

Examination of Self-Regulation Skills of Preschoolers in terms of the Home Environment Variables

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Abstract

Problem Situation and Purpose: The literature shows that the home environment is effective on the child in various aspects. Revealing the relationship between the variables in the home environment and the self-regulation skills of children can be a guide for families. In addition, it is thought that it will contribute to the literature by considering self-regulation skills in terms of different factors related to the home environment. It is aimed to examine the self-regulation skills of preschoolers in terms of various variables related to the home environment.

Method: Relational screening model was used. The study group consists of 218 children from the 5-6 age group attending kindergarten in Ankara in the 2021-2022 academic year. In the study, "General Information Form" and "Self-Regulation Skills Scale for 4-6 Years Old Children (Mother Form)" were used. The ANOVA test was used to determine whether there was a relationship between variables related to the home environment and self-regulation skills.

Findings of the Study: It was seen that the duration of children's play with family members, the type of games they played with family members the most, the time spent with technological devices, the daily book reading time of parents to the child, the number of books in the children's home were related to self-regulation skills. It was found that the self-regulation levels of the children did not constitute a significant difference according to the time spent outdoors.

Research Results and Recommendations: It was seen that the variables related to the home environment were related to self-regulation skills. Families may be guided to create a home environment that will support their self-regulation skills. With the early age of preschool schooling, the negativities that may arise from the home environment can be prevented.

Keywords: *Early childhood, Attention, Working memory, Disabling control, Home environment, Stimulus quality*

Introduction

The preschool period is important in terms of the child's development speed. In terms of the development of the child, the home environment is very important in the first years because children begin to acquire skills in the home environment before starting formal education. Before and during formal education, the home environment continues to have an impact on the child. For this reason, skills gained by children should be supported in a balanced way with each other both at home and in the school environment. (Cole, 2011; Ertürk Kara et al., 2018). Therefore, the qualification of the home environment is an issue that needs to be emphasized.

It is seen that different aspects of the home environment are effective in the development of the child. The characteristics of the family, the support they offer to the child, their participation in home learning activities, and their parenting attitudes play a role in the development and learning of the child (Cole, 2011). Spending quality time alone or with family members at home (Aydoğdu & Dilekmen, 2018), encountering appropriate stimuli (Özdemir, 2019) responds to children's needs. The interaction of parents with their children with activities such as reading books and playing games at home increases the quality of the home environment and supports the development of children. The inclusion of such activities in the home environment has an important place in terms of the development of social relations, behaviors and abilities in the preschool period (Sucuoğlu et al., 2019). Inappropriate use of technology in the home environment has negative effects on children (Al-Jarf, 2021). In research examining the impact of the home environment on children, it has been found that home chaos, high levels of noise, crowding and physical structuring deficiencies adversely affect children's development (Marsh et al., 2020). Research with young children reveals the effects of different variables related to the home environment on some fields such as mental health (Glynn et al., 2021), academic skills (Cheung et al., 2020), motivation to learn (Choi & Cho, 2020), motor development (Valadi & Gabbard, 2020), language development (Peterson et al., 2019). Variables related to the home environment may also play an important role in self-regulation skills.

The child's home environment can contribute to children's self-regulation skills with their physical and emotional characteristics. The fact that the home environment offers warmth, sensitivity and unconditional acceptance, and that it has parental guidance, allow children to develop self-regulating behaviors. Accepting their emotions allows children to better manage their emotions. With appropriate parental guidance, children demonstrate acceptable behaviors. Therefore, children learn their limits and can regulate their behavior. Children can learn and

internalize self-regulatory behaviors by modeling family members (Morawska et al., 2019). Family members supporting the child's socialization and autonomy activates self-regulatory factors such as attention control, receptive and expressive language, memory, and reasoning skills (Cole et al., 2018). Physical activity has an important role in the development of self-regulation. Games and outdoor activities with family members at home reduce screen time by allowing children to move around adequately. These activities increase children's health and learning capacity, as well as support their self-regulation skills (Kybart et al., 2019; McGowan et al., 2022). Since children develop self-regulation by interacting with their environment (Veziroğlu Çelik et al., 2020), spending time on activities that will increase interaction with family members (playing games, reading books, etc.) may lead to more developed self-regulation skills.

