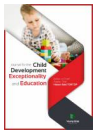

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Research Article

Teaching social skills to individuals with autism spectrum disorder[1]

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Abstract

The research aimed to teach "thanking" and "permission-seeking" skills to children with autism spectrum disorder (ASD) through a direct teaching method. Social skill deficits are a significant limitation for children with ASD. Effective interventions often involve gradually withdrawing instructions to encourage independence. This study focused on three male students, aged 10 and 11, diagnosed with ASD in 2022, who were attending a rehabilitation center in Istanbul, Turkiye. The targeted skills "thanking" and "permission-seeking" were assessed through evaluations provided by teachers and family members. To facilitate learning, researchers employed stories and illustrated sequential cards as educational tools. Data analysis was conducted using a multi-class model with a stratified sampling method. Findings revealed that the direct instruction significantly enhanced the participants' abilities to thank and seek permission. Follow-up observations, conducted two weeks after the intervention, showed that the children were able to demonstrate these skills independently. At the study's conclusion, feedback from both parents and teachers was overwhelmingly positive, indicating that the teaching process effectively improved the children's social skills. This approach underscores the potential for structured, gradual instruction in fostering social skill development in children.

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Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that emerges at an early age and continues throughout life; it refers to a wide spectrum characterized by repetitive behaviours and limited interests, in addition to limitations in language and communication skills and the associated inadequacy in social relations with people (Mazurek, Lu, Macklin, & Handen 2019; Suckle, 2021; Whiteley, Carr, & Shattock, 2021). Individuals with ASD are known to experience many difficulties in their daily lives owing to their obsession with various objects or actions, feeding and sleep problems, self-destructive behaviours, and difficulties in communicating (Hyman et al., 2020). Difficulties with interpersonal verbal and nonverbal communication form the basis of problems with social skills (Mazurek et al., 2019; Thapar & Rutter, 2021). Poor language skills make it difficult for children with ASD to communicate with their peers and their environment, and may cause them to be excluded from social environments (Duncan & Bishop, 2015). Limitations in these language skills can negatively affect self-expression and the expression of feelings and thoughts, and accordingly, children with ASD are known to experience social adaptation and socialization problems (Green, Chandler, Charman, Simonoff & Baird, 2016). Children with ASD have problems with nonverbal communication processes and

1 This study produced form fisrt author master thesis.

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verbal communication skills (Lord, Elsabbagh, Baird, & Veenstra-Vanderweele. 2018). In particular, inadequacies in making eye contact, understanding, and using gestures and facial expressions correctly may cause these individuals to misunderstand social relationships (Lord et al., 2018; Lyall et al., 2017). Behavioural problems are another reason for difficulties in the social skills of children with ASD (Özbey, 2005; Schneid & Raz, 2020). Due to behavioural problems, children with ASD are excluded from their peers and do not want to be included in play environments; therefore, they have difficulty developing social relationships and frequently experience social-emotional problems (Dajani & Uddin, 2016). Therefore, problems related to social skills in children with ASD can lead to serious consequences affecting all areas of development (Hyman, Levy, & Myers., 2020; Jones, Pickles, & Lord, 2017). In this context, it is important to provide social skills training to children with ASD, to include them in peer groups, and to ensure their holistic development. Consequently, psychosocial, and educational services have been developed for children with ASD and their relatives. In this context, training services are divided into two categories: focused and comprehensive practices. Training activities aimed at the development of a specific behaviour and realization of development goals refer to focused practices (Durkin et al., 2008). These practices are designed for a short period and are applied to the rapid realization of changes in target behaviours. On the other hand, comprehensive models applied in the education of children with autism spectrum disorder are educational practices that comprehensively address the effects of the disorder and aim to support the development of children in all aspects (Güleç-Aslan & Subasi, 2017).

