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EXAMINATION OF PRE-SCHOOL STUDENTS' SELF-REGULATION SKILLS

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Abstract

Children should have some essential characteristics to follow primary school education. Pre-schools prepare children for the first years of primary school by teaching them to attain the necessary skills. The main aim of this study was to explore the self-regulation skill levels of 4-6 age group students attending pre-school education institutions, according to various demographic variables. In this survey, a descriptive research method, one of the quantitative research methods, was used. The population is 10336 students who attend the public preschool education institutions in Küçükçekmece, İstanbul, and the sample consists of 203 students. The 'Personal Information Form' and the Development of the Self-Regulation Skills Scale for 4-6 Years Old Children (Teacher Form) were used in the research to collect data. One-way analysis of variance (ANOVA) and t-test were implemented to analyze the data. In terms of findings of the research, when teachers consider the self-regulation skills of 4-6 years old students as sub-dimensions, they stated that they had "mostly" obstructive control sub-dimension, "mostly" and "always" had sub-dimension of working memory. In general, it can be said that the children participating in the research mostly had self-regulation skills. Although significant differences existed between the self-regulation skills of preschool students in terms of gender, age, and class size, no significant difference was found according to whether the mothers working in a job or not.
Keywords: *self-regulation, self-regulation skills, preschool students, preschool teacher*

Introduction

Children meet formal education with preschool institutions. The preschool period is when the brain and synaptic connections show the fastest growth (MoNE [Turkish Ministry of National Education], 2013). Children start to direct their feelings and thoughts following the goals they set for themselves and begin using mental strategies to control activities during this period. These skills are the highest skills expected from children. They are termed as self-regulation skills (Bayındır, 2016). Therefore, supporting self-regulation skills during these early years can empower children's enthusiasm to solve the problems they encounter in education and their life, fight against various challenges, and find ways to cope with the stress they experience (Aydın & Ulutaş, 2017). Studies showed that students with self-regulated skills could manage their learning process, take steps to achieve success, and take more responsibilities (Zimmerman, 1989). People, who have self-regulation skills, are aware of their duties; they are successful people who can control and organize their lives in this direction (Aydın & Atalay Demir, 2015).

In today's society, education aims to educate each individual who can think fast and creatively. All these skills expected from individuals are self-regulation skills. The term "self-regulation" emerged with studies done by researchers such as Lecky (1945) and Thorne (1946) in psychology, and the concept of self-regulation is added to the literature. Pintrich defined

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self-regulation in the general sense as the individuals controlling and regulating their thoughts, emotions, impulses, attention, and behavior (as cited in Fındık Tanrıbuyurdu and Güler Yıldız, 2014). When it is accepted that individuals show their every behavior for a specific purpose, it may be derived that each individual has unique self-regulation skill; the only difference is that the self-regulation levels vary from one individual to another. According to Zimmerman (2000), self-regulation skills are present in each individual to a certain extent and are sometimes used more efficiently and sometimes at lower levels. For example, an overweight individual is aware of this, but breaking his/her diet and buying the food on the bakery display without restraint shows that an individual has a low level of self-regulation. On the other hand, someone with a sufficient and balanced diet who plans for activities and abide by these plans has high self-regulation skills.

Self-regulation skills are a system that includes certain aspects in terms of structure and function (Fındık Tanrıbuyurdu & Güler Yıldız, 2014). The literature review shows that self-regulation has several subdimensions: behavioral regulation, emotional regulation, and cognitive regulation. These subdimensions work as an interconnected system and affect each other (Ertürk Kara et al., 2018). It is known that all living beings regulate their systems, but sentience is what separates humans from other living people. Individuals attempt to self-regulate based on particular imaginations, long-term goals, and their circle's expectations. As in all other developmental areas, the development of self-regulation skills also increases over time. Self-regulation, which has a considerable impact on individuals' social relationships and life quality, starts with birth (Fındık Tanrıbuyurdu & Güler Yıldız, 2014). Even the crying of a baby to fulfill its needs is a basic form of self-regulation. Children begin exhibiting goal-directed behavior at age one. They can deliberately prefer to repeat actions that receive praise. At around age two, they start to delay their desires and control their behavior even if there are no adults to observe them; and around age three, they start trying to self-regulate according to changing circumstances (Aydın & Ulutaş; 2017). As they grow, they increase their tendency to refrain from thoughtless action and to act consciously. Self-regulation skills can be observed better with the brain's development in the following years (Fındık Tanrıbuyurdu & Güler Yıldız, 2014; Güler Yıldız et al., 2014).

