



INVESTIGATION OF THE EFFECTS OF PEER INTERACTION ON LANGUAGE AND PLAY DEVELOPMENT OF AN INDIVIDUAL WITH AUTISM SPECTRUM DISORDER

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Abstract:

Aiming at acquiring language and play skills for individuals with Autism Spectrum Disorder (ASD), this study uses multiple baseline design from single-subject research models supported by qualitative data. In the study, the data for storytelling, train building and playing, role playing skills were obtained through checklists, observations and interviews, and analyzed graphically and descriptively. Two children, one with high functional ASD and the other with typical development (TD), were included. The study was conducted in a home environment and a total of twenty-one teaching sessions were carried out. From the data obtained in the study process, it was concluded that peer interaction was effective in acquiring the skills of storytelling, train building and playing, role playing, and that these skills were generalized and permanent among different environments, persons and materials. In addition, non-targeted social and communicative gains were obtained in individuals with ASD. The social validity of the peer interaction and the skills studied was expressed by the families, children, teachers and academicians. Based on these data, peer interaction for the education of individuals with ASD is recommended.

Keywords: friendship; peer interaction; language development; autism spectrum disorder (ASD); play development

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1. Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that causes disruption in daily life skills including inadequate social interaction and communication skills and limited and repetitive behavior patterns in early childhood (American Psychiatric Association, 2013; Kırcaali-Iftar, 2018). The inability of social, language and communication skills of individuals with ASD caused by autism leads to problems in fulfilling their social development duties, and these tasks include skills such as interacting, initiating communication, initiating and maintaining conversation, and playing behaviors (Acarlar, 2001; Alak, 2014; Dagseven-Emecen, 2018; Rutherford & Rogers, 2003).

There is a strong relationship between symbolic play and language development (Acarlar 2001; Alak 2014). Considering this relationship, play: for the child; the necessity of its development is reflective, an assessment tool and a teaching method (Acarlar, 2001; Yavuzer, 2016). Also play; is an activity that is easily accessible in daily life, offers many learning opportunities, prepares the ground for interaction with objects and individuals, and reveals the active learning element such as observation, modeling, getting help and mimicking (Acarlar, 2001; Alak, 2014; Ataoğlu, 2009; Aydınli, 2008; Meltzoff, 2005; Meral & Cinisli, 2015; Piaget, 1962; Ökcün-Akçamuş, 2015; Yavuzer, 2016) Considering this relationship between play and child development, *play evaluation tool* is an instructional method as well as an acquisition feature (Aydınli, 2008; Blasco, 2001; Gagnon & Nagle, 2004; Şahin, 2015).

In the national field literature, there are studies on the determination of the deficiencies in the play development of individuals with ASD, monitoring the play development, gaining the play skills, and examining the relationship between the play and development areas. When the studies on play and ASD were examined, graduated guidance, least to most prompting, live model, video model, expanded activity schedules with video, social stories methods were used. (Dalgin-Eyiip, 2011) (Sani-Bozkurt, 2011) (Besler, 2015) (Turhan & Vuran, 2015) (Pioneer, 2015) (Çattık, 2016) (Ergin, 2017) (Saral, 2017). In the acquisition of skills, teaching was presented by mothers only in one study (Besler, 2015), while it was done by teachers in the others. While teaching sessions were held one-to-one, only two studies were conducted with small groups (Öncül, 2015; Çattık, 2016). When the play skills were studied, it was seen that train with legos, digital game, imaginative functional (symbolic) play, role play and games with rules were considered as play types. Also in the literature Acarlar (2001), the relationship between symbolic play and language disorders; Alak (2014) found that there are studies on the relationship between imitation types and play complexity and vocabulary, and Sengül (2018) studied the relationship between objective play and imitation skills with receptive and expressive language vocabulary.

Another deficiency of individuals with ASD is manifested in language skills (Kırcaali-Iftar 2018). Inefficiencies in receptive and expressive language skills limit the skills such as conversation and storytelling (?). Storytelling is part of an expressive

language and an activity intertwined with cognitive development. Storytelling contributes greatly to language and communication skills and the basis of this skill is the interaction of children with their parents (Piştav-Akmeşe, 2014). Individuals learn to interact with others in their language and play activities experienced in early childhood (Fantuzzo, et al., 1995). Interaction is related to language, cognition and advanced social skills (Özaydın, 2006). The insufficiency of individuals with ASD in the field of play and language limits their interaction (?). Children start making friends in preschool years (Kamaraj, 2011), and during peer interaction with their friends, children can observe, model, imitate, conversation, acquire language, take turns, share, understand social roles, help and provide many learning opportunities in the meantime. (Bandura, 1977) (Vygotsky, 1978) Özaydın 2006; (Gülay, 2010) (Avcioğlu, 2012) (Ökçün-Akçamuş, Acarlar, & Alak, 2018). Children who have problems in peer interaction experience adaptation problems later in life (Biermen & Wargo, 1995). Therefore, the importance of play intervention programs for children at risk is emphasized (NAEYC, 2001) and it can be said that individuals with ASD are in this risk group therefore peer interventions are important for individuals with ASD (Bauminger, 2007) (Özaydın, Tekin-İftar, & Kaner, 2008). Peer-mediated interventions are among the methods that have been demonstrated to be effective in evidence-based practices (NAC 2015; NPDC on ASD 2014). Considering that most of the children with ASD receive education with their peers in mainstream classes; working with peers is economical (in terms of time and cost) and accessible while many long-term learning opportunities (?).

