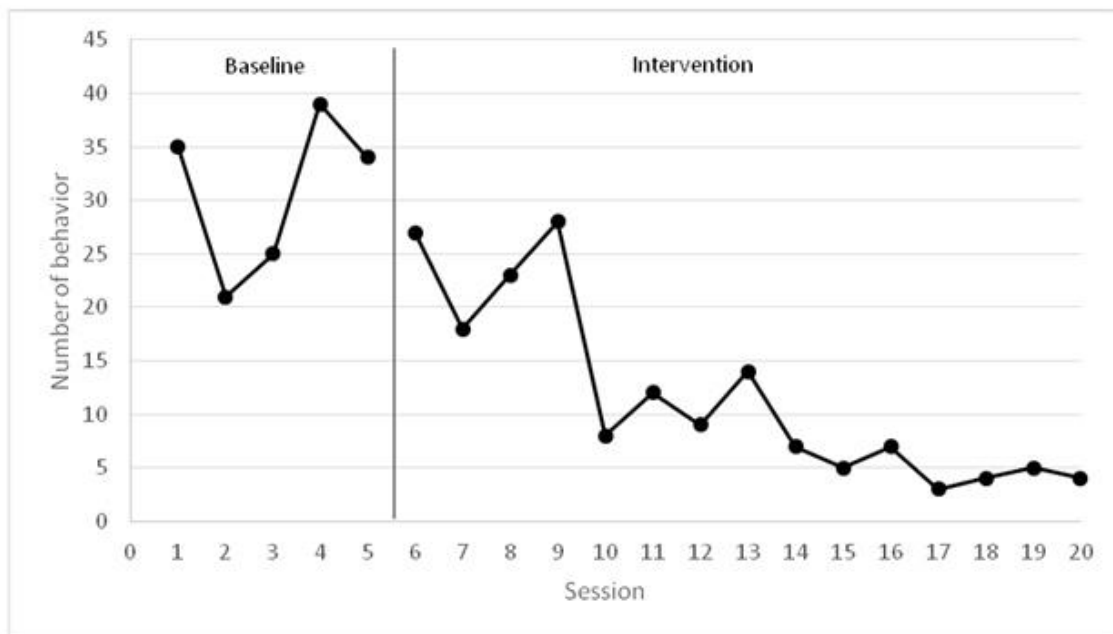


Figure 5: Kacper's modification of challenging behavior

The challenging behaviors have remained stable but low compared to the baseline. They now no longer occur when the boy wants something, but occur in situations related to demands that are perceived by the boy as difficult or unattractive. When the boy's request cannot be met, he also sometimes reacts with challenging behavior. In Kacper the mechanisms regulating emotions are not sufficiently developed, which is connected with the occurrence of difficult behaviors in situations of emotional tension. According to his mother, Kacper's behavior at home has also improved.

**8. Development of the participants' communicative skills**

During the interventions, the boys being studied made significant developmental progress, which was confirmed in the second VB-MAPP test (Figures 1 and 2).

Alan developed communication skills - primarily mand, tact, and to a small extent introverbal reactions. In the first phase of training, the boy was taught to ask for his preferred objects using symbols in pictures (the first phase of PECS). After mastering the first phase of PECS, the *Mówik* application was used, which allows for communication via a tablet (Alan definitely preferred this form of communication). At the beginning, Alan asked for

preferred things using the application, which he quickly mastered, and which allowed for the introduction of the next communication skills. Alan preferred figurines of animals and very soon he started using boards with these symbols. Currently, the boy uses 2- or 3-word sentences (e.g., "Please blue block", "Please yellow block") when he wants to obtain preferred objects or puzzle pieces. However, these behaviors are not spontaneous and it is necessary to practice them with the boy beforehand so that he can select the appropriate commands for the communicative context. Alan has also mastered tact, he can name nouns (toys, fruits, vegetables, animals, vehicles), and about 30 verbs as well as adjectives describing colors. Moreover, the boy has developed introverbal reaction to a small extent - he can say hello and goodbye using the application and he does it independently and spontaneously, without prompting.

The development of the boy's skills is evident in most developmental spheres. In the second test conducted after 4 months of interventions, the boy scored 38 points. In addition to the verbal behaviors discussed above, progress was evident in receptive language, visual analysis and matching, play, social skills and imitation. Echoics and vocalizations have developed only marginally and do not have a significant communicative function at this point.

Communication training with Kacper started with developing the ability to ask for a preferred object, in Kacper's case it was chocolates, candies or jelly beans. At the same time, the *Break* message was practiced. Then pictures of favorite puzzles and games were introduced. The boy mastered naming with the help of *Mówik*, including nouns from different categories, verbs, adjectives and colors. In addition, he combined communicating through the app with expressive speech. The boy has developed basic introverbal reactions - he can say hello, goodbye and answer simple social questions (about age, name, place of residence), as well as have a dialogue, but only one he has been taught. The use of a schedule helped the boy to understand the structure of time, and allowed him to anticipate the number of exercises, which increased his sense of security and reduced the level of stress during the classes. As well as the reduction of problem behaviors, Kacper has made significant progress in the development of individual functions. The second test, conducted with the use of VB-MAPP after 4 months of treatment, confirmed the boy's increase in skills with an increase from 50 to 92 points. The greatest progress, apart from the development of communication skills, was observed in the domains of visual analysis-matching, play and speech comprehension. The boy also developed school skills such as counting, reading and writing. The parents cooperated in developing communication, which contributed to the generalization of the skills in the home environment.

## Conclusions

As illustrated by the cases discussed, functional communication training combined with extinction procedures allowed for a significant reduction in the boys' problem behaviors. The research also made it possible to determine the importance of communication in the process of the occurrence of challenging behaviors. The inability to establish proper interaction with their environment triggered in the subjects the need to find effective forms of communication. Challenging behaviors, which initially occur as a result of frustration with unfulfilled needs, begin with time, as a result of their positive and negative reinforcement by other people, to constitute one of the forms of communication, and in the case of complete absence of the possibility to communicate, they become its only form.

Therapy for difficult behaviors should not be based solely on the reduction of difficult behaviors, but this process must be supported by a functional analysis that will allow for the identification of the environmental factors responsible for the behavior, especially the reinforcements that maintain it and the functions that these behaviors perform. Without recognizing the determinants of challenging behaviors, we are not able to discover their basis and thus respond to the needs of the child, who, having no other possibility, uses these behaviors as a way to communicate. In order to work effectively on the behavior, it is necessary to develop a communication system to enable the child to communicate at a level adequate to his/her developmental abilities.

Some limitations of the study should be mentioned, such as the small number of participants. Moreover, the effects of the therapy related to conditions at preschool and in individual classes, while changes in the child's behavior in the home environment were not examined, thus the effects of the therapy cannot be generalized. Further exploration and analysis of the function of challenging behaviors and their relation to the communication process and its limitations are necessary.

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