It can be said that the child's ability to self-regulate in the early childhood period is the basis of self-regulation skills. Self-regulation skills gained in preschool education were observed to positively affect processes such as adapting to school, academic achievement, positive empathic abilities, and social adaptation. Besides, individuals with high self-regulation skills are less prone to negative situations like substance abuse, antisocial behavior, or eating disorders in their lives (Fındık Tanrıbuyurdu & Güler Yıldız, 2014).

The children mostly share their first experiences with their parents starting from infancy, and the behaviors adopted in the first years of their life leave permanent effects in the following years. The parents need to be aware of the importance of the connection between all of the behavioral characteristics of children, self-regulation skills in particular. Therefore, parents' attitudes to children have affected whether they are self-confident individuals who have high self-control (Üredi & Erden, 2009). Apart from parents, peers that children socially interact with and teachers in the preschool education institutions also influence the development of children's self-regulation skills.

The preschool period carries high importance because, during this period, children develop creative thinking, establish social relationships, and experience intense cognitive developments and learn the rules, cultures, and values of their society. Therefore, improving self-regulation skills of students in preschools after a family education is crucial. Children who cannot gain self-regulation skills experience problems in their relationships with their peers, have lower academic achievements, and carry negative views towards their school (Aras, 2015). According to Ergin and Yıldız (2014), children whose self-regulation skills cannot develop may

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have attitude, behavior, and adaptation problems throughout their lives. Preschool education in Turkey covers children who are 36-72 months old. The goals of the curriculum are to support social-emotional, language, cognitive, self-care, and motor development and preparing children for primary education (MoNE, 2013). However, a child who does not have self-regulation skills cannot determine the goals that would carry him/her to success. In turn, it cannot be possible for him/her to achieve academic success and determine what is right from a behavioral perspective. Because of these, self-regulation skills must be supported in all levels of education, especially by preschool institutions. Eker and Arsal (2014) emphasized that those environments that are designed towards the development of self-regulation skills increase academic achievement in every level of education. According to Zimmerman (2002), students who have self-regulation strategies are more successful academically because they can motivate themselves. The development of self-regulation skills can be achieved with environmental factors and support from the parents and teachers.

Research Problem

Studies showed us that most developmental characteristics are gained during the preschool period. It can be called that providing children exercises that help their self-regulation skills during this time is crucial for their development (Ertürk Kara et al., 2018). Self-regulation skills are gained and improved firstly with the support of the family and then in the school; parental and teacher attitudes and specific education programs that will increase children's self-regulation are needed in the early period (Aydın & Ulutaş, 2017). In this regard, arranging the living environment in homes and learning environments in schools for children and adopting specific attitudes towards their development carries great importance. One of the factors that give this study a unique value is that it takes place in a district that we consider represents Istanbul the best and includes different age groups. Though the number of studies on self-regulation has increased in recent years, studies focusing on the self-regulation skills of preschool children in Turkey are still not sufficient (Bayındır, 2016; Sezgin & Demiriz, 2016).

The research intended to find the level of self-regulation skills of four to six years old preschool students and wanted to explain whether their gender, age, mothers' employment status, and class size affected these skills.

