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**ANALYZING THE FINE MOTOR DEVELOPMENT AND EARLY LITERACY SKILL
LEVELS OF PRESCHOOL CHILDREN**

ANAOKULU ÇOCUKLARININ İNCE MOTOR GELİŞİM VE OKUMA YAZMAYA HAZIRLIK
BECERİLERİNİN İNCELENMESİ

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ABSTRACT

Preschool education is aimed to provide preschool children with rich and valuable experiences. Children's fine motor development is required for their growth and academic success. This development is also critical to gain preliminary competencies for early literacy. The purpose of this study was to analyze the fine motor development and early literacy skill levels of preschool children. For this purpose, the relational screening model was chosen. Eighty preschool children were selected from the middle socio-economic class. Fine motor development test and early literacy assessment form was used to collect data. Results indicated that preschool children with inadequate early literacy levels had lower fine motor development scores while children with instructional early literacy levels had better fine motor development scores ($p \leq .05$). Besides, there was a positive significant correlation ($p \leq .05$) between fine motor development and print awareness sub-dimension, and fine motor development and expressive and receptive language sub-dimension of early literacy. According to these results, both print awareness, and expressive and receptive language sub-dimensions of early literacy had moderate level correlation ($r = .54$ and $r = .44$) with fine motor development. It can be said that children with better fine motor development also have better early literacy skills as well.

Keywords: preschool children, fine motor, early literacy

ÖZET

Okul öncesi eğitim çocuklara zengin ve kaliteli deneyimler edindirmeyi amaçlar. Çocukların ince motor gelişimi, onların sağlıklı büyüme ve akademik başarısı için gereklidir. Bu gelişim aynı zamanda erken okuryazarlık becerilerinin de alt yapısını oluşturur. Bu çalışmanın amacı çocukların ince motor gelişimi ve okuma ve yazmaya hazırlık becerilerinin incelenmesi amacı ile yapılmıştır. Çalışmada ilişkisel tarama modeli kullanılmıştır. Orta seviye ekonomik düzeye sahip, anaokuluna devam eden seksen çocuk örnekleme alınmıştır. Ölçme araçları olarak ince motor gelişim testi ve okuma yazmaya hazırlık değerlendirme formu kullanılmıştır. Sonuçlar okuma yazmaya hazırlık beceri seviyesi düşük ve orta olan iki grubun puanları arasında anlamlı bir fark olduğunu göstermiştir ($p \leq .05$). Ayrıca düşük seviyede okuma ve yazmaya hazırlık becerilerine sahip çocukların, ince motor beceri gelişimlerinin de düşük olduğu bulunmuştur. Çocukların ince motor gelişim puanları ile okuma yazmaya hazırlık beceri puanları arasında anlamlı ve orta derecede bir ilişki vardır ($r = .54$ ve $r = .44$). Buna göre çocukların okuma yazmaya hazırlık becerilerinin desteklenmesinde, ince motor gelişim alanı da dikkate alınmalıdır.

Anahtar kelimeler: okul öncesi, ince motor, okuma yazmaya hazırlık

1. INTRODUCTION

Preschool education is a very important step in the academic learning process of children. It also helps their socialization and school readiness. The learning goals of early childhood education are enhancing children's knowledge, developing their motor skills, improving their disposition and teaching how to control feelings (Katz, 2003). It has been proven that preschool education brings positive outcomes to children's school life and their future (Sparling, Ramey & Ramey 2007).

Fine motor development is one of the sub-dimensions of psychomotor development emphasizing on hand and food functioning, and object control skills (Boz, 2015). Significant fine motor skills include behaviors such as holding, grasping, writing, tearing drawing, cutting and gluing during preschool. Object control allows the child to gain new experiences and interact with the environment. Besides, fine motor development affects children's school skills such as copying, drawing, and writing. Fine motor skills are quite essential for academic growth and academic success of children. Because children should be able to copy, demonstrate, write or draw letters and shapes using appropriate fine motor skills in the school (Gliner, 1985, Çağlak Sarı, 2015).

Children are natural learners. Preschool education is intended to provide these curious children with rich and valuable experiences. Children develop several knowledges including reading and writing before elementary school through these experiences. Children's knowledge of reading and writing is called early literacy during preschool years (Neuman & Roskos, 1998). Early literacy skills include print motivation, print awareness, letter knowledge, phonological awareness, vocabulary and narrative skills (Roskos, Christie & Richgels, 2003). These skills are critical to gain preliminary competences for preschool children to become effective readers and writers in later years (Rohde, 2015).

