The Relations between Preschool Children's Self-Regulation Skills and Play Skills

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Abstract

Preschool education develops self-regulation and plays skills in children. This study aims to determine preschool children's self-regulation skills and play skills and reveal the relationship between them. The study, designed according to the relational screening model, was carried out with 338 children aged 4 and 5 attending kindergarten and preschool. The children were observed for a month, and each child's self-regulation and play skills were evaluated by the teachers using the "Self-Regulation Skills Scale for 4-6-year-old Children (Instructor Form) (SRSS)" and "Play Skills Scale (PSS)". Descriptive statistics, difference tests, and correlation analysis were used to analyze the collected data. As a result of the study, it was found that children's self-efficacy skills and play skills are high, there is no significant difference in skills between girls and boys, and there is a positive and strong relationship between these skills. In this context, it is recommended that preschool teachers include practices that will support both skills.

Keywords: Preschool Children, Self-Regulation Skills, Play Skills.

DOI: 10.29329/ijpe.2023.517.7

Submitted: 13/07/2022 **Accepted:** 09/01/2023 **Published:** 01/02/2023

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INTRODUCTION

This study addressed children's self-regulation skills and play skills and the relationship between them. The importance of play and self-regulation in preschool education has been discussed in many studies (e.g., Aksoy & Yaralı, 2017; Bodrova & Leong, 2007; Elias & Berk, 2002; Goldstein & Lerner, 2017; İvrendi, 2016; Miller & Almon, 2009; Savina 2014; Sezgin & Demiriz, 2017; Slot et al., 2017; Tuzcuoğlu et al., 2020; Whitebread et al., 2008). The positive effects of play and self-regulation skills on different variables in the preschool period were revealed in the studies. These studies also revealed the need to understand children's play and self-regulation skills and their effects on each other. Being play-based is one of the characteristics and principles of the preschool curriculum prepared by the Ministry of Education and implemented in public schools in Turkey. The curriculum stimulates the preparation and implementation of all activities with play. Another essential characteristic of the developmental curriculum is that it contains many elements to support self-regulation skills in children (MoNE, 2013). This curriculum is implemented in public schools and is optional for 3-6-year-old children in Turkey, free of charge. Determining the effect of the preschool curriculum on the development of children's self-regulation and play skills is vital in developing programs. The study addressed the play and self-regulation skills of 338 children attending preschool education in Turkey. In this context, it is thought that there is not enough research on this cultural structure. The results of the research aim to have significant contributions to understanding children's self-regulation and play skills levels and the relationship between them. It is thought that the results will guide teachers pedagogically and contribute to the development of preschool education in Turkey.

There may be differences between children's self-regulation and play skills in different cultures, and the relationship between these skills may also differ. Studies on different variables of self-regulation skills have been conducted in Turkey (Çelik & Kamaraj, 2020; Erol & İvrendi, 2018; Ertürk, 2013; Ertürk-Kara, & Gönen, 2015; Fındık Tanrıbuyurdu & Güler Yıldız, 2012; Kara & Gönen, 2015; Sezgin & Demiriz, 2017; Tuzcuoğlu et al. 2020; Yaralı &Aytar, 2017); but there are limited studies on the relationship between self-regulation and play skills (Aksoy & Yaralı, 2017; İvrendi, 2016; Özdemir & Budak, 2019). This study, which will expand the literature on self-regulation and play skills in Turkey, aims to examine the relationship between play skills and self-regulation skills of preschool children. For this purpose, the following questions were addressed in the study:

- Is there a significant difference in children's self-regulation skill scores according to gender?
- Is there a significant difference in children's play skill scores according to gender?
- Is there a relationship between children's play skills, self-regulation skills, and sub-dimensions?

