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The Effect of Floortime Therapy on Social Communication Skills in Autism Spectrum Disorder

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Abstract

The aim of this study is to examine the effect of Floortime therapy on social communication skills in children with Autism Spectrum Disorder (ASD). The research was conducted using a quasi-experimental pretest-posttest control group design. Two groups were formed through random assignment: an experimental group and a control group. The experimental group received "Floortime Therapy," whereas no experimental intervention was applied to the control group. Data were collected from both groups before and after the intervention using the "ABC Checklist" and the "Social Communication Checklist." The intervention process was planned over a total of five months, with sessions held twice a week, each lasting 40 minutes. Descriptive analyses, Mann-Whitney U test, and Wilcoxon signed-rank test were used for data analysis. The results of the study indicate that Floortime therapy led to significant positive developments in reducing autism-related behaviors in children with ASD when compared to the control group. Moreover, Floortime therapy contributed to improvements in social communication and related skills. Based on these findings, recommendations have been provided for educators, families, educational policymakers, and researchers.

Keywords: Autism Spectrum Disorder, Floortime, Social Communication

Introduction

Autism Spectrum Disorder (ASD) is defined as a neurodevelopmental condition that leads to notable differences in social communication, interaction, and behavioral patterns. These differences emerge in early childhood and may create significant challenges in family life, education, and social participation (Hirota & King, 2023). Increasing societal awareness and the refinement of diagnostic criteria have highlighted the importance of early intervention, as children diagnosed at an early age show more effective gains in social and communicative skills through appropriate therapies. Various educational approaches are implemented to support individuals with ASD, aiming to enhance their participation in daily life (Beki, 2024). At this point, developmental and interaction-based methods such as Floortime offer a holistic framework that supports the child's sensory, emotional, and cognitive needs.

Social communication is a complex process involving both verbal and non-verbal channels. In individuals with ASD, difficulties often manifest in eye contact, the use of gestures and facial expressions, and initiating communication (Çelikbaş, 2020). Floortime therapy, with its child-centered and emotionally engaging structure, stands out as an effective approach to alleviating these challenges. Research has shown that supporting foundational skills such as joint

attention and reciprocal interaction increases social participation among children with ASD (Beki, 2024; Yalım, 2023). Coordinated work between parents and specialists further strengthens the impact of Floortime, as the integration of therapy-based skills into daily routines promotes lasting behavioral improvements. Accordingly, Floortime interventions have been reported to significantly enhance social interaction and communication outcomes in children with ASD (Çelikbaş, 2020; Öztürk, 2022). Given its focus on the child's individual interests, Floortime aims to build stronger social communication while encouraging active family involvement. The primary purpose of the present study is to examine the effects of Floortime therapy on the social communication skills of individuals with ASD.

Problem Statement

Autism Spectrum Disorder (ASD), although defined as a neurodevelopmental difference, presents significant challenges in core areas such as social communication and reciprocal interaction. These difficulties become evident in early childhood and often hinder children from sustaining meaningful interactions with peers and adults. Families commonly seek support when they observe limited eye contact, reduced response to verbal cues, or difficulty engaging in shared play (Irmak et al., 2007). Deficits in social communication negatively affect daily living skills, academic engagement, joint attention, turn-taking, and emotional sharing (Çelikbaş, 2020).

Children with ASD tend to focus intensely on restricted interests and may miss important social cues, which can lead to social isolation (Pajareya & Nopmaneejumruslers, 2011). Early intervention programs aim to strengthen these core competencies; however, traditional approaches may not always address emotional or relational dimensions adequately. Difficulties in joint attention and reciprocal interaction are known to affect school participation, peer relationships, and overall social development (Wieder & Greenspan, 2003). These challenges also affect family dynamics, as parents may struggle to maintain sustained emotional exchanges with their children. The literature consistently highlights that social communication deficits are among the most defining features of ASD (Beki, 2024; Yalım, 2023). Such deficits influence language development, social cognition, empathy, and problem-solving. Underdeveloped joint attention limits children's ability to participate in shared activities, while sensory sensitivities may further restrict social engagement (Cevher & Kurnaz, 2024). Therefore, individualized and developmentally appropriate interventions are essential.

Interaction-based approaches such as Floortime address these needs by centering on the child's interests, emotional engagement, and sensory profile (Phandinataet al., 2017). The model's emphasis on parent-child interaction and emotional reciprocity has contributed to its growing adoption (Öngider, 2013). Research suggests that Floortime can enhance social interaction, emotional development, and family involvement in meaningful ways (Çelikbaş, 2020). In this context, examining the effects of Floortime on the social communication skills of children with ASD is crucial for informing early intervention, guiding special education practices, and offering practical insights for families and practitioners. This study aims to contribute both theoretically and practically by addressing a central developmental need within the ASD population.

The aim of this study is to examine the effect of Floortime therapy on the social communication skills of children with autism spectrum disorder. In line with this aim, the study seeks to answer the following research questions:

1. Is there a significant difference between the post-test scores of the experimental group receiving Floortime therapy and the control group receiving no intervention on the ABC Recording Form?

2. Is there a significant difference between the post-test social skills scores of the experimental group receiving Floortime therapy and the control group receiving no intervention?

3. Is there a significant difference between the pre-test and post-test ABC Recording Form scores of the experimental group receiving Floortime therapy?

4. Is there a significant difference between the pre-test and post-test social communication skills of the experimental group receiving Floortime therapy?