Research Focus

There are various studies done to know whether the gender of the students affected their self-regulation skills; the results are contradictory. In the research done by Kırkıç et al., there was no significant difference in self-regulation levels of primary school students either they were boys or girls (Kırkıç et al., 2020). Whereas in Bayındır's study on measuring the self-regulation skills of children who were between 48-60 months old, it was found that there were meaningful differences in gender (2016). Female children's self-regulation skills were significantly higher than male children had. Atabey (2018) discovered that female students had higher self-regulation skills than male ones due to scale in the study on the social-emotional competency of preschool children. However, in another study, no significant difference between children's gender and self-regulation skill levels was found (Fındık Tanrıbuyurdu & Güler Yıldız, 2014)

Bayındır found that the level of self-regulation skills of 48-60 months children had meaningful differences in the age variable (2016). Similarly, Atmaca et al. found that children who were 61 months old and over had higher self-regulation skills than those between 48 and 60 months old in her study on determining the self-regulation and social skill levels of preschool children (Atmaca et al., 2020). However, there was no significant difference between primary school students' age and their self-regulation skill levels (Kırkıç et al., 2020). It has

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been established that a significant difference existed between the self-regulation skill levels and ages of preschool students. A child who grows in age, has increased self-regulation skills as well (Fındık Tanrıbuyurdu & Güler Yıldız, 2014).

Families, which are the first education environments, have great importance in developing their self-regulation skills. Parents can nurture these skills by being a model for the children and providing feedback on their behavior, transforming the physical environment at home in terms of the child's abilities and making new arrangements as the child's skills can nourish self-regulation skills. Parent attitudes that encourage self-directed child behaviors can ensure the children to be more competent (Ponitz et al., 2009). Therefore, the employment status of mothers is essential. Temiz (2019) has concluded that children with working mothers have higher self-regulation skills than those with unemployed mothers.

Güler Yıldız et al. (2014) has conducted his study on characteristics of interaction between the teacher, the child, and its relationship with the children's self-regulation skills. He found that there was a significant relationship between the two. According to the study, the increased attention and control levels of children in the class and their positive attitudes/ behaviors positively correlated with the communication that the teacher established with the children.

The schools are places where they take most of the children's time beside their families. Teachers should evaluate self-regulation skills, and supportive teaching methods should be utilized for these skills in schools. Children must be given a chance to plan and implement their learning processes; moreover, teachers should provide feedback to children and provide opportunities for them to make amends to increase their self-regulation skills. Circle time activities with children also positively impact children's self-regulation skills (Aydın & Ulutaş, 2017). Furthermore, actions that have open-ended goals, multiple phases provide problem posing and solution-seeking opportunities to support self-regulation development as well (Sezgin, 2016). Also, it is known that providing children opportunities to make criticisms during activity times and to evaluate their learning processes increase self-regulation skills (Uygun et al., 2014). Becker et al. (2014), in their study they conducted to determine the relationship of energetic games with self-regulation and academic achievement, have reached the conclusion that children playing active games have higher self-regulation skills than those who do not. Pazarbaşı and Esin Cantez (2019) stated a positive correlation between the children's relationship with their peers and their self-regulation skills.

Research Aim and Research Questions

The number of studies aiming to measure the level of children's self-regulation skills is rapidly increasing. The fact that self-regulation skills affect academic achievement and other early childhood skills is one reason for the increase in research. Therefore, the research aimed to examine the self-regulation skills of 4-6 preschool-age students according to various demographic variables.

The research questions were presented below:

1. What is the level of self-regulation skills of preschool 4-6 age students in terms of teacher opinions?
2. Is there a meaningful difference between children's self-regulation skills and gender?
3. Is there a meaningful difference between children's self-regulation skills and age?
4. Is there a meaningful difference between children's self-regulation skills and their mother's employment status?
5. Is there a meaningful difference between children's self-regulation skills and their class size?

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Research Methodology

General Background

The research type was a survey. Survey methods are one of the quantitative methods that portray a past or current situation as it is. Individuals, events, or objects that are the subject of the study are attempted to be explained without changing the existing circumstances; they are not interfered with (Karasar, 2017). The research was conducted in the schools governed by Küçükçekmece Directorate of National Education in İstanbul, Turkey. The data were collected in the fall semester of 2019-2020.

