Self-Regulation in Child Development: Investigation of Preschool Education Duration and Teachers' Self-Regulation Levels [*]

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Abstract

This study was conducted to examine the self-regulation of teachers working in preschool education institutions, their practices to support self-regulated learning, and the relationship between preschool education status and children's self-regulation skills. The sample of this study, in which the relational survey model, one of the quantitative research methods, was used, consisted of 316 teachers and 213 children working in primary school preschool classes and independent kindergartens affiliated with the Ministry of National Education in Mersin province. The demographic information of the participants was collected through the Demographic Information Form prepared by the researcher. Teachers' self-regulation was assessed with the "Self-Regulation Scale", while the practices they used to support self-regulated learning were assessed with the "Scale for Evaluating Preschool Teachers' Practices to Support Self-Regulated Learning" (SC-SRLS). Children's self-regulation skills were assessed with the "Preschool Self-Regulation Scale" (PSRS), which requires face-to-face practice with each child. As a result of the study, it was found that children's self-regulation skills differed significantly in favor of children older than 68 months. In addition, it was determined that children's self-regulation and emotion regulation differed in favor of girls according to gender. In the study, the self-regulation skills of children with more than one year of preschool education were significantly higher than those of children with less preschool education. As a result of the study, it was determined that there was a positive and significant relationship between teachers' self-regulation and classroom practices to support self-regulated learning. In addition, there was a positive and significant relationship between teachers' self-regulation and the practices they used to support self-regulated learning and children's self-regulation skills.

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Introduction

There have been many studies on self-regulation in recent years, and the definition and scope of the concept have been focused on. The common behavioral indicators expressed in these definitions are listed as the individual's ability to control and regulate his/her emotions, to postpone or give up his/her behaviors and desires, to comply with social rules, to focus on the goal and to stay focused until the goal is achieved (Bauer & Baumeister, 2011). The concept of self-regulation can be used synonymously or confused with some other concepts. One way to resolve the complexity of defining the concept is to see the physiological, social-emotional and cognitive aspects of self-regulation and to elaborate on the confused concepts (Blair & Raver, 2012). The most commonly confused concept is self-control. However, self-regulation has broader meanings than self-control, which refers to the controlled abandonment of an action tendency to achieve another goal (Carver & Scheier, 2016). Self-control can be defined as delaying the satisfaction process or trying to block our thoughts about performing the behavior (Mischel, 2014). Self-regulation, on the other hand, involves developing behaviors by believing in a goal-oriented behavior that is internally controlled. It requires constant pursuit of the goal and self-evaluation of the individual (Carver & Scheier, 2016). Another concept that is often confused with the concept of self-regulation is conformity. In the concept of conformity, children may show desired behaviors because they are afraid of being punished or they would just like to get rewarded. Self-regulation, on the other hand, is a process based on showing behavior by believing that the results are meaningful (Shanker, 2013). As a result, self-regulation refers to a broader concept that includes self-control processes, and adaptive processes that include volitional cognitive and behavioral processes as a result of mental, motivational and emotional arousal (Blair & Diamond, 2008). In this respect, self-regulation emerges through the coordinated operation of both emotional regulation skills and executive function skills including working memory, inhibitory control and cognitive flexibility by using cognitive and behavioral strategies (Lawrence, 2015). In other words, self-regulation is the ability to comply with social rules, control and regulate emotions, postpone or give up one's behaviors and desires, focus on the goal and stay focused until the goal is achieved (Bauer & Baumeister, 2011). Self-regulated learning, on the other hand, supports the constructivist and student-centered approach in educational environments and indicates that children are responsible for their learning (Scott & Berman, 2013).

Children with well-developed self-regulation skills do not have problems with focusing, are in control of their impulses, can control their emotions, can foresee the effects of their behavior on others, and show improvement in empathy. As a result of these characteristics, they are ready to learn in educational environments. They are able to focus, regulate their emotions, control impulses, evaluate the consequences of a situation, understand how others feel, understand how their behavior affects others, and empathize (Neuenschwander, Röthlisberger, Cimeli, & Roebers, 2012; Shanker, 2015). Since many studies point to the role of self-regulation in development, research on supporting the development of self-regulation has increased recently (Duru & Balkıs, 2014; Sektnan, McClelland, Acock, & Morrison, 2010; Williford, Whittaker, Vitiello, & Downer, 2013).