Floortime Therapy Approach

The Floortime therapy approach, developed by Dr. Stanley Greenspan and Dr. Serena Wieder, is a developmental, play-based model that focuses on engaging with the child through natural and spontaneous interactions (Greenspan & Wieder, 2008). The essential principle is to follow the child's lead, enter their play as a "participatory observer," and support emotional expression without directing or interrupting their interests. By doing so, the child's confidence, motivation, and communication attempts increase. Floortime adopts a holistic perspective, addressing emotional, cognitive, sensory, and behavioral needs together (Divya et al., 2023).

In practice, the therapist or parent joins the child's play at their developmental level and uses interaction cycles to strengthen shared attention, reciprocity, and engagement. The approach emphasizes sensitive, emotionally attuned interactions, allowing the child to progress through developmental milestones at their own pace (Greenspan & Wieder, 2008; Hess, 2012). The method also enhances cognitive, sensory, motor, and language skills by integrating them within meaningful social exchanges. Family participation is a central component, as continued interaction at home helps generalize skills learned in therapy (Dionne & Martini, 2011).

Floortime aims primarily to support emotional regulation, reduce sensory stressors, and create opportunities for natural communication. Children are encouraged to initiate communication through their own motivation, increasing the use of gestures, facial expressions, and other nonverbal signals (Dionne & Martini, 2011). Core social abilities—such as joint attention, turn-taking, imitation, and reciprocity—are strengthened through structured yet child-led play. By involving caregivers in every stage of therapy, Floortime promotes sustainable gains in emotional expression, social communication, and adaptation to real-life environments (Silberg & Lapin, 2017).

Stages and Techniques of Floortime

Interaction Stage: Building Engagement and Trust

The interaction stage is considered one of the most critical steps in Floortime therapy. At this stage, the therapist or parent focuses on attracting the child's attention and creating a sense of safety. By observing the child's interests and joining their play without directing it, an initial emotional connection is established (Pacheco et al., 2021). Matching the child's rhythm, using supportive body language, and responding sensitively to their cues strengthen trust and encourage spontaneous social initiation (Carpente, 2009). For children with ASD, who may experience anxiety or sensory sensitivities, a calm, patient, and flexible approach is essential. Nonverbal signals such as facial expressions and gestures play a major role, and even small positive responses are reinforced (Homer-Smith, 2006). Respecting the child's boundaries and allowing them to initiate interaction fosters long-term engagement and forms the foundation for later communication skills (Panda, 2016).

Play Stage: Developing Social and Communication Skills Through Play

The play stage is where the child becomes most active and imaginative. The therapist joins the child's chosen play themes—such as pretend stories, puppets, or favorite toys—to support communication, reciprocity, and language development (Carpente, 2009). Through shared play,

the child practices turn-taking, dialogue, imitation, and emotional expression. Play also provides insight into the child's inner world, helping the therapist deepen engagement (Boshoff et al., 2020). Techniques are adapted to the child's interests, and materials such as music or theme-based scenarios (e.g., animals, space, vehicles) enhance motivation (Panda, 2019). The therapist affirms the child's initiatives and gently expands the play sequence, helping the child understand social roles and strengthen communication skills. Sensitive participation reinforces emotional connection and helps the child feel valued (Boshoff et al., 2020).

Regulation Stage: Emotional and Behavioral Regulation Strategies

The regulation stage focuses on helping the child manage emotional and behavioral responses more consistently. Children with ASD may struggle with sensory overload or intense emotional reactions; therefore, Floortime includes strategies tailored to sensory needs. Overwhelming stimuli are reduced, and calming techniques—such as breathing exercises or simple body-awareness activities—are incorporated (Lal & Chhabria, 2013). Therapists model emotional labeling (e.g., "You might be feeling worried"), supporting self-expression and communication. This stage contributes to both emotional balance and smoother social interactions (Carpente, 2009). Behavioral regulation strategies also help the child handle repetitive behaviors or frustration. Tools such as a "calm corner" or sensory-friendly materials can reduce distress (Bolghan-Abadi & Erfanyfar, 2022). Therapists observe early signs of stress and intervene promptly, while reinforcing positive behaviors. Since each child's sensory profile differs, regulation techniques are individualized and closely tied to the trust built in earlier stages (Boshoff et al., 2020).

The Effect of Floortime Therapy on Social Communication and Joint Skills

Floortime Therapy includes play-based strategies designed to enhance social communication skills. Central to the approach is establishing reciprocal interaction between the child and the therapist or parent. The child's emotions, interests, and spontaneous actions guide the process, and therapists expand these initiatives into meaningful social exchanges. When a child shows interest in an object or begins an action, the therapist builds on this to create opportunities for eye contact, gestures, facial expressions, and simple verbal communication (Hess, 2012). Research shows that Floortime yields positive short- and long-term outcomes in social communication. Dionne and Martini (2011) reported significant improvements in both verbal and nonverbal communication. Liao et al. (2014) similarly found increases in initiation, maintaining engagement, and reciprocal interaction when Floortime was practiced regularly at home. Qualitative data from parents also indicate enhanced parent-child interaction quality, suggesting that Floortime is effective across home, school, and clinical contexts.