Sample

The population of the research consisted of 10336 preschool students in public independent preschool institutions and preschool classes of public primary, middle and high schools in the Küçükçekmece district of Istanbul in the 2019-2020 school year. The sample size was calculated for 10,336 students with a 5% margin of error and a 95% confidence interval for sampling. The sample size was determined as 371 (Karasar, 2017; Raosoft, 2019). However, participation approval was obtained for 203 students. The fact that the sample was 203 instead of 371increased the margin of error in the study from 5.0% to 6.8%. For sampling, 203 students were reached and included in the study. The sample was chosen with a simple random sampling method (Karasar, 2017).

The frequency and percentage distributions for demographic variables of gender, age, mother employment status, and number of children in the class have been given in the tables.

Table 1
Frequency and Percentage Values for Children's Demographic Variables

		f	%
Gender	Girl	103	50.7
	Boy	100	49.3
	Total	203	100.0
Age	4 Years	39	19.2
	5 Years	90	44.3
	6 Years	74	36.5
	Total	203	100.0
Mother Employment Status	Unemployed	158	77.8
	Employed	45	22.2
	Total	203	100.0
Class Sizes	Between 17-20	108	53.2
	Between 21-24	95	46.8
	Total	203	100

As seen in Table 1, 103 (50.7%) of the children are female, and 100 (49.3%) are male and 39 (19.2%) of the children in the study are 4-year-old, 90 (44.3%) are 5-year-old, and 74 (36.5%) are 6-year-old. Table 1 also shows that 158 (77.8%) of children's mothers are

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unemployed, and 45 (22.2%) are employed, and 108 children(53.2%) are taught in a classroom which has a size of 17-20 class size and 95 of them are the students of 21-24 class size. For the students who were selected randomly for the research, consent was obtained from their parents. If parents agreed to be in the research, then they were included.

Instrument and Procedures

The data-gathering tool in the study consisted of two parts. In the first part, the aim of the research, confidentiality, and scientific-only purpose of the answers were explained. Furthermore, information about children's gender, age, employment statuses of their mothers, and class sizes were asked.

The second part consisted of three subdimensions and 22 items; namely, "Self-Regulation Skills Scale for 4-6 Years Old Children (Teachers' Form)" developed by İvrendi and Erol (2018), "Inhibitory Control" subdimension in items 1,2,3,4,5,6,7 and 8, "Attention" in items 9,10,11,12,13,14,15,16 and 17, and "Working Memory" in items 18,19,20,21 and 22. A 22-item, 3-factor (attention, working memory, and inhibitory control) structure was obtained, which explained 63% of the total variance according to AFA results. The structure's fit indices determined based on DFA results were sufficient (χ^2 /*df* = 1.28, RMSEA = .046, SRMR = .07). The survey's total item correlation ranged between .41 and .77. According to the results of the t-test conducted on the scale items' 27% lower/upper group discrimination, t values range between 7.36 and 17.61 (*df*=169, p<.01). The internal consistency coefficient was .94 for the scaling tool and ranged between .91 and .87 for the subdimensions.

The Cronbach alpha reliability coefficient is .94 for the inhibitory control subdimension. Moreover, it is .95 for the attention subdimension, .93 for the working memory subdimension, and .96 for the total of the scale. It can be said that the self-regulation skills scale for 4-6 years old children is reliable and appropriate for this study based on these results.

Data Analysis

Scales used for the research were 5-point Likert scales; values between 1-1.79 range are specified as "never," 1.80-2.59 range is "rarely," 2.60-3.39 range is "occasionally," 3.40-4.19 range is "frequently" and 4.20-5.00 range is "always." The scales were aligned from 1 to 203. Skewness and kurtosis values were determined in ±1.5 field according to the normality test, which was conducted for deciding on the analyses and for determining if the data distribution was normal. According to Tabachnick and Fidell (2013), this value being within the range of ±1.5 is sufficient for normality; thus, the distributions were considered normal distributions. Children's self-regulation scale and subdimension scores based on teacher opinions were subjected to one-way analysis of variance (ANOVA) to determine whether they differed according to the student's age. LSD test was utilized to determine between which groups the differentiations were when there is one. For independent samples, a t-test was used to find if the results varied according to the student's gender, mother's employment status, and the number of students in the teacher's class.

