Research Article / **Araştırma Makalesi**

Bolu Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi (BAİBÜEFD)

Bolu Abant Izzet Baysal University Journal of Faculty of Education

2024, 24(3), 1444 – 1460. https://dx.doi.org/10.17240/aibuefd.2024..-1407561

Investigation of the Relationship between Self-regulation and 21st Century Skills of Preschool Students

Okul Öncesi Dönem Çocuklarının Öz-düzenleme ve 21. Yüzyıl Becerileri Arasındaki İlişkinin İncelenmesi

Şerife Hülya KURT[1]

Geliş Tarihi (*Received*): 20.12.2023 **Kabul Tarihi (*Accepted*):** 03.07.2024 **Yayın Tarihi (*Published*):** 15.09.2024

Abstract: The aim of this study is to determine the relationship between self-regulation and 21st century skills of preschool children and the effect of self-regulation on 21st century skills. Relational survey was used as the research model. The sample of the study consists of 217 children studying in kindergartens in Tarsus district of Mersin province in the 2022-2023 academic year. The Self-Regulation Skills Scale was used to measure children's self-regulation skills and the 21st Century Skills Scale for 5-6 Year Old Children (DAY - 2) was used to measure 21st century skills. Correlation analysis and structural equation modeling were applied to the data. According to the findings, it was determined that there was a significant relationship between children's self-regulation and 21st century skills and their sub-dimensions. In the structural equation model, it was concluded that self-regulation significantly affected 21st century skills and explained 45% of the total variance. The findings obtained during the research process were discussed within the scope of the relevant literature and suggestions were made for future studies.

Keywords: Preschool period, Self-Regulation, 21st Century skills, Early childhood

&

Öz: Bu çalışmanın amacı okul öncesi çocuklarının öz-düzenleme ve 21. yüzyıl becerileri arasındaki ilişki ve öz-düzenlemenin 21. yüzyıl becerileri üzerindeki etkisinin belirlenmesidir. Araştırmada model olarak ilişkisel tarama kullanılmıştır. Araştırmanın örneklemini 2022-2023 eğitim-öğretim yılında Mersin ili Tarsus ilçesi anaokullarında öğrenim gören 217 çocuk oluşturmaktadır. Araştırmada veri toplama aracı olarak çocukların öz-düzenleme becerilerini ölçmek için Öz Düzenleme Becerileri Ölçeği ve 21 yüzyıl becerilerini ölçmek için de 5-6 Yaş Çocuklar için 21. Yüzyıl Becerileri Ölçeği (DAY – 2) kullanılmıştır. Çalışmada verilere korelasyon analizi ve yapısal eşitlik modeli uygulanmıştır. Elde edilen bulgulara göre çocuklarının öz-düzenleme ile 21. yüzyıl becerileri ve alt boyutları arasındaki anlamlı ilişki olduğu tespit edilmiştir. Oluşturulan yapısal eşitlik modelinde öz-düzenlemenin 21.yüzyıl becerilerini anlamlı bir şekilde etkilediği ve toplam varyansın %45'ini açıkladığı sonucuna ulaşılmıştır. Araştırma sürecinde elde edilen bulgular ilgili literatür kapsamında ele alınmış ve gelecekte yapılacak çalışmalar için önerilerde bulunulmuştur.

Anahtar Sözcükler: Okul öncesi dönem, Öz-Düzenleme, 21.Yüzyıl becerileri, Erken çocukluk

Atıf/Cite as:: Kurt, Ş.H. (2024). Investigation of the relationship between self-regulation and 21st century skills of preschool students. *Bolu Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi*, *24*(3), 1444-1460. https://dx.doi.org/10.17240/aibuefd.2024..-1407561.

İntihal-Plagiarism/Etik-Ethic: Bu makale, en az iki hakem tarafından incelenmiş ve intihal içermediği, araştırma ve yayın etiğine uyulduğu teyit edilmiştir. / This article has been reviewed by at least two referees and it has been confirmed that it is plagiarism-free and complies with research and publication ethics. https://dergipark.org.tr/tr/pub/aibuelt

[1] Sorumlu Yazar: Doç.Dr.Ş. Hülya Kurt Tarsus Üniversitesi, Sağlık Hizmetleri M.Y.O. Çocuk Gelişimi Programı, hulyakurt@tarsus.edu.tr, 0000-0002-0211-1463

1. INTRODUCTION

When the definitions about self-regulation are integrated, it can be stated as the capacity to comply with social rules, to postpone or completely give up the individual's desires and the behaviors reflected towards them, to regulate and control their emotions, to set plans and goals and focus on them, and to pay as much attention as necessary in all routines (Bauer & Baumeister, 2011). Self-regulation can be used in the same sense with some concepts such as self-control, working memory and executive function. However, self-regulation consists of both executive function skills such as working memory, inhibitory control and cognitive flexibility, and emotional regulation skills (the ability to moderate emotions through cognitive and behavioral strategies) (Lawrence, 2015). Self-regulation, which refers to the ability to plan and think before acting, is at the heart of a set of skills known as executive function. Executive function involves three mental processes: attentional and cognitive flexibility, working memory and inhibitory control (McClelland & Tominey, 2014). One way to resolve the complexity of defining this concept is to see the physiological, social-emotional and cognitive aspects of self-regulation in behavior (Blair & Raver, 2012). From a social psychological perspective, self-regulation is defined as a concept that includes the process of adopting and implementing goals in people's daily lives, from goals that are big enough to make New Year's resolutions to simple goals about what to do for lunch. It is a comprehensive concept in which people keep their thoughts, emotions and behaviors under control, including their basic capacity and general tendencies in achieving these goals (Davisson & Hoyle, 2017). Since many studies point to the role of children's self-regulation in the development of different areas, there has been an increase in the number of studies on supporting the development of self-regulation in recent years (Duru & Balkıs, 2014; Sektnana, et al., 2010; Torres, 2011; Williford, et al., 2013). Self-regulation is important for the successful realization of developmental tasks encountered in life and for understanding human development (McClelland, et al., 2018). Rapid developments in self-regulation skills occur in early childhood and especially in preschool years. Research emphasizes that self-regulation skills acquired in this period play a key role in other periods of life (Blair & Razza, 2007; McClelland et al. 2007).

Similarly, it is stated that the foundations of 21st century skills, which is the other variable of the study, and the development of these skills are laid in the preschool period. In addition, it is stated by studies that these skills gained in this period have an important role in developing positive attitudes in all skills in the following periods (Tuğluk & Altın, 2018). The rapid change in the world has made it necessary to create different solutions and new skills. Especially as a result of the recent changes in information and technology, 21 century skills have come to the agenda. The most common classification of these skills, which are one of the topics organized in research and various studies, conferences and seminars in the field of education in the world and in our country in recent years, is as follows: learning and innovation skills, life and career skills, information-media and technology skills (Trilling & Fadel, 2009). These 3 main topics are considered as 13 skills: Learning skills consist of problem solving, communication, creative thinking, critical thinking, collaboration. Information, media and technology skills, which are under the other heading, include information and communication technologies literacy, information literacy, media literacy skills. The last skill heading, life and career skills, includes self-management, flexibility and adaptability, leadership, social skills, productivity and accountability skills (Partnership For 21st Century Skills, 2009). Studies emphasize the necessity of disseminating 21st century skills as part of educational environments with methods appropriate to the developmental processes of children from early childhood (Weber & Greiff, 2023; Galarneau, & Zibit, 2007; Yalçin, & Öztürk, 2022).