The presence of a physical and social environment that cares about the child's developmental needs can respond to the child's interests and needs. In this case, it will also support the development of self-regulation of child. The quality of the home environment may be an important factor on self-regulation skills (Ertürk Kara et al., 2018). In the literature, it is seen that the effect of the quality of the home environment on the development of children and self-regulation skills is emphasized. The physical environment, stimuli, routines, interactions, attitudes toward the child, parental awareness, parent's stress, use of electronic devices and playing with family members in the home are effective in the development of children's self-regulation (Bronson, 2018; Ertürk Kara et al., 2018; Trevisani, 2019). Children have their first experiences with their families in the home environment. These experiences will have an impact on children's self-regulation. Revealing the relationship between the variables in the home environment and the self-regulation skills of children can be a guide for families. In addition, it is thought that self-regulation skills will contribute to the literature by considering them in terms of different factors related to the home environment. This study, it is aimed to examine the self-regulation skills of preschoolers in terms of various variables related to the home environment. The relationship between children's self-regulation skills and the following variables will be investigated:

- The amount of time a child spends playing games (other than digital games) with family members
- The type of games children plays most with family members
- The amount of time a child spends outdoors

- The amount of time a child spends with technological devices
- The number of children's books found at home
- The amount of time family members read books to the child

Method

Research Design

The study was conducted to examine various variables related to the quality of the home environment of the self-regulation skills of preschoolers. For this purpose, relational screening model was used. The relational screening model is a research model that aims to determine the existence and/or degree of covariance between two or more variables (Karasar, 2016).

Research Group

The study group of the research consists of 218 children (46.3% girl and 46.3% boy) from the 5-6 age group attending kindergartens in central districts of Ankara in the 2021-2022 academic year.

Research Instrument and Procedure

"General Information Form" and "Self-Regulation Skills Scale for Children Aged 4-6 (Mother Form)" developed by Erol and İvrendi (2018) were used. Erol and İvrendi (2018) state that the Cronbach Alpha internal reliability coefficient of the scale is .90, the co-validation is .84 and the test-retest reliability is .77. In the general information form filled out by the mothers, the time the child spends playing at home, the time spent outdoors, the time spent with technological devices, the number of children's books at home and the time spent reading books to the child are included.

Data Analysis

The obtained data were analyzed with SPSS 20 package program. Parametric tests were preferred because the skewness and kurtosis values were in the range of -2 to +2. One-Way Analysis of Variance (ANOVA) was used. Bonferroni test was used to determine group differences in significant differences.

Findings

The findings obtained from the analysis of the data are given in the form of tables.

Table 1

Self-Regulation Skill Scores According to the Amount of Time Children Spent Playing Daily Games with Family Members

Self-Regulation Scale										
Play Duration	Attention			Working Memory			Inhibitory Control-Emotion		Inhibitory Control-Behavior	
	N	\bar{x}	S	\bar{x}	S	\bar{x}	S	\bar{x}	S	
0-1 hour	77	21,39	4,84	21,27	3,14	18,55	3,87	11,68	3,22	
2-3 hours	103	22,56	3,81	22,57	2,19	19,37	3,58	13,24	3,29	
3-4 hours	23	23,48	4,04	22,82	1,99	19,21	2,71	13,43	2,96	
4 hours and more	15	24,07	4,78	22,53	2,79	20,80	3,76	14,40	2,99	
(Continuation of Table 1)										
Sum	218	22,35	4,34	22,13	2,65	19,17	3,64	12,79	3,31	
Variance Analysis	Sd	F	p	F	p	F	p	F	p	
Intergroup	3	2,701	0,047*	4,478	0,005**	1,853	0,139	5,246	0,002**	
Intragroup	214									
Sum	217									

***p<0.05**

****p<0,01**

When Table 1 is examined, it is found that there is a significant difference between the duration of children's play with family members and attention ($F_{(3-214)}=2.701$, $p<0.05$), working memory ($F_{(3-214)}=4.478$, $p<0.01$) and disabling control-behavior ($F_{(3-214)}=5.246$, $p<0.01$). According to Bonferroni analysis, it is determined that the significant difference is due to 0-1 hour of playing time. When the average score is examined, children who play for 0-1 hour; It is seen that in the sub-dimensions of attention ($X=21.39$), working memory ($X=21.27$), inhibitory control-emotion ($X=18.55$) and inhibitory control-behavior ($X=11.68$) have the lowest average scores.