Empirical findings further highlight improvements in parent–child bonding and parental involvement. Active participation enriches children's communication experiences and helps establish emotionally secure environments (Hess, 2015; Lal & Chhabria, 2013). The supportive nature of Floortime has been shown to reduce parental stress and strengthen family dynamics (Ökcün Akçamuş, 2016). These improvements contribute to gains in core communication areas such as joint attention and reciprocal interaction (Durukan & Türkbay, 2008). Regular sessions increase children's motivation to communicate and their ability to use social cues such as gaze, facial expressions, and gestures (Barghi et al., 2023). Meta-analytic and systematic reviews also support the effectiveness of Floortime. Boshoff et al. (2020) found that Floortime-based programs enhance social communication and parent–child relationships across various developmental levels. Mercer (2017) concluded that the approach strengthens both verbal and nonverbal communication and contributes to emotional regulation, with parental involvement being a key factor. Aali and Yazdi (2017) similarly reported improvements in communication functions among children with ASD.

Floortime also promotes "joint skills," such as joint attention and shared engagement. Joint attention involves focusing on the same object or event simultaneously (Durukan & Türkbay, 2008; Akin Bülbül & Özdemir, 2017). In Floortime sessions, therapists and caregivers enter the child's focus of interest to create and maintain shared attention. These skills are foundational not only for communication but also for academic and social functioning (Bean & Eigsti, 2012). Floortime enhances peer interactions as well, supporting cooperation and sustained engagement (Fredericks et al., 2023). Studies specifically examining joint attention support Floortime's effectiveness. Ali et al. (2019) found that a robot-assisted Floortime program increased joint attention and social initiation. Shih et al. (2021) reported increases in reciprocal interaction duration in early intervention applications. Floortime's emphasis on following the child's interests helps maintain attention and encourages sharing that attention with others (Kumazaki et al., 2018). The method also strengthens joint attention in peer interactions (Krier & Lambros, 2021). Sensory regulation is another critical factor supporting these gains, allowing children to tolerate environmental stimuli and maintain shared attention more effectively (Hess, 2015; Özden, 2022). Parental involvement reinforces these skills at home, making joint attention a repeated and integrated part of daily routines (Aali et al., 2015). Improvements in joint attention and related skills positively influence both social and academic performance (Freeman et al., 2015). Overall, research demonstrates that Floortime's play-based and relationship-centered structure supports sustained development in social communication and joint skills.

Method

This section presents the research design, study group, data collection tools, ethical procedures, and data analysis process.

Research Design

This study was conducted using a quasi-experimental design with a pretest–posttest control group, which is one of the experimental research models (Büyüköztürk, 2022). The study included two groups—an experimental group and a placebo control group—formed through random assignment. The experimental group received the *Floortime Therapy Intervention*, while no experimental procedure was administered to the control group. Data were collected from both groups using the *ABC Recording Form* and the *Social Communication Checklist*.

Table 1

Research Design

Groups	Formation Method	Pretest	Experimental Procedure	Posttest
Experimental Group (n = 10)	R	ABC Recording Form Social Communication Checklist	Floortime Therapy Intervention	ABC Recording Form Social Communication Checklist
Placebo Control Group (n = 10)	R	ABC Recording Form Social Communication Checklist	No Procedure	ABC Recording Form Social Communication Checklist

Note. R = Random assignment.

Study Group

The study group consisted of 20 children diagnosed with autism spectrum disorder, aged between 24 and 60 months, who were receiving special education services at a private

rehabilitation center in Kocaeli. All diagnoses were made by qualified child and adolescent psychiatrists.

The inclusion criteria for participation in the study were as follows:

- Having a formal diagnosis of ASD
- Regularly attending a rehabilitation center
- Demonstrating continuity in therapy
- Being between 24 and 60 months of age
- Parents providing written consent and voluntarily agreeing to their child's participation

Table 2

Distribution of Gender and Age by Experimental and Control Groups

Group	Variable	Value	f
Experimental	Gender	Female	2
		Male	8
	Age	2	1
		3	2
		4	3
		5	4
Control	Gender	Female	3
		Male	7
	Age	3	2
		4	4
		5	4

According to table 2, among the 10 participants in the experimental group, 2 are female and 8 are male. The age distribution shows that 1 child is 2 years old, 2 children are 3 years old, 3 children are 4 years old, and 4 children are 5 years old. The control group also includes 10 participants, of whom 3 are female and 7 are male. The age distribution in this group consists of 2 children aged 3, 4 children aged 4, and 4 children aged 5. Overall, both groups demonstrate a similar distribution in terms of age and gender.

Experimental Procedure

Implementation Process

In this study, a structured intervention program based on the Floortime Therapy Model was implemented to support the development of social skills in children diagnosed with ASD. The intervention lasted for a total of five months, scheduled twice a week, with each session lasting 40 minutes. All sessions were conducted individually, and each child worked one-on-one with the therapist. The process was designed in accordance with each child's developmental profile and individual differences, following the flexible, child-centered structure of the Floortime approach.

The Floortime Model, developed by Dr. Stanley Greenspan, is a therapeutic approach aimed at enhancing a child's developmental capacity across emotional, social, and cognitive domains. The fundamental principle of this model is to focus on the child's interests, establish an emotional connection, and increase social interaction through that bond. In line with this framework, the intervention process emphasized the following therapeutic steps:

- *Establishing Emotional Connection (Following and Joining):* At the beginning of each session, the child's emotional and sensory state was observed, and an activity or game

that captured the child's interest was used to draw their attention. During this phase, the therapist joined the child's self-directed play, interacting "on the child's level." This step is critical for supporting secure attachment and engagement.