Children's innate curiosity and enthusiasm to explore the world and create meaning leads them to learn new things through their experiences. Questioning, examining, examining, observing everything they are curious about and actively interacting with the environment as a result of these observations are normal developmental indicators (Gray, 2013; Nayfeld et al., 2011). These tendencies of children indicate that they are predisposed to thinking skills such as problem solving, critical thinking, creative thinking, and

communication and collaboration skills, which are within the scope of 21st century skills. Children's sense of curiosity also manifests itself in their media and technology skills. All types of media and technology products, and especially information communication technologies, have exploratory and challenging content, which is attractive for children in terms of their orientation towards their use (Casey et al., 2012; Hatzigianni, & Margetts, 2012). However, research on appropriate duration and the right content, especially in media and technology use, warns about the importance of teaching information, media, and technology literacy (Chen & Adler, 2019; Hosokawa, & Katsura, 2018). Within the scope of life and career skills, activities for children to develop adaptability, flexibility, social skills, productivity, leadership accountability and self-management skills, especially in the preschool period, should be supported in early childhood institutions. Another skill within the scope of life and career skills is the self-management skill within self-regulation development (DeRosier & Lloyd, 2010; Taylor et al., 2017).

The starting point of the study is the assumption that self-regulation skills, which include executive function and emotion regulation skills that enable children to control their emotions, thoughts and behaviors, may be related to 21st century skills such as learning and innovation skills, life and career skills, information-media and technology skills. In this direction, studies on the positive effect of self-regulation on academic achievement and establishing good relationships with peers support its relationship with learning skills, one of the 21st century skills (Montroy, et al., 2016; Riva & Ryan, 2015). Similarly, it is thought that life and career skills, another 21st century skill, may be related to self-regulation. In particular, self-management skill, which is included in life and career skills, is a product of executive function and emotion regulation skills at the center of self-regulation (Bauer & Baumeister, 2011; Shanker, 2015). In addition, when we look at the literature, there are studies that reveal the relationship between positive behaviors, sufficient level of empathy and social skills, which are among the other skills included in life and career skills, and self-regulation acquired in the early period (Ezmeci, 2019; McClelland & Tominey, 2016). The third and last of the 21st century skills, information, media and technology skills and self-regulation, emphasized the developmental effect of both variables on each other (Çiğdem, 2015; Kauffman et al., 2011; Steffens, 2006). All these studies reveal the relationship with self-regulation by considering the skills that make up the 21st century skills separately. The current study examines the relationship between 21st century skills and self-regulation as a variable in the context of preschool children. Since the preschool period is a period in which the foundations of many skills, including the variables of the study, are laid and can facilitate future development, it is important to examine the relationship between 21st century skills and self-regulation skills of children. In this direction, the study aims to examine whether the child's self-regulation has an effect on 21st century skills, considering that self-regulation will positively predict the components of 21st century skills. In line with this purpose, the following hypotheses were formed to be tested.

H1: There is a positive relationship between child self-regulation and 21st century skills.

H2: Child self-regulation has a significant effect on 21st century skills.

2. METHODOLOGY

2.1. Research Design

In the study, the relational survey model, which makes it possible to describe the relationships between variables, was used. This model helps to determine the existence and direction of the relationship between the variables in the research (McMillan & Schumacher, 2010). In this context, the relationship between children's self-regulation and 21st century skills was first examined with correlation analysis and then the predictive status was examined with structural equation modeling.

2.2. Study Group

The population of the study consisted of children studying in kindergartens affiliated with the Ministry of National Education in Tarsus district of Mersin province. The data were collected from teachers who were expected to fill in the option corresponding to the statements specified in the items about these

children. Criterion sampling, which is one of the purposive sampling methods, was used to determine the sample in the study. The criterion was that the teachers should be working in a kindergarten in order to reach a large number of children aged 48-60 months (5 years) by considering resource and time efficiency. Another criterion is that at least 10 teachers work in the institution. In this context, data were collected from 22 teachers who agreed to participate in the study from 4 kindergartens in the district center. After the verbal and written consent of the teachers to participate in the study was obtained, written consent was obtained from the families that data about the children would be collected from the teachers. Of the 216 children who participated in the study, 46,3% were girls and the rest were boys. There were no children with special needs among the children participating in the study. The schools where the data collection process of the study took place are neighborhoods inhabited by families with low and medium economic levels. When we look at the educational level of the families, it is seen that approximately one fourth of them have a bachelor's degree, but most of them have a secondary education.

2.3. Data Collection Tools

In the study, the Self-Regulation Skills Scale was used to determine the self-regulation skills of the child participants and the 21st Century Skills Scale for 5-6 Year Old Children (DAY - 2) form was used to determine their 21st century skills.

2.3.1. Self-Regulation Skills Scale (SRS)

The scale is used to determine the level of self-regulation skills of 48-72-month-old children. Developed in 2016 by Bayındır and Ural, the scale consists of 33 items and 2 sub-dimensions in 5-point Likert type, namely control and regulation skills. "He does not give up immediately in the face of difficulties", "He can correct his mistakes on his own (for example, when he makes a mistake in drawing on lines, he erases it and tries again)" are sample items for the regulation sub-dimension. "After the end of active activities such as chasing and dancing, he/she cannot calm down even though some time has passed.", "He/she waits for his/her turn." are sample items for the control subscale. The scale includes the evaluation of the child's self-regulation skills by the teacher by scoring. The regulation category includes process monitoring skills, planning skills, evaluation and emotion-action control skills, and motivational regulation skills. Under the control dimension, attention control and self-control skills are included. The internal consistency coefficient (cronbach alpha value) of the scale is .96 for the total scale, ,91 for the control skills sub-dimension and ,96 for the regulation skills sub-dimension. The test-retest correlation coefficient calculated for the scale is ,99 (Bayındır & Ural, 2016). As a result of the statistical analysis conducted within the scope of this study, the cronbach alpha value of the scale is ,76.

2.3.2. 21st Century Skills Scale for 5-6 Year Old Children (DAY - 2)

The scale developed by Yalçın, Simsar and Dinler in 2020 consists of 33 items and 3 sub-dimensions. The scale covers the evaluation of the child's 21st century skills by scoring by the teacher. It is a 4-point Likert-type measurement tool with 3 sub-dimensions. "He/she tries different tools (body language, drama, music, painting, etc.) while telling stories or expressing his/her feelings." is an example of the learning and innovation skills sub-dimension. "Adapts to changes in daily routine (such as spending less time at school for a field trip)." is an example item for the life and career skills subscale. "Utilizes previous experiences to access new information." is an example item for the information and media technologies sub-dimension. The cronbach alpha values for each sub-dimension of the scale were calculated as ,94 for life and career skills, ,96 for learning and innovation skills, and ,92 for information, media and technology skills. The cronbach alpha value for the whole scale was found to be ,97. These calculation results show that both the sub-dimensions and the whole scale have a high degree of internal consistency. The three-factor scale was tested separately through first and second level confirmatory factor analysis (CFA). According to the first level CFA results, the factor loadings of the items ranged between ,68 and ,94. According to the second level CFA analysis results, the item loadings ranged between ,63 and ,89. The

model-data fit statistics for the two-level structure of the scale were X2/sd = 2.66, RMSEA= .07, CFI= .91, TLI= ,90, SRMR= ,45. In this case, it can be said that the fit values of both the 3-dimensional and unidimensional structure of the scale are very good. As a result of the summations made after the item marking of the measurement tool, the 21st century skills value is calculated in the range of maximum 132 points and minimum 33 points. As the total score increases, the child's level of having 21st century skills increases (Yalçın, Simsar, & Dinler, 2020). As a result of the statistical analysis conducted within the scope of this study, the cronbach alpha value of the scale is ,81.