In the studies in international literature, by using the play as a tool and including the individuals with ASD in the peer group, social interaction and the frequency of communication were examined and an increase in both was observed (McEvoy, Heckaman, Wehbt, & Denny, 1988) (Katz & Girolametto, 2013) (Hochman, Carter, Bottema-Beutel, Harvey, & Gustafson, 2015) (Wolfberg & Schuler, 1999) (Rodriguez-Medina, Martin-Anton, Carbonero, & Ovejero, 2016) (Parsons, Cordier, Munro, & Joosten, 2018) Parsons et al. 2018; Hu, Zheng and Lee 2018) (Hu, Zheng, & Lee, 2018). Positive developments were also revealed in the studies where skills such as playing, joining and continuing play were examined by being included in the peer group (Vousden, Wilkes-Gillan, Cordier, & Froude) (Fujiwara & Sonoyama, 2018) (Kent, Cordier, Joosten, Wilkes-Gillan, & Bundy, 2018) (Wolfberg, DeWitt, Young, & Nguyen, 2015) (Adley, 2015) (Miller, 2015). When the related literature in our country is examined, it is seen that was studied peer-mediated instruction is studied in a very limited number; One of these few studies is Özaydın's (2006) study in which one of the target children, whose peer leadership tried to increase social interaction with friendship development program, in the other used autism and the effect of peer-mediated physical activities on communication skills of an individual with autism (Yarımkaya, 2016).

In the light of the literature, unlike the existing research; The peer initiation model was used in a highly simplified manner, and the inter-behavioral multiple-baseline model was supported by many qualitative data. The aim of this study was to investigate

the effect of peer interaction on language and play development of an individual with Autism Spectrum Disorder. In the research, the answers of these questions were sought:

- Is peer interaction effective in developing storytelling skills of individuals with ASD?
- Is peer interaction effective in the development of the individual with ASD ability to build and play trains?
- Is peer interaction effective in the development of (dramatic) role playing skills of individuals with ASD?

2. Research Design

In the research, inter-behavior multiple baseline was used from the single-subject research methods. This method enables evaluation on more than one situation in order to reveal the effectiveness of behavior or skill teaching method or program (Tekin-Iftar, 2012). In addition, this model is supported by qualitative data.

2.1 Participants

Two children, one with ASD and one with TD, participated in the study. Since the developing friendship process and skills in the acquisition processes were examined in dept the study was limited to only two children. Considering the ethical rules, the participants were given the nicknames Toprak (TD) and Kaan (ASD).

2.1.1 Individual with ASD

Kaan was diagnosed with Autism Spectrum Disorder in the hospital of a faculty of medicine; He was born in 2010 (7.6 years old). According to Gilliam Autistic Disorder Rating Scale-2 Turkish Version (GOBDÖ-2 TV), the autistic disorder index of the student is 93 points and this value indicates that the probability of ASD is very high.

Kaan has a similar competence with his peers in the field of painting and mathematics and is interested in these disciplines. He can copy the pictures of the objects he sees and paint them by matching their colors. In the field of mathematics, one, ten, five, two can count rhythmically, with real objects, the result can make up to twenty addition operations. Recognizes letters, matches, vocalizes. When the learning processes were examined, it was seen that memorization, observation and imitation skills were advanced, when he was a model, he realized a skill, when he was told to do so, he followed and imitated, and he continued to participate in the one-to-one activities at the desk for twenty minutes. In addition to these competencies, ASD has obsessive behaviors (faucets, doors, light closure, accumulating pens, avoiding sharing). He is hyperactive, has features such as resistance to breakdown of routines, screaming and self-speaking (giving stimulus, inappropriate context, saying meaningless words). He is unable to initiate and establish an interaction, initiate and maintain conversation. He cannot understand the abstract parts of the language (metaphor, synonyms). When the name is said, it looks at the voice direction, answers the questions in a single word, repeats the

second one without a conscious choice when two options are presented, establishes a short-term eye contact and does not share his interests. The Denver Development Test II performs at the age of four in language skills in word identification, knowing opposite meanings, using the plural suffix and reporting functions. He is an individual who makes little and short eye contact, cannot read desire and prefers loneliness. Moreover, he is a child who does not participate in the plays structured with a duty consciousness by someone else spontaneously, and cannot continue the regular play. Kaan examines the pictures of the story books, names the pictures he sees correctly, but fails to sort and narrate the pictures based on the occurrence of an event. He starts structure-building plays, but fails to sustain and eventually unable to function properly, while manages neither taking a role in dramatic plays nor sustaining them.

2.1.2 Individual with TD

Toprak was born in 2012 (6.4 years old) and grew up in a socio-culturally and economically well-off family. Toprak has a language development that can tell a story consisting of seven pictures with fifty words. The sentences he constructs are generally in accordance with the language structure of the Turkish and often consists of seven words. He can put simple idioms and rhymes in the stories he tells, and give similar and synonymous words in the story at different times. He is successful in constructing railroads, imaginary structures from blocks. He can act different roles in dramatic plays while capable of maintaining, differentiating and explaining those roles. The peer identification form developed for the study was completed by three observers for Toprak. He scored an average of 96 points from the three observers, and interviews were conducted at the end of this study with teachers and it was stated that he was suitable for the study. In the interviews Toprak was defined as a harmonious, collaborative, expressionist, responsive child who expresses his own ideas and demands others' ideas for each event, activity. He has a library and known for his fondness for books and communication; initiates and maintains interaction with all children around him and uses appropriate communication patterns.