Table 2

Self-Regulation Skill Scores According to the Type of Games Children Play Most with Family Members

Self-Regulation Scale									
Game Type	Attention			Working Memory		Inhibitory Control-Emotion		Inhibitory Control-Behavior	
	N	\bar{x}	S	\bar{x}	S	\bar{x}	S	\bar{x}	S
Outdoor games	38	22,00	4,08	21,74	2,77	18,89	3,69	12,42	3,28
Unstructured game	121	22,75	3,99	22,28	2,41	18,97	3,59	13,10	3,17
Digital gaming	28	20,10	5,36	21,19	3,72	19,39	3,34	11,68	3,61
Memory, attention and brain teaser games	31	23,23	4,44	22,74	2,16	20,06	4,08	13,03	3,49
Sum	218	22,35	4,34	22,13	2,65	19,17	3,64	12,79	3,31
Variance Analysis	Sd	F	p	F	p	F	p	F	p
Intergroup	3	3,453	0,017**	1,692	0,170	0,841	0,473	1,649	0,179
Intragroup	214								
Sum	217								

****p<0,05**

When Table 2 is examined, it is found that the type of games played by the children and their self-regulation skills create significant differences in the average scores related to attention ($F(3-214) = 3.453, p < 0.05$). According to Bonferroni analysis, it is determined that the significant difference is due to the digital game genre. When the average score is examined, children who play digital games, it is seen that attention ($X=20.10$), working memory ($X=21.19$) and obstructive control-behavior ($X=11.68$) sub-dimensions have the lowest average scores.

Table 3

Self-Regulation Skill Scores According to the Amount of Time Children Spent Outdoors

Self-Regulation Scale									
Outdoors Time	Attention			Working Memory		Inhibitory Control-Emotion		Inhibitory Control-Behavior	
	N	\bar{x}	S	\bar{x}	S	\bar{x}	S	\bar{x}	S
0-1 hour	128	22,21	4,33	22,17	2,55	19,10	3,76	12,49	3,36
2-3 hours	77	22,64	4,46	22,08	2,91	19,19	3,34	13,08	3,32
4-5 hours	13	21,84	3,76	22,15	2,19	19,69	4,47	14,08	2,39
Sum	218	22,35	4,34	22,14	2,65	19,17	3,64	12,79	3,31
Variance Analysis	Sd	F	P	F	p	F	p	F	p
Intergroup	2	0,327	0,721	0,030	0,970	0,156	0,856	1,803	0,167
Intragroup	215								
Sum	217								

When Table 3 is examined, it is seen that the self-regulation levels of the children according to the time spent outdoors do not have a significant difference in any sub-dimension ($p>0.05$).

Table 4

Self-Regulation Skill Scores According to the Time Children Spent with Technological Devices

Self-Regulation Scale									
Technological With devices Time	Attention			Working Memory		Inhibitory Control-Emotion		Inhibitory Control-Behavior	
	N	X	S	X	S	X	S	X	S
None at all	17	25,06	4,62	22,41	2,26	20,88	2,66	17,18	3,03
0-1 hour	113	22,81	4,09	22,22	2,65	19,05	3,77	13,04	3,13
2-3 hours	71	21,79	3,89	21,97	2,85	18,93	3,43	12,62	3,49
4 hours and more	17	18,94	5,22	22,00	2,32	19,24	4,36	10,53	3,02
Sum		22,35	4,34	22,14	2,65	19,17	3,64	12,79	3,31

Variance	Sd	F	p	F	p	F	p	F	p
Analysis									
Intergroup	3	7,055	0,000**	0,203	0,894	1,398	0,244	4,069	0,008**
Intragroup	214								
Sum	217								

****p<0,01**

When Table 4 is examined, it is found that there are significant differences in the average scores of children with regard to attention ($F_{(3-214)}=7.055$, $p<0.01$) and disabling control behavior ($F_{(3-214)}=4.069$, $p<0.01$). According to Bonferroni analysis, it is determined that the significant difference is due to the time spent with technological devices for 4 hours or more. When the average scores are examined, children who never use technological devices have the highest average score in attention ($X=25.06$), working memory ($X=22.41$), inhibitory control-emotion ($X=20.88$) and obstructive control-behavior ($X=17.18$) sub-dimensions.

