Smart Device Experience at Home, Vocabulary and Literacy Skills among Korean Children

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Abstract: This study examined how 5-year old children use smart devices at home and how their use of smart devices at home is related to children's vocabulary and reading skills. Eighty children were tested with the tasks of vocabulary and reading skills and their mothers replied to home questionnaires regarding children's use of smart device at home. Results showed that, first, 77.2% of children used smart device at home. Second, the often use of communication applications by children was related to vocabulary skill of children, and vocabulary was related to word reading. Results of mediation analysis showed that the use of communication applications contributed to word reading by the mediation of vocabulary skill.

Keywords: smart device experience, vocabulary, literacy, mediation analysis

1   Introduction

1.1   Need for the Study

In Korea, smart device (tablet pc or smart phone) supply ratio has been dramatically increased from 2.0 in 2009 to 38.3% in 2011 and 67.6% in 2013 according to the survey of the U.S. Strategy Analytics in 2013. Recently, many young children use smart phone and smart devices at home. Children use many different types of applications such as communication applications (e.g., SNS, KakaoTalk, band), education media applications (e.g., Junior Naver), and entertainment applications (camera, music, game). Recent studies reported that media experience and reading and vocabulary skills are positively related. For example, children of grades 2 and 3 know more internet site names and more internet experience, they have better reading skills [1]. Burg (1984) reported that 5-year old children who had less skill in vocabulary improved vocabulary and language skills after training with computer programs [2]. However, there is little research regarding the use of smart devices of young Korean children although their use dramatically increases these days. This study examined the use of smart devices among young children and their relation with vocabulary and reading acquisition.

1.2 Purposes

First, how often did children use smart devices and how long did children use smart device applications every day?
Second, would children's use of smart devices be related to reading and vocabulary skills?

Third, did the use of smart device applications contribute to reading by the mediation of vocabulary?

2 Methods

2.1 Participants

Participants were 80 children in a Children's House located in the city of Changwon and their mothers.

2.2 Measures

Children were tested with vocabulary and word reading tests. Mothers reported to home questionnaire regarding the use of smart devices at home.

- **Mother questionnaires**
①Mother education
②The time of using smart devices at home
③The time of using smart device applications (e.g., communication, education and entertainment)

- **Vocabulary Task:** Vocabulary task was used from a subtest of K-WISC test [3].

- **Word reading:** Korean word reading task consists of 90 questions. One point was allotted if children correctly read a word. Ninety points are the full mark.

3 Results

3.1 Children's use of smart devices and smart device applications

Regarding the percentage of children who used smart devices for particular duration, 22.9% of children did not use; 65.8% used for less than one hour; 10.1% used 1-2 hours; 1.3% used 2-3 hours.

Table 1 showed the percentage of children's spending time of smart device applications. About 32.6 % of children used game applications; 20.2% used TV and movie applications; 12.4% used camera and picture applications; 15.7% used children's cartoon applications, 7.9% used music applications; and 1.1% used communication applications.

Table 1. Percentage of children who used each application for a particular duration (minutes) every day

applications/time	No use	1-10 min	11-20 min	21-30 min	31-40 min	41-50 min	51-60 min	Over 60 min	Total
Communication	93.8	4.6	1.5						100%
Camera, picture	47.1	44.1	8.8						100%
Cartoon	54.4	17.6	7.4	7.4	10.3	1.5	1.5		100%
Music	59.7	23.9	16.4						100%
Game	39.4	21.1	15.5	9.9	8.5	4.2	1.4		100%
TV, movie, video	48.6	19.4	13.9	5.6	4.2	5.6	1.4	1.4	100%

3.2 Correlations among variables

Children's vocabulary was significantly correlated with the time of using communication application (r=.308, p<.05), and word reading (r=.432, p<.01). Other variables were not significantly related.

3.3 Mediation analysis

Single mediation analysis (Preacher & Hayes, 2004) showed that the time of using communication application contributed to word reading by the mediation of vocabulary as shown in Table 2.

Table 2. Results of mediation analysis between the time of using communication application and word reading by the mediation of vocabulary

Path	coefficient	se	t	BC 95% CI	
				Lower	Upper
Communication application → vocabulary	.32	.13	2.6*		
Vocabulary → word reading	.42	.11	3.75***		
Communication application → vocabulary → word reading	.13	.09		.02	.39

4   Conclusions

First, 22.9% of participating children in this study did not use smart devices but 77.1% of children used them. Most of children (65.8%) used for less than one hour.

Second, the highest percentage of children (32.6 %) used game applications; the lowest percentage of children (1.1%) used communication applications.

Third, correlation data showed that children's vocabulary was significantly correlated with only the use of communication application but not with other applications. Vocabulary was related with word reading.

Fourth, the time of using communication application contributed to word reading by the mediation of vocabulary.

These results suggest that media experiences such as using communication applications enhance vocabulary and reading skills among young children [4], [5], [6], [7].

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