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Research

The Effect of Prosocial Behavior Psychoeducation Program on Problematic Behaviors and Self-Regulation Skills of 5-6 Year-Old Children[1]

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Abstract:

The purpose of this study was to investigate how a prosocial behavior psychoeducation program affected the problem behaviors and self-regulation abilities of preschoolers. In the study that employed the experimental research technique, a pretest-posttest control group was part of a quasi-experimental design. In the 2nd semester of the 2023–2024 academic year, there were 16 students in the experimental group and 18 in the control group, all of whom were preschoolers in the 5–6 age range. Data were gathered using the Problem Behavior subscale of the Preschool and Kindergarten Behavior Scale and the Self-Regulation Skills Scale for 4-6 Year-Old Children. It was determined that there was a significant difference in favor of positive ranks between the pre-test and post-test mean scores of the experimental group children regarding the inhibitory control-emotion subscale and self-regulation skills total. It was determined that there was a significant difference in favor of negative ranks between the pre-test and post-test mean scores of the experimental group children regarding the problem of expression, learning problems, and total values of problem behavior. Significant improvements were recorded in the variables considered in the experimental group after only nine weeks of training, demonstrating the effectiveness and feasibility of implementing age-appropriate programs in early childhood classrooms to improve children's social-emotional competence by enhancing their self-regulation skills and reducing problem behaviors.

Keywords: Child, problem behavior, prosocial behavior, self-regulation.

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INTRODUCTION

Preschool, which offers unique opportunities to form the basis for healthy development, is a period in which many developmental experiences and skills are acquired. It is important that the first experiences of prosocial behaviors, which are considered as a part of social emotional development and are important for the harmonious functioning of societies, are built on solid foundations during this period. Prosocial behavior, which aims to benefit others, is generally accepted as the basis of human relations (Eisenberg & Fabes, 1998; Staub, 1979, as cited in Knafo & Plomin, 2006). Prosocial behavior is defined as behavior that aims to benefit others without seeking any benefit (Eisenberg et al., 2006, p.646). Prosocial behaviors are defined as a multidimensional structure that includes behaviors such as consoling people, offering psychological assistance, cooperating, helping, protecting, exchanging resources, and empathizing (Brownell et al., 2009; Carlo & Randall, 2001; Hay & Cook, 2007; Hogg & Vaughan, 2007). Prosocial behavior occurs when an individual recognizes the negative experiences of others, determines the causes of these experiences, generates an appropriate response, and takes action to intervene. This behavior is shaped by intuitive, automatic, and emotion-based evaluations that require understanding the negative situations of others and determining their causes (Geraci & Franchin, 2021). According to the literature, children around 18 months of age can show help and sharing, and make an effort to soothe a person who appears upset (Brownell et al., 2009). These behaviors, which increase in frequency and variety from the age of two, are motivated by empathic concern, which is defined as an emotional response for another person, including sensing another's distress or attending to their distress and needs (Eisenberg et al., 2006; Hoffman, 2000; Zahn-Waxler et al., 1992). Gaining the capacity to recognize and act upon clear indications from others, who express their wants or wishes, may be necessary to cultivate the ability to freely share important resources with others. When young children have the ability to empathic approach, this contributes to the development of their mental capacity. With these developing skills, children are increasingly conscious of the suffering of others and begin to interpret and respond more appropriately (Landers, 1991). The preschool period is when children can comprehend their own behaviors and shape them accordingly by understanding the reasons for their own and others' behaviors (Sepitci & Gültekin, 2019). In this process, the development of children's prosocial actions largely depends on their ability to regulate themselves (Liew, 2012; Riggs et al., 2006). The capacity of the youngster to effectively manage their conduct is referred to as self-regulation, and it is a broad concept that encompasses cognitive, emotional, and social processes (Dan, 2016). Self-regulation, according to Vallotton and Ayoub (2011), is a fundamental social skill that helps children engage with peers and adults, take part in educational activities, and adjust to novel or difficult circumstances. The behavioral components of this ability are described as "using focus adaptability, memory retention, and inhibitory control over actions" by researchers studying self-regulation in the context of education (McClelland & Cameron, 2011, p.32). Self-regulation skills consist of three

interrelated domains: emotional, behavioral, and cognitive self-regulation. Cognitive self-regulation includes the skills of problem solving, focusing attention, making decisions, and using cognitive skills flexibly; emotional self-regulation includes the ability to manage and regulate emotional states that facilitate adaptive functioning; behavioral self-regulation encompasses the ability to regulate behavior in a goal-directed manner, control impulses, and exhibit rule-compliant behavior (Blair, 2002; Murray et al., 2015). Attention and emotional regulation appear to be interrelated in children's early years (Williams et al., 2017). Emotional regulation capacity aids in their calming down after experiencing emotional discomfort, which gives them more resources and time to direct their attention to other elements in the environment. Similarly, the ability to pay attention to environmental and social cues plays a supporting role in kids' learning of emotional regulation skills and their use of adult regulatory strategies. Culotta et al. (2024) stated that self-regulation is an important indicator for predicting success in later life and that this skill begins in early childhood and continues to develop throughout life. Accordingly, in early childhood, it is crucial that children learn to use and integrate their regulatory skills. It seems likely that children with stronger self-regulatory skills have a greater capacity to respond to others in prosocial ways. In particular, displaying prosocial behaviors in peer relationships that become more complex as they grow older leads to successful interactions, facilitating peer acceptance, which is expressed as a primary developmental task for preschool children (Corsaro, 1985, as cited in Wang et al., 2018; Rose & Rudolph, 2006). It is thought that the first experiences gained in prosocial behaviors, which are considered as one of the important elements of social emotional development, contribute to the formation of positive behavioral patterns such as social adaptation, cooperation, and empathy in children, as well as affecting their self-regulation skills, which develop rapidly during this period (Greenberg et al., 2003). Lane et al. (2004) said that traits like "following directions" and "controlling anger with peers" are examples of prosocial conduct. In the preschool period, when learning and development progress rapidly and multidimensionally, children are expected to learn to organize their behavior in line with the values of society and to develop healthy relationships with others by minimizing negative behaviors and making positive behaviors a habit (Ramazan & Dönmez, 2018). However, during this period, some undesirable behavioral patterns may be encountered. Problem behaviors are defined as behaviors that prevent an individual from acquiring a new skill, cause exclusion from their environment, harm oneself or others, and are contrary to the social norms of the society in which they live (Kargı & Erkan, 2004; Öz, 1997; Pickens, 2009). Behavior problems have negative effects on both the child and their environment. When problem behaviors cannot be prevented through appropriate educational processes, these habits become ingrained in the child's mentality, raising the likelihood that they eventually develop into unpleasant and violent conduct (Ural et al., 2015). These problem behaviors, which begin at an early age, can cause many young children to be expelled from preschool education institutions, to deteriorate in their social relationships, and to be excluded from their peer group as a result of exhibiting aggressive and destructive behaviors in their communication (Burke et al., 2010; Fox et al.,