Preschool is the period of the most rapid changes in a child's brain development. In this golden age, countless neuronal connections are made every second. These rapid forward changes are important in laying the developmental foundations for later in life (Cherrie, 2017; Ryan, Kuhl, & Decy, 1997). Since self-regulation is governed by the right prefrontal cortex, which is responsible for sensory and motor nerves in the brain, it is thought that supporting the self-regulation process during this period will be of key importance for later periods of life (Montroy, 2014; Schmitt, Pratt, & McClelland, 2014). For example, when the baby is exposed to a high-frequency sound, the baby's behavior of searching for his/her pacifier or taking his/her finger to his/her mouth and sucking it is an indicator of the baby's self-regulation, that is, the baby's development of self-regulation against the stimulus coming from the environment (Florez, 2011). The caregiver's contact with the baby by eye, gesture and touch, and meeting the baby's needs when the baby cries are the first exercises for the development of control, as well as providing a safe environment that is important in the development of self-regulation (Posner &

Rothbart, 2009; Shanker, 2013). Successful acquisition of self-regulation is linked to biological and genetic predisposition as well as to the social environment provided by other people (Fonagy & Target, 2002; Kim & Konchanska, 2012; Zimmerman, 2002). Neuroscientists who defend the importance of biological development in self-regulation also emphasize the encouraging role of environmental factors in the formation and development of self-regulation. They state that the neural connections in the human brain are prepared to support self-regulation through growth as a result of biological and genetic factors, but that environmental stimuli should contribute to this process (Shanker, 2013).

Studies show that self-regulation acquired in early childhood has an impact on skills such as school readiness, academic achievement, social skills development, and empathy throughout the rest of life (McClelland & Tominey, 2011; Montroy, Bowles, & Skibbe, 2016; Riva & Ryan, 2015). At the beginning of scholar life, the teacher and preschool education also participate in sharing the responsibility for the child's self-regulation development as an environmental factor. While self-regulation progresses easily in children who have had a more structured preschool education experience in this period, children who have not had enough experience have difficulty (McClelland & Tominey, 2011). In fact, the child's self-regulation development is a sought-after feature not only in terms of the child's achievements but also in terms of the efficiency of the educational environment in the classroom (Bonnett & Maich, 2014). Because children who cannot display self-regulation skills in the classroom environment can negatively affect the educational process both for themselves and others academically, socially and emotionally (Smith, 2017). For this reason, teachers should develop an understanding that supports children to manage their learning processes in the development of self-regulation skills starting from preschool education environments (Degol & Bachman, 2015). However, when we look at the studies, it is seen that teaching with self-regulated learning strategies is rarely applied in classrooms (Cleary & Kitsantas, 2017; Dignath & Büttner 2018; Spruce & Bol, 2015).

Especially in the last 10 years, a large number of studies have been conducted on self-regulation skills in the preschool period in a wide range of subjects such as the development of self-regulation, its effect on school readiness and school success, its effect on various developmental areas, and its relationship with parental attitudes (Blair & Raver, 2015; Buzza & Allinotte, 2013; Jaramillo, Rendón, Muñoz, Weis, & Trommsdorff, 2017; Ludwig, Haindl, Laufs, & Rauch, 2016; Steinbach & Stoeger, 2016; Xu & Ko, 2019). The effect of the teacher and the education provided on the child's self-regulation development has been the subject of studies in recent years, especially as the implementation of the intervention program and the comparison of its results (Dörr & Perels, 2019; Merritt, Wanless, Rimm-Kaufman, Cameron, & Peugh, 2012; Perry, 2015; Willis, 2015). In these studies, no research examining the relationship between teachers' self-regulation, practices and preschool education and children's self-regulation skills was found. It is thought that the results of the current research are important to see the relationship between teachers and preschool education and children's self-regulation.

The purpose of this study is to examine the relationship between self-regulation, practices to support self-regulated learning, and the duration of preschool education with children's self-regulation skills. In line with this general purpose, answers to the following research questions were sought.

1. Is there a significant difference between children's age, gender and duration of preschool education and self-regulation skills?

2. Is there a significant relationship between teachers' self-regulation and their practices to support self-regulated learning?

3. Is there a significant relationship between teachers' self-regulation and practices to support self-regulated learning and children's self-regulation?