Fine motor development of young children is mostly linked to sportive movements (Hürmeriç Altunsöz, 2015). On the other hand, children's early literacy skills also mainly depend on fine motor movements (Koçak, 2018; Purtaş & Duman, 2017a). Delays in this developmental section will cause the under-performing of children. For this reason, the fine motor development of children regarding early literacy skills should be monitored. The purpose of this study was to investigate the preschool children's fine motor development concerning their early literacy skills. For this purpose, preschool children's level of fine motor development and early literacy skills was determined and the correlation between them was analyzed.

2. METHODS

The model of this research was relational screening model. Relational screening models intend to describe past or present conditions as they appear (Karasar, 2018). There is no attempt to alter or influence the conditions in the study. The relationships that are found through the screening are relatively interpreted rather than a cause-and-effect relationship. Fine motor development and early literacy levels of preschool children were presented descriptively and comparatively analyzed.

2.1. Population and Sampling

The target population of this research consisted of preschool children in İstanbul province, Turkey. The sample of the study was 80 children (40 girls and 40 boys) attending preschool classrooms. These students were at middle socioeconomic class located in the city center of İstanbul. The method for choosing the samples was purposive sampling. The preschools reported that they voluntarily want to involve in the study were listed. Seven of the preschools were randomly selected and parental consent forms were gathered. Participants were also randomly selected from these preschools according to the gender equivalence.

2.2 Data Collection Tools

Fine motor development test (FMDT) was used to decide on children's fine motor development levels. This test was designed to measure 3-6 years old children's fine motor skill development (Duman, 2016). There are six sub-dimensions (pencil grip, kneading, cutting, grasping, folding and assembling) in the inventory using eleven factors and twenty indicators for observational purposes. Three-point Likert type scale was (poor, moderate, and compatible levels) applied for the items. A total score of sixty points can be achieved by a child in the test.

Early literacy assessment form was used to establish children's early literacy skills. This form was developed by Koçak (2018) to determine and analyze the sub-dimensions of early literacy skills. The definition and guidelines of early literacy activities are provided for teachers by the Ministry of National Education (MoNE, 2013). Expected outcomes of the early literacy activities and targeted achievements are presented in the program book. Early literacy assessment form was developed based on developmental and educational guidelines. There are two sub-categories, print awareness, and expressive and receptive language, in the form. A three-point Likert type scale was also (inadequate, instructional, and independent levels) applied for the items.

2.3 Data Collection and Analysis

Data regarding children's fine motor development, FMDT was used to decide on children's fine motor development levels. Each child took the FMDT separately and each session was at the length of 30-35 minutes. Appropriate fine motor indicators were given three points, indicators that needed help were given two points, and inadequate indicators were given one point. Interobserver reliability for the fine motor development scores of one girl and one boy was .90.

Data regarding children's early literacy skills were collected using early literacy assessment form. Each child was observed twice on different days during free play time, emerging literacy activity time and/or Turkish activity time. The total observation period for each child was 120 minutes. For the test items, one point was given for the inadequate level, two points were given for the instructional level, and three points were given for the independent level. Interobserver reliability for the early literacy assessment scores for one girl and one boy was .89.

To analyze the data, SPSS (22.0) was conducted. Mean scores and standard deviations were used to present the descriptive data. To analyze the significant differences in sub-dimensions of early literacy levels, the t-Test was used. In the study, there were no children found at the independent level of early literacy development. To analyze the correlation between fine motor development and early literacy sub-dimension (print awareness and expressive and receptive language) the Pearson Correlation Coefficient Test was conducted. $p \leq 0.05$ level was considered significant for the statistical analysis and interpretation.

3. RESULTS

This study analyzed fine motor development and early literacy skill levels of preschool children.

Table 1. Early literacy levels of the preschool students

Early literacy skill levels	<i>f</i>	%
Inadequate level	35	44
Instructional level	45	56
Independent level	-	-
Total	80	100

Table 1 shows the early literacy levels of preschool children. The study showed that 35 students (44%) were in the inadequate early literacy level, and 45 students (56%) were at the instructional level. It was also found that no students were in the independent level of early literacy skills. This result could be considered ordinary for preschool children since they were still in the process of education.