Self-Regulation and Play Skills in Preschool

Self-regulation refers to the potential of the individual to direct their activities for their purpose in the face of changing conditions and time (Moravska, Dittman, & Rusby, 2019). In other words, self-regulation is the ability of a person to control their behavior based on motives in reaching the goal they have set for themselves (Zimmerman & Schunk, 2008). An individual's ability to focus attention, manage his emotions and thoughts, and choose the appropriate behavior is achieved by self-regulation (McClelland & Cameron, 2012). Although the development of self-regulation, which has a multidimensional structure with the skills to control emotions, thoughts, and behaviors, takes years, it has a rapid growth potential in early childhood (Timmons, Pelletier, & Corter, 2016; Wanless et al., 2016). In this period, executive functions form the cognitive dimension of self-regulation skills and reveal the behavioral self-regulation dimension by reflecting on the child's behaviors in real life; they consist of attention, inhibitory control, and working memory skills (McClelland & Cameron, 2012). The skills related to these three executive functions are the basis for children to achieve their goals

(Blair & Raver, 2015). Attention reflects the child's receiving information for recall and later use, paying attention while receiving and processing (McClelland & Tominey, 2011). Inhibitory control permits individuals to inhibit their impulses and natural, habitual, or dominant behavioral responses to stimuli to select a more appropriate behavior consistent with completing their goals (Eisenberg et al., 2004). Working memory is the structure that enables mental processing and keeping the information in memory (McClelland & Tominey, 2011). Self-regulation skills that emerge in the preschool period from the use of executive functions seem to be quite effective in academic and social achievements (Blair & Raver, 2015; McClelland & Cameron, 2012). For this reason, studies have been conducted on the effects of preschool education practices on self-regulation skills (e.g., Ponitz et al., 2009; Mccelland & Tominey, 2011; Timmons et al., 2016). For example, in the research of Points et al. (2009), it was seen that there is a positive relationship between self-regulation and classroom teacher practices. McCelland and Timmey (2011) also revealed the importance of determining self-regulation skills in the preschool period on academic success. Timmons et al. (2016) detected changes in children's self-regulation skills in different classroom contexts. Related research has expanded the scope of knowledge on self-regulation skills. In the study, self-regulation skills in children were tried to be explained in the context of play skills.

With research, awareness of the importance of self-regulation skills in academic achievement, school readiness, and classroom behavior is gaining momentum (e.g., Blair & Raver, 2015; Eisenberg et al., 2010; Hubert et al., 2015; McClelland et al., 2007; McClelland & Tominey, 2011; Montroy et al., 2014; Rimm-Kaufman et al., 2009; ten Braak et al., 2019). Some self-regulation skills used to reach the goals, such as paying attention, following instructions, and preventing inappropriate reactions, are considered critical for academic achievement (Bilgici & Deniz, 2021; Montroy et al., 2014). These self-regulation skills, acquired at an early age, continue to be gained steadily at later ages (McClelland et al., 2007; Raffaelli et al., 2005; Tominey & McClelland, 2011). Children with high self-regulation skills in preschool were observed to achieve more gains in terms of math skills, vocabulary, and literacy skills (ten Braak et al., 2019; McClelland et al., 2007; Montroy et al., 2014; Pointz et al., 2009). Children who are seen as weak in terms of self-regulation may show negative behaviors in their classrooms and may underperform in acquiring academic skills (Berkman et al., 2012). These children, who may suffer from regressions in their mental development and experience behavioral problems, are at risk (Eisenberg et al., 2004). Interventions for children whose self-regulation skills regress or progress were effective with observations and evaluations (Mischel, 2016), relating early childhood curriculum regulations to self-regulation. The development and implementation of a play-based curriculum as a way to develop self-regulation skills in children revealed the relationship between play and self-regulation (e.g., Bodrova & Leong, 2007; Pelletier & Corter, 2005; Sezgin & Demiriz, 2017; Timmons et al. al., 2016; Tominey & McClelland, 2011).