2002; Hughes et al., 2000; Gülay-Ogelman & Çiftçi-Topaloğlu, 2014; Şehirli, 2007). Peer relations in the preschool period are the first examples in life and have very important functions that can affect all areas of development. Peer relationships support the formation of environments that will enable the learning and implementation of social skills, social norms and roles, in terms of social development (Merrell & Holland, 1997). Prosocial conduct is thought to be a facet of social competence that influences how well children form relationships with their peers. For this reason, the requirement to examine patterns of social and antisocial conduct in relation to one another is increasingly on the agenda (Zahn-Waxler et al., 1986, as cited in Zahn-Waxler & Smith, 1992). Studies demonstrate an association between prosocial behaviors and positive developmental outcomes; children who exhibit prosocial behaviors have been found to develop positive biases and socially effective response strategies (Nelson & Crick, 1999; Laible et al., 2014). Laible et al. (2014) emphasize that prosocial behaviors have the potential to evoke positive reactions in others, which in turn strengthens children's internalized favorable role models and their faith in other people. Additionally, there is evidence that reduced prosocial behavior is linked to early conduct issues (Barker et al., 2010) and that, five years later, lower levels of prosocial behavior are associated with early externalizing behaviors (Kouros et al., 2010). At this point, preschool education, which provides the opportunity to recognize, nurture, and build the positive social behavior development that blossoms as a consequence of how children engage with their environment, plays a critical role (Edwards et al., 2005; Ellis, 2008).

The preschool education environment is considered an important social area because it offers many opportunities for children to socialize with their classmates (Anthony et al., 2005; Epstein, 2009; Ryan, 2011). It is demonstrated in the literature that there are many studies regarding the importance of some variables (parental attitudes, perception of social support, appropriate friend and parent models, self-perception, etc.) and personal factors (age, gender, socio-economic level, parental variables, etc.) in multi-dimensional terms, in relation to prosocial behaviors (Aydın & Karakelle, 2016; Doescher & Sugawara, 1992; Eisenberg et al., 1999; Gülay-Ogelman & Canbeldek, 2016; Svetlova et al., 2010; Uzmen & Mağden, 2002). In studies on self-regulation skills, problem behaviors, and prosocial behaviors, Caprara et al. (2014) investigated the effects of school-based interventions designed to promote prosocial behavior on aggressive behavior. Williams and Berthelsen (2017) examined the predictive function of early parental approaches on self-regulation skills and prosocial behaviors. Viglas and Perlman (2018) explored the impact of a mindfulness-based technique on self-control, hyperactivity, and prosocial behavior in young children. Eke (2018) investigated the relations between social behaviors, self-regulation skills, and values in preschool children. Ezmeci (2019) investigated the effects of a self-regulation technique on self-regulation, social skills, and problem behavior of preschool children. Yurdakul et al. (2022) investigated the relations between prosocial behaviors and self-regulation skill set in preschool kids. Bozkurt-Polat and Özbey (2021) examined the effects of the social values education system on the self-regulation, social skill

set, and problem behaviors of preschool children. It is thought that self-regulation skills and prosocial behaviors are among the important developmental tasks in early childhood, and should be supported during this period when basic knowledge and skills are acquired.

Conte et al. (2023) investigated the effects of a universal school-based mental health program on preschool children's social-emotional learning competencies, social behaviors, and academic outcomes. Jansen et al. (2024) and Haines et al. (2023) investigated the effects of a mindfulness-based Kindness Program on children's social and emotional functions. Erten and Güneş (2024) investigated the effects of children participating in a mindfulness program on prosocial behavior, physical aggression, and depressive behaviors. Berti and Cigala (2020) and Courbet et al. (2024) investigated the effects of children participating in a mindfulness-based social and emotional learning program on emotional, behavioral, and relational problems. Previous studies have reported that children with prosocial behavior have stronger interpersonal skills and can establish healthy relationships with their peers characterized by trust and warmth. These behaviors play a critical role in children's social-emotional development and promote the formation of healthy peer relationships by providing opportunities for the acquisition of skills such as role-taking, conflict resolution, and cooperation. In this context, prosocial behavior is considered an important characteristic that should be developed in children from an early age (Asscheman et al., 2020; Jambon & Malti, 2022; Rubin et al., 2013). In addition, due to their multifaceted positive outcomes, self-regulation skills and social behaviors are considered among the important developmental tasks in early childhood and should be supported during this period when basic knowledge and skills are acquired. While babies are largely dependent on external regulation in the first years of life, over time, children become more successful in monitoring their own behavior, directing their attention, and regulating their emotional states. This process shows significant development in self-regulation. Children's self-control is often considered one of the positive social skill sets that should be given to all kids (Diamond, 2012; Ritgens vd., 2024). It is considered important to carry out interventions in this direction in early childhood, when both prosocial behaviors and self-regulation skills are further developed, and children face many social and academic difficulties (Raffaelli et al., 2005; Tintori et al., 2021).

Considering the literature, the need for studies that demonstrate how programs that aim to support the development of prosocial behaviors work of preschool children on self-regulation skills and problem behaviors has gained prominence. The program used in this study is designed to support and encourage the development of prosocial behavior and includes various activities suitable for the 5-6 age group. It is thought that the findings will provide important information about how activities that support awareness and development of prosocial behaviors, will contribute to the self-regulation skills of preschool children, and how they will affect their problem behaviors.