Method

Research Model

The relational survey model, one of the quantitative research methods, was used in the study. This model determines the coexistence and degree of changes between two or more variables through studies conducted on a sample selected from a population (Creswell, 2013). This model was selected to examine the relationship between teacher self-regulation and practices of supporting self-regulated learning and children's self-regulation and to determine whether self-regulation differs according to some variables (gender, age, and years of education).

Population and Sample

The population of the study consisted of kindergarten and preschool teachers (approximately 1700) working under the Ministry of National Education in Mersin province in Turkey and the children in their classrooms. All procedures regarding the study were approved by the Çukurova University Ethics Committee (E-95704281-604.02.02-43142). For this purpose, in order to reach a large number of participants, the participation of two or more preschool teachers working in the institution was determined as a criterion. A total of 642 teachers were reached, but data could be obtained from 388 teachers. The scales received from 388 teachers participating in the study were analyzed and it was determined that 316 teachers had valid scale forms. The remaining scales were not included in the study due to lack of items and their multiple markings. Thanks to the scales obtained in this first stage, data on the levels of teachers' self-regulation and practices supporting self-regulated learning were obtained. The scores obtained from the two scales applied to the teachers were calculated in the SPSS program, and a total of 12 teachers were identified, six teachers with the lowest (134-202) and six teachers with the highest (280-298) scores. The second data collection process was carried out with 57-76-month-old children in the classes of the identified teachers. The second data collection process was completed with one-on-one interviews with a total of 213 children. Information about the children is given in Table 1.

Table 1. Demographic Information on Children

Variables		f	%
Gender	Girl	98	46.0
	Boy	115	54.0
Age	57-68 month	106	49.8
	More than 68 months	107	50.2
Years of education	1 year	115	54.0
	More than 1 year	98	46.0
	Total	213	100.0

According to Table 1, 46% of the 213 children participating in the study were girls and 54% were boys; 49.8% were 57-68 months old, 50.2% were older than 68 months; 54% had received preschool education for one year, and 46% had received preschool education for more than one year. Information about the teachers is given in Table 2.

Table 2. Demographic Information on Teacher

Variables		f	%
Gender	Female	308	97.5
	Male	8	2.5
Age	34 and less	98	31.0
	35-39	112	35.4
	40 and more	106	33.5
Education level	Associate degree	9	2.8
	Bachelor's degree	292	92.4
	Postgraduate	15	4.7
Seniority level	10 years and less	116	36.7
	11-14 years	96	30.4
	15 and more	104	32.9
	Total	316	100.0

According to Table 2, 97.5% of the 316 teachers participating in the study were female and 2.5% were male. 31% of the teachers were 34 years old or younger, 35.4% were 35-39 years old, and 33.5% were 40 years old or older. In addition, 2.8% of the teachers graduated with an associate degree, 92.4% with a bachelor's degree, and 4.7% with a postgraduate. 36.7% of the teachers have 10 years or less, 30.4% have 11-14 years of experience, and 32.9% have 15 years or more of experience.

Data Collection Tools

A demographic information form prepared by the researcher was used to collect data from children and teachers. The Preschool Self-Regulation Scale was used to collect data from children; the Self-Regulation Scale and the Scale for Assessing Preschool Teachers' Practices to Support Self-Regulated Learning were used to collect data from teachers.

Preschool Self-Regulation Scale (PSRS):

It was developed by Smith-Donald, Raver, Hayes, and Richardson (2007) and adapted by Tanrıbuyurdu and Yıldız (2014). The scale consists of two main parts: The practitioner's guide to the child's tasks and the practitioner's evaluation form. In the first part, there are 9 tasks put together to assess children's self-regulation performance. The second part provides the practitioner with the opportunity to assess children's emotions, attention levels and behaviors based on the practitioner-child interaction throughout the 9 tasks. The scale consists of a total of 16 items and a two-factor structure, namely Attention/impulse control (10 items) and Positive affect (6 items). As a result of the reliability analyses conducted in the adaptation study, Cronbach's alpha reliability coefficient was .83 for the overall scale, .88 for the attention/impulse control sub-dimension, and .80 for the positive affect sub-dimension. As a result of the reliability analyses conducted in this study, Cronbach's alpha reliability coefficient was .79 for the overall scale, .88 for the attention/impulse control sub-dimension, and .70 for the positive emotion sub-dimension.