2.4. Process

The data of the study were collected from teachers using measurement tools representing variables about children. In line with this limitation, as a precautionary measure, data collection was carried out in May-June 2023, the last two months of the academic year, when teachers are thought to have the highest level of knowledge about children. In addition, it is very difficult for teachers to fill in the scales for each child and it can turn into a process that tends to be filled in randomly after a while. In order to prevent this situation, only 10 students were randomly selected from the class lists of 22 teachers. In this process, the teachers in the central schools who volunteered to participate in the study were first interviewed and informed about the study. After verbal and written consent was obtained from the teachers, a letter was sent to the families of the children in their classes to inform them about the study and to obtain their consent. The data collection process was completed with 243 children whose families consented to participate in the study. This process took approximately 6 weeks. Consent was obtained from the data collection families for the teacher to provide information about the items in the relevant scales. When the scales were examined, it was determined that there were 216 valid measurement tools due to leaving blank items.

2.5. Data Analysis

In the study, skewness and kurtosis values of the data were examined first. These values are used to reveal whether the data are normally distributed or not. After it was seen that the data were normally distributed, cronbach alpha values were calculated for reliability analysis. All these procedures were calculated using the SPSS 26 program (ethically, the source should be used, whichever program will be used). In order to analyze the validity of the scales used, Confirmatory Factor Analysis (CFA) was conducted in AMOS 22 (the same applies). Tables 1, 2 and 3 show the results of the validity and reliability analyses.

Table 1.
Normality and Reliability Values of Data

	n	min.	max.	mean	ss.	skewness	kurtosis	cronbach alfa
Self-regulation skills	217	1,56	4,50	3,75	1,12	0,96	-1,13	0,76
21st century skills	217	1,00	3,95	2,25	1,02	-1.03	-0,73	0,81

Table 1 shows the descriptive, data distribution values (skewness and kurtosis) and reliability analysis (cronbach alpha) results of self-regulation skills and 21st century skills variables. Accordingly, the skewness value of the self-regulation skills scale was 0.96 and the kurtosis value was -1.13. The 21st century skills scale skewness value was -1.13 and kurtosis value was -0.73. Although there are normality criteria for different ranges in the literature, it is accepted that the skewness and kurtosis values between -1.5 and +1.5 in this study provide normal distribution (Tabachnick & Fidell, 2013). The reliability coefficient (cronbach alpha) of 0.70 and above indicates that the scores of the measurement tool are sufficient for validity (Büyüköztürk et al., 2014). The cronbach alpha coefficient for the Self-Regulation Skills Scale was found to be 0.76. The cronbach Alpha coefficient for the 21st Century Skills Scale for 5-6 Year Old Children was 0.81. Accordingly, it can be said that both measurement tools are reliable.

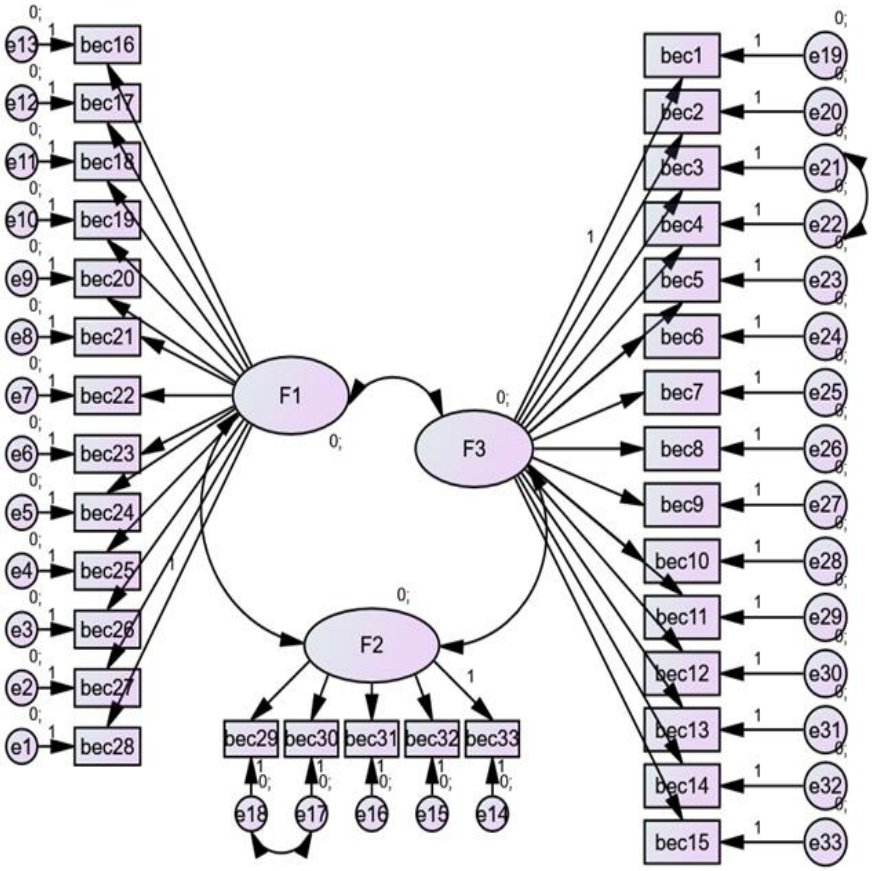

Figure 1. Validity analysis of the 21st century skills scale for 5-6 year old children (DAY - 2)

Figure 1 shows the confirmatory factor analysis of the 21st Century Skills Scale for 5-6 Year Old Children (DAY - 2). The data obtained as a result of the analysis are presented in Table 2 with reference values.

Table 2.
Validity Values of the 21st Century Skills Scale for 5-6 Year Old Children

Goodness of Fit Indices	**Acceptable Compliance**	**Good Fit**	**Measurement Model Results**
Chi-square/Degree of Freedom (χ 2/df)	2df ≤ χ 2 ≤ 3df	0 ≤ χ 2 ≤ 3df	1,844
Mean Approximate Errors Square Root (RMSEA)	,05 < RMSEA ≤ ,08	0 < RMSEA ≤ ,05	,058
Normed Fit Index (NFI)	,90 ≤ NFI < ,95	,95 ≤ NFI < 1	,953
Comparative Fit Index (CFI)	,95 ≤ CFI < ,97	,97 ≤ CFI < 1	,974
Goodness of Fit Index (GFI)	,90 ≤ GFI < ,95	.95 ≤ GFI < ,97	,898
Adjusted Goodness of Fit Index (AGFI)	,85 ≤ AGFI ≤ ,90	,90 ≤ AGFI ≤ 1	,856

(Engel, Moosbrugger and Müller, 2003)

As a result of the confirmatory factor analysis, it was found that the 21st Century Skills Scale for 5-6 Year Old Children was a valid measurement tool. Looking at the goodness of fit indices of the model, it is seen that the x^2/df value is 1.844. This value, which is obtained by dividing the χ^2 value by the degrees of freedom, is below 3, which is considered as an acceptable fit. The RMSEA value of 0.058 indicates that it is within the acceptable goodness of fit range. When the NFI and CFI values were examined, it was determined that the two index values were .953 and .974, respectively, and these values showed a desired level of fit. Although the goodness-of-fit index value (GFI) is very close to the acceptable value, it is below the range. However, the literature is still not clear between the ranges of fit indices and which index can be used when evaluating the model (Engel, Moosbrugger, & Müller, 2003). In addition, the adjusted goodness of fit index value (AGFI) is within the acceptable range. Modifications were made between e17, e18 and e21, e22 for goodness of fit values.