Purpose of the Study

The purpose of this study is to examine the effects of educational practices that support the development of prosocial behavior on the self-regulation skills and problem behaviors of children aged 5-6. In this context, answers to the following sub-objectives were sought.

1) Is there a significant difference between the pre-test scores of the experiment and control group children in terms of self-regulation skills?

2) Is there a significant difference between the pre-test scores of the experiment and control group children in terms of problem behavior?

3) Is there a significant difference between the pre-test and post-test scores of the experiment group children in terms of self-regulation skills?

4) Is there a significant difference between the pre-test and post-test scores of the experiment group children in terms of problem behavior?

5) Is there a significant difference between the pre-test and post-test scores of the control group children in terms of self-regulation skills?

6) Is there a significant difference between the pre-test and post-test scores of the control group children in terms of problem behavior?

7) Is there a significant difference between the post-test scores of the experiment and control group children in terms of self-regulation skills?

8) Is there a significant difference between the post-test scores of the experiment and control group children in terms of problem behavior?

METHOD

Research Model

In this study, the experimental research method was used because it allows the effects of a variable to be observed and is the most valid and reliable way to test cause-effect relationships. In the study, since the researcher carried out the applications in the experimental group during the education and training hours, a separate suitable classroom environment could not be provided also. It was not possible to create subject pairs and assign them to the groups randomly. For this reason, no unbiased assignment was made to the experimental and control groups, and an attempt was made to match two kindergarten classes of a school. The matched groups were assigned to the treatment groups randomly. Accordingly, in the study, an alternative design was used in cases where random assignment could not be made a pre-test-post-test control group quasi-experimental design (Fraenkel & Wallen, 2006 as cited in Büyüköztürk et al., 2012, p.195). The dependent variable of the study are the self-regulation skills and problem behaviors of 5-6 year old children,

and the independent variable is the Educational Practices Supporting the Development of Prosocial Behavior. In the study, the Pre-School Education Program of the Ministry of National Education continued to be applied by the classroom teachers to the children in the experimental and control groups, In addition, the education program created by Bağcı-Çetin (2021) was implemented with the kids in the experimental group. The symbolic view of the research design is given in Table 1.

Table 1

Experimental Procedure

Groups	Pre-test	Procedure	Post-test	Retention-test
GE	O1.1	X	O1.2	O1.3.
GC	O2.1	-	O2.2	

GD: Experiment group,

GK: Control group,

O1.1: Experiment group pre-test,

O1.2: Experiment group post-test,

O1.3. Experiment group retention-test

O2.1: Control group pre-test,

O2.2: Control group post-test measurements,

X: Experimental procedure (Prosocial Behavior Psychoeducation Program applications) (Büyüköztürk et al., 2012, p.208).

Table 1 reveals that, before the experimental procedure was applied, measurements regarding self-regulation skills and problem behaviors were made in both groups (Büyüköztürk et al., 2010, p.212). The experimental procedure was implemented on the experimental group after the pre-test was used on both the experimental and control groups. After the experimental procedure, a post-test was administered to both groups regarding self-regulation skills and problem behaviors. The permanence test was used only for the experimental group.

Study Group

A list showing independent kindergartens and preschool classes affiliated with the Ministry of National Education in the Efeler District of Aydın Province was compiled to create the study group. From this list, the school that allowed the researcher easy access to conduct the application was determined among the schools with at least two classes in the same age group (Büyüköztürk, 2002; Yıldırım & Şimşek, 2000). One of the branches continuing half-day education in the same school was assigned as the experimental group and the other as the control group. In this regard, 16 students from the 5-6 age group who

continued pre-school education in the second semester of the 2023-2024 academic year made up the experimental group and 18 students constituted the control group.

Program Implementation Process

The aim of the program prepared to support the development of prosocial behavior as one of the basic elements of social development of children aged 5-6, is to raise awareness about prosocial behaviors such as empathy, sharing, helping each other, and cooperation. These behaviors have a significant part in ensuring and sustaining social integrity and peace through group life. In this direction, 27 educational situations were used in the preliminary application of two programs designed by Bağcı-Çetin (2021). The content of the program includes emotions, empathy, helping, sharing, cooperation, and comforting/consoling. The program included Turkish language, art, music, games, movements, and drama activities developed by Bağcı-Çetin (2021) or compiled from other sources. During the application process over 9 weeks, a total of 27 educational situations were applied, including preliminary applications, three times a week with the kids in the experiment group. To make the children comfortable, each application started with warm-up games, and various visual and auditory materials (posters, banners, puppets, music, nursery rhymes, books, slide shows, videos, etc.) were used in the activities. At the beginning of the application process, information was provided in accordance with the content of the work to be done that day; the activities in the program were implemented, and the work was supported with short group discussions. After each session, the aim was for the children to reinforce their gains with family-participated home activities. To facilitate understanding, bulletins, brochures, or an activity plan to be implemented at home were sent to the families with instructions and materials to inform them about the work done during the day and the prosocial behaviors addressed. The activities conducted in the context of these family-participation activities were shared and discussed by the volunteer children with their group friends at the beginning of the next session. In addition, the previous session was summarized with the children and the researcher at the beginning of each session, thus establishing a connection between the sessions.

Data Collection Tools

Self-Regulation Skills Scale for 4-6 Year-Old Children (Mother Form)

The scale was developed by Erol and İvrendi (2018) based on parental feedback to assess children's abilities in self-regulation between the ages of 4-6. Concurrent criterion validity, exploratory factor analysis (EFA), and confirmatory factor analysis (CFA) were employed in the construct validity analyses. The scale has 20 items and 4 sub-dimensions (working memory, emotion inhibitory control, behavioral inhibitory control, and attention), which together accounted for 61% of the variation in the overall variance, according to the EFA results. The model's fit indices ($\chi 2/sd=1.91$, RMSEA=.07, SRMR=.07) derived using CFA were found to be within an acceptable range. The items' correlations with the total scores ranged from .36 to .70, and scales' Cronbach Alpha internal consistency was found to be .90.