Self-regulation Scale:

It was developed by Brown, Miller, and Lawendowski (1999) to measure teachers' self-regulation and adapted into Turkish by Aydın, Özer Keskin, and Yel (2014). The 51-item scale has three sub-dimensions. The scale has a 5-point Likert scale. There are 29 items in the self-reinforcement sub-dimension, 18 items in the self-monitoring sub-dimension and 4 items in the self-evaluation sub-dimension. As a result of the reliability analyses conducted in the adaptation study, Cronbach's alpha reliability coefficient was .87 for the overall scale, .88 for the self-reinforcement sub-dimension, .87 for the self-monitoring sub-dimension and .60 for the self-evaluation sub-dimension. As a result of the reliability analysis conducted in this study, Cronbach's alpha reliability coefficient for the overall scale was .90, .87 for the self-reinforcement sub-dimension, .70 for the self-monitoring sub-dimension and .72 for the self-evaluation sub-dimension.

Scale for Assessing Preschool Teachers' Practices to Support Self-regulated Learning:

It was developed by Adagideli, Saraç, and Ader (2017) to assess teachers' practices that support self-regulated learning. The scale has a 4-point Likert scale. The scale consists of 21 items and 5 sub-dimensions. As a result of the reliability analysis, Cronbach's alpha reliability coefficient was calculated as .90 for the whole scale, .84 for the emotional and motivational regulation sub-dimension, .80 for the metacognitive regulation sub-dimension during activities, .79 for the metacognitive knowledge of tasks and strategies sub-dimension, .75 for the post-activity metacognitive regulation sub-dimension, and .72 for the metacognitive knowledge of people sub-dimension. As a result of the reliability analysis conducted in this study, Cronbach's alpha reliability coefficient was calculated as .92 for the whole scale, .69 for the emotional and motivational regulation subscale, .80 for the metacognitive regulation during activities subscale, .85 for the metacognitive knowledge of tasks and strategies subscale, .82 for the post-activity metacognitive regulation subscale, and .80 for the metacognitive knowledge about people subscale.

Data Collection

Data were collected in two stages. In the first stage, data were collected from teachers, and in line with the results obtained from the analysis of these data, the children who would be participants in the data collection for the second stage were determined. In the first stage of the study, the scale battery (Self-Regulation Scale and Scale for Assessing Preschool Teachers' Practices to Support Self-Regulated Learning) was hand-delivered to schools with easy access. For schools with difficult access, online questionnaires were used to fill out the scales on the internet. First, teachers' levels of self-regulation and support for self-regulated learning were determined. Since working with all children in 318 teachers' classrooms would not be economical and possible in terms of time and resource utilization, the child sample group consisted of children in the classrooms of 12 teachers who received the highest and lowest scores from the relevant scales. G Power program was used in the power analysis calculation used to determine the sample size consisting of children. When determining the sample size, it is sufficient to take a moderate effect size (0.50) (Cohen, 1992). In the study, the power of the research was analyzed by using the β values [power=1- β] formula. Cohen (1988) stated that the power level should be at least 0.80. When the power analysis of the study was performed by taking into account the moderate effect size (power=1- β), it was seen that this study could be conducted on 210 participants with an effect size of 95.01%. In order to collect data from the specified number of child participants, a total of 12 teachers were contacted, six teachers with the lowest (134-202) and six teachers with the highest (280-298) scores. A voluntary consent form was prepared for each stage and approval was obtained from both the parents and teachers of the children. This form consists of brief information about the study, a commitment to protect the confidentiality of participant information, and a text containing the rights of the participants.

In the second data collection process, the interviews with the children were conducted on a date and time convenient for both the researcher and the teacher. In addition, the school administration showed an area suitable for one-on-one work with children (quiet and close to the classroom). In the second data collection phase of the study, children whose parents signed the consent form and who were not mainstreaming students and who volunteered to participate were studied. The second data collection process was completed with 213 children who were willing to participate in the study. In this process, while one researcher worked with the children, an assistant researcher ensured that the children had access to the interview area. The preschool self-regulation scale to be applied to children consists of 9 tasks that require giving instructions to children. Therefore, before using the scale with children, the researcher obtained detailed information from the researchers who developed the scale, conducted a pilot study, and then obtained the necessary permission for the use of the scale. The researcher's application with each child lasted approximately 20-30 minutes. After the application, the practitioner evaluation form of the Preschool Self-Regulation Scale, in which the child's reactions were evaluated, was completed by the researcher.