Research Results

Findings on Children's Self-Regulation Skill Levels

Findings from the question "What are the self-regulation skill levels of 4-6-year-old preschool students based on teacher opinions", the first question of the research, are given in Table 2.

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Table 2
Arithmetic Mean, Standard Deviation and Standard Error Values of the Self-Regulation Skills Scale for 4-6 Years Old Children and its Subdimensions

Subdimensions	*N*	$\bar{x}$	*SD*	*SEM*
Inhibitory Control	203	4.07	.75	.05
Attention	203	4.11	.73	.05
Working Memory	203	4.39	.64	.04
Total Scale	203	4.16	.63	.04

In Table 1, it can be seen that the self-regulation skills of pre-school students are developed well. The mean scores were found as =4.07 for the "inhibitory control" subdimension; =4.11for the "attention" subdimension; =4.39 for the "working memory subdimension and =4.16 for the total scale.

Findings on the Gender Variable

Independent samples t-test was conducted to determine whether there was a meaningful difference in self-regulation skill levels of 4-6 years old children based on the gender variable, and the results are given in Table 3.

Table 3
t-Test Results for 4-6 Years Old Children's Self-Regulation Skills Scale and Subdimension Scores based on the Gender Variable Groups

Subdimensions	Groups	*N*	$\bar{x}$	*SD*	*t* test		
					t	*df*	*p*
Inhibitory Control	Female	103	4.12	.75	1.075	201	.284
	Male	100	4.01	.76			
Attention	Female	103	4.28	.69	3.396	201	.001
	Male	100	3.94	.73			
Working Memory	Female	103	4.44	.62	1.153	201	.250
	Male	100	4.34	.65			
Total Scale	Female	103	4.26	.61	2.336	201	.020
	Male	100	4.06	.63			

As seen in Table 3, results of the t-test show that there are meaningful differences in female students' favor in the attention subdimension $[t_{(201)}= 3.396; p<.01]$ and total scale scores $[t_{(201)}= 2.236; p<.05]$. Based on the findings, female children have higher general self-regulation and attention skills than male children have. However, the inhibitory control $[t_{(201)}= 1.075; p>.05]$ and working memory $[t_{(201)}= 1.153; p>.05]$ subdimensions' independent sample t-test results found no meaningful difference between the two groups.

Findings on the Age Variable

One-way analysis of variance (ANOVA) was conducted on the data obtained from the survey to find if there was a meaningful difference between the self-regulation skills of children based on the age variable, and the results are given in Table 4.3.

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Table 4

One-Way Analysis of Variance (ANOVA) Results of the Self-Regulation Skills Scale for 4-6 Years Old Children and its Subdimension Scores Based on the Age Variable

		N	Mean *SD*	Values	ANOVA Results					
Subdimension	**Group**	$\bar{x}$		*SD*	**Variance**	***SS***	***df***	**MS**	***F***	***p***
	4 Years	39	3.73	.81	Intergroup	5.91	2	2.96		
Inhibitory Control	5 Years	90	4.19	.68	Intragroup	108.97	200	.55	5.423	.005
	6 Years	74	4.10	.76	Total	114.88	202			
	4 Years	39	3.49	.61	Intergroup	18.65	2	9.325		
Attention	5 Years	90	4.25	.58	Intragroup	89.73	200	.449	20.785	.001
	6 Years	74	4.28	.79	Total	108.38	202			
	4 Years	39	3.83	.58	Intergroup	15.49	2	7.746		
Working Memory	5 Years	90	4.52	.56	Intragroup	66.02	200	.330	23.468	.001
	6 Years	74	4.53	.60	Total	81.51	202			
	4 Years	39	3.65	.60	Intergroup	12.40	2	6.199		
Total Scale	5 Years	90	4.29	.53	Intragroup	67.49	200	.337	18.371	.001
	6 Years	74	4.27	.63	Total	79.89	202			