2.2 Researcher

After completing the creative drama teaching program at the Çağdaş Drama Association, he had worked with preschool children for seven years on creative drama, role and play processes. He graduated from the department of the education of the intellectual disability and at the time of research still was a graduate student in the department of autism spectrum disorder in the field of child psychiatry. After completing his master's degree, he started to work as a research assistant at Maltepe University, Department of Special Education. During his undergraduate and master studies, the researcher conducted private lessons with individuals with autism.

2.3 Determination Process of Participants

Kaan is a student of the researcher who has been studying primary school preparation skills such as language-cognition and social competence, read-write preparation, basic mathematics for one year. Since Kaan is a high-functioning ASD, his limitations in the context of social and language skills, his inability to perform complex skills such as play, the researcher thought that the peer-mediated teaching methods could be applied and therefore included Kaan in this study after interviewing his family.

Toprak was the researcher's student who had participated in creative drama workshops for three years and demonstrated proficiency in interaction, communication and play skills. Within the scope of the study, three teachers who worked with Toprak for a year filled in the peer determination form. Toprak received 96 points from these forms which were shared with the family. As a result, he was included in the study, considering that it would contribute to Toprak.

2.4 The Dependent Variable

Three independent variables were included in the study.

- **Story telling:** the individual was expected to sort the story cards of seven squares according to the plot and establish a three-word sentence for each card, one of which states action.
- **Train building and playing:** the individual was expected to remove the train tracks from the box, build the tracks using all the tracks (16 rails and a tunnel), combine the three wagons and drive at least two turns on the tracks.
- **Role-playing:** the individual was expected to play the role of the animal in the story he was listening to, symbolically use an object and remain in the role as he continued this process.

2.5 Independent Variable

The independent variable of the research was peer interaction. It covers the process of interacting with an ASD individual by meeting the regulated environment and appropriate peer.

2.6 Interaction Process

In this peer model, which is expressed as peer interaction and simplified the peer initiation model, TD is only introduced to the target skills and it is stated that he should do these activities together with his friend. In the absence of any training for the peer in this study, it is assumed that (1), the peer determination tool determines the appropriate peer, (2) the peer is aware of the differences of the people with disabilities, since he participated in activities related to individuals with special needs in preschool period, (3) that any training situation constitutes preliminary assumptions against the target individual, and (4) avoiding the time-consuming limitation of peer-mediated methods that teach peer training.

2.7 Pilot Study

Pilot testing sessions were conducted before the study to test the feasibility of not applying peer instruction and the simplified model. In these practices, families and children were introduced (to each other) five months before the study started, and three times, once a month, children were allowed to spend time together.

Children examined a picture book together on the first day they met. During this event, Kaan sat at the same table with Toprak, but did not answer his peer questions. The researcher interpreted the sharing of the same environment throughout the activity as positive for the study.

In the second meeting, Kaan and Toprak built a tower of wooden blocks and tried to avoid destroying the tower by pulling some wooden blocks (jenga). During this activity, Kaan's difficulty has continued despite taking turns, and Toprak's response to two of the three questions. Kaan asked about the tablet of his interest was interpreted as positive in terms of study and interactivity.

In the third meeting, the children shared the same table with Kaan's desire to paint. While he was painting, he asked Toprak Kaan seven questions about the objects around him and the painting he drew. Kaan answers two of them with a single word; when Toprak asked the other five questions for the second time, he gave one-word answers. In this context, the study was interpreted as the repeatability of interaction and started to study.

2.8 Baseline Sessions

In the start-up sessions, the researcher tested the skills of storytelling, train building and playing, role playing. The individual was given a starting instruction for the related skill, and when the individual did not perform the skill, the instruction was repeated to ensure performance. When he completed the performance, his participation was confirmed as "Thank you for participating". Performance was obtained until a stable data was obtained, and when the stable data was reached for these skills, the intervention session was started.

While intervention for storytelling skills continued, baseline performance continued for train building and playing and role-playing skills. When the individual meets the desired criteria in storytelling, materials are included for the ability to build and play trains, and the peer is reminded of the need for taking an action take action.

While the intervention for train building and playing were in progress, the baseline performance data of the role playing skills were obtained, and when the desired criteria for train building were met, scenario/story cards were put into the environment and peer activities were reminded.