Table 5

ANOVA Results of Self-Regulation Skill Scores According to the Number of Children Books in the Children's Home

Self-Regulation Scale									
Children Book Number	Attention		Working Memory		Inhibitory Control-Emotion		Inhibitory Control-Behavior		
N	S	S	S	S	S	S	S		
0-5 Books	47	20,09	4,17	20,96	3,11	18,47	3,91	11,72	2,74
6-10 Books	54	22,37	4,31	22,32	2,71	19,15	3,41	13,13	3,52
11-25 Books	43	21,91	4,21	22,63	2,85	18,40	3,89	12,41	2,89
26-50 Books	39	23,10	4,31	22,67	2,17	20,49	3,21	13,85	3,51
51 Books and More	35	25,06	3,09	22,26	1,61	19,63	3,51	13,00	3,46
Sum	218	22,35	4,34	22,14	2,65	19,17	3,65	12,79	3,31
Variance Analysis									
Intergroup	4	7,897	0,000**	3,286	0,013*	2,387	0,049*	2,597	0,037*
Intragroup	213								
Sum	217								

***p<0.05, **p<0.01**

When Table 5 is examined, it is found that there are significant differences in the number of books in the children's home and the average scores related to attention ($F_{(4-213)}=7.897, p<0.01$), working memory ($F_{(4-213)}=3.286, p <0.05$), disabling control-emotion ($F_{(4-213)}=2.387, p<0.05$) and obstructive control-behavior ($F_{(4-213)}=2.597, p<0.05$). According to Bonferroni analysis, it is determined that the significant difference is due to the number of books in the house with 0-5 books and the number of books 51 and more. When the average score is examined, children who have 0-5 books in their homes have the lowest average score in attention ($X=20.09$), working memory ($X=20.96$), inhibitory control-emotion ($X=18.47$) and obstructive control-behavior ($X=11.72$) sub-dimensions.

Table 6

Self-Regulation Skill Scores According to the Daily Number of Books Read by Family Members to the Child

Reading Duration	Attention		Working Memory		Inhibitory Control-Emotion		Inhibitory Control-Behavior		
	N	S	S	S	S	S			
None at all	35	20,29	4,75	21,22	2,90	18,31	4,29	11,63	3,47
1-30 minutes	121	22,74	4,05	22,40	2,48	19,41	3,45	12,82	3,09
30-60 minutes	62	22,74	4,39	22,15	2,78	19,17	3,62	13,40	3,51
Sum	218	22,35	4,34	22,14	2,66	19,17	3,65	12,79	3,31
Variance Analysis	F	p	F	p	F	p	F	p	
Sd									
Intergroup	2	4,876	0,008**	2,668	0,072	1,233	0,293	3,288	0,039*
Intragroup	215								
Sum	217								

***p<0.05, **p<0.01**

When Table 6 is examined, it is found that daily reading duration by family members and the average scores related to attention ($F_{(2-215)}=4.876, p<0.01$) and disabling control-behavior ($F_{(2-215)}=3.288, p<0.05$) created significant differences. According to Bonferroni analysis, it is determined that the significant difference is due to those who never read books. When the average scores are examined, the family members of the children who never read books have

the lowest average score in attention ($X=20.29$), working memory ($X=21.22$), inhibitory control-emotion ($X=18.31$) and inhibitory control-behavior ($X=11.63$) sub-dimensions.

Discussion

In this study, the self-regulation skills of preschoolers are examined in terms of variables such as the type of game the child played the most with family members, the time spent playing games with family members, the time spent outdoors, the time spent with technological devices, the number of children books found at home and the daily reading time of the family to the child. When examining the findings of the research, it should be taken into consideration that it has some limitations. The data of this study are obtained from children attending preschool education in the center of Ankara based on maternal opinions. Besides, the children included in the study were exposed to social isolation due to the global pandemic. The effects of variables such as time spent outdoors, time of technology usage, book reading time are examined. However, no examination has been made as to the qualification of the activities carried out during these periods. Likewise, the qualification of children books in children's homes is unknown.

The findings obtained indicate that children who played the most digital games with family members have the lowest average score in the sub-dimensions of attention, working memory and inhibitory control-behavior. Digital games offer independent environments and develop elements of metacognition, strategic action, and motivation. Thus, it provides contexts for children to develop self-regulation (Chen & Hsu, 2020; Mahayanti et al., 2020; So et al., 2019). Therefore, digital games can provide practice for self-regulation. However excessive time spent playing digital games may replace the time children spend interacting with the social environment and engaging in physical activity (Baldwin et al., 2022). The fact that children's digital game playing time is over 1 hour has negative effects on their attention levels (Gözüm & Kandır, 2020). As children's screen use increases, attention, working memory, inhibitory control-behavior and inhibitory control-emotion variables are negatively affected (Koyuncuoğlu, 2022). The long time devoted to digital games may reduce the amount of time devoted to activities that support children's self-regulation development.