- *Enhancing Reciprocal Interaction:* The therapist initiated and maintained social interaction through verbal and nonverbal communication. Indicators of joint attention—such as eye contact, following vocal cues, and responding to gestures and facial expressions—were encouraged. The therapist followed the child's interactional attempts, responded accordingly, and helped create continuous interaction cycles.
- *Deepening Emotional Expression and Developing Symbolic Thinking:* In the later stages of therapy, children's emotion regulation skills and symbolic play abilities were supported. Activities such as using toys with symbolic meanings or enacting social stories were employed to strengthen role-taking skills in social scenarios. At this point, the goal was to enhance imagination and expressive abilities.
- *Building Relationships, Problem-Solving, and Strengthening Social Connections:* Toward the end of the sessions, higher-level social skills—such as social problem solving, turn-taking, waiting, and understanding others' emotions—were supported. The therapist planned cooperative tasks with the child and modeled behaviors that fostered building and maintaining social relationships.

Session Structure

Before each session, an individualized plan was developed based on the child's general mood, attention level, and observations from previous sessions. Sessions were typically structured in three stages:

- *Introduction Phase (5–10 min):* Simple, low-stimulus games were used to help the child focus attention, establish a secure interactional environment, and transition into the session.
- *Activity Phase (25–30 min):* During this phase, intensive interaction and games targeting the key goals of the Floortime approach were implemented. The therapist followed the child's lead, creating and expanding social interaction cycles.
- *Closing Phase (5 min):* The session concluded by tidying up the play materials together and eliciting the child's verbal or nonverbal feelings or thoughts about the session.

Data Collection Tools

ABC Recording Form

The Autism Behavior Checklist (ABC), developed by Krug et al. in 1993, is a measurement tool used for screening and assessing autism. The scale includes five subscales: sensory responses (9 items), relating (12 items), body and object use (12 items), language (13 items), and social/self-help skills (11 items), for a total of 57 items. Children receive scores between 0 and 159; scores of 68 and above indicate a "high probability of autistic disorder." The validity and reliability study of the Turkish version was conducted by Yılmaz Irmak et al. (2007), who reported a cut-off score of 39 for the Turkish form.

Social Communication Skills Checklist (SİLKOL-R-OTV)

The Social Communication Checklist–Revised (SİLKOL-R), developed by Ingersoll and Dvortcsak (2010) and adapted to Turkish culture, is used to measure the social communication and interaction skills of children diagnosed with ASD. Initially designed to assess social participation, imitation, and play skills of children aged 18 months to 6 years in parent-supported

interventions, the tool has become widely used in research due to its practical and effective structure (İnan, Ökcün-Akçamuş, Bakkaloğlu & Yalçın, 2020).

SİLKOL-R consists of 70 items and four subscales: social participation (15 items), expressive language (30 items), receptive language (8 items), and imitation/play skills (17 items). Items are rated based on frequency using a three-point scale: "rarely or never" (1 point), "sometimes but not consistently" (2 points), and "usually, at least 75% of the time" (3 points). Total scores range from 70 to 210. Confirmatory factor analysis showed a four-factor structure similar to the original scale, with most item loadings above .30, ranging from moderate to high. Reliability analyses showed Cronbach's alpha values above .80 for both teacher and parent versions, indicating high reliability (İnan et al., 2020).

Data Analysis and Ethical Procedures

This study was approved as ethically appropriate by the … Non-Interventional Research Ethics Committee on 29/11/2024 with protocol number 61351342/020-550.

First, the normality assumptions of the *ABC Recording Form* and *Social Communication Checklist* scores for the children in the experimental and control groups were tested. Shapiro–Wilk test results indicated that the distributions of both scales did not meet normality assumptions. Therefore, the Mann–Whitney U test was used to compare the experimental and control groups on the *ABC Recording Form* and the *Social Communication Checklist*. Within-group comparisons of the experimental group's pretest and posttest scores on both tools were conducted using the Wilcoxon signed-rank test.

Findings

In this section, the findings obtained from the analysis of the data are presented.

Findings Regarding the 'ABC Record Form' Scores of the Experimental and Control Groups

The descriptive findings regarding the pre-test scores of children diagnosed with ASD in the experimental and control groups based on the 'ABC Record Form' are presented in table 3.

Table 3

Descriptive Analysis of the 'ABC Record Form' Pre-test Scores of Children Diagnosed with ASD in the Experimental and Control Groups

	Experimental Group		**Control Group**	
	n	**X̄**	**SD**	**n**
Sensory	10	21.70	2.41	10
Relationship Building	10	28.60	4.60	10
Body and Object Use	10	33.80	6.49	10
Language Skills	10	10.30	8.82	10
Social and Self-Care Skills	10	17.60	1.84	10
Total	10	112.00	11.20	10

As shown in table 3, the descriptive statistics of the pre-test scores obtained from the ABC Record Form before the experimental procedures are presented. According to the analyses, the mean pre-test total score of the children in the experimental group was 112.00 with a standard deviation of 11.20. The mean pre-test total score of the children in the control group was 113.90 with a standard deviation of 7.65. The results of the Mann–Whitney U test conducted between the two groups are provided in table 4.