2.9 Intervention Sessions

The intervention sessions were conducted in a completely natural context. Before the intervention sessions, the materials to be used in the study were made available and a camera was placed on one side of the room. There were some activities such as eating

fruit, painting, writing letters and playing tablets, not exceeding five minutes according to the wishes of the children. When individuals with ASD did not want to attend the event, they were reminded that they should help their friends first and they were expected to attend the event. If the individual continues to be reluctant to participate; when the event was over, a reinforcing agreement was made with him to draw a picture with his friend. Toprak was instructed to *"You must making activity at least three times with Kaan"*. Just before the start of the session for the ability to tell stories, told to Toprak *"There are story cards here so you can sort and tell them"* Kaan has been given the directive to *"work with Toprak."* Toprak invited Kaan to the event in various ways such as *"Let's tell me the story, I tell the story, please listen to me, I tell firstly, and then you will tell me."*

When the 80% criterion for storytelling skill was met, the train set box had been placed just before the beginning of the session for the ability to build and play train given Toprak *"You can play with the train in the box but you should build it at least three times"* was also given the *"Kaan today helps to Toprak"* directive. They invited and played with their peers with various initiation words in different ways, such as Toprak taking the box and *"let's rule it, let's build the train, build it, play it"*. Since it took about an hour to build and play the train three times, they did not want to do another activity.

When the 80% criterion in train building skill was met, the third skill, role playing skill, was started. Just before the session began, had introduced to Toprak, *"there are cards on the table, tell the story and then animate it"*, *"You can play with your friend"* directive was given to Kaan. Toprak took the cards and started animating in a variety of ways, such as *"let me tell you, let me do the same here, you become a dog and I am already a child"*.

2.10 Follow-up Sessions

Follow-up sessions were conducted on the 1st, 2nd and 3rd weeks following the 100% criteria for the individual with ASD. There is no presentation of any reinforcers in these sessions, and after the participant has completed the skill, *"thank you for participating"* like that has been approved.

2.11 Generalization Sessions

The generalization sessions in the research were examined in three different ways: interpersonal, inter-environment, inter-material generalization for each skill. Generalization sessions were held after the individual performed 100% performance three times in a row.

In the storytelling skill, the individual with ASD performed in the park near his home for the generalization skills among the environments; he told the story to his mother for interpersonal generalization; he used a new story card set for generalization between materials.

In the ability to build and play trains, the ASD individual performed in the park near his home for inter-environment generalization skills; received and played instructions from his father for interpersonal generalization skills; used an easily accessible, common plastic train set for generalization between materials.

In role-playing skills, the individual with ASD performed in the park near their home for inter-environment generalization skills; shared and played roles with the peer's brother (3-year-old boy) for interpersonal generalization; for the generalization of materials, a scenario / story card with similar characteristics was used.

2.12 Data Collection Tools

In the research, skill registration forms were used for effectiveness, generalization, follow-up and reliability of skills; semi-structured interview forms for social validity data; field diaries were used to describe the friendship process and to examine interaction.

A. Peer Identification Form

The Peer Identification Form was created for this study. In the relevant form, the necessary skills and behaviors were listed and compiled into consideration by Kerr and Nelson (1998), considering the features, friendship, teaching-learning processes that the peer had foreseen and expressed in all peer studies. A total of thirty-seven skills and behaviors were taken in one column in the form of expert opinions and marked as “never, sometimes, always için for the frequency of the teaching peer. The frequency substances mentioned in the form; never one, sometimes two, always three to be scored, the peer has not been taken 1 point from any item, all the relevant skills and behaviors correspond to 3/2 of 74 points, this value was also the lowest score to be received for the peer.

B. Skill Registration Forms

Skill Registration Form in which the stages of a behavior are specified and the steps that an individual should take while performing the behavior is a form. The behaviors discussed in the research were analyzed and each step was processed into the form. In this form, storytelling skills consisted of eight steps, train building skills twenty-three steps and role play skills seven steps. Students' performance is recorded with plus (+) symbol for each step performs independently and minus (-) symbol for the steps cannot perform.

C. Semi-Structured Interview Forms

Interview is a data collection technique that is frequently used in order to obtain information from participants within qualitative research methods. On the other hand, semi-structured interviewing is one of the types of interviews where certain questions are posed, and new ones can be added with the flexibility of the process. (Karasar, 2016) (Lightning & Lightning, 2016).

D. Focus group

Focus group interviews were also conducted with the families for social validity interviews and other views and observations of the process. Focus group interview is a type of interview in which participants gathered at a similar or common point answer

the group questions and interact with each other to express their opinions (Yıldırım and Şimşek, 2016).

E. Field Notes

The researcher's record of his experiences, observations and thoughts related to the work in writing defines the field notes. Keeping field notes ensures direct and first-hand records of the subject being studied. At the time of the peer interaction, the researcher moved to a corner where he could see the children and recorded the events and situations in writing. He interpreted his notes by supporting them with video recordings.

3. Effectiveness, Follow-up and Generalization Data and Analysis

Depending on student performance, relevant skill registration forms were completed at the end of each session. The forms filled out about the effectiveness of peer interaction were analyzed by graphical analysis method. The analysis was made by visualizing the line graph. The horizontal axis in the line graph shows the number of sessions and the vertical axis represents the percentage (%) performance dependent on the dependent variable. Thus, how much performance the participant performed in each session was understood and expressed in a simple way. Generalization data were collected in the environment, material and interpersonal dimensions of the generalization, and the values in skill registration forms filled for pre-test and post-test data were expressed as percentage values in column graphs.

3.1 Reliability Data and Analysis

In the study, interobserver reliability and application reliability's (fidelity procedure) data were collected. For both reliability data, three experts were sent randomly selected video recordings from all sessions through random assignment and asked to complete the data recording form. The first observer was a research assistant at the Maltepe University special education department. After her master's degree, she continued her doctorate studies in the same field and participated in single-subject research.