Concurrent validity was found to be 0.84, and test-retest reliability was 0.77. The test-retest reliability was .77 and the concurrent validity score was .84. According to moms, the scale is a valid and trustworthy measuring instrument for assessing the self-regulation abilities of 4-6 year old kids, which is consistent with our findings. The dependability coefficient value for the complete scale in the current investigation was determined to be 0.91.

Preschool and Kindergarten Behavior Scale

Merrell (2003) created the scale to be able to assess children's social skills and problem behaviors (Fazlıoğlu et al., 2011). The measurement tool includes of 2 scales as social skills and problem behavior scales. In this study, the problem behavior scale designed to evaluate children's problem behaviors was employed. The problem behavior scale, which includes two sub-dimensions, namely, learning and expressing problems, has 42 items in its original form. It is expected that each item related to kids' problem behaviors will be answered according to the frequency of occurrence in the past three months. The scale is graded as "never-0, rarely-1, sometimes-2, often-3" and the increase in the scores obtained indicate that children's levels of exhibiting problem behaviors are high. Turkish adaptation of the scale was realized by Fazlıoğlu et al. (2011). It was stated that the factor structure of the measurement scale was maintained within Turkish culture, as formed after an item was removed from the measurement tool, with the confirmatory factor analysis conducted for validity. To find out the discrimination of the items in the measurement tool, the t-test was conducted to determine the significance level of the difference in item scores between the upper and lower 27% groups, and it was stated that the differences were significant for all items. The Alpha reliability coefficient of Cronbach which was calculated for the entire problem behavior scale and its sub-dimensions was .96, the issue of expressing problems was .96, and the learning problem was .89. The reliability coefficient values calculated for the current study were found to be .95 for the entire scale. The coefficient value of reliability calculated for the current study was 0.90 for the entire scale.

Data Collection

Prior to the data collection process of the study, ethics committee approval was obtained, and Aydın Provincial Directorate of National Education granted the necessary permissions for the study to continue as planned. The researcher met with the administrators and preschool educators of the school, which provided easy access and implementation opportunities, and informed them about the purpose and method of the study. Two kindergarten classes in the school were matched. To identify the children and families who volunteered to participate in the study, the information note regarding the study, including the measurement tools expected to be filled out by the parents and the parental consent form, were filed and delivered to the families of the students in these classes through the classroom teachers. The forms sent to the families of the students who were accepted to participate in the study were forwarded again through the classroom

teacher and collected. Before the application, the experimental and control groups were formed by random assignment. The Self-Regulation abilities Scale for 4-6 Year-Old Children (Mother Form) was completed as a pre-test for each child by their mothers in order to ascertain whether the groups' levels of self-regulation abilities varied and the pre-test scores of the groups were analyzed by comparison. The Pre-School and Kindergarten Behavior Scale (Problem Behavior subscale) regarding the problem behaviors of the groups was filled out by the classroom teachers and the groups' pre-test results were examined. The kids in the control group continued their daily education programs in line with the Pre-School Education Program of the MoNE by their teachers. Within the scope of the research, a program including 27 educational situations was conducted to the kids in the experiment group for 2,5 months, 3days a week, together with the Pre-School Education Program of the MoNE. After the program applications, post-test forms were filled out by the mothers and teachers of the children in the control and experimental groups. Statistical analysis of the collected data was performed.

Data Analysis

Statistical analyses of the obtained values were conducted via the SPSS 22.0 program. In the analyses, the normality of the distribution was first tested. Since there was no normal distribution and the sample size was n<30, the data were analyzed using nonparametric tests (Büyüköztürk, 2010). The youngsters in the experiment and control groups had their pre- and post-test results compared using the Mann Whitney U Test. The Wilcoxon Signed Rank Test was used to ascertain whether there were any statistically significant differences between the pre- and post-test results for the children in the experiment group and the control group. This was following the application of the prosocial behavior psychoeducation program to the experiment group. The significant difference in the distributions was examined in order to determine which measurement was more advantageous by comparing the pre- and post-test (Büyüköztürk, 2010).

Ethical considerations

Ethical Review Board: Adnan Menderes University Educational Research Ethics Committee

Date of Ethics Review Decision: 20.09.2023

Ethics Assessment Document Issue Number: E-84982664-050.01.04-424626

RESULTS

In this section, the data obtained from statistical analyses regarding the problem status and sub-problems of the research are presented and interpreted in tables.

Sub-Problem 1: Is there a significant difference between the pre-test scores of the self-regulation skills of the experiment and control group children? Findings Related to the Question

Table 2

Mann–Whitney U Test Results Related to the Pre-Test Scores of the Self-Regulation Skills Scale of the Experiment and Control Group Children

	Groups	*n*	Rank Total	Rank Average	*U*	*Z*	*p*
Attention	Experiment	16	275	17.19	139	-.17	.86
	Control	18	320	17.78			
Working Memory	Experiment	16	277	17.31	141	-.10	.91
	Control	18	318	17.67			
Inhibitory Control	Experiment	16	270	16.88	134	-.35	.72
(emotion)	Control	18	325	18.06			
Inhibitory Control	Experiment	16	283	17.69	141	-.10	.91
(behavior)	Control	18	312	17.33			
Self-regulation Skills Total	Experiment	16	273.5	17.09	137.5	-.22	.82
	Control	18	321.5	17.86			

*p<0.01

The children in the experiment and control groups did not significantly vary in their average scores in the sub-dimensions of working memory (U=141; p>.05), attention (U=139; p>.05), inhibitory control-emotion (U=134; p>.05), inhibitory control-behavior (U=141; p>.05) and self-regulation total (U=137; p>.05) according to the results of the Mann Whitney U test.