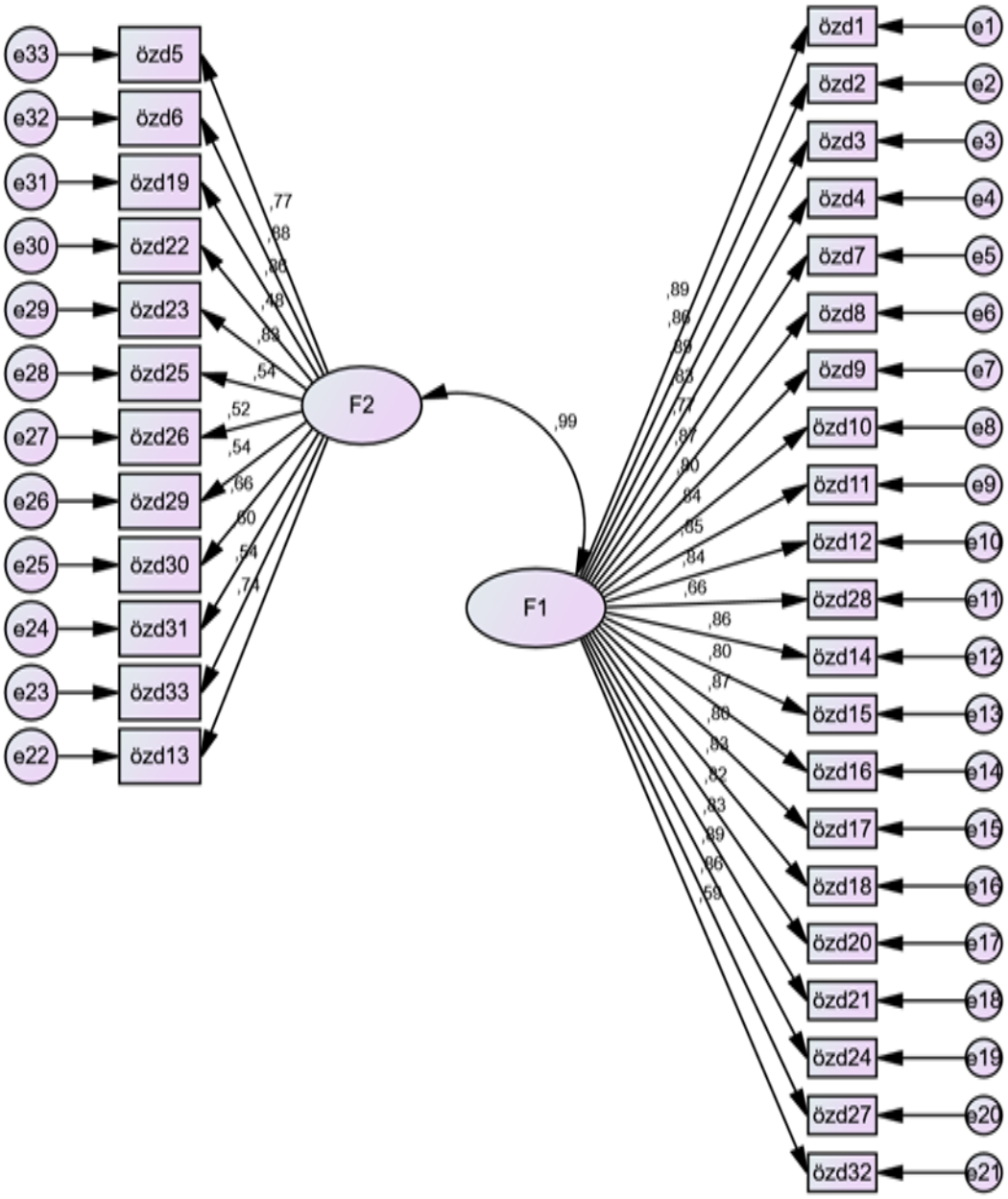

Figure 2. *Confirmatory factor analysis of self-regulation skills scale*

Figure 2 shows the confirmatory factor analysis of the Self-Regulation Skills Scale. The data obtained as a result of the analysis are presented in Table 3 with reference values.

Table 3.
Validity Values of the Self-Regulation Skills Scale

Goodness of Fit Indices	Acceptable Compliance	Good Fit	Measurement Model Results
Chi-square / Degree of Freedom (χ 2/df)	2df ≤ χ 2 ≤ 3df	0 ≤ χ 2 ≤ 3df	2,005
Mean Approximate Errors Square Root (RMSEA)	,05 < RMSEA ≤ ,08	0 < RMSEA ≤ ,05	,039
Normed Fit Index (NFI)	,90 ≤ NFI < ,95	,95 ≤ NFI < 1	,911
Comparative Fit Index (CFI)	,95 ≤ CFI < ,97	,97 ≤ CFI < 1	,981
Goodness of Fit Index (GFI)	,90 ≤ GFI < ,95	,95 ≤ GFI < ,97	,969
Adjusted Goodness of Fit Index (AGFI)	,85 ≤ AGFI ≤ ,90	,90 ≤ AGFI ≤ 1	,937

As a result of the confirmatory factor analysis, it was found that the Self-Regulation Skills Scale was a valid measurement tool. Looking at the goodness of fit indices of the model, it is seen that the x^2/df value is 2,005. This value, which is obtained by dividing the χ^2 value by the degrees of freedom, is below 3, which is considered as an acceptable fit. The RMSEA value of ,039 indicates that it is within the acceptable goodness of fit range. When the NFI and CFI values are analyzed, the two index values are respectively. ,911 and ,981, respectively, and these values indicate a desired level of fit. The goodness of fit index value (GFI) and adjusted goodness of fit index value (AGFI) are also within the acceptable and good fit value range (Engel, Moosbrugger, & Müller, 2003).

2.6. Ethics committee permission information

Name of the ethical review committee: Tarsus University Scientific Research and Publication Ethics Committee

Date of ethical review decision: 20.03.2023

Ethics assessment certificate number: 02-2023/11

3. FINDINGS

After the validity and reliability analyses of the scales, correlation analysis in SPSS program and regression analysis using structural equation modeling in AMOS program were conducted to test the assumptions of the study.