Data Analysis

In the analysis of the data, normality and homogeneity values were examined first. For this, skewness and kurtosis values were examined first. In a distribution or data set, a skewness and kurtosis value of ± 3.29 for samples between 50 and 300 indicates that the distribution is normal. For samples larger than 300, ± 2 for skewness and ± 4 for kurtosis are used as reference values to determine a significant normality (Mishra et al., 2019). When the skewness and kurtosis values for the Self-Regulation Scale (-4.27-3.27), the Preschool Self-Regulation Scale (-5.24-6.15), and the Scale for Assessing Preschool Teachers' Practices to Support Self-Regulated Learning (-3.96-3.12) were calculated, it was determined that they were not within this range. Pallant (2015) stated that the distribution normality of the data in a data group can be interpreted with various graphical methods and statistical tests. In the study, when the Q-Q plot, histogram and P-P graphs were analyzed, it was seen that the scores were excessive and not normally distributed. In addition, when examining the normality of the scores in the normality test, Kolmogorov Smirnov test is used if the group size is more than 50 (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz, & Demirel, 2014). Accordingly, it was determined that the distribution was not normal with the Kolmogorov Smirnov test (p<.05). Since the distribution was not normal, non-parametric tests were applied.

The Mann Whitney U test, which is considered to be the most powerful nonparametric test, was used to determine whether there was a significant difference in the attention-impulse control and positive emotion sub-dimensions of children's self-regulation according to their age, gender and duration of preschool education. While Mann Whitney U test statistically tests the difference between only two different groups, Kruskal Wallis H test tests whether more than two groups are different (Baştürk, 2016). For this reason, Kruskal Wallis H test was used to determine whether teachers' self-regulation and practices to support self-regulated learning differed according to their age and Mann Whitney U test was used to determine whether they differed according to their seniority. Spearman Brown Correlation analysis was used to determine the relationship between the teacher's self-regulation and practices to support self-regulated learning and children's self-regulation.

Results

Findings Regarding Whether Children's Self-Regulation Differentiates According to Their Age, Gender and Duration of Preschool Education

The results of the Mann Whitney U test, one of the nonparametric tests used to determine whether children's self-regulation differed according to their age, gender and duration of preschool education, are given in Tables 3-5.

Table 3. Self-Regulation Scores According to Children's Age

	Age	n	Mean rank	Sum of ranks	u	p
Attention-impulse control	57-68 month	106	89.74	9512.50	3841.50	.00
	More than 68 months	107	127.10	13278.50		
Positive emotion	57-68 month	106	104.52	11079.50	5408.50	.54
	More than 68 months	107	109.45	11711.50		
Total	57-68 month	106	91.34	9682.50	4011.50	.00
	More than 68 months	107	122.51	13108.50		

As seen in Table 3, the mean ranks of children's total self-regulation scores were 91.34 for children aged 57-68 months and 122.51 for children older than 68 months. As a result of the analysis, it was found that there was a significant difference between the mean ranks of the self-regulation scores of 57-68-month-old children and children older than 68 months [U =4011.50; p<0.05]. Accordingly, the self-regulation of children older than 68 months was significantly higher than that of children aged 57-68 months. The mean ranks of children's attention-impulse control scores were 89.74 for children aged 57-68 months and 127.10 for children older than 68 months, and a significant difference was found between the mean ranks of attention-impulse control scores [U =3841.50; p<0.05]. Accordingly, the

attention-impulse control of children older than 68 months was significantly higher than that of children aged 57-68 months. On the other hand, the mean ranks of children's positive emotion scores were 104.52 for children aged 57-68 months and 109.45 for children older than 68 months, and there was no significant difference between the mean ranks of positive emotion scores [U =5408.50; p>0.05].