Table 2. Early literacy sub-dimensions analysis of the preschool children

Dimension	Level	n	\bar{x}	sd	t	p
Print awareness	Inadequate	30	1.32	0.39	-2.63	.00*
	Instructional	50	1.89	0.42		
Exp. and recept. language	Inadequate	28	1.42	0.35	-2.59	.00*
	Instructional	52	1.91	0.43		

N=80, $p \leq .05$

Table 2 presents the descriptive analysis of early literacy sub-dimension values of preschool children. The arithmetic mean score of the print awareness skills of the inadequate level students was found as 1.32, and 1.89 for the instructional level. Instructional level students had significantly different ($p \leq 05$) print awareness skills comparing to the inadequate level students. The arithmetic mean of the instructional level students (1.89) showed that these students performed better in print awareness than the inadequate level group. When the expressive and receptive language skills analyzed, the arithmetic mean score of this sub-dimension was found as 1.42, and 1.91 for the instructional level. Instructional level students had significantly different ($p \leq 05$) expressive and receptive language skills when compared to the inadequate level children. The arithmetic mean of the instructional level students (1.91) showed that these students performed better in print awareness as well.

Table 3. Fine motor development of the preschool children in terms of early literacy levels

	Group	n	\bar{x}	s	t	p
Fine motor development	Inadequate	28	1.44	2.27	-2.40	.00*
	Instructional	52	2.14	2.12		
	Total	80				

$p \leq .05$

Table 3 presents the fine motor development values of preschool children when analyzed in terms of early literacy skill levels. Inadequate early literacy level children's arithmetic mean for fine motor development was found as 1.44. It was found as 2.14 for instructional level children. It has been established that there was a significant different ($p \leq 05$) between the two groups of preschool children's fine motor development. Results indicated that the instructional level group of children who performed better in early literacy test also achieved higher scores in fine motor development as well. Similarly, when the early literacy test scores were lower, preschool children's fine motor development scores were getting lower too.

Table 4. Pearson Correlation Coefficient values of fine motor development and early literacy skill levels

	n	Print awareness		Expressive and receptive language	
		r	p	r	p
Fine motor development	80	.54	.00*	.44	.00*

$p \leq .05$

Table 4 presents the Pearson Correlation Coefficient values of fine motor development and early literacy skill levels of preschool children. According to the table, there was a positive significant correlation ($p \leq 05$) between fine motor development and print awareness, and between fine motor development and expressive and receptive language. According to these results, both print awareness and expressive and receptive language sub-dimensions of early literacy skills had moderate (.54 and .44) level correlation with fine motor development. It can be stated that children with better fine motor development also have better early literacy skills.

4. CONCLUSION AND DISCUSSION

The purpose of this study was to examine the fine motor development of preschool children and their early literacy skill levels. Whether there was a correlation between fine motor development and sub-dimension of early literacy skills also analyzed. It has been found that 44% of the preschool children were in the inadequate level and 56% were in the instructional level of early literacy skills. The children in the instructional level had greater values for fine motor development as well. These children presented better fine motor skills in the print awareness and expressive and receptive

language dimensions. The Pearson Correlation Coefficient value was significant when it comes to print awareness, and expressive and receptive language skills regarding fine motor development. The correlation degree was moderate for both sub-dimensions.

Other research results are verifying most of the findings of this current study. It has been found that there were enough educational activities supporting fine motor development in Turkish early childhood institutions (Erdoğan, Özen Altınkaynak & Erdoğan, 2013). These activities secondarily support print awareness and visual-motor coordination (Purtaş & Duman, 2017b). On the other hand, it has been found that educational preschool activities assisting phonological awareness were needs to be improved (Koçak, 2018). However, studies showed that there is a very strong correlation between phonological awareness and print awareness (Bellocchi, Muneaux, Huau, Lévêque, Jover & Ducrot, 2017; Demirler & Arı, 2016). It can be concluded that both these developmental areas will be benefited from fine motor development. In their study Milne, Cacciotti, Davies & Orr (2018) explained that children with low English grades may benefit from additional motor proficiency skills.

According to study results, fine motor development is a valuable element to encourage preschool children's early literacy skills. Early literacy skills are important factors in school for the social and academic development of the children (Delcamp, 1983; Logan & Johnston, 2009). As conclusion, preschool children's fine motor development should be taken into consideration and supported for their early literacy skills development.

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