Table 4.
Correlation Analysis Between Self-Regulation Skills and Sub-Dimensions and 21st Century Skills and Sub-Dimensions

n=217		21st skills	1	2	3	self-regulation	4	5
21st century skills	**r**	1	,862	,710	,575	,374	,233	,380
	p		,000	,000	,000	,001	,033	,000
1	**r**		1	,580	,498	,289	,238	,278
	p			,000	,000	,008	,029	,010
2	**r**			1	,573	,228	,259	,391
	p				,000	,037	,018	,000
3	**r**				1	,283	,251	,219
	p					,009	,021	,045
self-regulation	**r**					1	,673	,401
	p						,000	,000
4	**r**						1	,674
	p							,000
5	**r**							1

p<.05, p<.01, r<0.30 indicates a low level relationship, 0.30<r<0.69 indicates a medium level relationship, r≥0.70 indicates a high level relationship

Table 4 shows the results of the correlation analysis between self-regulation and its sub-dimensions and 21st century skills and its sub-dimensions. The results of the analysis show that there is a positive and moderately significant relationship between children's self-regulation skills and 21st century skills (r=.374; p<0.01). According to the correlation analysis between 21st century skills and self-regulation sub-dimensions, there was a positive low-level significant relationship between 21st century skills and regulation skills (r=.233 ; p<0,05) and a positive moderate-level significant relationship between 21st century skills and control skills (r=.380 ; p<0,01). When the correlation analysis between self-regulation and 21st century skills sub-dimensions is examined, it is seen that there is a positive low-level significant relationship between self-regulation and learning and innovation (r=.289 ; p<0,01), life and career (r=.228 ; p<0,05), information, media and technology skills (r=.283 ; p<0,01). In the context of the current results, the fact that there is a significant positive relationship between self-regulation and 21st century skills means that the increase in self-regulation skills will increase 21st century skills.

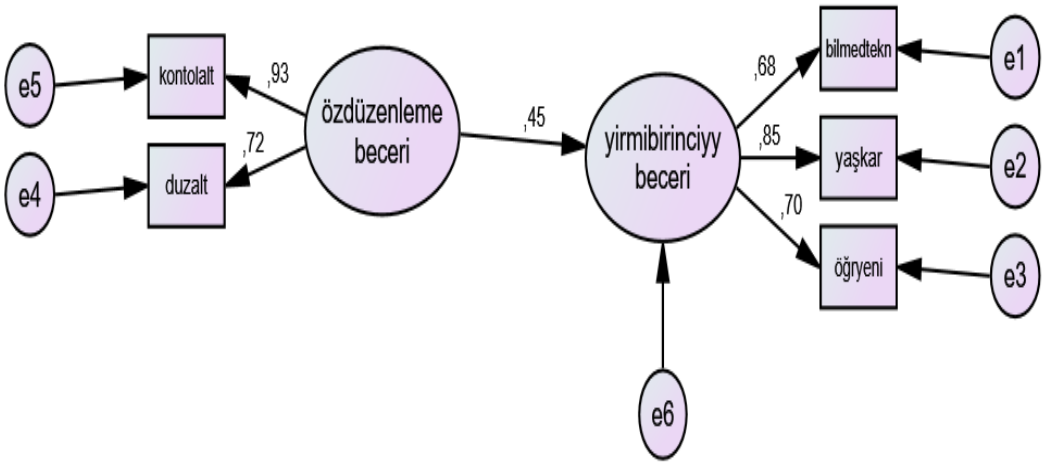

Figure 3. *Structural equation model of the relationship between self-regulation skills and 21st century skills*

The structural equation modeling established to test the effect of self-regulation skills on 21st century skills is shown in Figure 3. The goodness of fit values that emerged with the establishment of the model are presented in Table 5.

Table 5.
Structural Equation Model (SEM) Fit Values of the Relationship Between Self-Regulation Skills and 21st Century Skills

Variable	χ 2/df	RMSEA	NFI	CFI	GFI	AGFI
SEM	1,016	,014	,971	,998	,961	,927

When Table 5 is examined, it is seen that the results of the structural equation model are at good fit level ($0 \leq \chi\ 2 \leq 3df$; $0 < RMSEA \leq .05$; $.95 \leq NFI < 1$; $.97 \leq CFI < 1$; $.95 \leq GFI < .97$; $.90 \leq AGFI \leq 1$). (Engel, Moosbrugger, & Müller, 2003). Accordingly, it was seen that the model was validated with a good degree of fit and the results could be evaluated. The β coefficients, standardized ß coefficients, standard error, critical ratio and p values between the variables in the model were examined and it was concluded that children's self-regulation positively affected their 21st century skills (β= ,451; p=0,000). In other words, it can be said that self-regulation predicts 45% of 21st century skills. In the context of the current results, both hypotheses of the study were accepted.

4. DISCUSSION, CONCLUSION, RECOMMENDATIONS

In this study, it was aimed to examine the level of relationship between self-regulation and 21st century skills of 5-6 year old children and the predictive power of self-regulation skills on 21st century skills. Self-regulation, which means planning and activating thinking processes before taking action, is thought to be effective in the process of acquiring 21st century skills such as learning and innovation skills, life and career skills, information-media and technology skills. When the literature is examined, there are studies examining the relationship between self-regulation skills and various concepts (Aktan, 2012; Blair & Raver, 2015; Turan & Demirel, 2010) Similarly, there are studies examining the relationship between self-regulation skills and skills such as problem solving and critical thinking, which are included in 21st century skills (Chang et al., 2022; Erol, İvrendi, & Özcan, 2022). However, there is no study examining the relationship and prediction status between self-regulation and 21st century skills of preschool children.

Following the understanding of the importance of self-regulation in children's development, studies have shown that this concept should be addressed as a concept that should be emphasized in the early years (Montroy et al., 2016; Riva & Ryan, 2015). In recent years, self-regulation skills, like 21st century skills, have emerged as an important skill for children to be successful in learning and managing social relationships (McCombs, 2013; Montroy, 2014; Schmitt, et al., 2014). In a changing and developing world, all social circles have agreed that children need to have 21st century skills to be successful, including competencies such as critical thinking and problem solving skills, communication skills, information and media literacy skills, contextual learning skills, and collaboration skills (P21, 2011). (Kaufman, 2013; Rotherham, & Willingham, 2010). In the current study, it was concluded that there was a positive and moderately significant relationship between children's self-regulation skills and 21st century skills. Based on this finding, it can be concluded that an increase in children's self-regulation skills will increase their 21st century skills. When other studies were examined, a study investigating the relationship between self-regulation and 21st century skills was found. When the results of this study were analyzed, it was found that there was no significant relationship between these two variables. The reason for this difference may be due to the number of samples, method or measurement tool. However, studies that investigated the relationship between self-regulation and 21st century skills such as communication, problem solving and critical thinking, which are included in 21st century skills, found a significant relationship (Haryono et al., 2019; Hendry et al., 2022).

The other hypothesis of the study, which was formed on the grounds that self-regulation skills, which have been shown by studies (McClelland & Tominey, 2016; Riva & Ryan, 2015; Schmitt, et al., 2014) to include processes such as exhibiting positive behavior, academic success, developing good relationships, managing their behaviors, and acting in a planned manner, can support 21st century skills in terms of the features it contains, was also confirmed. Accordingly, the other result of the study is that children's self-regulation skills have an effect on 21st century skills. According to the structural equation model, self-regulation skills positively affect 21st century skills. Thanks to this finding, it can be interpreted that the development of children's self-regulation skills can support the development of 21st century skills. When the relevant literature was examined about the current finding, no similar research was found. When the literature was examined, studies investigating the effect of processes such as STEM activities, games and digital storytelling on 21st century skills were found (Hirsh-Pasek et al., 2020; Singh, 2021; Radeva, 2020; Czarnecki, 2009). No similar study was found to evaluate the current result. However, it is thought that self-regulation skill (Bauer & Baumeister, 2011; Shanker, 2015) with its characteristics of self-regulation, evaluation, management, control and empathy is capable of predicting 21st century skills consisting of 3 main topics and 13 skills (problem solving, critical thinking, communication, cooperation, self-management, social skills, flexibility and adaptability, productivity, etc.).