The second observer works as a psychologist at an educational research hospital affiliated to the Ministry of Health. Following her undergraduate degree in psychology, he continues her master's degree in family counseling and autism spectrum disorder and has taken courses in single subject research methods in graduate education. The third observer is a teacher with bachelor's and master's degrees in special education. He works in a special education school. He has taken courses on single subject research methods in undergraduate and graduate education.

3.2 Interobserver Reliability

Videos submitted for interobserver reliability data account for 35% of the overall study. Reliability data were obtained from the observers who watched all the videos and completed the form independently. Interobserver reliability data obtained from these

forms were calculated using the formula $[(\text{Consensus} / \text{Consensus} + \text{Disagreement}) \times 100]$ (Erbaş, 2012).

Interobserver reliability coefficient for story telling skills; The average reliability of this skill was calculated as 96.8%, 100% for the baseline level, 87.5% for the intervention session, 100% for the follow-up sessions, and 100% for the generalization sessions. The inter-observer reliability coefficient for the ability to build a train within the building plays; The average reliability of this skill was calculated as 98.8%, 100% for the baseline level, 95.5% for the intervention session, 100% for the follow-up sessions, and 100% for the generalization sessions. Interobserver reliability coefficient for role playing skills; The average reliability of this skill was calculated as 96.4%, 100% for the baseline level, 85.7% for the intervention session, 100% for the follow-up sessions, and 100% for the generalization sessions.

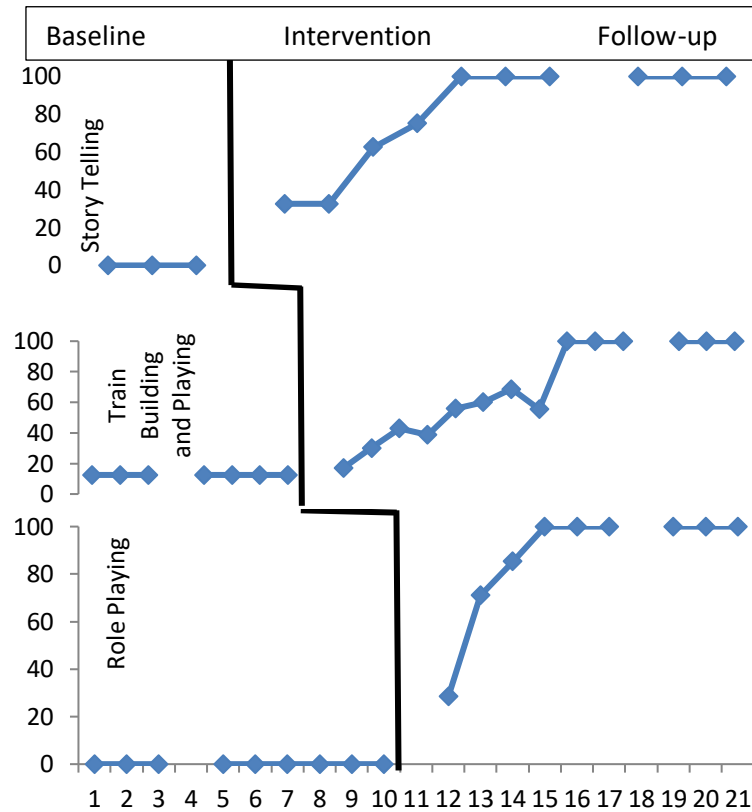
3.3 Application Reliability (Fidelity Procedure)

Refers to the measurement stability of different observers to test whether the effect of the tested variable is actually applied as planned, which tries to reveal how much instruction overlaps with the planned practice while gaining a behavior or skill (Erbaş, 2012). For this reliability type, Observed Practitioner Behavior / Planned Practitioner Behavior $\times 100$ (Erbaş 2012) was taken into consideration in order to calculate whether the planned process was realized in the learning scheme. 35% of the study consisted of randomly selected parts of the sessions were filled by three independent observers by considering the learning scheme. For this purpose, it was taken into consideration whether the researcher provided only the arrangements specified in the diagram. It is seen that application reliability is 100% for baseline level, 100% for intervention session, 100% for follow-up sessions, 100% for generalization sessions.

3.4 Social Validity Data and Analysis

Social validity data were obtained from focus group interviews and face-to-face interviews. Social validity refers to the qualitative dimensions of a behavior, its importance, significance, acceptability (Vuran & Sönmez, 2008) (Kurt, 2012). In the semi-structured forms prepared to obtain social validity data, questions were asked about the social validity of objectives, method and effectiveness. All social validity interviews were recorded. A total of ten people, including a professor working in the field of autism, a doctoral faculty member working in the field of social skills, a preschool and special education teacher, both working in the field, individuals with TD and ASD and their families. In order to determine the social validity comprehensively, data were collected from the individual who was given behavior in the context of subjective assessment approach (Vuran & Sönmez, 2008), from his friend who accompanied him in the process of gaining these skills, from the families who were indirectly affected by this skill, from academicians who were field researchers, and from practicing teachers. All of the sound recordings were first decoded in writing and then interpreted by descriptive analysis.