Table 4

Mann–Whitney U Test Results for the 'ABC Record Form' Pre-test Scores of Children Diagnosed with ASD in the Experimental and Control Groups

Subscale	Group	n	Mean Rank	Rank Sum	Mann-Whitney U	Z	p
Sensory	Experimental	10	9.85	98.50	43.50	-0.50	0.62
	Control	10	11.15	111.50			
Relationship Building	Experimental	10	8.20	82.00	27.00	-1.77	0.08
	Control	10	12.80	128.00			
Body and Object Use	Experimental	10	11.15	111.50	43.50	-0.50	0.62
	Control	10	9.85	98.50			
Language Skills	Experimental	10	11.10	111.00	44.00	-0.53	0.59
	Control	10	9.90	99.00			
Social and Self-Care Skills	Experimental	10	11.95	119.50	35.50	-1.11	0.27
	Control	10	9.05	90.50			
Total	Experimental	10	9.90	99.00	44.00	-0.45	0.65
	Control	10	11.10	111.00			

According to table 4, the mean rank of the pre-test total scores on the ABC Form for the children in the experimental group was 9.90, while the mean rank for the children in the control group was 11.10. The Mann–Whitney U test yielded a Z value of 0.45 for the pre-test rank comparisons between the groups. This finding indicates that the pre-test ABC Form scores of children diagnosed with ASD were equivalent across the two groups before the experimental procedures. The post-test results of children diagnosed with ASD are presented in table 5 and table 6.

Table 5

Descriptive Analysis of the 'ABC Record Form' Post-test Scores of Children Diagnosed with ASD in the Experimental and Control Groups

Subscale	Experimental Group	Control Group
	n	$\bar{X}$
Sensory	10	6.30
Relationship Building	10	8.50
Body and Object Use	10	13.10
Language Skills	10	9.10
Social and Self-Care Skills	10	8.70
Total	**10**	**45.70**

As shown in table 5, the descriptive statistics of the post-test scores obtained from the ABC Form after the experimental procedures are presented. According to the analyses, the mean post-test total score of the children in the experimental group was 45.70 with a standard deviation of 18.38. The mean post-test total score of the children in the control group was 101.40 with a standard deviation of 9.54. The Mann–Whitney U test results conducted between the two groups are presented in table 6.

Table 6

Mann–Whitney U Test Results for the 'ABC Record Form' Post-test Scores of Children Diagnosed with ASD in the Experimental and Control Groups

Subscale	Group	n	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	p
Sensory	Experimental	10	6.80	68.00	13.00	-2.82	0.00*
	Control	10	14.20	142.00			
Relationship Building	Experimental	10	5.60	56.00	1.00	-3.71	0.00*
	Control	10	15.40	154.00			
Body and Object Use	Experimental	10	5.70	57.00	2.00	-3.66	0.00*
	Control	10	15.30	153.00			
Language Skills	Experimental	10	10.40	104.00	49.00	-0.08	0.94
	Control	10	10.60	106.00			
Social and Self-Care Skills	Experimental	10	5.95	59.50	4.50	-3.48	0.00*
	Control	10	15.05	150.50			
Total ABC Form	Experimental	10	5.50	55.00	0.00	-3.78	0.00*
	Control	10	15.50	155.00			

Table 6 presents the Mann–Whitney U test results for the post-test scores obtained from the ABC Form and its subscales in the experimental and control groups. According to the analyses, the Z value was 2.82 for the sensory subscale, 3.71 for the relating subscale, 3.66 for the body and object use subscale, 0.08 for the language subscale, 3.48 for the social and self-help subscale, and 3.78 for the total ABC score. These findings indicate that there was no significant difference between the groups only in the language subscale ($p > .05$). However, significant differences in favor of the experimental group were found in the total ABC score and all other subscales ($p < .05$). Following the intervention, children in the experimental group demonstrated substantial reductions in sensory difficulties, relating challenges, body and object use problems, and social and self-help difficulties compared to their peers in the control group. Therefore, the Floortime therapy intervention appears to have contributed positively to improvements in sensory responses, relating skills, body and object use, and social/self-help skills among children diagnosed with ASD.

Table 7 presents the Wilcoxon test results for the pre-test and post-test scores of children diagnosed with ASD in the experimental group based on the ABC Form.

Table 7

Wilcoxon Test Results for Pre-test and Post-test Scores on the ABC Form in the Experimental Group

Subscale	Ranks	n	Mean Rank	Sum of Ranks	Wilcoxon Z	p
Sensory	Negative Ranks	10	5.50	55.00	-2.809	0.005*
	Positive Ranks	0	0.00	0.00		
	Ties	0				
	Total	10				
Relationship Building	Negative Ranks	10	5.50	55.00	-2.807	0.005*
	Positive Ranks	0	0.00	0.00		
	Ties	0				
	Total	10				
Body and Object Use	Negative Ranks	10	5.50	55.00	-2.803	0.005*

Subscale	Ranks	n	Mean Rank	Sum of Ranks	Wilcoxon Z	p
	Positive Ranks	0	0.00	0.00		
	Ties	0				
	Total	10				
Language Skills	Negative Ranks	7	4.21	29.50	-0.833	0.405
	Positive Ranks	2	7.75	15.50		
	Ties	1				
	Total	10				
Social and Self-Care Skills	Negative Ranks	9	5.00	45.00	-2.801	0.007*
	Positive Ranks	0	0.00	0.00		
	Ties	1				
	Total	10				
ABC Form Total	Negative Ranks	10	5.50	55.00	-2.805	0.005*
	Positive Ranks	0	0.00	0.00		
	Ties	0				
	Total	10				

According to the Wilcoxon test results presented in table 7, the Z value for the sensory subscale was 2.809; for the relating subscale, 2.807; for the body and object use subscale, 2.803; for the language subscale, .833; for the social and self-help subscale, 2.801; and for the total ABC score, 2.805. Based on these findings, significant differences were found at the .05 significance level between the pre-test and post-test scores in all subscales and in the total ABC score, except for the language subscale. According to the rank means, children in the experimental group showed significant decreases in sensory difficulties, challenges in relating, problems in body and object use, and difficulties in social and self-help skills from pre-test to post-test.

