How are home literacy environment and youth's academic performance associated? What South and North Korean parental involvement reveals

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Abstract

The study explored whether family background and home literacy practices are associated with the achievement gap between North and South Korean students. A total of 103 North and 146 South Korean parents responded to the home literacy practice questionnaire. The results showed that there were significant differences in academic achievement, with the largest difference observed in English, followed by social studies. Family's SES explained the observed academic achievement differences with the exception of social studies. The two groups differed significantly in home literacy practices, and the largest difference was observed in parents' reported academic interest and support for their children. These findings have implications for teacher education and the role of North Korean parents in supporting their children's education.

Keywords: home literacy environment, family background, academic performance, North Korean children, social factors



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Introduction

In recent decades, the academic gap between North and South Korean students has continued to widen (e.g., Kang et al., 2014; Kim et al., 2021; Kim et al., 2016). The causes of this disparity are complex and varied, but as Bourdieu (1991) noted, social factors such as home literacy practices (HLP) and family backgrounds may play a key role in exacerbating educational challenges.

Various studies have demonstrated that home literacy experiences, such as parental involvement, parent-child interactions, and parental instruction, can play a crucial role in the development of literacy. In 1996, for example, a report prepared by Smith et al. (1996) stated that parental involvement was a key factor affecting literacy development. Sénéchal and LeFevre (2002) additionally documented a direct relationship between early literacy environment at home and later fluent reading, and an indirect relationship between children's early experiences and later reading outcomes. Specifically, Burgess et al. (2002) reported that home literacy environment (HLE) plays a significant role in improving educational outcomes. They suggested that children benefit from home environments that provide exposure to literacy-related events (see also Ciping et al., 2015; Gottfried et al., 2015; Tichnor-Wagner et al., 2016; van Bergen et al., 2017)

There has, however, been no research examining the HLE of North Korean (NKn) children in South Korea (SK). In addition, there has been little research related to the HLE of South Korean (SKn) older readers (school-age students). In one study, working with SKn children (aged between 4 and 5) and their families, Kim (2009) found a positive association between frequent home-reading and emergent and conventional literacy development. Kim's findings also suggested that Korean parents were more likely to believe that the teacher has the overall responsibility for children's learning process and literacy acquisition at an early age. This tendency limited the extent of parental involvement in explicit literacy instruction at home. These findings have provided a good understanding of how cultural expectations of literacy acquisition in SK contribute to a child's literacy activities at home.

It is clear that the home can be the primary cause of literacy development for all children, in spite of family background. However, parents differ in their capacity to provide support for their children's educational performance. Although primarily most parents want to help their children do well in school, not all parents are capable of doing so effectively (Epstein, 1986). Furthermore, minority group parents who have experienced discrimination may find it harder to convince their children that extensive effort will be rewarded with social and economic success (Ogbu, 1991). The differential educational experience is less important in the early grades; school-related tasks are rather straightforward. However, as children advance in grade, schoolwork increases in complexity, at times exceeding the capacity of parents to help with their children's school tasks. More formal education provides parents better preparation to help their children to consider alternative strategies and solutions (Castro et al., 2015; Epstein, 1986; Jang, 2021; Jeynes, 2016; Lareau, 1989; Ma et al., 2016; Stevenson & Baker, 1987).

However, the parents of NKn students have less direct experience with schooling than the parents of SKn students (Jang, 2021). Many NKn parents failed to complete

high school themselves or, if they did, remember school as a difficult and trying experience (Jang, 2021; Natriello et al., 1990). In further considering the challenges facing NKn students in SKn schools, it is important to explore the associations between their academic achievement and HLE as a part of the overall environment that influences educational outcomes. Specifically, the effect of HLE on the school performance of older students over the age of six is still unclear, and more research is needed.