Children use the basic self-regulation skills while playing and improve these skills through play (Hawes et al., 2012). Children set limits on their behavior in their plays without any external intervention, which can be seen as the initiation of self-regulation (Bodrova et al., 2013). Children's self-regulation skills affect their ability to continue their play with their peers and be playmates (Özdemir & Budak, 2019). According to Vygotsky (1978), the zone of proximal development, which improves self-regulation skills enabling self-regulation, emerges as the child resists instant impulsive reactions and obeys the rules through play (as cited in Savina, 2014). For children with low play and self-regulation skills, the teacher helps determine the roles and planning, setting up a scaffolding within the zone of proximal development. The support should be reduced as the child's play level increases (Bodrova & Leong, 2007). According to Piaget (1962), the process of determining the play, the rules of the play, and deciding what will happen when the rules are broken is essential in developing cooperation and autonomy morality. To ensure development, teachers should focus on cooperation; they should avoid setting the rules of the play, managing the play, and supervising how children follow the rules (as cited in Savina, 2014; Smirnova, 1998). Hence, studies have shown that children playing games show more improvement in self-regulation skills (Diamond et al., 2007; Elias, & Berk, 2002; Qu, 2010; Robson, 2010; Tominey, & McClelland, 2011; Vieillevoye, & Nader-Grosbois, 2008; Whitebread et al., 2009). The play enables the child to acquire basic self-regulation skills by providing purposeful behavior, flexible thinking, communication and cooperation with peers,

and the opportunity to focus attention on the task (Timmons et al., 2016). For example, in socio-dramatic play (Elias & Berk, 2002), which sets forth children's ability to regulate their behavior in the classroom environment, children exhibit higher self-regulation skills by discussing their roles and sharing common play objectives (Qu, 2010). Children continue to interact with their peers during play by regulating their emotions and behaviors even if they do not like the role given to them, which is a significant indicator of the development of self-regulation (Ashiabi, 2007). Therefore using play in education should be considered an essential strategy to increase self-regulation skills (Bodrova & Leong, 2008; Aksoy & Yaralı, 2017). As a result, the importance of self-regulation and play skills and the relationship between them is underlined.

METHOD

Study Design

A correlational survey model was used in this cross-sectional study. It is a model that aims to examine the relationship between two or more variables without intervening (Büyüköztürk et al., 2010). The study was carried out in kindergartens and preschools affiliated with MoNE in Turkey's Central Anatolia region between February 28, and April 29, 2022.

Setting and Participants

The accidental sampling method, which provides easy access to the sample (Büyüköztürk et al.2010), was used in the research. The research was carried out in 5 schools and 20 preschool classes; 14 classes from 3 kindergartens and 6 preschool classes from 2 primary schools, located in a province in Central Anatolia. Kindergarten offers 3-year education for 3-5-year-old children, and preschool offers 1-year education within the primary school. MoNE play-based curriculum is used in these schools. The children were considered from regular-income families because both their parents were working. Participants consist of 4 and 5-year-old children who do not have any disability and whose parents agreed to participate in the study. According to National Education Statistics, 5,501 children aged 4 and 5 receive preschool education in the province (MEB, 2022). When the population is 5000, the sample size can be taken between 234 and 357, taking into account the 0.05 deviation error (Yazıcıoğlu & Erdoğan, 2004). 338 children participated in the study. Of these, 49.4% (n = 167) were girls and 50.6% (n = 171) were boys. Regarding the distribution by age, 74.9% (n = 253) were 5-year-old and 25.1% (n = 85) were 4-year-old; 69.8% (n =236) attended kindergarten, and 30.2% (n =102) preschool.

Data Collection

Before collecting the data, preschool teachers were met and informed about the scales. Teachers observed children for a month before filling out scale items. They filled out the scales for each child at the end of the month; they took their previous observations about the child into account. The researcher collected the data between February 28 and April 29, 2022. To ensure reliability, it was confirmed that the teachers understood the items of the scales and it was ensured that the scales were filled by the same teacher without changing teachers.

Data Collection Tools

The data were collected by the Demographic Form, Self-Regulation Skills Scale for 4-6-Year-Old Children (Teacher Form), and the Play Skills Scale.

The Demographic Form consisted of three questions to collect information about the gender and age of the children and the type of school they attend.