Table 8 presents the Wilcoxon test results for the pre-test and post-test scores of children diagnosed with ASD in the control group based on the ABC Form.

Table 8

Wilcoxon Test Results for Pre-test and Post-test Scores on the ABC Form in the Control Group

Subscale	Ranks	n	Mean Rank	Sum of Ranks	Wilcoxon Z	p
Sensory	Negative Ranks	7	4.00	28.00	-2.388	0.017
	Positive Ranks	0	0.00	0.00		
	Ties	3				
	Total	10				
Relationship Building	Negative Ranks	6	3.50	21.00	-2.207	0.027
	Positive Ranks	0	0.00	0.00		
	Ties	4				
	Total	10				
Body and Object Use	Negative Ranks	5	3.00	15.00	-2.023	0.043
	Positive Ranks	0	0.00	0.00		
	Ties	5				
	Total	10				
Language Skills	Negative Ranks	3	2.50	7.50	-0.647	0.518
	Positive Ranks	3	4.50	13.50		
	Ties	4				
	Total	10				

Subscale	Ranks	n	Mean Rank	Sum of Ranks	Wilcoxon Z	p
Social and Self-Care Skills	Negative Ranks	3	3.33	10.00	-0.105	0.916
	Positive Ranks	3	3.67	11.00		
	Ties	4				
	Total	10				
ABC Form Total	Negative Ranks	7	4.00	27.00	-2.171	0.052
	Positive Ranks	0	0.00	0.00		
	Ties	3				
	Total	10				

According to the Wilcoxon test results presented in table 8, the Z values for the pre-test and post-test measurements in the control group were 2.388 for the sensory subscale, 2.207 for the relating subscale, 2.023 for the body and object use subscale, 0.647 for the language subscale, 0.105 for the social and self-help subscale, and 2.171 for the total ABC score. These findings indicate that significant differences at the .05 level were observed only in the sensory and relating subscales between the pre-test and post-test measurements. Based on the mean ranks, children diagnosed with ASD in this group showed a significant reduction in difficulties related to sensory features and relating skills from pre-test to post-test. However, no significant differences were observed between pre-test and post-test measurements for the total ABC score or the other subscales in the control group.

Findings on the 'Social Communication Checklist' Scores of the Experimental and Control Groups

Table 9

Descriptive Analysis of Pre-test Scores on the 'Social Communication Checklist' for Children with ASD in the Experimental and Control Groups

	Experimental Group		Control Group	
	n	X̄	SD	n
Social Participation	10	16.10	2.33	10
Using Communication	10	31.60	3.66	10
Understanding Communication	10	8.80	1.32	10
Pretend Play	10	17.70	1.06	10
Total	**10**	**74.20**	**7.47**	**10**

Table 9 presents descriptive analyses of the pre-test scores obtained from the 'Social Communication Checklist' by children with ASD before the experimental procedures. The mean total pre-test score of the experimental group was 74.20, with a standard deviation of 7.47, while the mean total pre-test score of the control group was 71.50, with a standard deviation of 2.32. The results of the Mann-Whitney U test between the two groups are presented in Table 10.

Table 10

Mann-Whitney U Test Results for Pre-test Scores on the 'Social Communication Checklist' for Children with ASD in the Experimental and Control Groups

Pre-test	Group	n	Mean Rank	Rank Sum	Mann-Whitney U	Z	p
Social Participation	Experimental	10	11.50	115.00	40.00	-1.45	0.15
	Control	10	9.50	95.00			
Using Communication	Experimental	10	11.50	115.00	40.00	-1.45	0.15
	Control	10	9.50	95.00			

Pre-test	Group	n	Mean Rank	Rank Sum	Mann-Whitney U	Z	p
Understanding Communication	Experimental	10	10.35	103.50	48.50	-0.14	0.89
	Control	10	10.65	106.50			
Pretend Play	Experimental	10	10.90	109.00	46.00	-0.36	0.72
	Control	10	10.10	101.00			
Total	Experimental	10	10.85	108.50	46.50	-0.30	0.77
	Control	10	10.15	101.50			

According to table 10, the mean rank of the total pre-test scores on the 'Social Communication Checklist' was 10.85 for the experimental group and 10.15 for the control group. The Mann-Whitney U test Z value calculated for the pre-test rankings was 0.30, indicating that the pre-test scores of children in both groups were comparable before the experimental procedures. The post-test scores of children with ASD on the 'Social Communication Checklist' are presented in tables 11 and 12.

Table 11

Descriptive Statistics of Post-test Scores on the 'Social Communication Checklist' for Children with ASD in the Experimental and Control Groups

	Experimental Group			Control Group
	n	$\bar{X}$	SD	n
Social Participation	10	31.30	8.38	10
Using Communication	10	51.70	20.99	10
Understanding Communication	10	20.00	6.27	10
Pretend Play	10	35.50	11.31	10
Total	**10**	**138.50**	**43.51**	**10**

Table 11 shows descriptive statistics for post-test scores. The experimental group had a mean total score of 138.50 (SD = 43.51), while the control group had a mean total score of 109.90 (SD = 25.79). Mann-Whitney U test results for the post-test scores are presented in Table 12.