Current study

This study explored whether differences in HLP between NKn students in SK and SKn students affect the academic achievement gap between the two groups. The current study examined first how the two groups differed in academic achievement. The first research question is: (1) Are there differences in academic achievement between the NKn and SKn students? On the basis of earlier reports, significant differences are expected in academic achievement. The next two questions focused on differences in HLP as a contributing factor, examining the reports of parents and considering the role of SES in HLP. The second two research questions are: (2.1) Are there differences in HLP, as reported by parents? (2.2) Do differences in the parents' HLP reflect SES? As no previous study has provided information of NKn parents' HLP, no hypothesis of the differences was formed. The final two questions are: (3.1) How do SES and HLP variables predict academic achievement? (3.2) Are the relationships between academic achievement, SES, and HLP different across the two groups? In the absence of earlier studies examining these topics, no hypothesis was formed here as well.

Methods

Participants

To examine all five questions, a total of 194 North and 151 South Korean students were asked to fill out a demographic questionnaire. Their parent(s) were asked to fill out a family's socioeconomic status (SES) questionnaire. Their parent(s) were also asked to fill a parents' HLP questionnaire. Finally, 21 teachers (seven from the North [They who taught in North Korea teach North Korean students in South Korean public schools] and 14 from the South) were also asked to fill out a teacher's questionnaire.

Measures

Home literacy practices (HLP)

The first author developed the parents' HLP questionnaire. The parent questionnaire had three parts: (1) reading practice, (2) reading interest and support, and (3) digital device access and use. The survey was designed to obtain a better understanding of parents' HLPs. These questions were used to identify HLPs that may affect the

achievement gap between NKn and SKn students.

Reading practice. The questions about reading practice focused on parents' reading habits. They addressed three kinds of reading materials: books, magazines and newspapers, and online digital texts. The reading practice scale consisted of 13 questions and were measured on a mixture of a dichotomous scale (one = no, two = yes) and a five-point Likert scale ranging from one (e.g., never) to five (e.g., daily). Cronbach's alpha reliability coefficient was .87.

Academic interest and support. The questions about academic interest and support were designed to obtain information about how often parents talked about reading with their children and how often they interacted with their children regarding schoolwork. The academic interest and support scale consisted of seven questions and measured on a five-point Likert scale ranging from one (never) to five (daily). Cronbach's alpha reliability coefficient was .90.

Digital device access and use. The questions about digital device access and use were designed to obtain information about the parents' access to digital resources. Seven questions were used to determine indicators of access to digital resources and were measured on a mixture of a dichotomous scale (one = no, two = yes) and a five-point Likert scale ranging from one (e.g., zero) to five (e.g., two hours or more). Cronbach's alpha reliability coefficient was .34.

Academic achievement

Two sources of academic achievement were obtained for each student: the student's grade point average (GPA) of the 2016 first semester midterm exam and the teacher's ratings of each student's school outcomes. Teachers completed a survey for each student who participated in the study. Five questions were used to determine indicators of academic achievement. These items required the teacher to report how the student was performing in (1) Korean language, (2) mathematics, (3) English, (4) science, and (5) social studies. Cronbach's alpha reliability coefficient was .95.

SES

The socioeconomic status questionnaire was divided into four parts: parents' education level, parents' occupation and position, parents' occupational status, and monthly household income.

Procedure

Because the South Korean government often does not release any information about defectors, including North Korean students and their schools in SK, which are scattered across SK, we collected data in two ways. First, we asked a former director of the North Korean Youth Education Support Center at the Korea Educational Development Institute (KEDI) to contact North Korean teachers, who were working in South Korean elementary and middle schools in Seoul and Gyeong-gi province (the area surrounding the capital). Both cities were the two most populous in SK with 21.8% and 30.1%, respectively, of North Korean students in 2017. Then, the North Korean teachers

requested their principals' permission for data collection. Second, we asked a top-level school administrator in the Gyeong-gi provincial office of Education to contact the principals of schools that had North Korean students. Next, each principal informed teachers about the data collection. If a school principal approved the data collection, then the principals and teachers of the participating schools were asked to read the information letter and sign consent forms for their participation in this research. Finally, the teachers chose equal numbers of North and South Korean students in their classes and sent the information letter and consent forms to the parents/guardians of the selected students. The parent questionnaire was sent home with the students on a single occasion. The parents were not observed while completing their questionnaire. The teacher survey, with questions about students' performance in specific academic subject areas, was distributed on a single occasion to the teachers. The demographic questionnaire for students was administered individually to each student in a quiet classroom in a session of roughly 20 minutes.