Children with 0-1 hour of daily play time with family members have the lowest average score in all sub-dimensions. In early childhood, playing allows children to develop many skills (Tuzcuoğlu et al., 2020). Playing reveals the cognitive capacity necessary for the child's self-

regulation. It allows him/her to focus on the goal and distract himself/herself from the disappointing stimulus (Ravindran et al., 2021). While playing games, behaviors such as stopping talking and waiting in line improve impulse control (Özbey et al., 2018). Playing with family members creates opportunities for children to develop self-regulation strategies. Due to the low playing time, the lack of acquisitions provided by the game may have adversely affected children's self-regulation skills.

It is observed that the self-regulation levels of the children according to the time spent outdoors don't create a significant difference. Spending time outdoors provides many opportunities for a child's development. Nevertheless, there is a need for parental attitudes that support learning and autonomy for the development of self-regulation. Inappropriate interventions by parents negatively affect self-regulation development (Dermitzaki & Kallia, 2021; Obradović et al., 2021; Taylor & Butts-Wilmsmeyer, 2020). Even if children spend time outdoors, parents may be restricting autonomous behaviors during this time period. In addition, the children in the study group experienced a complete shutdown process due to the global pandemic. This may have reduced the impact of outdoor time on self-regulation skills.

It is observed that children who spent 4 hours or more with technological devices have significantly lower attention and preventive control behavior scores compared to children who spent less time with technological devices. Children who never use technological devices have the highest average scores in all sub-dimensions. As children's screen use increases, attention, working memory, inhibitory control-behavior and inhibitory control-emotion variables are negatively affected (Koyuncuoğlu, 2022). It has been stated that screen use in children should not exceed 1-2 hours (Hill et al., 2016; WHO, 2019). However, AAP (2021) has recommended that families make a media usage plan considering that children need adequate sleep, physical activity and media-free time in the new normal. Therefore, technological device usage time affects self-regulation skills. However, proper screen usage time has become different in the new normal. This may have led to significantly lower self-regulation skills in children whose technology usage exceeds 4 hours.

It is observed that children with 0-5 books in their homes have the lowest average score in all sub-dimensions. Children books are an essential element of the rich stimulating environment necessary for the development of the child (Yükçü et al., 2019). Children books are among the materials included in self-regulation interventions (Howard et al., 2018). In the preschool period, children identify with book characters (Karagül, 2018). Their identification with

characters in children's books may have supported their skills such as impulse control, emotion regulation, problem-solving, and prosocial behavior.

It is observed that children whose family members never read books have the lowest average score in all sub-dimensions. Parents' social-emotional and educational interactions with their children, such as reading books, support their self-regulation skills (Duran Yurdacan, 2022). Reading books increases the socialization of emotions between adults and children. It improves children's self-regulation skills by helping them understand different emotions, the causes and consequences of those emotions (Farkas et al., 2020). Besides having children's books at home, the family's reading to the child is also considered important for the development of self-regulation.

Conclusion

The findings show that children's self-regulation skills are related to the home environment. It has been observed that children's self-regulation skills are lower if the most played game type with family members is digital games and the daily time spent by children with technological devices is 4 hours. Screen time can be an influential factor in children's self-regulation skills. It has been observed that the family's playing time with the child does not take 1 hour per day, lack of reading books to the child and the number of children books in the house is less than five are associated with lower self-regulation skills. Parents' interaction with children through activities such as games and reading books, spending quality time and including appropriate stimuli in the home environment can improve children's self-regulation skills. Contrary to our assumption, children's levels of self-regulation do not differ according to the time they spend outdoors. This situation may be a consequence of the global pandemic process.

Recommendations

The findings of the study revealed that the variables related to the home environment were related to self-regulation skills. For this reason, raising awareness of families by organizing family education can make an important difference for the development of the child. Guidance can be given on issues such as the appropriate use of technology during childhood, supporting self-regulation skills through play and interactive reading. Teachers can guide families through outdoor activities with families. With the start of the preschool education process at an earlier age, the negativities that may arise from the home environment can be prevented.

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