Sub-Problem 2: Is there a significant difference among the problem behavior pre test scores of the experiment and control group children? Findings Related to the Question

Table 3

Mann–Whitney U Test Results Related to the Pre-Test Scores of the Pre-School and Kindergarten Behavior Scale (Problem behavior sub-scale) of the Experiment and Control Group Children

	Groups	*n*	Rank Total	Rank Average	*U*	*Z*	*p*
Problem expressing	Experiment	16	273.5	17.09	137.5	-.22	.82
problems	Control	18	321.5	17.86			
Learning problem	Experiment	16	278.5	17.41	142.5	-.05	.95
	Control	18	316.5	17.58			
Problem behavior total	Experiment	16	274	17.13	138	-.20	.85
	Control	18	321	17.83			

*p<.05

The results of the Mann-Whitney U test show that there is no statistically significant difference between the experiment and control group kids' average scores on the problem behavior sub-dimension, specifically the issue of expressing problems (U=137.5; p>.05) and the problem behavior total (U=138; p>.05), and the mean ranks are close to each other.

Sub-Problem 3: Is there a significant difference between the mean pre-test and post-test scores of the children in the experiment group regarding self-regulation skills? Findings Related to the Question

Table 4

Wilcoxon Signed Rank Test Results Regarding the Pre-Test-Post-Test Scores of the Self-Regulation Skills Scale of the Children in the Experiment Group

		n	Rank Total	Rank Average	*Z*	*p*
Attention	Negative Order	0	0	0	-1.34	.180
	Positive Order	2	3	1.5		
	Ties	14				
Working Memory	Negative Order	0	0	0	-1.63	.102
	Positive Order	3	6	2		
	Ties	13				
Inhibitory Control (emotion)	Negative Order	0	0	0	-2.40*	.016*
	Positive Order	7	28	4		
	Ties	9				
Inhibitory Control (behavior)	Negative Order	0	0	0	-1.84	.066
	Positive Order	4	10	2.5		
	Ties	12				
Self-regulation Skills Total	Negative Order	0	0	0	-2.67**	.008**
	Positive Order	9	45	5		
	Ties	7				

*Arranged based on negative ranks.
*p<.05
**p<.01

The values obtained for inhibitory control-emotion (z=-2.40, p<.05) and self-regulation skills total (z=-2.67, p<.01) at the Wilcoxon Signed Rank Test show that there is a significant difference between the pre- and post-test average scores of the experiment group children. When the average ranks and total scores are examined, it is observed that the difference between the pre- and post-test is in favor of positive ranks for the inhibitory control-emotion sub-dimension and self-regulation skills total score. However, no significant difference was found between the pre- and post-tests of the experimental group children in the attention (z=-1.34, p>.05), working memory (z=-1.63, p>.05) and inhibitory control-behavior (z=-1.84, p>.05) sub-dimensions.

Sub-Problem 4: Is there a significant difference between the pre-test and post-test mean scores of the experimental group children regarding problem behavior? Findings Regarding the Question

Table 5

Wilcoxon Signed Rank Test Results Regarding the Pre-Test-Post-Test Scores of the Pre-School and Kindergarten Behavior Scale (Problem behavior sub-scale) of the Experiment Group Children

		n	Rank Total	Rank Average	*Z*	*p*
Problem expressing problems	Negative Order	6	21	3.5	-2.25*	.024*
	Positive Order	0	0	0		
	Equal	10				
Learning problem	Negative Order	5	15	3	-2.07*	.038*
	Positive Order	0	0	0		
	Equal	11				
Problem behavior total	Negative Order	7	28	4	-2.40*	.016*
	Positive Order	0	0	0		

		Equal	9			

a. Organized based on positive ranks.
*p<.05

When Table 5 is checked, the results of Wilcoxon Signed Rank Test for the problem expression problem (z=-2.25, p<.05), learning problem (z=-2.07, p<.05) and problem behavior total (z=-2.40, p<.05) values show that the children in the experiment group had significantly different average scores on the pre- and post-tests. According to the mean ranks and total ranks, the difference between the pre- and post-tests supports negative ranks for the problem expression and learning problem sub-dimensions and the problem behavior total.

Sub-Problem 5: Is there a significant difference between the pre-test and post-test mean scores of the control group children regarding self-regulation skills? Findings Related to the Question

Table 6

Wilcoxon Signed Rank Test Results Regarding the Pre-Test-Post-Test Scores of the Control Group Children on the Self-Regulation Scale

		n	**Rank Total**	**Rank Average**	***Z***	***p***
Attention	Negative Order	0	0	0	-1.00	.317
	Positive Order	1	1	1		
	Equal	17				
Working Memory	Negative Order	2	4	2	-.57	.564
	Positive Order	1	2	2		
	Equal	15				
Inhibitory Control (emotion)	Negative Order	5	20	4	-1.13	.257
	Positive Order	2	8	4		
	Equal	11				
Inhibitory Control (behavior)	Negative Order	1	2.5	2.5	-1.00	.317
	Positive Order	3	7.5	2.5		
	Equal	14				
Self-regulation Skills Total	Negative Order	6	35.5	5.92	-.23	.813
	Positive Order	5	30.5	6.10		
	Equal	7				

a. Organized based on negative ranks.
b. Organized based on positive ranks.
*p<.05

When Table 6 is examined, the values obtained from the Wilcoxon Signed Rank Test regarding the sub-dimensions of attention (z=-1.00, p>.05), working memory (z=-.57, p>.05), inhibitory control-emotion (z=-1.13, p>.05), inhibitory control-behavior (z=-1.00, p>.05), and the total self-regulation skills (z=-.23, p>.05) are reported. These tests show that there is no significant difference between the pre-test and post-test mean scores of the control group children.

Sub-Problem 6: Is there a significant difference between the pre-test and post-test mean scores of the control group children regarding problem behavior? Findings Regarding the Question

Table 7

Wilcoxon Signed Rank Test Results Regarding the Pre-Test-Post-Test Scores of the Control Group Children on the Pre-School and Kindergarten Behavior Scale (Problem behavior sub-scale)

		n	Rank Total	Rank Average	*Z*	*p*
Problem expressing problems	Negative Order	5	21	4.20	-1.26	.206
	Positive Order	2	7	3.5		
	Equal	11				
Learning problem	Negative Order	1	3.5	3.5	-1.63	.102
	Positive Order	5	17.5	3.5		
	Equal	12				
Problem behavior total	Negative Order	5	33	6.60	-1.00	1
	Positive Order	6	33	5.50		
	Equal	7				

a.The sum of negative ranks equals the sum of positive ranks
b.Organized based on negative ranks.
c.Organized based on positive ranks.
*p<.05

When Table 7 is examined, the expressing problems (z=-1.26, p>.05), learning problems (z =-1.63, p>.05), and problem behavior total (z=-1.00, p>.05) values obtained as a result of the Wilcoxon Signed Ranks Test show that there is no significant difference between the pre-test and post-test mean scores of the control group children.