Results

North Korean students' demographic profiles

	Characteristic	N (%)
Birth place		
	NK	78 (40.2)
	China	112 (57.7)
	Other	4 (2.0)
Length of stay	a	
NK	Less than 1 year	4 (5.1)
	1-5 years	14 (18.0)
	5-9 years	27 (34.6)
	9 years or more	33 (42.3)
China	Less than 1 year	10 (8.9)
	1-5 years	18 (16.1)
	5-9 years	50 (44.6)
	9 years or more	34 (30.3)
Other	Less than 1 year	3 (75)
	1-3 years	1 (25)
Previous schoo	ling	120 (61.9)
	NK	42 (35.0)
	China	77 (64.2)
	Other	1 (.83)
Highest grade		
NK	Only attended kindergarten	16 (38.0)
	Grade 1 - 4 (elementary school level) ^b	23 (54.8)
	Grade 5 - 6 (middle school level)	3 (7.2)
China	Only attended kindergarten	25 (33.3)
	Grade 1 - 6 (elementary school level)	40 (53.4)
	Grade 7 - 9 (middle school level)	10 (13.4)
Other	Grade 2	1 (100)

Table 1. Descriptive statistics for the North Korean students' demographic profiles

Characteristic	N (%)
Length of stay in SK ^c	
Less than 1 year	34 (17.5)
1-3 years	53 (27.3)
3-5 years	43 (22.2)
5 years or more	63 (33.0)

^aThe categories for the length of stay in NK, China, or other countries were: (1) less than 1 year, (2) 1-3 years, (3) 3-5 years, (4) 5-7 years, (5) 7-9 years, (6) 9-11 years, (7) 11 years or more.
^bThe North Korean school system consists of three stages: one year of kindergarten, four years of primary school, and six years of secondary school.

"The categories for the length of stay in SK were: (1) less than 1 year, (2) 1-2 years, (3) 2-3 years, (4) 3-4 years, (5) 4-5 years, (6) 5 years or more.

Of the 151 South Korean students' parents surveyed, only 62 (41%) responded to the SES questionnaire. Of the 194 NKn students' parents surveyed, 103 (53%) responded to the HLP questionnaires. Of the 151 SKn students' parents surveyed, 146 (97%) responded to the parents' HLP questionnaire.

Differences in academic achievement

The NKn students had lower GPAs and other educational outcomes than their SKn peers (Table 2). The ANCOVAs indicate that the observed academic achievement differences are largely explained by SES. Interestingly, the academic achievement in social studies of the SKn students was significantly better than that of their NKn peers, even after controlling for age and SES. This is likely due to substantial differences between the school curriculum in SK and the school curriculums in NK and China; of special importance, there is no social studies in the school curriculum at primary and secondary levels in NK.

		NK (n	= 194)			SK (n	= 151)	
	М	SD	Min	Max	М	SD	Min	Max
Five-point Likert scale ^a								
GPA	2.12	.89	1	5	2.71	1.18	1	5
Korean language	2.28	1.03	1	5	2.76	1.12	1	5
Math	2.19	1.01	1	5	2.79	1.28	1	5
English	1.82	.90	1	4	2.87	1.24	1	5
Science	2.11	.78	1	4	2.80	1.21	1	5
Social studies	2.11	.83	1	4	2.93	1.21	1	5

Table 2. Descriptive statistics for academic achievement for the North and South students

Note. GPA = grade point average; M = mean; SD = standard deviation.

^aThe scale points were: (1) poor (2) fair (3) good (4) very good (5) excellent.

Differences in HLE

Principal component analysis (PCA)

To reduce the number of data points, the items with five-point Likert scales were factor analyzed using PCA and direct oblimin rotation. Factor scores were saved for further analyses using regression.

Reading practice. The results of PCA of the questions about reading practice are shown in Table 3. Communalities for the question of *Digital text reading* were low (.37), and the question was removed and analyzed separately. After removal, the analysis yielded three factors explaining a total of 73.0% of the variance for the nine variables.