Social skills are a set of acceptable learned behaviours that enable individuals to interact in a healthy way with the individuals around them and prevent socially inappropriate reactions (Coulter et al., 2021; Cay, 2019; Fadiloglu, 2019; Fombonne, 2018; Gresham & Ellxiot, 1990; Helpautism, 2020). Social skills are learned behaviours that enable individuals to achieve positive behaviours in social environments (Kircaali-Iftar, 2018). It is stated that the interaction of children with ASD with their peers and adults around them can perform their roles in the society they live in with the development of social skills, and there will be a decrease in problem behaviours (Lord et al., 2020). For this reason, social skills training is an important part of programs prepared for individuals with ASD. Effective methods, such as cooperative learning, cognitive processes, drama, peer-mediated teaching, social stories, and direct teaching methods, are used to develop the social skills of children with ASD (Avcioglu, 2009). The direct instruction method, which is generally used in teaching many skills, is also preferred for teaching social skills (Dagseven, 2008). The direct teaching method is based on the behaviourist approach and aims to make the individual independent by gradually withdrawing clues to acquire the skill (Birkan, 2013; Sung et al., 2018). In the teaching process, skills teaching consists of motivation, modelling, guided practice, and independent practice stages (Rossignol et al., 2014). In the application process of this method, in which the teacher has all the responsibility in the first stage of teaching, the responsibility passes to the student as the teaching stages progress and is aimed at the student to become independent in behaviours by showing high-level participation in the given studies under the guidance of the teacher (Lyall et al., 2017). When studies on teaching social skills using the direct teaching method are examined, it is seen that it is a preferred method in thanking, apologizing, asking for permission, asking for help, finishing the work started, sharing skills, developing language and communication skills, initiating social interaction and communication, and developing speaking skills (Rossignol et al., 2014). In this context, the aim of the study was to teach thanking and asking for permission in children with ASD through a direct instruction method. In line with these general objectives, the sub-objectives of this study are as follows:

- Is the direct instruction method effective in teaching the skills of thanking and asking for permission to children with ASD?
- If the teaching of thanking and asking for permission prepared through the direct instruction method is effective, can children diagnosed with ASD maintain this skill after the teaching is completed?
- What are the views of teachers and parents on the process of teaching thanking and asking for permission to children with ASD through a direct instruction method?

Method

Research Model

In this study, in order to determine the effectiveness of the direct instruction method in teaching the skills of saying thank you and asking for permission to children with autism spectrum disorder, the multiple probe model with an inter-participant probe phase, a single-subject research model, was used. Single-subject research models are "quasi-experimental" research methods that are used when the number of participants in the research samples is limited. In the single-subject research models, the effect of the independent variable on the dependent variable was investigated for one participant. Single-subject research models are research methods that provide clues about how the application will be done at the baseline level. In the application phase, the method that will be applied is applied and has the feature of replicability (Kırcaali-Iftar & Tekin, 1997).

Participants

Three boys diagnosed with Autism Spectrum who received education in a special education and rehabilitation center in Istanbul in the spring semester of the 2022 academic year were included in the study. One of the conditions for the inclusion of participants was the presence of limitations in their social skills. Three participants who did not have the skills of "saying thank you" and "asking for permission," who could fulfill instructions of at least three or four words, who could follow an event from the beginning to the end, and who could answer the questions asked about the event were selected for the social skills assessment tools and interviews, and permission was obtained from their families for the research.The demographic characteristics of the participants, who were given code names within the scope of the research, are shown in Table 1.

Table 1. Demographic characteristics of the participants

Participant	Gender	Age	Diagnosis	GOBDÖ 2 TV Score
Ömer	Male	10	ASD	75
Levent	Male	10	ASD	85
Doruk	Male	12	ASD	79
Alternate participant	Male	11	ASD	75

Data Collection Tools

The data collection tools used in the study, including the selection of participants, selection of target skills, registration of the teaching process, and evaluation of the process at the end of the teaching, are explained below.

GOBDÖ 2-TV test (Gilliam autistic children rating scale)

This instrument is a scale that aims to assess individuals between the ages of 3-23 who have autism spectrum disorder and repetitive behaviours. GOBDÖ-2-TV was developed by James Gilliam (1995) in the USA in 1995, and revised again in 2005. The GOBDÖ-2-TV has three subscales with items that include observable and measurable behaviours related to "obsessive behaviours", "social communication, and "interaction". There were 14 items in each of the scales and 42 items in total in the GOBDÖ-2-TV. This study aimed to determine the degree to which children with ASD are affected.