Table 4. Self-Regulation Scores According to Children's Gender

	Gender	n	Mean Rank	Sum of rank	u	p
Attention-impulse control	Girl	98	113.16	11090	5031	.17
	Boy	115	101.75	11701		
Positive emotion	Girl	98	116.93	11459.50	4661.50	.02
	Boy	115	98.53	11331.50		
Total	Girl	98	122.29	11984.50	4136.50	.00
	Boy	115	93.97	10806.50		

As seen in Table 4, the mean ranks of children's total self-regulation scores were 122.29 for girls and 93.97 for boys. As a result of the analysis, it was found that there was a significant difference between the mean ranks of the total self-regulation scores of girls and boys [U =4136.50; p<0.05]. Accordingly, girls' self-regulation scores were significantly higher than boys' self-regulation scores. The mean ranks of children's attention-impulse control scores were 113.16 for girls and 101.75 for boys, and it was found that there was no significant difference between the mean ranks of children's attention-impulse control scores according to gender [U =5031; p>0.05]. On the other hand, the mean ranks of children's positive emotion scores were 116.93 for girls and 98.53 for boys, and it was found that there was a significant difference between the mean ranks of children's positive emotion scores according to gender [U =4661.50; p<0.05]. Accordingly, girls' positive emotion scores were significantly higher than boys' scores.

Table 5. Children's Self-Regulation Scores According to the Duration of Preschool Education

	Duration of education	n	Mean Rank	Sum of rank	u	p
Attention-impulse control	1 year	115	101.55	11678.50	5008.50	.15
	More than 1 year	98	113.39	11112.50		
Positive emotion	1 year	115	96.91	11144.50	4474.50	.00
	More than 1 year	98	118.84	11646.50		
Total	1 year	115	96.25	11068.50	4398.50	.00
	More than 1 year	98	119.62	11722.50		

In Table 5, the mean ranks of children's self-regulation total scores were 96.25 for children with one year of preschool education and 119.62 for children with more than one year of preschool education, and there was a significant difference between the mean ranks of self-regulation total scores of children with one year and more than one year of preschool education [U =4398.50; p<0.05]. Accordingly, the self-regulation of children with more than one year of preschool education was significantly higher than that of children with one year of preschool education. The mean ranks of children's attention-impulse control scores were 101.55 for children with one year of preschool education and 113.39 for children with one year or more of preschool education, and there was no significant difference between the mean ranks of attention-impulse control scores of children with one year and more than one year of preschool education [U =5008.50; p>0.05]. The mean ranks of children's positive emotion scores were 96.91 for children with one year of preschool education and 118.84 for children with more than one year of preschool education, and it was found that there was a significant difference between the mean ranks of positive emotion scores of children with one year and more than one year of preschool education [U =4474.50; p<0.05]. Accordingly, the positive emotion scores of children with more than one year of preschool education were significantly higher than those of children with one year of preschool education.

Findings on the Relationship between Teachers' Self-Regulation and the Practices They Use to Support Self-Regulated Learning

The results of the Spearman Brown Correlation analysis conducted to determine the relationship between teachers' self-regulation and the practices they use to support self-regulated learning are given in Table 6.

Table 6. Correlation Analysis of Teachers' Self-Regulation and T-SRL Scores

Variables	n	r	p
Self-regulation T-SRL	316	.187	.001

As seen in Table 6, there is a low, positive and significant relationship between teachers' self-regulation and the practices they use to support self-regulated learning (p<.01, r=0.187). Accordingly, it can be said that as the self-regulation of preschool teachers increases, the practices they use to support self-regulated learning also increase.

Findings on the Relationship between Teachers' Self-Regulation and the Practices They Use to Support Self-Regulated Learning and Children's Self-Regulation

The results of the Spearman Brown Correlation analysis conducted to determine the relationship between teachers' self-regulation and the practices they used to support self-regulated learning and children's self-regulation are given in Table 7.

Table 7. Spearman Correlation Coefficient for the Relationship between Teachers' Self-Regulation and Children's Self-Regulation Scores with the T-SRL

Variables	n	r	p
Self-regulation and T-SRL scores children in the high teacher's class	103	.352	.000
Self regulation and T-SRL scores children in the low teacher's class	110		

When Table 7 is examined, it is seen that there is a moderate, positive and significant relationship between the children of teachers with high self-regulation and T-SRL and the children of teachers with low self-regulation (p<.01, r=0.352). Accordingly, it can be said that the self-regulation of the children in the classes of teachers with high self-regulation and the practices they use to support self-regulated learning is also high.