		Factor		
	Factor 1	Factor 2	Factor 3	Cronbach's
	Investment in books	Library & bookstore visits	Reading	α
Money for parent's books	.88			.82
Money for children's books	.84			
Number of parent's books	.83			
Library visits		.92		.76
Library books		.91		
Bookstore visits		.36		
Newspapers reading			.98	.77
Magazine reading			.77	
Book reading			.49	
KMO (Kaiser Meyer Olkin)				.79
Bartlett Test of Sphericity			Chi-square	1078.74
			df(p)	36(.000)

Table 3. Results of principal component analysis of reading practices of the HLP questionnaire

Factor 1 was labeled *Investment in Books*, due to high loadings from three items related to books: money spent on parents' books and children's books, and the number of parents' books. Factor 2 was labeled *Library & Bookstore Visits* due to high loadings from three items related to library and bookstore: library visits, library books, and bookstore visits. Factor 3 was labeled *Reading* due to high loadings from three items related to reading: the number of hours for book, magazine, and newspapers reading. The three factors explained 49.2%, 12.5%, and 11.4% of the variance, and Cronbach's *as* were .82, .76, and .77, respectively. Investment in Books correlated .45 with Library & Bookstore Visits and .46 with Reading, whereas the correlation between the latter two was .37.

Academic interest and support. The results of PCA of the questions about academic interest and support are shown in Table 4. The analysis yielded one factor explaining a total of 61.2% of the variance for the seven variables. Cronbach's α was .90.

	Factor 1	Cronbach's
	Academic interest & support	α
Talking about school learning	.86	.90
Talking about academic progress	.83	
Discussion reading	.82	
Talking about reading	.81	
Talking about academic strategy	.80	
Talking about school activities	.69	
Helping homework	.67	
KMO (Kaiser Meyer Olkin)		.87
Bartlett Test of Sphericity	Chi-square	999.566
	df(p)	21(.000)

Table 4.	Results of	principal	component	analysis of	reading	interest	support	of the	HLP	questionnaire

Digital device access and use. Five items were analyzed, including three Likert-scale items about *Children's internet time, Parents' internet time,* and *Online educational resource use,* and two composite-scale (individual item scores, either 0 or 1, are added to provide a composite scale score) items about *Number of digital devices* and *Number of online educational programs.* However, because the internal consistency coefficient of the dimension of digital device access and use was not acceptable (Cronbach's $\alpha = .40$; > .60 acceptable as a rough guide; Pallant, 2007), it was not appropriate to include all the items in a composite scale; rather each item with Likert scales in the questionnaire was examined individually.

Group comparison

The results of a series of ANCOVAs after controlling age and SES are shown in Table 5. As SES data was not available for all participants, these analyses were performed with a subsample of all parents. The ANCOVAs indicate that the observed differences in *Investment in Books* and *Library/Bookstore Visits* are largely explained by SES. In contrast, there were significant differences between the two groups of parents in five areas, even after controlling for SES: (a) Reading (paper books, eBooks, and audiobooks); (b) Digital text reading; (c) Academic interest/support; (d) parents' internet time; (e) the number of digital devices; and (f) the number of online educational resources used with their children. The SKn parents reported more reading in all formats, more parental academic interest and support, more digital devices for themselves, and more online educational resources utilized with their children, and the NKn parents reported more time spent on the internet in their home. These results indicate that only some of the observed differences between the two groups reflect SES differences.

	NK (n	= 101)	SK (n	= 62)		
Controlling for age and SES	М	SD	М	SD	F (1, 159)	η_p^2
Reading practices						
Investment in books	31	.83	.04	.78	3.24	.02
Library & bookstore visits	30	.83	.30	.92	3.28	.02
Reading	37	.50	.55	1.44	15.83***	.09
Digital text reading	1.76	.83	2.42	.98	7.48**	.05
Academic Interest and support	47	.87	.47	.88	15.87***	.09
Digital device access and use						
Parents' internet time	4.07	.95	2.56	1.24	25.25***	.14
Children's internet time	3.10	1.03	3.05	1.43	2.05	.01
Online educational resources	1.10	.30	1.52	1.47	.12	.00
No. digital devices	1.43	.86	3.02	1.29	32.12***	.17
No. online educational program	.31	.88	1.47	1.60	7.50**	.05

Table 5. Results of ANCOVAs for the effect of group on each factor of the HLP questionnaire

Note. Age and SES were controlled. *p < .05. **p < .01. ***p < .001.