Self-Regulation Skills Scale for 4-6-year-old Children (Instructor Form) (SRSS): The scale was developed by Erol and İvrendi (2018) by working with 20 preschool teachers and 438 children.

The 5-point Likert-type scale consists of 22 items and has a 3-dimensional structure. The sub-dimensions of the scale are Inhibitory Control (8 items), Attention (9 items), and Working Memory (5 items). The internal consistency coefficient of the whole scale was 0.94, and the internal consistency coefficients of the sub-dimensions were between 0.91 to 0.87. The split-half coefficient was 0.90 (Erol & İvrendi, 2018).

In the current study, the Cronbach Alpha value of the whole scale was 0.95; it was 0.92 for the Inhibitory Control; 0.93 for attention; and 0.91 for working memory. As a result of the reliability analysis, it can be said that the data obtained from 4-6-year-old children using SRSS are reliable.

Play Skills Scale (PSS): The Play Skills Scale, developed by Fazlıoğlu, Ilgaz, and Papatğa (2013), consists of 27 items. It uses 5-point Likert-type rating and has one dimension. The scale should be filled out by someone who knows the child well (teacher or parent). The scale's Cronbach Alpha internal consistency coefficient was high, .93.

In this study, the Cronbach Alpha value of the scale was 0.95. As a result of the reliability analysis, it is accepted that the data obtained using the Play Skills Scale are reliable.

Data Analysis

SPSS (Statistical Package for the Social Sciences) was used to analyze the data in the study. Cronbach's alpha coefficients were calculated to check the reliability of the scales, and it was 0.95 for both scales. Accordingly, it is inferred that the scales are highly reliable (Özdamar, 2016). In addition, the Item Total Correlation values showing the differentiation of the dimensions were between 0.5 and 0.8. Accordingly, it is understood that the scales are sufficient in terms of reliability and differentiation criteria (Özdamar, 2016). The data distribution was tested by the Skewness and Kurtosis measurements. It was seen that the Skewness and Kurtosis of all dimensions are between ±2 (Please see Table 1). According to George and Mallery (2010) it can be accepted that the distribution of all dimensions has Normal Distribution. The outcomes were shown as frequency, percentage, and median. The significance of group means' differences were tested by an Independent Sample t-test. Pearson correlation analysis was used to determine the relationships between scales and subscales.

RESULTS

The descriptive statistics of SRSS and PSS, Independence Sample t-test results for the differences in children's self-regulation and play skills according to gender, and Pearson Correlation analysis results showing the relationship between children's self-regulation and play skills are displayed below in the tables.

Descriptive Statistic

Descriptive statistics were calculated to determine preschool children's self-regulation and play skills, and the results are given in Table 1 and Table 2.

Table 1. Descriptive statistic

	Min.	Max.	X	S_x	Mean	Skewness	Kurtosis
Play Skills Score (PSS)	51	135	111.54	16.24	4.13	-0.756	0.535
Self-Regulation Skills Score (SRSS)	39	110	87.97	14.42	3.99	-0.706	0.532
Inhibitory Control	8	40	31.04	6.43	3.88	-0.787	0.461
Attention	11	45	35.47	6.75	3.94	-0.782	0.638
Working Memory	7	25	21.46	3.36	4.29	-0.978	1.280
N	338						

** p <0,05*

Table 1 shows the descriptive statistics of the scores. Accordingly, the mean SRSS score is 87.97 (±14.42), and the mean PSS score is 111.54 (±16.24). PSS scores range from 51 to 135, and SRSS scores are between 39 and 110. The means of the scales and sub-dimensions were calculated by proportioning the mean item scores to the number of items. The scores between 3.70 and 5.00 are considered high (Tekin, 2002). Therefore, it can be said that both self-regulation skills (3.99) and play skills (4.13) of preschool children are at high levels. Regarding the sub-dimensions of SRSS, the highest mean score belongs to the working memory dimension (4.29). According to Table 1 the Skewness and Kurtosis values show that the distribution of all dimensions is normal.