Family interview form

This form was prepared by the researcher to obtain parents' opinions about the study in which their children participated. The family interview form consisted of six questions for parents to evaluate their children's thanking skills and asking for permission.

Social skills rough assessment form

This was designed to determine which social skills children with ASD have. The social skills rough assessment form was administered by the researcher, observing, and marking 32 basic social skills (in school, while waiting for parents, individual education sessions, and group education).

Social skills prerequisite skills measurement tool

This was created by the researcher to determine whether participants had the skills of thanking and asking for permission.

Teacher interview form for organizing social skills teaching

It was used to determine the scenarios and reinforcers to be used in teaching the social skills of "thanking" and "asking for permission" to children with ASD.

Implementation reliability form

This form was developed by the researcher to conduct evaluations related to the studies conducted to develop "thanking and asking for permission" skills in students and the implementation process. This form includes 19 items related to the introduction, modelling, prompting, prompting withdrawal, and independent practice stages of implementation. The implementation reliability was calculated according to the following formula: observed implementation/planned implementation x100.

Social skills teaching unit prepared according to the direct teaching method

In the teaching material prepared for teaching the skills of thanking and asking for permission to individuals with ASD, stories and pictures were prepared for a total of six sub-objectives in line with two main objectives. The following scenarios were created in three social contexts to teach individuals with ASD the skill of thanking with the direct teaching method: (1) When the other person helps him/her in a situation where he/she needs help, he/she says thank you. (2) When another person shares something with him or her, or she says thank you. (3) When another person gives them a gift or treats them, they thank them. To teach individuals with ASD the skill of asking for permission through direct instruction, scenarios were created in three contexts: (1) Asking permission to use another person's belongings. (2) Asking permission when necessary to meet their needs. (3) When entering a room or space, he/she knocks on the door and asks permission to enter by saying "May I come in?". In the study, two stories and one independent practice story were prepared for each situation and three social contexts determined for the target skills of "thanking" and "asking for permission." A Turkish language teacher was consulted to determine the suitability of the prepared stories in terms of Turkish expression features and spelling, and two special education experts were consulted to determine their suitability for the participants. Corrections were made in the story texts in line with feedback from the experts. After the appropriate stories were prepared, an expert panel was held on the suitability of the digital and pencil-drawing drafts reflecting the stories. The practitioner presented each story, the appropriateness of the pictures reflecting the story, and the matching of the story and picture to the experts in an online meeting. Based on the opinions of two special education experts who have experience with children diagnosed with ASD, it was decided to use the pictures drawn in the digital environment, and the final version of the teaching material was finalized after the necessary corrections were made.

Environment

The study was conducted at a special education and rehabilitation center, where the participants attended two days a week. The sessions were conducted in an 18 m2 individual education support room with two large windows where the participants were comfortable. There are two individual education desks, three chairs, three bookshelves, and a cork board in the classroom. The environment was organized in line with the teaching plan before the teaching sessions. In the implementation, illustrated stories were used for the modelling and prompt withdrawal phases for each sub-goal. In the application, materials such as paint, paper, hairpins, books, cookies, and bags were used in accordance with the scenarios created during the animation of the stories.

Implementation Process

A pilot study was conducted with the substitute participant to identify any deficiencies that may occur before the participants started to practice the skills of thanking and asking for permission using the teaching plan prepared according to the direct instruction method.

The implementation process of The research was conducted one-on-one with three students, and probe sessions, instructional sessions, and monitoring and generalization sessions were conducted with each student. The implementation lasted approximately two or three days a week and approximately 12 weeks for each participant, and all data collected by the implementer were recorded by video. The implementation sessions were completed in 26 sessions with the first participant, 25 sessions with the second participant, and 27 sessions with the third participant. The experimental process consisted of a baseline, implementation of instructional sessions, probe sessions, and follow-up probe sessions.

Determining the baseline: In order to determine the baseline level of the participants' "thanking" and "asking for permission" skills, the measurement tool for thanking and asking for permission was used.Each participant was administered 3 times and there were at least six hours between sessions. In the first participant, the intervention started after baseline data were collected, and in the second participant, the intervention started after baseline data were collected. After baseline data were obtained from the second participant and the implementation was started, baseline data were obtained from the third participant, and the implementation was started.