For the dichotomous questions, we wanted first to control for SES. The mean of z-scores of income and parents' educational level was calculated. Then, those scores were matched between the two groups (NK: M = .11 and SK: M = .11). Twenty-three parents who had high SES (the mean of -.16 to .39) for NK were chosen and compared to 25 parents who had low SES (the mean of -.40 to .59) for SK. To control for age, we compared the two subgroups (N = 48) on age; no significant difference was found.

The results of Chi-square tests showed that there were no differences in online educational resources use after controlling for SES. By contrast, two variables showed a significant difference with the smaller samples controlled for age and SES: library card ownership, X^2 (1, N = 48) = 5.56, p = .018, and screen time limit (whether parents limit their children's screen-time), X^2 (1, N = 48) = 15.07, p < .001, indicating that more SKn parents reported owning a library card and limiting screen time for their children. Our findings suggest that these observed differences between the two groups reflect differences.

Relationship between academic achievement, SES and HLP

To examine the relationship between academic achievement, SES and HLP, correlation and hierarchical multiple regression analyses were conducted combining continuous (Likert scale) and one dichotomous variable (screen-time limit).

Hierarchical multiple regression analysis

The correlations among all academic achievement variables and Parents' HLP questionnaire variables are shown in Table 6. None of the HLP variables were significantly associated with academic achievement for the NKn students; however, Reading (books, magazine, and newspapers), hours per day students spent using online educational programs, the number of online educational programs they used, and

whether the parents limited their children's screen-time were significant for the SKn students when age and SES were not controlled.

When age and SES were controlled, number of digital devices at home was positively associated with academic achievement for NKn students and explained 4 to 13% of variance in academic achievement measures. The amount of digital text reading (negative for GPA and Math), the amount of parents' internet time (negative for GPA, Math, English, and Science), hours per day students spent using online educational programs (positive for GPA and English), and the number of online educational programs students used (positively for English) were associated with academic achievement for the SKn students.

For the NKn students, as only one variable correlated significantly with the academic outcome measures, no further analyses were conducted. For the SKn students, Korean and Social Studies were not associated significantly with any of the HLP variables, and Science was associated only with parents' internet time that explained 13% of the variance after age and SES were controlled. No further analyses were conducted for these three academic outcome measures.

The results of the hierarchical multiple regression analysis for GPA, Math, and English of the SKn students are shown in Table 7. SES (33%) and the three included home literacy environment variables (digital text reading, parents' internet time, and hours per day students use online educational programs; 20%) jointly accounted for 53% of variance in GPA. When the HLE variables were entered in stage three of the regression model, digital text reading did not predict unique variance in GPA, but parents' internet time was a significant negative predictor, and hours per day students spent using online educational programs was a significant positive predictor of GPA.