An Independent Sample t-test is a parametric test used to compare two independent groups when the data are normally distributed. Since the data were normally distributed in the study, The Independent Sample t-test was used to determine whether children's self-regulation and play skills differed significantly according to gender.

Table 2. Independent Sample t-test results by gender

	Gender	n	$\bar{X}$	S_x	p
Play Skills Score (PSS)	Female	167	112.60	14.97	0.234
	Male	171	110.50	17.38	
Self-Regulation Skills Score (SRSS)	Female	167	89.33	12.79	0.085
	Male	171	86.64	15.77	
Inhibitory Control	Female	167	31.50	5.80	0.199
	Male	171	30.60	6.98	
Attention	Female	167	36.16	6.00	0.061
	Male	171	34.80	7.36	
Working memory	Female	167	21.68	3.16	0.246
	Male	171	21.25	3.55	

Regarding the mean scores that girls and boys achieved from both scales in Table 2, girls' mean scores are slightly higher than boys. However, there is no statistically significant difference between the scores according to gender (p>0.05).

Relation between Self-Regulation Skills and Play Skills

The results of the Pearson Correlation analysis addressing the relationship between self-regulation and play skills are given in Table 3.

Table 3. Results of the Pearson correlation analysis

		Play Skills Score	Self Regulation Skills Score	Inhibitory Control	Attention	Working memory
Play Skills Score	r	1				
	p					
Self-Regulation Skills Score	r	.700**	1			
	p	.000				
Inhibitory Control	r	.676**	.886**	1		
	p	.000	.000			
Attention	r	.586**	.899**	.644**	1	
	p	.000	.000	.000		
Working memory	r	.530**	.788**	.596**	.617**	1
	p	.000	.000	.000	.000	

The correlation coefficient is categorized by the "r" value, and if the "r" value is between 0.68 and 1.0, it indicates a strong and high correlation (Taylor, 1990). Regarding the table above, there is a positive and strong relationship between children's play skills and self-regulation skills (r=0.700 p <0.05). In addition, regarding children's play skills and the sub-dimensions of self-regulation skills, play skills have a positive and strong relationship with the Inhibitory Control (r =0.886 p <0.05), a positive and moderate relationship with the attention dimension (r =0.586 p <0.05) and a positive and moderate relationship with the working memory dimension (r =0.530 p <0.05).

Accordingly, there is a statistically significant relationship between children's self-regulation and play skills. It is inferred that children's self-regulation skills vary according to their play skill levels.

DISCUSSION AND CONCLUSIONS

Descriptive statistics, difference tests, and correlation analysis were performed on the data obtained from 388 children to reveal preschool children's self-regulation skills and play skills and the relationship between them. The review of the analysis showed that the children's self-regulation skills (3.99) and play skills (4.13) were high.

The fact that both skill levels are high shows the developmental similarities of children's self-regulation and play skills. In the study, the differentiation of these skills according to gender was tested, and although girls' mean scores were slightly higher than that of boys, this difference was not significant.

Some studies on children's self-regulation skills reported that girls' self-regulation skills were higher than boys (Raffaelli et al., 2005; Veijalainen et al., 2017). However, Gestsdottir et al. (2014) examined children's self-efficacy skills in Iceland, Germany, and France. They concluded that there was no gender-based difference in these countries except in Iceland. No gender differences were found in some studies conducted in Turkey (Fındık Tanrıbuyurdu & Güler Yıldız, 2012; Kara & Gönen 2015). Similarly, the studies on children's play skills showed no significant difference between the play skills of girls and boys (Aksoy & Yaralı, 2017). This inconsistency in the research results is thought to be due to the differences between cultures. İvrendi et al. (2019) conducted a study on the perceptions of play by Turkish and Norwegian teachers, mothers and children; they discovered that there were differences between the two cultures in defining play and using materials, which supports the view of intercultural differences. In addition, the gender-based score differences in this age group were minor; thus, they cannot cause differentiation (Matthews et al., 2009). As children grow, the differences in skills may increase with age (Montroy, 2014).