One of the limitations of the study is that the relationship and prediction status between the sub-dimensions of the variables in the study were not included in the current study. The sample in the study was determined to cover only kindergartens in a district center. This may have a limiting effect on the generalizability of the research results. A similar study can be planned with large sample groups in different regions and different socioeconomic contexts. In future studies, research can be planned by considering variables such as psychological resilience and parental attitudes that may play a role in the effect of self-regulation on 21st century skills. In the study, the data collection process about children was conducted through teachers. A similar study can be planned in the form of parents answering the items about the child or including child participants in the process through observation and interview, and the results can be compared. Early childhood is a critical time period in the development of the skills addressed in the study. Considering that these skills are affected by personal and environmental processes, it is necessary to plan studies for teachers and educators who have an important role in the child's development process. From this point of view, dissemination activities such as training programs and seminars for teachers and parents can be planned to support the development of self-regulation and the importance and development of 21st century skills.

Reference

Aktan, S. (2012). The relationship between students' academic success, self-regulation skills, motivation and teachers' teaching styles [Doctoral dissertation, Balıkesir University].

Bauer, I. M. ve Baumeister, R. F. (2011). Self-regulatory strength. In K. Vohs, & R. Baumeister (Eds.), Handbook of self-regulation (2nd ed.) (pp. 64-82): New York: Guilford Press.

Bayındır, D., ve Ural, O. (2016). Development of the Self-Regulation Skills Scale. International Online *Journal of Educational Sciences,* 8(4).

Blair, C., & Raver, C. (2012). Child development in the context of adversity: Experiential canalization of brain and behavior. *American Psychologist, 67*, 309–318.

Blair, C., & Raver, C. C. (2015). School readiness and self-regulation: A developmental psychobiological approach. *Annual Review of Psychology, 66*, 711-731.

Blair, C. & Razza, R. P. (2007). Relating effortful control, executive function, and false belief understanding to emerging math and literacy ability in kindergarten. *Child Development, 78*(2), 647-663.

Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö.E., Karadeniz, Ş. ve Demirel, F. (2014). Scientific research methods. Ankara: Pegem Akademi.

Casey, A., Layte, R., Lyons, S., & Silles, M. (2012). Home computer use and academic performance of nine-year-olds. Oxford Review of Education, 38(5), 617-634.

Chang, C. Y., Panjaburee, P., Lin, H. C., Lai, C. L., & Hwang, G. H. (2022). Effects of online strategies on students' learning performance, self-efficacy, self-regulation and critical thinking in university online courses. *Educational Technology Research and Development*, 1-20.

Chen, W., & Adler, J. L. (2019). Assessment of screen exposure in young children, 1997 to 2014. JAMA *Pediatrics, 173*(4), 391-393.

Çiğdem, H. (2015). How does self-regulation affect computer-programming achievement in a blended context?. *Contemporary Educational Technology, 6*(1), 19-37.

Czarnecki, K. (2009). How digital storytelling builds 21st century skills. *Library Technology Reports, 45*(7), 15.

Davisson, E. K., & Hoyle, R. H. (2017). The Social-Psychological Perspective on Self-Regulation. The Wiley Handbook of Cognitive Control, 440-453.

DeRosier, M. E., & Lloyd, S. W. (2010). The impact of children's social adjustment on academic outcomes. *Reading & Writing Quarterly, 27*(1-2), 25-47.

Duru, E., & Balkıs, M. (2014). Analysis of the relationships between burnout, academic achievement and self-regulation. *Educational Sciences in Theory and Practice, 14*(4), 1263-1284.

Engel, K. S., Moosbrugger, H. & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and sescriptive goodness of fit measures. *Methods of Psychological Research Online, 8* (2), 23 – 74.

Erol, A., İvrendi, A., & Özcan, Ö. (2022). The relationship between scientific process and self-regulation skills in early childhood. *Dokuz Eylül University Buca Faculty of Education Journal,* (54), 988-1005.

Ezmeci, F. (2019). The effect of Preschool Self-Regulation Program on children's self-regulation, problem behaviors and social skills. [Doctoral dissertation, Hacettepe University].

Galarneau, L., & Zibit, M. (2007). Online games for 21st century skills. Games and simulations in online learning: Research and Development Frameworks, 59-88.

Gray, P. (2013). Free to Learn: Why Unleashing the Instinct to Play Will Make Our Children Happier, More Self-Reliant, and Better Students for Life. Hachette UK.

Haryono, S. E., Wulandari, N. W., Eva, N., & Anggraini, H. (2019). Critical Thinking Skills And Self Regulated Learning In The Learning Process In Early Childhood. In Proceeding of International Conference of Psychology (pp. 92-96).

Hatzigianni, M., & Margetts, K. (2012). 'I am very good at computers': young children's computer use and their computer self-esteem. European Early Childhood Education Research Journal, 20(1), 3-20.

Hendry, A., Agyapong, M. A., D'Souza, H., Frick, M. A., Portugal, A. M., Konke, L. A., ... & Brocki, K. C. (2022). Inhibitory control and problem solving in early childhood: Exploring the burdens and benefits of high self-control. *Infant and Child Development, 31*(3), e2297.

Hirsh-Pasek, K., Hadani, H. S., Blinkoff, E., & Golinkoff, R. M. (2020). A new path to education reform: playful learning promotes 21st century skills in school and beyond. Policy Brief.

Hosokawa, R., & Katsura, T. (2018). Association between mobile technology use and child adjustment in early elementary school age. *PloS one, 13*(7), e0199959.

Kaufman, K. J. (2013). 21 ways to 21st century skills: why students need them and ideas for practical implementation. *Kappa Delta Pi Record, 49*(2), 78-83.

Kauffman, D. F., Zhao, R., & Yang, Y. S. (2011). Effects of online note taking formats and self-monitoring prompts on learning from online text: Using technology to enhance self-regulated learning. *Contemporary Educational Psychology, 36*(4), 313-322.

Lawrence, S. (2015). Interventions to Promote Young Children's Self-Regulation and Executive Function Skills in Early Childhood Settings. Child Care & Early Education Research Connections.

McClelland, M. M., Cameron, C. E., Connor, C. M., Farris, C. L., Jewkes, A. M., ve Morrison, F. J. (2007). Links between behavioral regulation and preschoolers' literacy, vocabulary, and math skills. *Developmental Psychology, 43*(4), 947.

McClelland, M., Geldhof, J., Morrison, F., Gestsdóttir, S., Cameron, C., Bowers, E., Duckworth A., Little T.,& Grammer, J. (2018). Self-regulation. In Handbook of Life Course Health Development (pp. 275-298). Springer, Cham.

McClelland, M. M., & Tominey, S. L. (2014). The Development of Self-Regulation and Executive Function in Young Children. Zero to Three, 35(2), 2-8.

McClelland, M. M., & Tominey, S. L. (Eds.). (2016). İntroduction to Special Issue on Self-Regulation in Early Childhood. Self-regulation and Early School Success. Routledge.

McCombs, B. L. (2013). Self-regulated learning and academic achievement: A phenomenological view. In Self-regulated learning and academic achievement (pp. 63-117). Routledge.