Table 6. Correlations among a	all acade	emic a	chiever	nent va	ariables	and I	-ILP va	riables	in the	North	(belov	v diag	onal) a	nd Sol	ıth (ak	ove d	iagona) parei	nts
	1	2	3	4	5	9	7	8	6	10	11	12	13	14	15	16	17	18	19
1. Investment in books		.28**	.33**	.30**	.25**	.41	.08	.35**	80.	.22	.10	04	15	06	.02	-11	60	27**	.01
2. Library/Bookstore visit	.28**		.20*	.21*	.22**	.08	.12	.30**	90.	60.	.21**	60.	60 [.]	.03	.04	.06	.05	.07	.26*
3. Reading	.46**	.48**		.33**	.39**	.05	15	.53**	.16	.34**	.15	.16	.17*	.10	.13	.12	.16	09	.05
4. Digital text reading	07	09	.30**		$.16^{*}$.36**	Π.	.34**	00 [.]	.21*	09	05	05	03	04	01	03	.04	.07
5. Academic interest/support	t .24*	.17	.55**	.17		.16	.17*	.40**	.20*	.37**	.14	.14	.01	.05	60.	.07	.16	.02	.19
6. Parents' internet time	08	.02	.07	.16	.14		.46**	60.	.23**	04	01	15	11	14	02	14	07	24**	-00
7. Students' internet time	.08	.05	.30**	03	.29**	13		03	02	08	.03	.03	10	01	.14	01	00.	.18*	.28*
8. e-Program	.37**	.25**	.53**	.34**	.51**	.08	.29**		08	.70**	.15	.31**	.22	.25**	32**	22**	.25**	15	.26*
9. No. digital device	.40**	.33**	.68	.06	.64	.14	.39**	.63**		.11	.03	.01	.08	04	.05	02	.05	15	Π.
10. No. e-Program	.56**	.43**	.73**	.33**	.52**	01	.28**	.88	.70**		.15	.23**	.19*	.18*	20^{*}	.16*	.18*	.30**	.25
11. Screen-time limit	.32**	.16	.16	19	.17	.08	.14	.11	.43**	.10		.20*	.21*	.08	.06	.18*	.05	.27**	.19
12. GPA	03	.10	06	02	04	00.	10	03	.01	04	.08		.80**	.82**	75**	.85**	.80**	.37**	58**
13. Korean	. 02	.08	.03	.01	60.	02	03	.03	.13	.03	.05	.83**		.71**	64**	74**	.71**	.36** .	36^{**}
14. Math	02	.05	06	01	09	04	12	07	01	-00-	.07	.82	.83**	·	66 ^{**}	.75**	.66**	.34**	45**
15. English	02	.12	.02	.01	03	.04	03	01	.07	01	Π.	.77**	.69	.70**		.57**	.61**	.18*	41^{**}
16. Science	. 07	.16	90.	05	.12	.02	.05	.06	.15	.07	.05	.82**	.76**	. **69.	67**		.76**	.42**	51**
17. Social studies	. 01	.07	01	06	90.	.01	.04	.10	.11	.05	.03	.86**	.78**	.71**	68**	.88	·	.32**	35**
18. Age	. 02	.04	.18	90.	.19	.07	.20*	.14	.16	.19*	.03	07	04	17	.01	04	08		-00
19. SES ^a	07	15	26**	04	19	.04	04	.03	13	25*	.22*	.27**	.26**	.32**	40**	.27**	.22*	.04	
Note. e-Program = Online edu	cational	progra	am. Nc	. digita	al devi	ce =]	The nur	nber o	f digit	al devi	ces. N	o. e-Pı	ogram	= The	umt a	ber of	online	educat	ional
programs.																			
$^{a}N = 101$ for NK and $N = 62$ * $p < .05$. ** $p < .01$. *** $p < .01$	tor SK 001.																		

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			GPA			Math			English	
Step	Predictors	ΔR^2	В	SE	ΔR^2	В	SE	ΔR^2	В	SE
1	Age	.00	05	.10	.00	02	.10	.01	.11	.12
2	SES	.33	.75	.14	.20	.60	.16	.18	.65	.18
3	Digital text reading	.20	16	.13	.13	16	.14	.20	-	-
	Parents' internet time		20*	.10		19	.11		27*	.10
	e-Program		.22**	.07		-	-		.23	.12
	No. e-Program		-	-		-	-		.08	.12
	Total R^2	.53			.33			.39		

Table 7. Results of hierarchical multiple regression analysis for the South parents

Note. e-Program = Online educational program; No. e-Program = The number of online educational programs.

p < .05. p < .01. p < .01. p < .001.

SES (20%) and the two included HLE variables (digital text reading and parents' internet time, 13%) jointly accounted for 33% of variance in Math. When the HLE variables were entered in stage three of the regression model, neither predicted unique variance in Math. Finally, age (1%), SES (18%), and the three included HLE variables (parents' internet time, hours per day students spent using online educational programs, and the number of online educational programs the students used; 20%) jointly accounted for 39% of variance in English. When the HLE variables were entered in stage three of the regression model, only parents' internet time explained unique variance in English.