4. Findings



4.1 Findings on the Effectiveness and Generalization of Peer Interaction in Storytelling Skills

Kaan's 0% performance in storytelling skills appears to be at the baseline level. In the fifth session with peer interaction, it is seen that Kaan fulfills the skill criteria of 100%. When the performances of the sessions are examined; 32.5% in the first and second sessions, 62.5% in the third session, 75% in the fourth session, 100% in the fifth and seventh sessions. Following the acquisition of tracking data for this skill; first, second and third weeks. 100% performance of the individual indicates the permanence of the acquisition. In the third session, where Kaan's storytelling skills were studied, it was seen that Kaan made a connection with the story and his friend reinforced this performance.

T: "What should we name this child on the card?"

K: "Let's call Kaan."

T: "Kaan told how beautiful it is (Kaan said /told us that "How beautiful" (it was?))! he knew the hug card!" (8/10/2018)

T: "Kaan said the card was very successful today, he wouldn't say it at all and he's getting better. Really good about it."

It was seen in the video recordings that Kaan used the conjunctions “even” appropriately in the story (15.10.2018).

It was seen that Kaan was able to tell a story simultaneously and complete the unfinished story.

“He told Kaan’s story cards simultaneously with his friend and continued the story from where his peer left off in the next narration.” (04.11.2018)

Kaan developed positive attitudes towards storytelling and generalized it in the observation notes and during the interview with his family.

“When Kaan saw the researcher and the Toprak, he said, Let’s tell the story.” (05.11.2018)

“When Kaan gets his story cards, he says, ‘YEHUUU the story time!’ (12.11.2018)

Mother: “Kaan wants to read the story book and takes it and tells it beautifully. A little memorization sentence, a little bit of the story by commenting, even if it tells the story, before going to sleep.”

Father: “The rhino took a book and says two or three things to each image. Her rhinoceros came, she has blond hair, a green tshirt, an orange skirt. Begüm has done this, he says he’s eating two pancakes, usually two or two sentences about visual at that time.”

Mother: “After this work, now, it has come to my mind. Kaan’s enthusiasm for telling stories has increased. He used to say standard things by looking at pictures. He used to say what he had memorized. Now it is very diversifying the story.” (23.12.2018)

In the process of acquisition based on peer interaction, TGG chose to be the most model for this skill. This is seen in video analysis and observation notes.

“First I will tell you then”,

“Tell me, Kaan, it’s your turn”,

“...sort and tell when you’re done ”,

“listen to me”

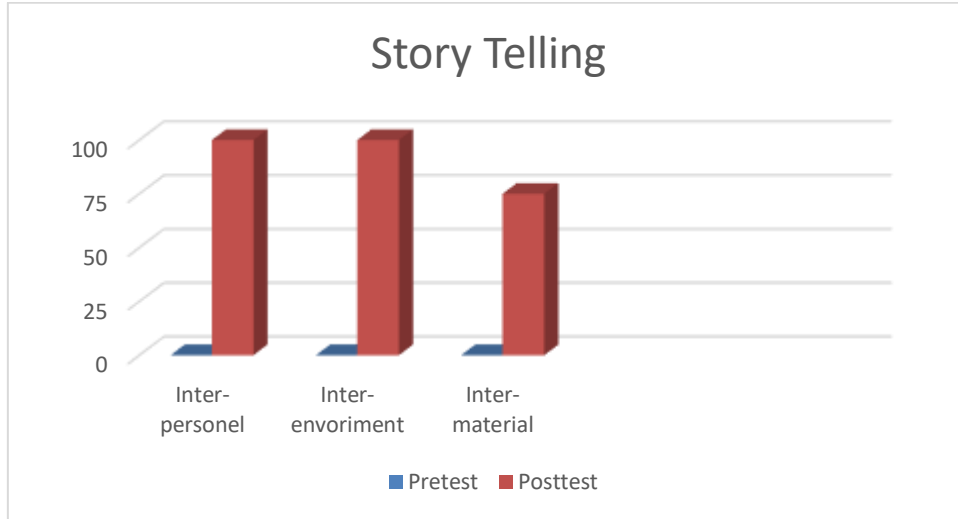


Figure 1:

When the above graph is examined, it is seen that Kaan performed 100% performance in the park near the house for storytelling skill for inter-environment generalization skill. Kaan, who tells the story to his mother for interpersonal generalization skills, performed 100% for the skill. He used a new story card set for generalization between materials and he performed 75%. Although Kaan sorted the new card set correctly, he could not fulfill the three appropriate word-telling criteria for each card for two cards. Although this performance is an adequate criterion for the acquisition of a skill; Given that language skills in autism are limited, and for the first time they encounter a new set of story cards different from the cards they are accustomed to, they do not meet the 100% criterion for this complex skill.

4.2 Findings on the Effectiveness and Generalization of Peer Interaction in Train Building and Playing Skills

When Kaan's performance on train building skills is examined, it can be seen that he performed 12.9% at the baseline level. Following the first session of the study, 17.2%; 30.1% in the second session; 43% in the third session; 38.7% in the fourth session; in the fifth session 55.9; 60.2 in the sixth session; 68.8 in the seventh session; in the eighth session, 55.6; In the ninth, tenth and eleventh sessions, it is found that it met 100% criteria. It is seen that the performance of the individual decreases twice in the fourth and eighth sessions. The first of these decreases was related to Kaan's high fever, and the second decrease occurred in the session after he stuck his finger on the door and went to the hospital, which also included qualitative data. Following the acquisition of tracking data for this skill; first, second and third weeks. 100% performance of the individual indicates the follow-up of the acquisition.