Teaching process: In the teaching process, a teaching plan was prepared according to the direct teaching method for the skill of saying thank you and asking for permission. In the teaching process, the sequence was as follows: introduction, presentation, modeling, guided practices (prompting and withdrawal of prompts), and independent practices.

Follow-up data: Two weeks after the instructional sessions ended, the participants acquired the skills of thanking and asking for permission independently, and follow-up data were collected to determine whether they maintained the skills. Follow-up data were collected three times for each skill. Eighteen follow-up data points were collected.

Validity and Reliability

Three types of data were collected for validity and reliability: (a) efficacy data (baseline, daily probe, and follow-up sessions); (b) social validity data (from parents and teachers); and (c) inter-rater reliability data.

The following steps were followed regarding the reliability of the applications of the research process: the implementation plan was prepared, expert opinions were taken on the plan, and a pilot study was conducted with a substitute participant. The implementation process was recorded and monitored by the observers. Data on the practices before, during, and after implementation were recorded regularly. Observers participated in the implementation at certain intervals and the process was evaluated.

For implementation reliability, we evaluated whether the social skills teaching plan prepared using the direct instruction method was implemented correctly by the implementer. Reliability data are collected in 20% of the application if it is carried out by an expert, and in at least 30% of the application if the application is carried out out-of-field (mother, father, auxiliary personnel). In the study, the practices for teaching the participating students the skills of thanking and asking for permission were recorded. In this study, implementation reliability data were collected for at least 30% of the implementations. The instructional sessions for which implementation fidelity data were collected were determined in an unbiased manner. The recorded behaviors of the implementer were observed by the observer and marked on the implementation fidelity form by examining whether they were fulfilled. The implementation reliability percentage was calculated by dividing the observed practitioner behavior by the planned practitioner behavior and multiplying by 100. The implementation reliability data for this study are listed in Table 2.

Table 2. Implementation reliability

	Teaching Session	Attendance Session	Follow up
Ömer	%89	%100	%100
Levent	%94	%100	%100
Doruk	%100	%100	%100

When the reliability findings were analyzed, it was observed that the direct teaching method was successful. Before starting the research, legal permission approval and ethics committee approval were obtained. The families were informed verbally and in writing about all the details and content of the research, and a consent form was obtained from the families.

Findings

The findings regarding the effectiveness of the direct instruction method in teaching the social skills of "saying thank you" and "asking for permission" to three students diagnosed with Autism Spectrum Disorder were calculated with the

formula Percent Correct Response = Number of Correctly Demonstrated Trials/Total Number of Trials x 100 and shown as a line graph (Figure 1).