Sub-Problem 7: Is there a significant difference between the self-regulation skills post-test scores of the experiment and control group children? Findings Related to the Question

Table 8

Mann-Whitney U Test Results Related to the Self-regulation Skills Scale Post-Test Scores of the Experiment and Control Group Children

	Groups	*n*	Rank Total	Rank Average	*U*	*Z*	*p*
Attention	Experiment	16	276	17.25	140	-.13	.905
	Control	18	319	17.72			
Working Memory	Experiment	16	292	18.25	132	-.42	.695
	Control	18	303	16.83			
Inhibitory Control (emotion)	Experiment	16	290.5	18.16	133.5	-.36	.721
	Control	18	304.5	16.92			
Inhibitory Control (behavior)	Experiment	16	289.5	18.09	134.5	-.33	.746
	Control	18	305.5	16.97			
Self-regulation Skills Total	Experiment	16	286.5	17.91	137.5	-.22	.825
	Control	18	308.5	17.14			

*p<.05

When the findings obtained from the Mann Whitney U test were examined, there was no statistically significant difference in the average scores of the experiment and control group children in the sub-dimensions of attention (U=140; p>.05), working memory (U=132; p>.05), inhibitory control-emotion (U=133.5; p>.05), inhibitory control-behavior (U=134.5; p>.05), and self-regulation skills (U=137.5; p>.05).

Sub-Problem 8: Is there a significant difference between the problem behavior post test scores of the experimental and control group children? Findings Related to the Question

Table 9

Mann–Whitney U Test Results Related to the Preschool and Kindergarten Behavior Scale (Problem behavior sub-scale) Post-test Scores of the Experimental and Control Group Children

	Groups	*n*	Rank Total	Rank Average	*U*	*Z*	*p*
Problem expressing problems	Experiment	16	273.5	17.09	137.5	-.22	.822
	Control	18	321.5	17.86			
Learning problem	Experiment	16	271	16.94	135	-.31	.756
	Control	18	324	18.00			
Problem behavior total	Experiment	16	268	16.75	132	-.41	.679
	Control	18	327	18.17			

*$p<0.05$

When the findings obtained from the Mann Whitney U test were analyzed, it was seen that the difference between the mean scores of the experiment and control group children in the problem of expressing problems sub-dimension (U=137.5; p>.05), learning problem sub-dimension (U=135; p>.05), and problem behavior total (U=132; p>.05) were not statistically significant.

DISCUSSION

This section discusses the results obtained from the study and their interpretation in light of the theoretical framework, classifying them according to the dependent variables of the study.

Results and Discussion Regarding the Self-Regulation Skills Mean Scores of the Experimental and Control Group Children

Upon closer inspection, the results reveal that the children in the experiment and control groups did not significantly differ in their overall mean scores in the sub-dimensions of working memory, attention, inhibition control-emotion, inhibition control-behavior, and self-regulation. It was determined that there was a significant difference in favor of positive ranks between the pre-and post-test score mean scores of the experiment group kids regarding the inhibitory control-emotion sub-dimension and self-regulation skills total. No significant difference was found between the pre-and post-test mean scores of the control group kids in terms of the sub-dimensions of attention, inhibitory control-behavior, inhibitory control-emotion, working memory, and self-regulation skills. In addition, no statistically significant difference was observed among the total mean scores of the experiment and control groups kids with regard to attention, self-regulation skill set, inhibitory control-behavior, inhibitory control-emotion, and working memory.

Many behavioral and neuroscientific studies have shown that experiences (especially social experiences) play a key role in both developing the neural circuits that assist self-

regulation and in developing the manifestations of behaviors in various contexts (Baker et al., 2012; Diamond & Lee, 2011; Sameroff, 2010; Zelazo et al., 2008). In a study conducted by Pazarbaşı and Cantez (2019), it was observed that as children's prosocial behavior scores increased, their behavior regulation scores also increased. In another study conducted by Hubert et al. (2017), it was observed that children's prosocial behavior in kindergarten affected cognitive self-regulation more than their prosocial behavior and peer acceptance in the first grade did. Therefore, the developmentiiof self-regulation through interpersonaliiinteractions appears critical for children to be successful in demonstrating high levels of self-control. In studies conducted on children between the ages of 3 and 6, teachers reported that mindfulness programs implemented in the classroom were effective in managing emotional and behavioral disorders and in supporting children's self-regulation skills and executive functions (Razza et al., 2020). Although reviews have yielded mixed results in measuring self-regulation skills in young children, it has been observed that mindfulness-based practices generally support self-regulation and social-emotional development. In their research examining 18 studies conducted between 2010 and 2021, Bockmann and Yu (2022) found that mindfulness practices have mixed effects on self-regulation in children. A literature review by Sun et al. (2021) revealed that yoga and mindfulness practices for preschool children improve self-regulation and executive function skills in school settings. Flook et al.'s (2015) research shows that implementing a program designed to promote developing self-regulation and prosocial behavior in young children in preschool classrooms has positive effects on children's self-regulation skills and social and emotional competence. Such programs appear to help kids better understand themselves and manage their emotional states, as well as enable them to be more effective in social interactions (Diamond & Lee, 2011). Berti and Cigala (2020), in their study evaluating the effects of a mindfulness-based intervention, found that children in the experimental group demonstrated significant developments in prosocial behavior, inhibitory processes of self-regulation, and perspective-taking skills, especially in the cognitive and emotional components. In the research conducted by Eke (2018), it was found that there was a significant relation between children's values, self-regulation skills and social behavior. It was concluded that as children's responsibility and honesty value levels increased, their self-regulation skills also increased, and that as their cooperation value level increased, their total self-regulation skills improved. The study by Semple et al. (2010), which applied a mindfulness program, reported a decrease in children's attention problems. Similarly, the study results of Hawley (2003) and Özbey (2017, 2018) support the findings of the research. These studies show that children with developed value behaviors are successful in providing self-control and can manage their emotions. Among similar studies, it can be said that the finding that the story-based integrated social-emotional education program prepared by Tosun (2023) increases the self-regulation skills and prosocial behaviors of preschool children supports the results of the study. In addition, Williford et al. (2013) stated in their studies that children's positive relation with their teachers and friends and their active participation in activities are related to emotional regulation skills.