Discussion

This study explored whether differences in HLP between NKn students in SK and SKn students affect the academic achievement gap between the two groups. To do this, we examined several research questions. The first question was whether there are differences in academic achievement between the two groups. The next two questions focused on differences in HLP as a contributing factor, examining the reports of parents (Question 2.1) and considering the role of SES in HLP (Question 2.2). The final two questions were how SES and HLP variables predict academic achievement (3.1) and whether the relationships between academic achievement, SES, and HLP are different across the two groups (3.2).

Differences in academic achievement

We found that the NKn students had lower GPAs and other educational outcomes than their SKn peers. Our findings align with previous results (Han et al., 2013; Ministry of Education, 2017; U. S. Government Accountability Office, 2010).

It is notable that the observed academic achievement differences were largely explained by SES. Numerous studies have demonstrated that socioeconomic background has a significant effect on students' academic achievement (e.g., Johnson et al., 2007; Sirin, 2005; White, 1982). In examining the relationship between SES and academic achievement in the SKn context, it should be highlighted that there is a widening gap in spending by low- and high-income families on private education (Statistics Korea, 2018), and this factor increases the achievement gap between students from low-income and high-income families (e.g., Choi & Paik, 2017; Kim, 2007; Moon & Kim, 2003).

According to the annual survey by Statistics Korea in 2018, while 58.3% of elementary school students from low-income families (that had a monthly household income of \$1,700 to \$2,600) received private tutoring, 81% of students from high-income families (that had a monthly household income of \$4,300 to \$5,200) attended private tutoring institutes. The data also showed a widening gap in spending on private education between low- and high-income families; \$65 vs. \$390 per month per child for families that earn less than \$1,000 vs. families that earn more than \$6500.

Furthermore, Choi et al. (2011) showed that 84.3% of NKn students in SKn schools did not receive private tutoring, and 71.4% of the respondents reported that their limited family income was the main reason for this. Our findings align with the results of prior research and suggest that SES is an especially important factor in the achievement gap experienced by the NKn students in SK, who are substantially different from their SKn peers in SES, and mostly come from lower SES families.

We also observed the largest difference in subject-area achievement in English, followed by social studies. Prior studies of NKn students in SK reported that they viewed English as the most difficult subject at the elementary, middle, and high school levels (e.g., Jung et al., 2014). NKn students in SK scored significantly lower in English on a national standardized test; at the elementary and middle school levels, 47.4% and 74.1%, respectively, of the NKn students were below standard academic levels in English (compared to 11.6% and 29.4% of the SKn students, respectively). In addition, Jung et al. (2014) showed that 62% of NKn respondents reported having learned no English before their arrival in SK.

Our findings align with previous results and suggest that it is important to consider the NKn students' demographic characteristics when examining their underachievement in English in SKn schools. That is, we can speculate that the NKn students' achievement in English is hindered by socio-cultural differences reflected in their demographic characteristics, including limited English learning experiences and the lack of study opportunities during their journey to SK. In the SKn context, children start learning English earlier than when the formal English education starts in Grade 3, either through private institutes or publicly subsidized pre-schools (Chung & Choi, 2016). The enthusiasm of modern SKn people for English is so intense that it has been described as a "national religion" (Demick, 2002).

Our findings also strongly support prior results that their overall poor vocabulary influences the NKn students' English achievement. Jung et al. (2014) suggested that NKn students in SK face achievement gaps in English caused by their poor (SKn) vocabulary knowledge; that is, they do not understand the content of English textbooks even in the Korean language. For example, some of them do not understand Christmas tree or grape (Jung et al., 2014) because they have never seen these items before. Moreover, NKn defectors may not understand up to 60% of what South Koreans are saying, mainly because of differences in vocabulary between NK and SK (Choe, 2006). For example, they do not understand vegetable and ice cream because these words take different forms in the two languages. Our findings concur with these results and

suggest that it is important to consider differences in (SKn) vocabulary knowledge between the two groups when examining achievement gaps in English.