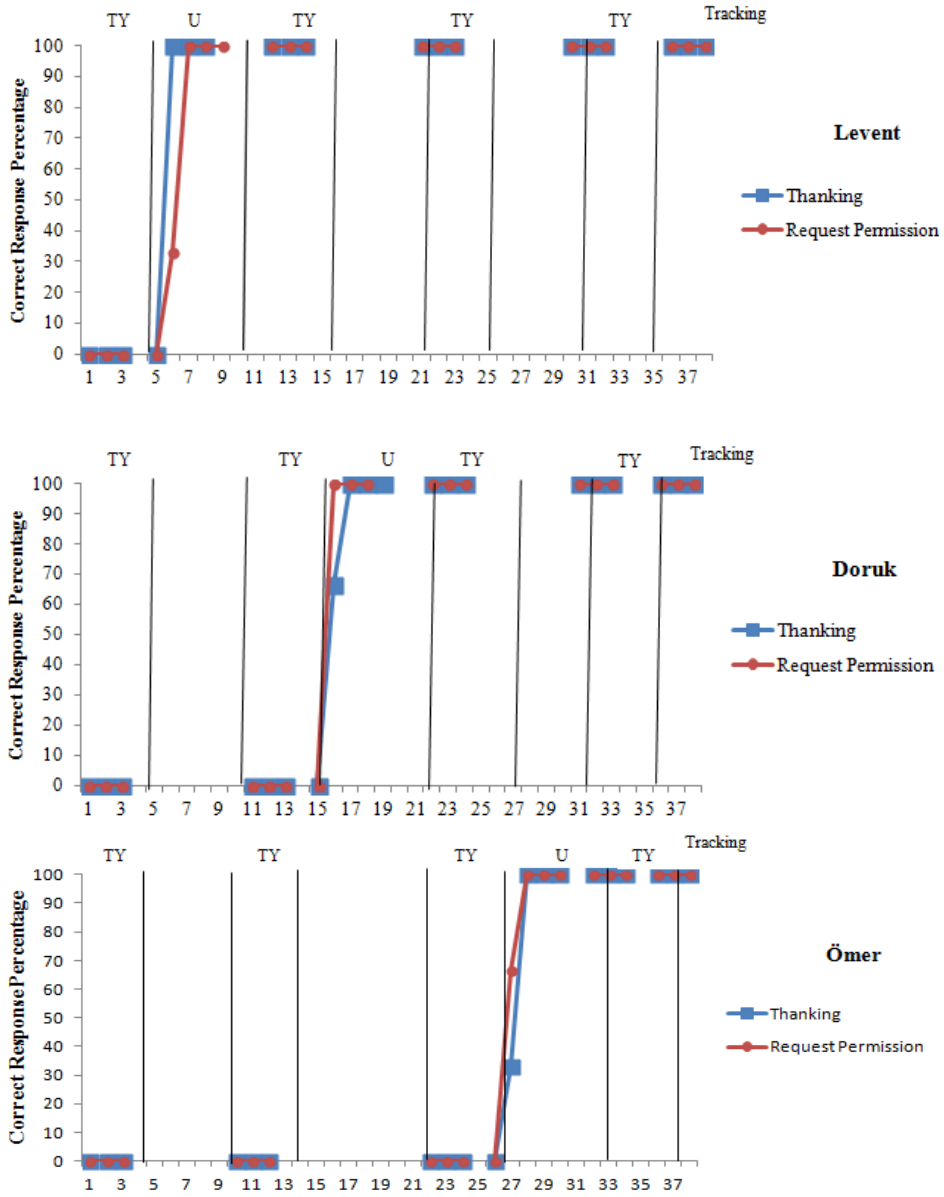

Figure 1. "Thank you" skill and "asking for permission" skill

In the findings obtained from the research, the horizontal axis in the graph represents the probe sessions of the intervention, and the vertical axis represents the target correct responses of the target skill. In the first session, the first probe data were collected for all participants for the skill of saying thank you and asking for permission. After obtaining stable data in the first probe phase for thanking skill with Participant Levent, the instructional session started. It was observed that participant Levent did not say thank you in any of the three situations that required thanking the mass probe. After starting the application, the percentage of correct responses was 0% in the first application and 100% in the second application, the criterion was met and the application continued until stable data were obtained. After stable data were obtained, it was observed that the participant thanked the participant in all probe sessions. Follow-up sessions were organized 15 days after the intervention, and it was observed that the participants thanked in three of the three situations that required thanking. The first probe data, for the ability to ask for permission, were collected from all participants. After obtaining stable data in the 1st collective probe phase organized with Participant Levent for the skill of asking for permission, the instructional session was started. After starting the application, the correct response percentage was 0% in the first application, 33.3% in the second application, and 100% after the third application, the criterion was met and the application continued until stable data were obtained. It was observed that the subject asked

for permission in all mass probe sessions after stable data were obtained. Follow-up sessions were organized 15 days after the intervention, and it was observed that the participants asked for permission in all three situations requiring permission. The second-probe data for thanking and asking for permission were collected for all participants.

After obtaining stable data in the mass probe on participant Doruk's ability to say thank you, the intervention was started with participant Doruk. He did not say thank you in any of the three situations that required thanking in the mass probe taken before the application. In the first application, the correct response percentage was 0% and no behaviour was observed. After the second application, the percentage of correct responses increased to 66.6%; after the third application, the percentage of correct responses was 100%, the criterion was met, and the application continued until stable data were obtained. After obtaining stable data from Doruk, the probe data were collected again. From these probe data, it was observed that the first two participants thanked each other in all three situations that required thanking. After obtaining stable data in the probe phase for the skill of asking for permission with Participant Doruk, the instructional session started. In the mass probe data taken before the implementation, it was observed that she did not ask for permission in any of the three situations requiring permission. In the first implementation, the percentage of correct responses was 0%, and no behaviour was observed. After the second implementation, the correct response percentage was 100%, the criterion was met, and the implementation continued until stable data was obtained. In the third probe data for the skill of asking for permission, it is seen that both participants asked for permission in all three situations in which they needed to ask for permission. In all participants, the third probe data for the skill of saying thank you and asking for permission were obtained.