In this context, the activities included in the program, aimed at supporting positive social relationships, played an effective role in the increase observed in the inhibitory control-emotion dimension of the self-regulation skills of the experimental group children. In addition, in studies examining self-regulation skills in the preschool period, it is observed that education provided with a play-focused education program contributes to the development of children's self-regulation skills (Elias & Berk, 2002; Tominey & McClelland, 2011). In the studies of Arifiyanti and Suparno (2024), differences in the social behaviors of children were observed after participating in games with rules. Similarly, although the games and drama activities in the program applied in the current study aimed to increase prosocial behaviors, other areas of development can also be supported through games. The drama and game activities in the program were designed to integrate different aspects of development in a complex way. This approach is consistent with previous research emphasizing the potential of games to provide various benefits in the cognitive, motivational, emotional and sociocultural areas in the learning process (Plass et al., 2015). As a result, improving self-regulation through activities that support the development of prosocial behavior helps children understand themselves better and manage their emotional states, leading to better social-emotional skills. In this context, the frequent inclusion of active play and socio-dramatic games in the program used in the current study has a positive effect.

Results and Discussion Regarding the Problem Behavior Score Averages of Experimental and Control Group Children

It was determined according to the findings, that the difference between the problem behavior sub-dimensions of the problem behaviors of the children in the experiment and control groups, the problem of expressing problems and the learning problem and the problem behavior total score averages were not statistically significant, and their rank averages were close to each other. A significant difference was found in favor of negative ranks between the pre-test and post-test score averages of the problem of expressing problems, learning problem and problem behavior total values of the children in the experimental group. It was seen that there was no significant difference between the pre-test and post-test score averages of the problem of expressing problems, learning problem and problem behavior total values of the children in the control group. It was observed that the difference between the problem of expressing problems, learning problem sub-dimensions and the problem behavior total score averages of the children in the experiment and control groups was not statistically significant.

Childhood research reveals an inverse relation between prosocial and aggressive behavior (Laible et al., 2014; Nantel-Vivier et al., 2014). It has also been stated that prosocial behavior contributes to reducing the likelihood of problematic behaviors over time and influencing friends positively (Carlo et al., 2014). In the research conducted by Eke (2018), it was determined that there is a significant relationship between children's values and social

behavior. It was concluded that as children's respect and honesty value levels increase, their positive social behaviors also increase. Conversely, as friendship and sharing value levels increase, their relational aggression behaviors decrease. The study by Grazzani et al. (2016) study also suggested that young children behave kinder toward their peers after they are encouraged to talk about their feelings and learn about them. In a research by Adinugroho (2009), it was shown that books with prosocial content increased children's prosocial behaviors and decreased their aggressive behaviors. Flook et al. (2015) showed that a mindfulness-focused prosocial skills training curriculum resulted in more significant improvements in the social competence of children in the intervention group. Viglas and Perlman (2018) found that a mindfulness-based program had a positive effect on 3-6 year olds' self-regulation and social and non-compliant behaviors. In the study conducted by Bozkurt-Polat and Özbey (2021), it was observed that the Social Values Education Program positively affected children's self-regulation skills and reduced their problem behaviors. In the study by Battistich et al. (1989), it was observed that the program applied contributed to the social problem-solving skills and strategies of children by making them better understand problem situations, their showing more sensitivity to the needs and feelings of others, and developing their ability to think in a more detailed and results-focused manner. Conte et al.'s (2023) study findings show that the program designed to improve students' mental health and prevent negative behaviors improves preschool children's social-emotional learning competencies, social behaviors, and academic success. In line with the numerous practical activities carried out in the program, children's social behavioral skills increased, and internalized or externalized negative behaviors decreased. Similarly, the program consisting of 27 sessions in the current study was effective in reducing children's problem behaviors since it allowed for numerous activities. Courbet et al. (2024) stated that the mindfulness-based social and emotional learning program reduced children's emotional and behavioral problems, problems in peer relationships, and teacher-child conflicts. Jansen et al. (2024) showed that the mindfulness-based Kindness Curriculum for children aged 3-6 provided a significant improvement in the emotional and social functions of the experimental group children. Haines et al. (2023) found that children who participated in the Mindfulness-Based Kindness Curriculum experienced significant benefits in terms of social-emotional competence, social behavior, and executive functions. Erten and Güneş (2024) observed an increase in positive social behaviors and a decrease in physical aggression and depressive behaviors in children who participated in mindfulness practices. Apaydin-Demirci et al. (2020) found a significant positive relationship between children's emotion regulation skills and interpersonal problem-solving skills in their study. Considering that prosocial behaviors such as helping and cooperating contribute to the solution of interpersonal problems, this finding is consistent with our research. Many researchers have reported that games provide children with many opportunities to develop prosocial behaviors and that behavioral problems can be reduced through cooperative play (Cano-Moya et al., 2023; Li & Shao, 2022). In addition, it has been stated that traditional games played outdoors help children to be in harmony with their friends and their

environment, making their positive social behaviors more evident (Dewi et al., 2020; Junaedah et al., 2020). Arifiyanti and Suparno (2024) observed that children's ability to express themselves effectively has a significant impact on their positive social interactions and also revealed the role of language in encouraging prosocial behaviors. In the study by Gözüm and Aktulun (2021), it was concluded that children's receptive and expressive language skills positively affect their self-regulation skills. Considering the importance of language in supporting social interactions, it can be said that the program used in the current study included activities that allow children to start and end their day by expressing themselves. These activities also involve storytelling, songs, and poems with the theme of prosocial behavior, musical activities, puppet shows, and drama activities in each session, which play an active role in facilitating children's social relationships by supporting both receptive and expressive language skills. Based on the findings of the current study, it can be said that the positive effects of the program, which encourages children to exhibit prosocial behavior by improving their language skills, tend to decrease children' problem behaviors.