Discussion and Conclusion

As a result of the research conducted to see the relationship between teachers' self-regulation, practices to support self-regulated learning, and the duration of preschool education with children's self-regulation skills, it was found that the self-regulation skills of children aged 57-68 months and children aged older than 68 months differed significantly in favor of children aged older than 68 months. These results coincide with studies showing that self-regulation increases in parallel with age (Hong, 2012; Lonigan et al., 2017; Tanrıbuyurdu & Yıldız, 2014; Yılmaz, 2016). As a reason for this, studies indicate that executive control and working memory processes, which include self-regulation processes that show great improvements in early childhood, develop linearly after this period (Best, Miller, & Jones, 2009; Montroy, 2014). For example, in a longitudinal study, the self-regulation development of children between the ages of 4 and 8 was recorded. At the end of the study, according to the data collected from the teacher and the performance measures applied directly by the researchers, it was observed that there was a great improvement in self-regulation skills by the age of 5. In addition, the study concluded that age had strong effects on executive control (Neuenschwander et al., 2012).

In the current study, it was concluded that girls' self-regulation skills were higher than boys'. Some research results similarly support the conclusion that boys' self-regulation is lower (Ko, 2012; Montroy et al., 2016; Neuenschwander et al., 2012). Studies have shown that boys' self-regulation generally decreases around the age of 2 years compared to girls' self-regulation and increases towards 36 months, while girls' self-regulation increases steadily (Vallotton & Ayoub, 2011). Accordingly, the reason why girls' self-regulation was higher than boys' self-regulation in the study may be due to the steady increase in girls' self-regulation compared to boys. Another finding of the study is that girls have higher emotion regulation than boys. Looking at the literature, some studies show that girls are more emotionally conscious and have a more detailed understanding of emotions than boys (Bajgar, Ciarrochi, Lane, & Deane 2005; Sala, Pons, & Molina, 2014). From a different perspective, some studies have shown that boys are more sensitive to environmental experiences such as crisis environments (Ponitz, Rimm-Kaufman, Brock, & Nathanson 2009). In particular, there are studies on the effects of parents' and teachers' expectations on self-regulation development in boys (Montroy et al., 2016; Wanless, McClelland, Tominey, & Acock, 2011). In this context, the study supports the related literature. However, some studies indicate that there is no difference in children's self-regulation according to their gender (Schmitt et al., 2014; Smith-Donald et al., 2007). The reason for this difference in the studies may be a reflection of the child-rearing attitudes in the child's culture. For example, in Japan, due to child-rearing beliefs, especially girls are traditionally raised with the tendency to control their impulses and prevent their impulses from an early age (Olson & Kashiwagi, 2000). Similarly, in Kpelle and Mayan cultures, boys are not assigned any responsibility in daily routines in life, while girls are assigned to domestic chores by their parents from early childhood (Göncü, Jain, & Tuernmer, 2007). In Turkish society, girls are expected to behave in a more harmonious, restricted, calm and orderly manner, while boys are expected to be more autonomous and impulsive in their actions (Ecevit, 2011; Ersöz, 2016; Kurt & Özgün, 2023). In this respect, the current result may be due to the child-rearing attitudes of the sample group.

As a result of the study, it was observed that the self-regulation skills of children who received more than one year of preschool education were higher than those of children who received one year of preschool education. In this respect, it is concluded that as the duration of preschool education increases, children's self-regulation skills will also increase. In studies, it has been stated that preschool education institutions can be places that improve self-regulation by offering opportunities, teaching techniques, classroom interactions, various learning opportunities, peer cooperation and self-evaluation opportunities (Darcy, Sarette, Boghigian, & Marley, 2017; Ervin, Wash, & Mecca, 2010; Long, 2017). There is also evidence that movement and play activities are particularly beneficial for behavioral self-regulation (Best, 2010; Savina, 2014). In Turkey, the 2013 Preschool Education Program was put into practice after a year of evaluation studies conducted with academics, education experts and other stakeholders of the society. All of the teachers who participated in the study implemented the program in their classrooms. This program was prepared with a child-centered synthesis in order to meet national characteristics and needs by taking advantage of different approaches and models employed in various countries such as High Scope, Montessori and, Regio Emilia (Ministry of National Education, 2013). When the characteristics of the program are considered, it is seen that it has a dynamic structure that allows planning and organizing together with children (eclectic, flexibility, play-based, child-centered, caring about creativity, emphasis on learning by discovery, reference to daily life experience and close environment opportunities) (Gürkan & Koran, 2014). In addition, the curriculum supports the use of play, movement, research, investigation, projects, group work, experiments, open-ended questions, and child-discovery activities. In theory, the current curriculum contains many elements to support self-regulated learning. If what is stated in theory is reflected in practice in the classroom, children's self-regulation skills may improve as the duration of preschool education increases.