In Table 4, the results of one-way analysis of variance (ANOVA) conducted to find if there was a meaningful difference in the mean scores of the scale based on the age variable given. It shows that there were significant differences in all of the inhibitory control [$F_{(2\text{-}200)}$ = 5.423; p<.01], attention [$F_{(2\text{-}200)}$ = 20.785; p<.01] and working memory [$F_{(2\text{-}200)}$ = 23.468; p<.01] subdimensions and in the total of the scale [$F_{(2\text{-}200)}$ = 18.371; p<.01]. LSD multiple comparison test was used to determine the groups which encompassed the differences, and the results are given in Table 5

Table 5

LSD Test Results for Self-Regulation Skills Scale for 4-6 Years Old Children and its Subdimension Scores Based on the Age Variable

Score	**Groups (i)**	**Groups (j)**	$\bar{x}_i - \bar{x}_j$	**SEM**	*p*
Inhibitory Control	4 Years	5 Years	-.46	.14	.001
		6 Years	-.37	.15	.002
Attention	4 Years	5 Years	-.76	.13	.001
		6 Years	-.78	.13	.001
Working Memory	4 Years	5 Years	-.70	.11	.001
		6 Years	-.70	.11	.001
Total Scale	4 Years	5 Years	-.64	.11	.001
		6 Years	-.62	.11	.001

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Table 5 shows the results of the post hoc LSD test conducted to determine which groups had the difference between the inhibitory control, attention, and working memory subdimensions and the total scale mean scores based on the age variable arise. The discrepancies between three subdimensions and the scale appeared in favor of 5 and 6 years of age (p<.01). The difference means that 4-year-old children had lower results in terms of inhibitory control, attention, working memory, and general self-regulation skills than 5 and 6- year- old children.

Findings on the Employment Status of the Mother

The mother's employment status variable, whether it causes a significant difference in the self-regulation skills of children, an independent sample t-test was conducted, and the results are shown in Table 6.

Table 6
t-Test results of Self-Regulation Skills Scale for 4-6 Years Old Children and its Subdimension Scores based on the Mother's Employment Status Variable

Subdimensions	Groups	*N*	$\bar{x}$	*SD*	*t* test		
					t	*df*	
Inhibitory Control	Unemployed	158	4.06	.76	-.129	201	.898
	Employed	45	4.08	.74			
Attention	Unemployed	158	4.15	.72	1.235	201	.218
	Employed	45	4.00	.78			
Working Memory	Unemployed	158	4.42	.65	1.023	201	.308
	Employed	45	4.31	.59			
Total Scale	Unemployed	158	4.18	.63	.765	201	.445
	Employed	45	4.10	.64			

Table 6 shows no meaningful difference in the self-regulation scale mean scores between the groups based on the mother's employment status variable. The self-regulation skills of 4-6 years old children do not meaningfully differ based on their mother's employment.

Findings on the Class Size Variable

An independent sample t-test was conducted to check whether the class size variable of children causes a significant difference in the self-regulation skills of children, and the results are shown in Table 7.

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Table 7
t-Test results of Self-Regulation Skills Scale for 4-6- Year-Old Children and its Subdimension Scores based on the Class Size Variable

Subdimensions	Groups	*N*	$\bar{x}$	*SD*	*t* test		
					t	*df*	*p*
Inhibitory Control	Between 17-20	108	3.93	.81	-2.736	201	.007
	Between 21-24	95	4.22	.65			
Attention	Between 17-20	108	3.94	.77	-3.781	201	.001
	Between 21-24	95	4.31	.63			
Working Memory	Between 17-20	108	4.27	.68	-2.873	201	.004
	Between 21-24	95	4.53	.55			
Total Scale	Between 17-20	108	4.01	.67	-3.677	201	.001
	Between 21-24	95	4.33	.54			

The t-test results on Table 7 show that there was a meaningful difference in the mean scores of inhibitory control [$t_{(201)}$= -2.736; p<.01], attention [$t_{(201)}$= -3.781; p<.01] and working memory subdimensions [$t_{(201)}$= -2.873; p<.01] and the total scale [$t_{(201)}$= -3.677; p<.01] in favor of the class sizes between 21-24. According to the results, the self-regulation skills of children in classes with 21-24 students in all subdimensions and the total scale were higher than those in classes with 17-20 students.