Table 12

Mann-Whitney U Test Results for Post-test Scores on the 'Social Communication Checklist' for Children with ASD in the Experimental and Control Groups

	Group	n	Mean Rank	Rank Sum	Mann-Whitney U	Z	p
Social Participation	Experimental	10	10.95	109.50	45.50	-0.34	0.73
	Control	10	10.05	100.50			
Using Communication	Experimental	10	12.50	125.00	30.00	-1.52	0.13
	Control	10	8.50	85.00			
Understanding Communication	Experimental	10	13.25	132.50	22.50	-2.20	0.03*
	Control	10	7.75	77.50			
Pretend Play	Experimental	10	13.40	134.00	21.00	-2.24	0.02*
	Control	10	7.60	76.00			
Total	Experimental	10	12.75	127.50	27.50	-1.70	0.09
	Control	10	8.25	82.50			

According to table 12, Z values for post-test scores were 0.34 for social participation, 1.52 for using communication, 2.20 for understanding communication, 2.24 for pretend play, and 1.70 for the total score. These results indicate that significant differences between groups were observed only in the 'understanding communication' and 'pretend play' subscales, favoring the experimental group ($p < .05$).

Children in the experimental group showed significant improvements in understanding communication and pretend play skills compared to peers in the control group. These findings suggest that the Floortime therapy intervention increased social communication skills in children with ASD compared to the control group.

Table 13

Wilcoxon Test Analysis of Pre-test and Post-test Scores on the 'Social Communication Checklist' for Children with ASD in the Experimental Group

Pretest-Posttest	**Ranks**	**n**	**Mean Rank**	**Sum of Ranks**	**Wilcoxon Z**	**p**
Social Participation	Negative Ranks	0	0.00	0.00	-2.805	0.005
	Positive Ranks	10	5.50	55.00		
	Ties	0				
	Total	10				
Communication Use	Negative Ranks	0	0.00	0.00	-2.803	0.005
	Positive Ranks	10	5.50	55.00		
	Ties	0				
	Total	10				
Understanding Communication	Negative Ranks	0	0.00	0.00	-2.814	0.005
	Positive Ranks	10	5.50	55.00		
	Ties	0				
	Total	10				
Imitation Play	Negative Ranks	0	0.00	0.00	-2.807	0.005
	Positive Ranks	10	5.50	55.00		
	Ties	0				
	Total	10				
Total	Negative Ranks	0	0.00	0.00	-2.805	0.005
	Positive Ranks	10	5.50	55.00		
	Ties	0				
	Total	10				

The Wilcoxon test results for the experimental group showed Z values of 2.805 for social participation, 2.803 for using communication, 2.814 for understanding communication, 2.807 for pretend play, and 2.805 for the total score.

These results indicate significant improvements ($p < .05$) across all subscales and the total checklist. Mean ranks demonstrate that children in the experimental group showed a significant increase in social communication and related skills from pre-test to post-test, indicating the positive effect of Floortime therapy.

Table 14

Wilcoxon Test Analysis of Pre-test and Post-test Scores on the 'Social Communication Checklist' for Children with ASD in the Control Group

Pretest-Posttest	Ranks	n	Mean Rank	Sum of Ranks	Wilcoxon Z	p
Social Participation	Negative Ranks	0	0.00	0.00	-2.803c	0.005
	Positive Ranks	10	5.50	55.00		
	Ties	0				
	Total	10				
Communication Use	Negative Ranks	0	0.00	0.00	-2.670c	0.008
	Positive Ranks	9	5.00	45.00		
	Ties	1				
	Total	10				
Understanding Communication	Negative Ranks	1	3.00	3.00	-2.333c	0.020
	Positive Ranks	8	5.25	42.00		
	Ties	1				
	Total	10				
Imitation Play	Negative Ranks	0	0.00	0.00	-2.552c	0.011
	Positive Ranks	8	4.50	36.00		
	Ties	2				
	Total	10				
Total	Negative Ranks	1	1.00	1.00	-2.703c	0.007
	Positive Ranks	9	6.00	54.00		
	Ties	0				
	Total	10				

The Wilcoxon Z values for the control group were 2.803 for social participation, 2.670 for using communication, 2.333 for understanding communication, 2.552 for pretend play, and 2.753 for the total score. These results indicate significant improvements ($p < .05$) across all subscales and the total checklist. Mean ranks show that children in the control group also demonstrated significant increases in social communication skills and related abilities from pre-test to post-test. However, the magnitude of improvement in social communication skills was lower compared to children receiving Floortime therapy.

Discussion

In the assessment of children's developmental levels, cognitive skills, language competencies, social-emotional skills, as well as fine and gross motor domains are considered. The literature emphasizes that evaluating social communication skills plays a critical role in the early detection of developmental delays (Losardo et al., 2000; Wetherby et al., 2002). This study examined the effect of Floortime therapy on the social communication skills of children diagnosed with ASD. According to the findings, children in the experimental group who received Floortime therapy demonstrated a notable reduction in autism-related behaviors. Test analyses indicated that Floortime therapy was particularly effective in key developmental domains, such as social and self-care skills, affective abilities, relationship-building, and body-object use. These results suggest that the child-centered, play-based, and emotionally interactive nature of Floortime therapy is effective in reducing ASD symptoms.

The significant decrease in affective subscale scores indicates that children began responding more adaptively to environmental stimuli. The significant difference in the relationship-building subscale suggests that Floortime supported children in understanding social

cues and responding appropriately. The significant difference in body-object use also reflects positive changes in motor skills and functional interactions with objects (Yalım, 2023). Improvements in social and self-care skills indicate progress in daily living skills and social integration (Casagrande & Ingersoll, 2017).

The absence of a significant difference in the language subscale suggests that Floortime may have limited short-term effects on language development. This underscores the importance of implementing structured language therapies alongside Floortime to support language acquisition (Sun et al., 2017).