In the process of acquisition based on peer interaction, TD peer mostly used gestural and verbal prompt.

"It's not like that, take it out and turn it, put it back on now"

and sometimes put the wrong parts and put them on their own.

In the process of acquiring Kaan, it was seen that he took turns taking the train while he was driving the train. The ability to play in sequence is one of the untargeted gains.

When Kaan took another train by train:

T: "Kaan, can I play now?"

K: "Let the Toprak play." (22.10.2018)

T: "But now it's my turn! the train goes (it takes the train) very fast very fast! (the train drives on the rails and gives it to Kaan after a minute of passing, Kaan drives the train)".

T: (Toprak waits for two minutes) 'Come on me!' (He takes the train from Kaan and plays two laps, Kaan waits for his turn). (12.11.2018)

In the park near the house for inter-environment the skill of building and playing train; Kaan received and played instructions from his father for interpersonal generalization skills; he used a plastic train set sold for almost every toymaker for generalization between materials.

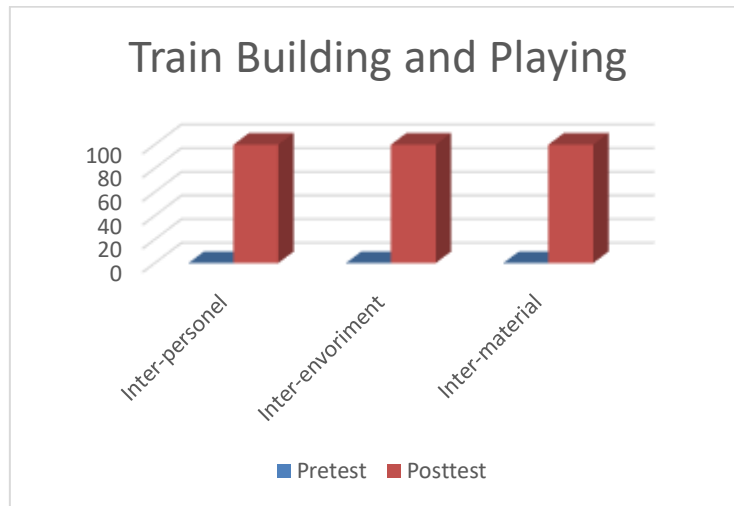


Figure 2:

When Kaan's generalization performances are examined, he has constructed the train as requested after the 'Do you make a Kaan train? Directive he received from his father as a result of interpersonal generalization performance and performed 100% performance. For inter-environment generalization, the individual who received the same directive in the park near their home built 100% criteria by constructing the train as desired. The individual who is asked to build a plastic train set is made of the material from which this train works; Although it is different in terms of material, color and model, it transferred the acquisition and achieved 100% success.

4.3 Findings on the Effectiveness and Generalization of Peer Interaction in Role-Playing Skills

When Kaan's role-playing behavior was examined, he showed a 0% performance at baseline. He scored 28.4% in the first session, 71% in the second session, 85.3% in the third session, and 100% in the fourth, fifth and sixth sessions. Tracking data for this skill, following the acquisition; first, second and third weeks. 100% performance of the individual indicates the follow-up of the acquisition.

It was seen that TD peer used the most model and verbal prompt in acquiring this skill. The individual used the story as a verbal prompt by voicing the story they portrayed in the first sessions, and it was found to be a model in the body forms appropriate for the role.

T: (*Toprak stood in a four-legged form with hands and feet like a dog*) “Now come and caress my face” (*Kaan did*).

T: “Now pour some crackers out here (*Kaan grabs the box, slams it to the ground. Fixing the Toprak box*)’ Will you pour Kaan crackers? This is how you do it. (*Represents*). Look, I’m gonna put it. (*then he put the box, the food container in the air, and pretended to eat*). ‘Now I will lick you’, he hug to Kaan and pretended to lick it.” (20.11.2018).

During the acquisition of this skill, Kaan developed hugging behavior as an untargeted gain. In the first sessions, it was seen that Kaan avoided hugging, while in the last sessions it was observed that he had acquired this behavior.

“At the end of the play, Toprak laid on the ground while hugging Kaan. Kaan grimaced and pushed Toprak. He didn’t seem to like this contact.” (19.11.2018)

“They started the play, Toprak said ‘I will lick you now and embraced Kaan. Kaan remained unresponsive.” (20.11.2018)

“The Toprak is hugging Kaan, Kaan gently throws his arms to Toprak” (09.12.2018).

“Kaan told the story and finally licked and hugged.” (17.12. 2018).

Another of the untargeted gains was to make a sound as pretending. While it is indigenous to provide the form of the role to meet the criterion, it has been seen that Kaan adds sounds appropriate to the role steps.

“Kaan makes a licking sound”

T: “Now hug”.

K: *"Ayyyh (just pretending to hold waist of his friend)." (20.11.2018)*

T: *"Come on Kaan be the dog."*

K: *"waf waf waf (pile)." (11.20.2018)*

T: *"The dog was upset."*

K: *"(wearing a sad expression) ıghhh." (09.12.2018)*

"Kaan took the box in his hand and pretended to eat it by saying' nam nam ((10.12.2018).