Discussion

The mean scores were found as =4.07 for the "inhibitory control" subdimension; =4.11for the "attention" subdimension; =4.39 for the "working memory subdimension and =4.16 for the total scale. Based on these findings, teachers have stated that 4-6 years old children frequently (3.40-4.19 range is "frequently") have inhibitory control and attention subdimensions. Whereas, 4-6 years old children always (4.20-5.00 range is "always") have working memory subdimension in terms of their teachers' opinions. However, teachers have stated that 4-6 years old children frequently (3.40-4.19 range is "frequently") have the general self-regulation skills. These results showed that the self-regulation skills of preschool students were generally high. These findings are essential because after the preschool, children attend primary school, and the research done by Connor et al. (2010) showed that the first-grade students with high SR skills had achieved higher levels of reading and vocabulary skills. Also, Kuşdemir Kayıran and Doğanay found that the higher the self-regulation skill level, the higher the students' reading comprehension level (2017).

Therefore, to determine the level of SR skills of preschool students lets teachers make their students in the primary school. The fact that students' self-regulation skills affect the achievement in primary school may provide preschool teachers with the opportunity to correct and improve their students' SR skills when they know their students' SR skills before they start primary school, that is, before the preschool education program is complete. The results also revealed that students that reported high in self-regulation were more likely to report high in cognitive strategy use. Adesola and Li found that students with high self-regulation skills used cognitive strategy more (Adesola & Li, 2018).

There was a meaningful difference in children's self-regulation skills based on their gender. This difference was determined in favor of female children rather than male children.

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This finding is also supported in the study by Karakurt (2019) and (Daggul & Işık Gürşımşek, 2019). The reason that the self-regulation level of girls is higher than self-regulation skills of boys may be the cultural values that they have (Karakurt, 2019). For instance, studies in France and Germany did not find any meaningful difference in children's self-regulation skills based on their gender (Gostsdottir et al., 2014; as cited in Şahin, 2019). These studies are basic examples of the effect of culture on gender. These differences may be because girls mainly take their mothers as examples, spend most of their time at home with their mothers. At the same time, boys are raised more independently and exhibit more impulsive behaviors.

Furthermore, the difference in the self-regulation skills of preschool students in terms of gender is also related to the development of girls. The development of girls before the age of seven may be faster than boys. In the primary school age, this difference gradually decreases, and the difference between boys and girls decreases. In the study conducted by Kırkıç et al., no significant difference was found between primary school students' self-regulation skills in terms of gender Kırkıç et al. (2020). Alejandro et al. (2016) revealed that in terms of behavioral scores and self-regulation ratings done by teachers, girls possessed more self-regulation skills than boys in a study conducted in California with 4-6 years old children. In another study done in Iceland and Germany, the self-regulation skills of students according to their gender were different in both countries (Suchodoletz et al., 2013). It would be beneficial to close this difference before they start primary school, and if there is a difference against boys when primary school starts, teachers should make an effort to correct it in primary school.

It is essential for students to have self-regulation skills at an early age and to develop these skills as they get older and older, for students to have a successful school life. Birgisdóttir et al. found that students must have self-regulation at an early age for their future success (2015). Self-regulation skills meaningfully differentiate based on the children's age variable. 4-year-old children have lower self-regulation levels than 5- and 6- years old children. Fındık Tanrıbuyurdu and Güler Yıldız (2014) stated that since children's experience increased together with their age, their self-regulation skills also increased in proportion. The research done supports this result. However, it has the opposite results of the study done by Kırkıç et al. (2020).

There were no meaningful differences found in the study based on the employment status of the mothers. Temiz (2019) has concluded that children with working mothers had higher self-regulation skills than unemployed mothers' children. Different samples may be the reason for this discrepancy. Although Emre at al. (2019) found a relationship between the communication levels of parents and the self-regulation skills of their children, it was deficient. Büyüktaşkapu Soydan and Akalin proposed that new intervention programs should be designed to strengthen the communication of parent and child interaction because mothers behave more positively if their children have developed self-regulation skills (2020).