In the current study, it was concluded that teachers' high self-regulation had a positive effect on the classroom practices they used to support self-regulated learning. Looking at the literature on the subject, it is seen that high teacher self-regulation enables self-regulated learning practices to come to life in classrooms (Buzza & Allinotte, 2013; Perry, 2015; Toussi, Boori, & Ghanizadeh, 2011; White & DiBenedetto, 2015; Yılmaz, 2016). In one study, it was concluded that teachers with high self-regulation were more likely to recognize children's needs for self-regulation and perform better in recognizing and coping with obstacles and difficulties (Delfino, Dettori, & Persico, 2010). In another recent study, it was emphasized that teachers' competence in teaching self-regulated learning depends on being both a learner and a teacher. In other words, the teacher should adopt self-regulated learning both as a learner and as a teacher (Kramarski & Kohen, 2017). Based on the literature, it can be said that teachers with high self-regulation in the current study have an attitude toward supporting children's self-regulated learning. In the study, there was a significant relationship between children's self-regulation skill levels and teachers' self-regulation and the practices they used to support self-regulated learning. In this direction, it can be said that as teachers' self-regulation and practices supporting self-regulation increase, children' self-regulation will also increase. Although there is no similar study in the literature, studies showing that children's self-regulation is positively affected as a result of teachers' practices for self-regulated learning supports the current study (Butler & Schnellert, 2015; Cleary, 2015; Cleary, Velardi, & Schnaidman, 2017; Fuhs, Nesbitt, Farran, & Dong, 2014; Rimm-Kaufman, Curby, Grimm, Nathanson, & Brock, 2009). These studies noted that teachers can support self-regulated learning when they provide students with procedural support (questioning, clarification, correction, elaboration) and opportunities to influence each other (collaboration, sharing ideas and problem solving). In another study, Peeters et al. (2014) concluded that both teachers' self-regulation and encouraging children to self-regulated learning are important in conducting self-regulated learning practices in educational settings. It was also emphasized in this study that teachers with developed self-regulation adapt their educational approaches to their self-regulated learning skills and are more effective in teaching self-regulated learning. As supported by the literature, the study concluded that teachers' self-regulation levels positively affect self-regulated learning practices in the educational environment and both have an effect on increasing children's self-regulation.

Suggestions

High levels of self-regulation in children play a vital role in school adaptation, prevention of classroom behavior problems and academic success. In the current study, it was concluded that teachers' high levels of self-regulation support self-regulated learning practices and that they can improve children's self-regulation. Based on the current study and the literature, action plans can be developed to improve self-regulation in children in a planned manner at all levels of education, especially preschool education. Within the scope of these plans, teachers can start by organizing training to raise their awareness about the importance of self-regulation. Teachers can then be supported to develop activities, games, practices, projects and studies that improve self-regulation. Another finding of the study was that children who received preschool education for a longer period had higher levels of self-regulation. In this context, it is thought that it would be a good investment for children's self-regulation development if the authorities, especially those who determine educational policies, take action to ensure that every child can receive preschool education and receive this education for more than one year. Based on the results of the study, others (peers, siblings, caregivers) other than parents and teachers in the current study can be included as participants in the self-regulation development of the child in future studies. It is also important to investigate the effect of social contexts and socioeconomic conditions on self-regulation development. In addition to these, to see the place of gender, age and education variables in the self-regulation development process, longer-term studies that address different contexts such as family, peers and siblings can be conducted.

Limitations

The current study is important in terms of showing the effect of teachers' (self-regulation and self-regulation supportive practices) and educational processes on children's self-regulation development. However, the study has some limitations. One of the teachers selected for the second data collection process of the study stated that the parents of some of the children in her class did not approve of working with the child. Therefore, the data collection process was carried out with the children in the class of the teacher who was one point lower in the score ranking. The criterion was to collect data from schools in Mersin province where two or more teachers work. However, as some teachers did not want to participate or later stated that they did not want to be involved in the process, one teacher from some institutions participated. In the second data collection process with children, a total of 3 children could not be included in the study because they did not want to participate in the research or could not pay attention to the process.

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