After obtaining stable data in the collective probe on the skill of thanking participant Ömer, implementation was started. He did not say thank you in any of the three situations that required thanking in the collective probe taken before the application. In the first application, the correct response percentage was 0% and no behaviour was observed. After the second application, the percentage of correct responses increased to 33.4% and after the third application, the percentage of correct responses was 100%, the criterion was met and the application continued until stable data was obtained. It was observed that all participants thanked in the probe taken after the intervention. In the third probe session, conducted with the same participant to teach the skill of asking for permission, the teaching session was started after obtaining stable data. She did not ask for permission in any of the three situations that required asking for permission in the probe sessions taken before the intervention. In the first application, the correct response percentage was 0% and no behaviour was observed. After the second implementation, the percentage of correct responses increased to 66.6%; after the third implementation, the percentage of correct responses was 100%, the criterion was met, and the implementation continued until stable data were obtained. In the probe data taken after the implementation, it was observed that all participants asked for permission. Follow-up sessions were organized 15 days after the end of the intervention, and it was observed that the participants asked for permission in all three situations requiring permission.

Social Validity Findings

After the interventions related to the students' acquisition of thanking skills and asking for permission, interviews were conducted with the families and teachers to examine the social validity of the outcomes. In the family interviews conducted in this context, they stated that the acquisition of thank you and asking for permission by their children with ASD would help them facilitate their social life. Families also stated that the behaviors of saying thank you and asking for permission, which were studied within the scope of the research, were the priority skills among other social skills that their children should learn and that they had a positive effect on other social behaviors.When the responses of the families to the question "Can you describe in a few sentences the positive changes you have seen in your child at the end of this study?" were examined, the parent of participant Doruk said, "After gaining these behaviors, he behaves more moderately towards his friends. He does not turn to an object without permission". The parent of participant Ömer stated that "his behavior of taking and throwing his friend's belongings had disappeared. He no longer asks for permission and does not cause problems." Participant Levent's parent stated that "we were pleased that he thanked us and asked permission to do something." Regarding the activities in the research process, the families stated that their

children learned the skills quickly and that their children maintained the skills of asking for permission and saying thank you after the interventions and in the home environment.

When the teachers' opinions regarding the teaching of thanking skills and asking for permission through the direct teaching method were examined, they stated that it contributed to the development of students with ASD, that the program was appropriate for the students, that these skills would be useful for the students, and that the method used was appropriate. However, the teachers stated that although they could observe students inside the classroom, they could not observe students outside the classroom.

Discussion

In this study, which examined the effectiveness of the direct instruction method in teaching thanking and asking for permission to individuals with ASD, it was concluded that the participants acquired the target social skills and maintained these social skills after the teaching sessions ended. In line with the findings obtained from the participants, it was observed that the direct teaching method was effective in teaching social skills, and the teaching plan applied in this study for teaching the skills of thanking and asking for permission was successfully implemented. At the same time, the social validity of the study was examined through interviews with the families and teachers of children diagnosed with ASD who participated in the study after the interventions. In the study, families evaluated the skills of saying thank you and asking for permission as important skills for their children and stated that they were satisfied with the research process because these skills affect other social skills and contribute to children's acceptance by others and more interaction. The interviews with the teachers reported that the program contributed to the development of the students, that the program was appropriate to the level of the students, and that the method used was effective.

Social skills are considered very important in the daily lives of individuals, as they include behaviors that enable them to initiate and maintain communication with others, adapt to the behavioral expectations of different environments, and communicate their own wishes and preferences appropriately (Bremer & Smith, 2004, McLane, 1998). Within the scope of this study, the skills of saying thank you and asking for permission were selected as target skills because they would contribute to the acceptance of three participants diagnosed with ASD with social skill limitations by others and the development of more interaction skills.