The results are in favor of children in more crowded classes in terms of class size. This result may be interpreted as more opportunities to establish social communication, and peer learning occurs more frequently in crowded classes. Pazarbaşı and Esin Cantez (2019) stated a positive correlation between the children's relationship with their peers and their self-regulation skills. However, McDonald Connor et al. determined that individual training significantly improved the self-regulation skills of primary school students instead of teaching in classes with a large number of students (2016). Moreover, Cadima et al. explored that the better the teacher-student relationship in the classroom environment, the better the development of students' self-regulation. However, in this study, the level of self-regulation of students was found to be higher in crowded classrooms where the teacher-student relationship was likely to be less effective (2016).

Despite the level of self-regulated skills of preschool students in this research, Şen et al. (2015) stated that the self-regulation skills of students could be raised by implementing

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specific methods and techniques during the instruction. McDonald Connor et al. suggested that self-regulation during the early school years may be malleable and that additional emphasis on aspects of the classroom environment that promote self-regulation may help to ensure students' school success and higher levels of academic achievement overall (2016).

In this study, the level of self-regulation skills of the preschool students and how this level changed according to gender, age, mother's employment status, and the class size were examined. Higher self-regulation skills of students compared to previous studies can be considered as an indicator that students will be more successful in their primary school life. However, the fact that boys' self-regulation skills are lower than girls requires male students to be supported in primary school. Being aware of this situation, it is likely that primary school teachers should consider the levels of male students in both teaching and gaining self-regulation skills. It is predicted that self-regulation skills will develop as age progresses. In this study, as the age of the students increased, their self-regulation skill levels also increased. It is an essential issue that primary school teachers should also monitor whether their self-regulation skills increase as the age grows in the preschool period, and they should be evaluated in terms of providing support to the students in need on time. The employment status of the mothers does not make a difference in the self-regulation skills of the students. Therefore, it can be investigated how mothers' communication styles with children affect children's self-regulation skills rather than whether mothers are employed or not. The higher self-regulation skills of the students studying in crowded classes can be attributed to their higher peer interaction with their friends. However, in future studies, there is a need for research on how the number of students in the classroom changes the social interaction between students, how it affects teacher-student mutual communication, and as a result of these interactions, how students' self-regulation skills change.

Conclusions and Implications

Children have sufficiently high self-regulation scores; however, there are also those with low ratings. Arrangements at home and in the class can be made to support the self-regulation skills of these children within the education system. Learning environments can be rearranged in this direction. Girls' self-regulation skills are developed more than male students' self-regulation skills, and it is necessary to conduct new research to improve male students' self-regulation skills. The fact that boys' self-regulation skills are lower than female students' self-regulation skills may be related to their development. For this reason, it can be researched how to improve self-regulation skills by considering the development periods of male preschool students.

As the age of the students increases, their self-regulation skill levels also increase. Self-regulation skills of preschool children aged five and six have been higher than self-regulation skills of 4-year-old students parallel to age development. However, the absence of any difference between the five and six age group students can be considered as a research topic for future studies. It has been determined that the mother being a housewife or working at a job does not affect the level of self-regulation skills of preschool children. This result shows that working mothers can contribute to the development of their children like non-working mothers. However, it may also be a question of why children whose mothers are housewives do not have more self-regulation skills. Their mothers do not work in a job, and therefore they are supposed to have more time for their children.

The self-regulation skills of the students whose class size is between 21-24 people are higher than the self-regulation skills of the students studying in a class size between 17-20. This result can be explained by the fact that they interact more with their peers. However, it is recommended to research according to different class sizes where self-regulation skill levels can develop best.

This study evaluates children's self-regulation skills based on teacher opinions. In the future, similar studies may be conducted in terms of parent opinions. This research was limited to public preschools. New research may include private and public schools together. In this research, it was found that self-regulation levels were different in favor of girls.

It was also found that children educated in small-sized classrooms had higher levels of self-regulation skills; therefore, to make children gain self-regulation skills, the class sizes should not exceed 20 students.

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