LIMITATIONS AND RECOMMENDATIONS

The current study supports the growing evidence that interventions that support the development of prosocial behavior positively affect the increase of self-regulation skills and reduce problem behaviors in preschool children. However, it is important to consider the findings within the framework of certain limitations. One limitation of the study is that self-regulation was assessed using parent reports, which means that direct measurement methods were not used. However, Haines et al. (2023) reported that parents' reports of their children's empathy and social-emotional skills paralleled those of teachers. In the current study, given that parent reports reflect whether children use self-regulation skills at home, the measurement tools completed by parents encourage the generalization of children's self-regulation skills outside the classroom (Bockmann & Yu, 2022). It should also be noted that there may be variability in the number of sessions attended by children due to absences. Since information on absences was not collected, the average effect of the intervention is assessed assuming that all children attended similarly often. Future research could focus on collecting this information to examine the effect of the duration of attendance. Another limitation is that the sustainability of the results cannot be confirmed because the children were not followed up long-term. It should also be noted that an alternative treatment was not provided to the control group, as they were intended to serve as a comparison for the effects of different types of interventions. Given these limitations, it is important to build on these preliminary findings to better understand the impact of programs that support the development of prosocial behavior in early childhood. Due to the exploratory nature of the study, additional research is needed with larger sample sizes and more meaningful comparison groups. Further studies on the subject will provide valuable information on how prosocial behavior can be developed in early childhood classrooms.

The findings of the study show that children's awareness of their thoughts, feelings, and emotions can support their social and emotional development, increase their self-regulation capacity, and improve their ability to understand the emotional and cognitive perspectives of others. In this context, the results of the study provide important clues for both families and educational institutions. Educational programs covering prosocial behavior skills in the preschool period can be prepared, and their contributions to children's development levels can be evaluated. Designs can be developed to disseminate such programs through the Ministry of National Education. Preschool teachers can receive training on sensitive classroom management to create classroom environments that support positive social behavior development and self-regulation. Teachers' adoption of such practices and their integration into existing educational practices can increase the sustainability of the benefits achieved because it provides more effective results. For example; programs that encourage children to use methods such as "stop and think" before responding can be integrated into classroom routines and increase self-regulation (Tominey & McClelland, 2011). In addition, activities themed around social-emotional learning, self-control, recognition and management of emotions, and interpersonal conflict resolution can improve both self-regulation and emotional responses (Liew & Spinrad, 2022). In addition, educators can focus on language development in these practices, fostering the development of children's self-regulation skills and encouraging more positive exchanges in their social interactions (Arifiyanti & Suparno, 2024; Gözüm & Aktulun, 2021). Previous studies do not provide a definitive conclusion on the effects of applied interventions on self-regulation and executive function. While some studies find significant effects in certain tasks, the results observed in other tasks involving the same structure may not be significant (Poehlmann-Tynan et al., 2016; Razza et al., 2015). Therefore, considering the role of self-regulation skills in child development, it is important to conduct more research on which factors are affected by interventions and how these interventions can be made more effective. In addition, it is deemed necessary to identify children in need of intervention at an early stage and to derive specific intervention measures targeting specific competency gaps for a more detailed understanding of self-regulation skills (Ritgens et al., 2024). Such interventions should also be reinforced in out-of-class environments, and a consistent structure that promotes self-regulation skills and positive social behaviors should be created between the home and school environments (Goldberg et al., 2019). At this point, it can be recommended that parents and educators model these skills in both the home and school environment, and develop supportive routines by providing consistent rules and rewards.

Aside from all these suggestions, a noteworthy issue is the prevalence of digital technologies and their effects on children's education and development. While many studies in the literature emphasize that digital applications and their various contexts (e.g., duration and content) negatively affect children's social skills (Mundy et al., 2017; Paulus et al., 2021) and self-regulation skills (Canaslan-Akyar & Sungur, 2022; Gözüm & Kandır, 2020), other findings suggest that well-designed digital content can help develop self-regulation skills

(Williams & Berthelsen, 2017) and increase positive social behaviors (Li & Zhang, 2022). However, Papadakis and Kalogiannakis (2020) revealed that only a few of the digital applications described as educational have positive effects on children's learning processes and development. It is a necessity to bring technology together with educational content and integrate it into the educational process. At this point, it can be said that educators, technology experts, and researchers have the responsibility to contribute to the design of digital applications with educational value by determining design principles suitable for early childhood education.

CONCLUSION

The program implemented in this study included various activities to support the prosocial behaviors of young children. Gains in the area of self-regulation helped children reduce their problem behaviors. The findings are parallel to existing research on preschool children. Many variables observed in the experimental group showed significant improvements after only nine weeks of training, demonstrating the feasibility of age-appropriate programs to develop self-regulation skills, increase social-emotional competencies, and reduce problem behaviors (Burke, 2010; Greenberg & Harris, 2012). It also emphasizes the need for more research on the implementation of programs aimed at improving self-regulation and behavior in early childhood classrooms.

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Data Availability Declaration

Data Availability Upon Formal Request:

While the primary datasets utilized in this study are not publicly accessible due to certain constraints, they are available to researchers upon a formal request. The authors have emphasized maintaining the integrity of the data and its analytical rigor. To access the datasets or seek further clarifications, kindly reach out to the corresponding author. Our aim is to foster collaborative academic efforts while upholding the highest standards of research integrity.

Author Contributions

The sole author of this research, Burcu BAĞCI-ÇETİN, was responsible for the conceptualization, methodology formulation, data collection, analysis, and interpretation. Furthermore, Burcu BAĞCI-ÇETİN took charge of drafting the initial manuscript, revising it critically for vital intellectual content, and finalizing it for publication. The author has read and approved the final manuscript and takes full accountability for the accuracy and integrity of the work presented.

Author(s)' statements on ethics and conflict of interest

Ethics statement: We hereby declare that research/publication ethics and citing principles have been considered in all the stages of the study. We take full responsibility for the content of the paper in case of dispute.

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