Methods such as creative drama, social stories, modeling, cognitive process approach, cooperative learning, peer-supported learning, demonstration methods, role-playing methods, and direct teaching methods are used to teach social skills (Avcioglu, 2009). The preference for the direct teaching method over other methods is that the participants demonstrate the behaviors independently with the gradual withdrawal of the support given for the independent realization of the behaviors aimed at being acquired by the individual (Bacanli, 1999). When the literature is examined, similar studies show that the direct teaching method is an effective method for gaining social skills to increase individuals' social acceptance. Baty, Sorensen, Pancini, and Paiser (2000) examined the effectiveness of the direct instruction method in teaching social skills to 31 students in the 6th, 7th and 8th grades of secondary school. At the end of the teaching sessions, it was determined that there was an increase in target skills. Pritchard-Rowe et al. (2024) compared three different methods (direct instruction method, structured naturalistic approach method, positive collaborative method) in teaching problem-solving, adaptation, and listening skills to students with moderate intellectual disabilities, and found that the direct instruction method was more effective than other teaching methods. There are studies showing that direct instruction is an effective method in different types of disabilities. For example, in a study in which one of the participants was a 10-year-old girl diagnosed with ASD and the other participant was a 9-year-old boy with intellectual disability, it was observed that the direct instruction method was effective in teaching appropriate speaking, appropriate touching and appropriate sitting skills in both students (Botha et al., 2022). Similar to our study, other studies examining the effectiveness of the direct instruction method in teaching social skills to individuals with ASD found that students gained social skills effectively (Solomon, 2022). In another study examining the effectiveness of the direct instruction method in teaching inappropriate touch avoidance and greeting skills, Swaggart and Gagnon (1995) found that three students with ASD acquired target social skills.

In this study, children with ASD were taught the skills of saying thank you and asking for permission, and it was observed that they maintained these skills in the follow-up sessions held two weeks later. When the literature is examined, it is seen that the teaching is permanent in other studies in which the direct teaching method is used in the acquisition of social skills (Alptekin 2012, Dagseven, 2008, Park et al., 2023, Özokcu, 2007). In a study by Hughes et al. (2011), in which direct instruction methods were used to teach social interaction and social communication skills to two girls and three boys with ASD, it was observed that the behaviors continued in the follow-up sessions. Özokcu (2007) found that the social skills teaching method prepared according to the direct instruction approach was effective in helping students with intellectual disabilities in co-education settings acquire and generalize the social skills of asking for help, apologizing, and finishing a task on time. Dagseven (2008) compared the effectiveness and efficiency levels of the activities carried out with the direct teaching method and cognitive process approaches in teaching social skills to students affected by intellectual disability, and concluded that "thanking and sharing" skills were developed in students, the direct teaching method was effective, and the generalization and retention levels of the acquired skills were achieved.Turer (2010) examined the effectiveness of the direct instruction method in teaching the skills of thanking and apologizing to students with intellectual disabilities and concluded that the generalization and retention levels of the skills were achieved. Alptekin (2012) conducted a study on teaching social skills to students with intellectual disabilities with direct instruction approach and found that students gained social skills effectively and that direct instruction method is an effective method in teaching social skills. Park et al. (2016) stated that with the direct teaching method, speaking skills in 5th grade students were realized at a high level, and thanks to speaking skills, students' self-confidence improved, they felt more comfortable and contributed to their mental development. As it can be seen, direct instruction method shows that it is an effective method in teaching social skills and this study is supported by other research findings.

Limitation of Study

This study is limited to teaching social skills such as thanking and asking for permission to children with Autism Spectrum Disorder through direct instruction method

Recommendations

The effectiveness of the direct teaching method can be examined in teaching different social skills such as waiting in line, greeting, apologizing, making requests, helping, introducing oneself, and introducing others in children diagnosed with ASD. It is recommended that the direct teaching method, which is effective in teaching social skills, can be used in functional academic skills, free time activities, and work and vocational skills training areas. It is recommended that similar methods and practices be applied in group education activities to examine their effectiveness. This research was carried out with three students using the individual teaching method and it is recommended that it be applied in group activities and its effectiveness be examined. It is also recommended that the social skills teaching program prepared according to the direct teaching method can be adapted to mobile planning and applied.

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