Studies show that children's self-regulation and play skills positively affect each other (e.g., İvrendi, 2016; Slot et al., 2017; Qu, 2010; Whitebread et al., 2009). A positive correlation was

revealed in the current study between children's play skills and self-regulation skills and their sub-dimensions. Play allows children to practice the regulation of their own and peers' emotions, behaviors, and thoughts (Timmons et al., 2021). Aksoy and Yaralı (2017) found a positive and significant relationship between the emotion regulation dimension, one of the sub-dimensions of self-regulation, and play skills. In their study addressing the relationship between play and self-regulation skills, Carlson, White, and Davis-Unger (2014) found a positive correlation. In another study, a strong, positive relationship was found between socio-dramatic play and self-regulation (Elias & Berk 2002). Slot et al. (2017) found a significant positive relationship between play and cognitive and emotional self-regulation skills. Studies have also shown that children who play more interactive plays have higher self-regulation skills (İvrendi, 2016; Whitebread et al., 2009; Vieillevoye & Nader-Grosbois, 2008). Koçyiğit et al. (2015) concluded that children's play skills decrease as their emotional regulation problems increase. These studies are consistent with the findings of the current study. However, Glover Gagnon et al. (2014) concluded that self-regulation does not significantly affect play behavior. Pierucci et al. (2014) found no relationship between pretended play and executive function skills. The results of these studies do not overlap with the results of the current study, which may be due to the children's differences.

In summary, revealing the strong relationship between play skills and self-regulation skills promotes strengthening these skills together. Play allows children to think about their emotions, develop cooperative behaviors, and provide self-control (Savina, 2014). Thus, it will be easier for educators to decide on the practices that support both skills. The resulting outcome will also be helpful for policymakers. It will contribute to the development and reinforcement of the MoNE curriculum on play and self-regulation skills in Turkey.

LIMITATIONS AND SUGGESTIONS

This study differs from other studies on children's self-regulation and plays skills in Turkey because it focuses directly on these skills and their relationship (Aksoy & Yaralı, 2017; İvrendi, 2016; Özdemir & Budak, 2019). The outcomes provided important information about the relationship between self-regulation and play skills. The results obtained from this study will contribute to increasing Turkish preschool teachers' awareness of the importance of self-regulation and play skills. By providing the necessary support and opportunity for children to play, teachers can scaffold their development and help to improve self-regulation skills (Timmons et al., 2016). This research has strengths; however, it has some limitations that must be accepted. A limitation of this quantitatively designed study is that the scale items were coded based on observations, lacking teacher-child interaction. The quality of teacher-child interaction is considered important in children's self-regulation development (Pianta & Stuhlman, 2004; Timmons et al., 2016). Different research models, which also consider the lack of teacher-child interaction, could be the focus of future research.

Another possible limitation is that although the children participating in the study were from various kindergartens and preschools, other factors such as socioeconomic status and family characteristics could also be important variables. Potential mediators or drivers in the relationship between self-regulation and play skills should be examined, and the effects of these variables should be revealed.

Another limitation of this study is the failure to benefit from the observations of the parents. With further research, children's self-regulation and play behaviors can be evaluated by including parental views, and the consistency of the results can be tested. The data obtained from this research can be enriched by evaluating the relationships between self-regulation and play behavior in children with a longitudinal study.

Conflicts of Interest: No potential conflict of interest was declared by the author.

Funding Details: No funding or grant was received from any institution or organization for this research.

CRediT Author Statement: It is a single-author article and the author The **author** confirms sole responsibility for the following: Methodology, data collection, data analyze, finding, discussion, conclusion.

Ethical Statement: The research was carried out in accordance with ethical rules and principles of Eskişehir Osmangazi University. Data were collected in the fall of 2021 and analyzed in the spring of 2022. Participants were kept confidential and analyzes were performed using the SPSS package program.

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