McMillan, J. H., & Schumacher, S. (2010). Research in Education: Evidence-Based Inquiry, MyEducationLab Series. Pearson.

Montroy, J. J., Bowles, R. P., & Skibbe, L. E. (2016). The effect of peers' self-regulation on preschooler's self-regulation and literacy growth. *Journal of Applied Developmental Psychology, 46*, 73-83.

Montroy, J.J. (2014). The development of behavıoral self-regulatıon across preschool and ıts associatıon wıth academıc achievement. [Doctoral dissertation, Michigan State University]. UCL Discovery.

Nayfeld, I., Brenneman, K., & Gelman, R. (2011). Science in the classroom: Finding a balance between autonomous exploration and teacher-led instruction in preschool settings. *Early Education & Development, 22*(6), 970-988.

Partnership For 21st Century Skills, (P21). (2009). Framework For 21st Century Learning. Erişim tarihi: 22 Aralık 2022 https://files.eric.ed.gov/fulltext/ED519462.pdf

Radeva, S. (2020). STEM Education Should Support and Encourage 21st Century Skills of Children and Sustainability and United National Goals. Key Poınts For Early Chıldhood Stem Educatıon And Involvıng Parents, 4.

Riva, S., & Ryan, T. G. (2015). Effect of Self-Regulating Behaviour on Young Children's Academic Success. *International Journal of Early Childhood Special Education, 7*(1), 69-96.

Rotherham, A. J., ve Willingham, D. T. (2010). 21st-century" skills. *American Educator, 17*(1), 17-20.

Schmitt, S. A., Pratt, M. E., & McClelland, M. M. (2014). Examining the validity of behavioral self-regulation tools in predicting preschoolers' academic achievement. *Early Education and Development, 25*(5), 641-660.

Sektnana, M., McClellanda, M., Acocka, A. & Morrison, F. (2010). Relations between early family risk, children's behavioral regulation and academic achievement. *Early Childhood Research Quarterly, 25*, 464–479.

Shanker, S. (2015). Self-regulation. Retrieved from; https://www.ccyp.wa.gov.au/media/ 1769/report-2012-thinker-in-residence-stuart-shanker-june-2012.pdf

Singh, M. (2021). Acquisition of 21st century skills through STEAM education. Academia Letters, 2, 712.

Steffens, K. (2006). Self-regulated learning in technology-enhanced learning environments: Lessons of a European peer review. *European Journal of Education, 41*(3-4), 353-379.

Tabachnick, B. G. & Fidell, L. S. (2013). Using multivariate statistics. Boston, Pearson.

Taylor, R. D., Oberle, E., Durlak, J. A., & Weissberg, R. P. (2017). Promoting positive youth development through school-based social and emotional learning interventions: A meta-analysis of follow-up effects. *Child Development, 88*(4), 1156-1171.

Torres, M. (2011). Understandıng self-regulation, lınks to school readıness, and implıcatıons for intervenıng wıth hıgh-rısk chıldren. (Publication No. 3483744) [Doctoral dissertation, The Pennsylvania State University]. ProQuest Dissertations & Theses Global.

Trilling, B. & Fadel, C. (2009). 21st Century Skills: Learning for Life in Our Times. San Francisco: Jossey-Bass.

Tuğluk, M. N. & Altın, G. (2018). Leadership and accountability. In A. D. Öğretir-Özçelik, and M. N. Tuğluk, (Eds.) 21st century skills in education and industry. Ankara: Pegem Akademi.

Turan, S., & Demirel, Ö. (2010). The relationship between self-regulated learning skills and academic achievement: The case of Hacettepe University Faculty of Medicine. *Hacettepe University Faculty of Education Journal, 38*(38).

Yalçın, V., Simsar, A. & Dinler, H. (2020). 21st Century Skills Scale for 5-6 Year Old Children (DAY-2): Validity and Reliability Study. *Mediterranean Journal of Educational Research, 14*(32), 78-97.

Yalçin, V., & Öztürk, O. (2022). Examination of the Effects of Design-Oriented STEM Activities on the 21st Century Skills of Pre-School Children Aged 3-4. *Southeast Asia Early Childhood, 11*(2), 1-20.

Weber, A. M., & Greiff, S. (2023). ICT Skills in the Deployment of 21st Century Skills: A (Cognitive) Developmental Perspective through Early Childhood. Applied Sciences, 13(7), 4615.

Williford, A. P., Vick Whittaker, J. E., Vitiello, V. E., ve Downer, J. T. (2013). Children's Engagement within the Preschool Classroom and Their Development of Self-Regulation. *Early Education and Development, 24*(2), 162–187.

TÜRKÇE GENİŞLETİLMİŞ ÖZET

1.GİRİŞ

Öz-düzenleme, yaşamda karşılaşılan gelişimsel görevlerin başarıyla gerçekleşmesi ve insan gelişimini anlamada önem taşımaktadır (McClelland, ve diğerleri, 2018). Öz-düzenleme konusunda erken çocukluk yıllarında ve özellikle okul öncesi dönemde hızlı gelişmeler yaşanmaktadır. Araştırmalar bahsi geçen dönemde kazanılan öz-düzenleme becerilerinin yaşamdaki diğer dönemler için anahtar rol üstlendiği vurgusu yapmaktadır (Blair ve Razza, 2007; McClelland ve diğerleri 2007). Benzer şekilde çalışmanın diğer değişkeni olan 21. yüzyıl becerilerinin ve bu becerilere yönelik gelişimin okul öncesi dönemde temellerinin atıldığı ve bu dönemde kazandırılan bu becerilerin sonraki dönemlerde 21.yüzyıl becerileri kapsamına giren tüm becerilerde olumlu tutum geliştirmede önemli yeri olduğu ifade edilmektedir (Tuğluk ve Altın, 2018). Çalışmalar erken çocukluktan itibaren 21. yüzyıl becerilerinin çocuğun gelişim süreçlerine uygun yöntemlerle eğitim ortamlarının bir parçası olarak yaygınlaştırılması gerekliliğine vurgu yapmaktadır (Weber ve Greiff, 2023; Galarneau, ve Zibit, 2007; Yalçin, ve Öztürk, 2022).Çocuğun duygu, düşünce ve davranışlarını kontrol edebilmesini sağlayan yürütücü işlev ve duygu düzenleme becerisini kapsayan öz-düzenleme becerisinin 21. yüzyıl becerileri olan öğrenme ve yenilikçilik becerileri, yaşam ve kariyer becerileri, bilgi-medya ve teknoloji becerileri ile ilişkili olabileceği varsayımı çalışmanın çıkış noktasıdır. Bu doğrultuda öz-düzenlemenin akademik başarı ve akranları ile iyi ilişki kurabilme üzerindeki olumlu etkisine yönelik yapılan çalışmalar 21. yüzyıl becerilerinden biri olan öğrenme becerileri ile olan ilişkisini desteklemektedir (Montroy, ve diğerleri, 2016; Riva ve Ryan, 2015). Benzer şekilde 21. Yüzyıl becerilerinden bir diğeri olan yaşam ve kariyer becerilerinin) öz-düzenleme ile ilişkili olabileceği düşünülmektedir. Özellikle yaşam ve kariyer becerileri içinde yer alan kendini yönetme becerisi öz-düzenlemenin merkezinde bulunan yürütücü işlev ve duygu düzenleme becerilerinin bir ürünüdür (Bauer & Baumeister, 2011; Shanker, 2015). Yaşam ve kariyer becerilerinde yer alan diğer becerilerden olan olumlu davranışlar, yeterli düzeyde empati ve sosyal becerilerin erken dönemde kazanılan öz-düzenleme ile ilişkisini ortaya koymaktadır (Ezmeci, 2019; McClelland ve Tominey, 2016). 21.yüzyıl becerilerinin üçüncü ve sonuncusu olan bilgi, medya ve teknoloji becerileri ile öz-düzenleme arasındaki ilişkiyi inceleyen çalışmalar ise her iki değişkenin birbiri üzerindeki geliştirici etkisine vurgu yapmıştır (Çiğdem, 2015; Kauffman ve diğerleri, 2011; Steffens, 2006). Okul öncesi dönem çalışmanın değişkenleri de dahil olmak üzere birçok becerinin temellerinin atıldığı ve gelecekte geliştirilmeye kolaylık sağlayabileceği bir dönem olduğu için çocukların 21. yüzyıl becerileri ile öz-düzenleme becerileri arasındaki ilişkinin incelenmesi önem arz etmektedir. Bu doğrultuda çalışma öz-düzenlemenin 21. yy becerilerinin içinde yer alan bileşenleri olumlu yönde yordayacağından hareketle çocuğun öz-düzenlemesinin 21. yy becerilerine etkisi olup olmadığını incelemeyi amaçlamaktadır. Bu amaç doğrultusunda sınanmak üzere aşağıdaki hipotezler oluşturulmuştur:

H1: Çocuğun öz-düzenlemesi ile 21. yy becerileri arasında pozitif yönlü bir ilişki vardır.

H2: Çocuğun öz-düzenlemesinin 21. yy becerileri üzerinde anlamlı etkisi vardır.

2. YÖNTEM

Araştırmada değişkenler arasındaki ilişkilerin betimlenmesini mümkün kılan ilişkisel tarama modeli kullanılmıştır. Bu kapsamda çocukların öz-düzenleme ve 21. yy becerileri arasında önce ilişki durumu korelasyon analizi ile sonra yordayıcılık durumu yapısal eşitlik modeli ile incelenmiştir. Araştırmada çocuk katılımcıların öz-düzenleme becerilerini belirlemek için öğretmenler tarafından doldurulan Öz Düzenleme Becerileri Ölçeği ve 21 yüzyıl becerilerini belirlemek için de 5-6 Yaş Çocuklar için 21. Yüzyıl Becerileri Ölçeği (DAY – 2) formu kullanılmıştır. Çarpıklık ve basıklık değerleri referans alınıp verilerin normal dağıldığı görüldükten sonra güvenirlik analizi için de cronbach alpha değerleri hesaplanmıştır. Kullanılan ölçeklerin geçerlilik analizini yapmak için ise Doğrulayıcı Faktör Analizi (DFA) yapılmıştır. Bu analizler sonucunda verilerin geçerli ve güvenilir olduğu görülmüştür.

3. BULGULAR, SONUÇ VE TARTIŞMA

Bu araştırmada 5-6 yaş çocukların öz-düzenleme ve 21.yüzyıl becerileri arasındaki ilişki düzeyi ile öz-düzenleme becerilerinin 21. yüzyıl becerilerini yordama gücünü (etkisini) incelemek amaçlanmıştır. Literatür incelendiğinde öz-düzenleme becerisinin çeşitli kavramlarla ilişkisini inceleyen çalışmalar bulunmaktadır (Aktan, 2012; Blair ve Raver, 2015; Turan ve Demirel, 2010) Benzer şekilde 21.yüzyıl becerilerinin içinde yer alan problem çözme, eleştirel düşünme gibi beceriler ile öz-düzenleme becerileri arasındaki ilişkileri inceleyen çalışmalar bulunmaktadır (Chang ve diğerleri, 2022; Erol, İvrendi ve Özcan, 2022). Ancak okul öncesi dönemdeki çocukların öz-düzenleme ve 21.yüzyıl becerileri arasındaki ilişki ve yordama durumunu inceleyen bir çalışmaya rastlanmamıştır. Mevcut çalışmada çocukların öz-düzenleme becerileri ile 21.yüzyıl becerileri arasında pozitif yönlü orta düzeyde anlamlı bir ilişki olduğu sonucuna ulaşılmıştır. Bu bulgudan hareketle çocukların öz-düzenleme becerilerindeki artışın 21. yüzyıl becerilerini de arttıracağı sonucuna ulaşılabilir. Araştırmalara bakıldığında 21. yüzyıl becerileri içinde yer alan iletişim, problem çözme, eleştirel düşünme gibi becerilerin ayrı ayrı öz-düzenleme ile ilişkisini araştıran çalışmalarda mevcut araştırma ile benzer sonuçlara ulaşıldığı görülmüştür (Haryono ve diğerleri, 2019; Hendry ve diğerleri.,2022). Olumlu davranış sergileme, akademik başarı, iyi ilişkiler geliştirme, davranışlarını yönetebilme, planlı hareket etme gibi süreçleri içinde barındırdığı araştırmalar tarafından (McClelland ve Tominey, 2016; Riva ve Ryan, 2015; Schmitt, Pratt ve McClelland, 2014) ortaya koyulan öz-düzenleme becerisinin ihtiva ettiği özellikler bakımından 21. yüzyıl becerilerini destekleyici olabileceği gerekçesiyle oluşturulan çalışmanın diğer hipotezi de doğrulanmıştır. Buna göre araştırmanın diğer sonucu çocukların öz-düzenleme becerilerinin 21.yüzyıl becerileri üzerinde etkisinin bulunmasıdır. Kurulan yapısal eşitlik modeline göre öz-düzenleme becerisi 21. yüzyıl becerisini pozitif yönde etkilemektedir. Bu bulgu sayesinde çocukların öz-düzenleme becerilerinin gelişiminin 21. yüzyıl becerilerinin gelişimini destekleyebileceği yorumu yapılabilir. Mevcut bulgu hakkında ilgili literatür incelendiğinde benzer bir araştırmaya rastlanmamıştır. Ancak sahip olduğu kendini düzenleme, değerlendirme, yönetme, kontrollü ve empatik olma özellikleri ile öz-düzenleme becerisinin (Bauer ve Baumeister, 2011; Shanker, 2015) 3 ana başlık ve 13 beceriden oluşan (problem çözme, eleştirel düşünme, iletişim, iş birliği, kendini yönetme, sosyal beceriler, esneklik ve uyum, üretkenlik vb.) 21.yüzyıl becerilerini yordayacak nitelikte olduğu düşünülmektedir.

ETHICAL APPROVAL OF THE RESEARCH

In this study, all rules specified in the "Directive on Scientific Research and Publication Ethics of Higher Education Institutions" were followed. None of the actions specified under the second section of the Directive, "Actions Contrary to Scientific Research and Publication Ethics", have been carried out.

Ethics committee permission information

Name of the ethical review committee: Tarsus University Scientific Research and Publication Ethics Committee

Date of ethical review decision: 20.03.2023

Ethics assessment certificate number: 02-2023/11

CONTRIBUTION RATE OF RESEARCHERS

The research is single authored.

ACKNOWLEDGEMENT

I would like to thank the teachers, school administrators, parents and children who participated in the study for their support during the data collection process.

CONFLICT OF INTEREST

The research has no financial or personal connection with any person or organization. Therefore There is no conflict of interest in the research.