"Kaan stood up and approached his face, making a licking tongue while pretending to lick it. " (12.10.2018)

As another untargeted achievement, Kaan diversified the symbolic materials and used them within the play. Kaan used train wagons, train rails, pencils and story cards for biscuits, a symbolic element in the story.

"Kaan throws his pencils into the box brought by Toprak. When Toprak says 'not yet' and Kaan say's "he gave food "(09.12.2018)

"Toprak brought the wagons and poured them into the box like biscuits. Kaan took the box and pretended to eat it. Kaan brought the wagons for biscuits as before and put them in the box." (10.12.2018)

It has been seen that Kaan has also used symbolic materials to demonstrate and diversify his role-playing skills at other times.

"Kaan puts the box on his leg during the play and pretends sleeping baby and says "eee Kaan eee ee e." (20.11.2018)

Mother: *"Now the story is very diversified and the second one starts to play that it plays and imitates."*

Father: *"Yes, yes it started to play imaginative play on its own containing dramatic things." (12.23.2018)*

In the generalization session of the role-playing skill, the TD individual's 3-year-old sibling for interpersonal generalization, new story cards contain that two characters and one symbolic element, one animal (cat) and one symbolic element (for balls of string

instead of ball and table instead of armchair) for inter material generalization, used the park near the house for inter-environment generalization.

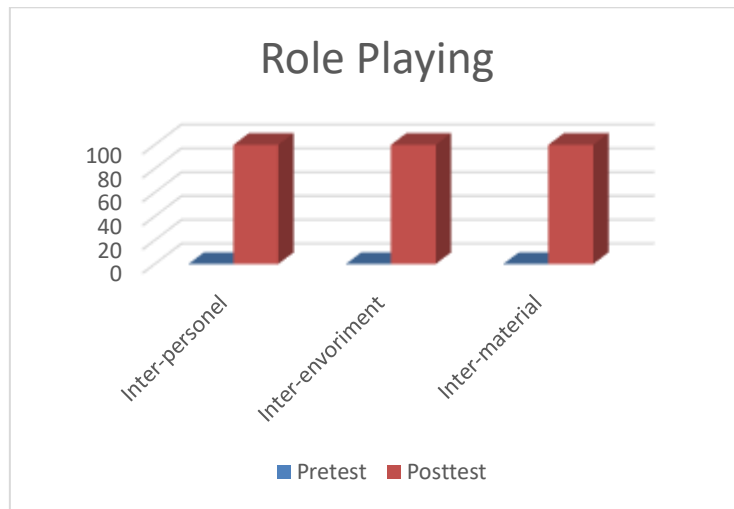


Figure 2:

When Kaan's generalization performances were examined, as a result of the interpersonal generalization performance, he arranged the cards, performed the necessary roles and performed 100% performance following "Shall we play, Kaan?" the directive from the peer's brother. The individual who received the same directive in the park near their house for generalization between the environments showed 100% criteria by playing the role as desired. It was seen that he lined up a new story card set and generalized acquisition that met the criteria 100% in playing new roles.

5. Discussion Conclusion and Suggestions

Peer interaction was found to be effective in acquiring the ability to tell stories, this skill could be generalized by repeating with different materials, people and environments, performance was maintained and lasting for three weeks. In addition, this method has gained untargeted gains such as using conjunctions in the individuals with ASD in a non-targeted manner, telling story simultaneously, maintaining the narration left unfinished, taking turns during narration, and developing positive attitudes towards story telling. In the process of acquisition of skills, it was seen that peer was often a model.

Peer interaction was found to be effective on train building and playing skills, it was generalized that it was repeated in different materials, people and environments, performance was follow-up and lasting for three weeks. In addition, it was observed that this method also gained taking turn turn-taking and waiting behavior during the play in the non-targeted individuals with ASD, the peer frequently provided gestural and verbal prompt in the acquisition process of skill.

Peer interaction was found to be effective on role playing, it was generalized that this skill was repeated in different materials, people and environments, performance was

follow-up and lasting for three weeks. In addition, it has been observed that this method provides non-targeted natural vocalizations appropriate to roles, hugging, using different objects symbolically, diversifying plays, and the peer being the most model and verbal prompt used in the acquisition process of the skill.

When we look at the studies in the field of peer play skills (Vousden et al., 2018; Fujivara and Sonayama 2018; Kent et al., 2018; Wolfberg and Schuler 2015; Wolfberg et al., 2015; Adley, 2015; Miller, 2015) with the results of this study It was found to be consistent.

As a result of the social validity interviews with many people, it was revealed that peer interaction method is useful, effective and efficient, highly suitable and effective, pleasing, applicable, preferable, and can provide many benefits. While it was emphasized that the method was economic in monetary terms, there was a divergency that it could not be economical in terms of time. In the study, it is stated that all of the selected skills are very important from social and communicative point of view, will provide unintended, implicit gains and are necessary. It was found that it could be difficult to find a peer for such studies and that the study was limited with a single pair of children. Considering all these, it has been demonstrated that the method and skills are socially valid.

These results are the application and diffusion of peer-based methods in inclusive classes, demonstrating the effectiveness of the peer-interactive method in other development and skill areas, comparing the efficiencies of the relevant method with other methods, and introducing the unintended gains of the peer-interactive method and the gains of typical developing children in these processes.

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