Literature findings support the results of this study. Çelikbaş (2020) reported that a Floortime program contributed to significant improvements in developmental domains of children aged 2–5 with autism. Pajareya and Nopmaneejumruslers (2011) applied approximately fifteen hours per week of home-based Floortime for three months to thirty-two children aged 2–6 and found positive changes in functional emotional development. Reis et al. (2018) provided weekly sixty-minute Floortime interventions for ten months to twenty-five children with ASD aged 3–6, observing improvements in communication skills and sensory regulation.

No significant reduction in autism symptoms was observed in the control group. The significant difference between experimental and control groups in the posttest confirms the overall effect of Floortime therapy on children with ASD. Through its child-centered approach, Floortime provides an environment where children feel safe and communicate freely, contributing notably to emotional regulation, social engagement, and independence (Kotila et al., 2020). At the end of the experimental application, children in the experimental group showed remarkable improvement in social communication skills, particularly in processes of meaning-making, symbolic play, and relationship-building. Strategies such as focusing on the child's interests, fostering emotional bonds, and promoting reciprocal interactions were used in Floortime sessions. Special emphasis was placed on developing joint attention skills, including eye contact, following facial expressions, and responding to gestures.

Lal and Chhabria (2013) reported significant improvements in social behavior of 26 children with ASD aged 3–6 following Floortime sessions. Liao et al. (2014) found that a ten-week home-based Floortime intervention with eleven children and their mothers positively affected children's emotional functionality, communication competencies, and daily living skills. Phandinata et al. (2017) indicated that Floortime interventions in adolescents with ASD significantly increased purposeful bidirectional communication behaviors and the number of communication chains.

Following Floortime therapy, children in the experimental group demonstrated significant improvements in social participation, communication use, understanding communication, and imitation/play behaviors. However, no significant differences were observed between groups in social participation and communication use, indicating that the intervention process could be further supported with group play activities. Family involvement was emphasized to ensure the effective implementation of Floortime. Families received regular guidance on supporting their children at home, which helped reinforce therapeutic gains in daily life. The alignment of Floortime with children's natural developmental sequences is a primary reason for its positive impact on social communication. Ensuring active participation and supporting development at the child's own pace enhanced the permanence of these effects. Floortime's sensitivity to children's emotional needs and empathetic approach contributed significantly to social development.

Conclusions and Recommendations

According to the study findings, the mean pretest ABC total score for children in the experimental group was 112.00 ± 11.20, while the control group scored 113.90 ± 7.65. No significant differences were observed between groups in pretest ABC scores, indicating similar baseline characteristics. After the experimental application, a significant decrease in total ABC scores was observed in the experimental group. Improvements were seen in affective skills, relationship-building, body-object use, social and self-care skills, and total scores. No significant difference was found in the language subscale. Floortime therapy effectively reduced autism symptoms in children, while high scores persisted in the control group. Posttest scores showed statistically significant differences between groups, with significant improvements in affective, relationship-building, body-object use, and social/self-care subscales in favor of the experimental group. Thus, Floortime therapy demonstrated positive effects on autism-related behaviors compared to the control group.

For the Social Communication Checklist, pretest scores were 74.20 ± 7.47 for the experimental group and 71.50 ± 2.32 for the control group, with no significant differences between groups. Posttest results showed marked improvements in social communication skills in the experimental group, particularly in communication meaning-making processes, symbolic play, and social play behaviors. No significant differences were observed in social participation and communication use. Significant increases were noted within the experimental group for social participation, communication use, understanding communication, imitation/play subscales, and total scores. Floortime therapy positively impacted social communication and related skills of children with ASD.

Recommendations for educators include integrating Floortime therapy approaches into classroom practices to support social communication, planning play-based activities tailored to the individual interests of students with ASD, and supporting recognition and appropriate responses to students' emotional expressions. Activities should be included to develop joint attention, imitation, and play skills. Teachers should receive in-service training on Floortime-based applications. Social stories and symbolic play can be used to support communication meaning-making, while alternative communication methods should be employed to support language development, with progress monitored through observation forms and records in collaboration with families.

For families, it is recommended to engage in daily reciprocal interactions with the child, foster communication through play to strengthen parent-child bonds, integrate Floortime strategies into daily routines, allow children to express emotions, and help them understand these expressions. Families should encourage participation in social play and group activities, support imitation play at home, and seek professional guidance or collaborate with certified Floortime institutions to ensure effective therapy.

For policy makers in education, enhancing the feasibility of Floortime-based therapies in special education institutions through legislation is suggested. Floortime approaches should be included in special education programs and standardized practices developed. Teacher training programs should incorporate child-centered therapeutic approaches, and informative training seminars for families should be supported while employing trained Floortime specialists. Assessment tools should be developed to monitor the developmental progress of children with ASD. Individualized education programs for children with ASD in preschool and primary education should be expanded, and necessary materials and physical environment support should be provided for Floortime applications.

For researchers, long-term studies are recommended to examine the lasting effects of

Floortime therapy and to compare its effects across different age groups of children with ASD. Comparative studies between Floortime and other therapeutic approaches should be conducted. Both qualitative observations and quantitative data should be used for a holistic perspective. The impact of family participation on children's outcomes should be measured, and the influence of play materials and environmental arrangements in Floortime sessions should be investigated. The effects of Floortime on emotional regulation, self-care skills, and social problem-solving should be analyzed separately, with interventions adapted to individual developmental differences. Finally, assessment tools should be developed or adapted to determine the effectiveness of Floortime therapy.

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