Finally, our results show that the SKn students were significantly better in social studies than their NKn peers after controlling for SES. Social studies is not taught in NK's school curriculum. In addition, the students who were born in China or educated in Chinese schools, either in Korean folk (Chosun-Chok) schools, where students are taught in Chinese and Korean, or in Han-Chinese (Han-Chok) schools, where students are taught exclusively in Chinese, likely face a variety of challenges related to English and social studies. The social studies curriculum taught in Chinese schools usually reflects socialist ideology and differs ideologically from the educational objectives of SK's curriculum. In addition, most China-born students never or rarely learn English in Chinese schools before their arrival in SK. In fact, students from China viewed English and social studies as the most difficult subjects during elementary and middle schools in SK, and 71.4% of the respondents reported different academic contents of the subjects as the main reason for academic difficulty (Choi et al., 2011).

In sum, SES contributes to the achievement gap between the North and SKn students. The NKn students' demographic characteristics and (SKn) vocabulary knowledge are particularly important contributors to the NKn students' underachievement in English and social studies.

Differences in HLP

NKn and SKn parents differed significantly in their HLP. The largest difference was observed in their academic interest and support for their children (reflected in talking about reading and schoolwork), as SKn parents provided more such support. In addition, the SKn parents reported engaging in more reading practices (i.e., frequent reading, more access to books and libraries, more subscription to magazine and newspapers, and more investment in books) than the NKn parents. Similarly, the SKn parents reported more digital device access and use (i.e., more digital device ownership, use of online learning for their children, and shorter screen-time limits for their children). In contrast, the NKn parents themselves reported spending more time on the internet than the SKn parents.

While the causes of these differences are complex, the variations observed between the two groups in three types of measures (Investment in Books, Library and Bookstore Visits, and Online Educational Resources) can be largely explained by SES. Given that those three measures are more directly linked to socioeconomic resources, it is not surprising that the SKn parents, who were from higher-income families, reported more investment in books for their children and themselves, more frequent visits to the library and bookstores, and greater use of online educational resources with their children. A significant correlation between SES and the HLE has likewise been reported in previous studies (e.g., Breen & Jonsson, 2005; Buchmann, 2002; Park, 2008; Shavit & Blossfeld, 1993). Consistent with prior results, our results suggest that the SKn parents are more likely to provide their children with richer home literacy opportunities. Considering the NKn parents' occupations and monthly household income in SK, we can expect that they may not have enough time to visit a library or bookstore, and may lack money to buy books or use online educational programs, which are usually not free.

Not all differences, however, were related to SES. When SES was controlled for, statistically significant differences remained in the reading of all formats (paper books, eBooks, audiobooks, and digital text), academic interest and support (reflected in talking about their children's reading and schoolwork), parents' internet time, the number of digital devices at home, and the number of online educational resources used by their children. The results indicate that the SKn parents reported more reading in all formats, more parental academic interest and support, more digital devices at home, and more online educational resources use for their children, and the NKn parents reported more time spent on the internet in their home. It is possible that these differences may reflect social-environmental influences. In examining the relationship between the HLP and sociocultural context in NK, it should be highlighted that there is a unique social classification system (Songbun) that negatively impacts NKn parents' general attitude toward their children's education. Among those in a lower Songbun, their family background generally does not permit advanced education beyond high school (except for technical schooling) (Ahn & Min, 2006; Collins, 2012). Students in a higher Songbun are treated with privilege by teachers; the same teachers limit access to higher education for students in a lower Songbun, even if they perform well in class. After graduating from high school, most students are sent to a farm, mine, construction site, or the military for about ten years. This, as a result, leaves the NKn people with few prospects and little hope for achieving advanced education (Collins, 2012). In particular, NKn women believe that a woman does not need to study or read, but to marry a rich man (Ahn & Min, 2006).

Consequently, parents from NK, who are not encouraged to promote family literacy and have relatively poor sociocultural literacy environments, are less likely to engage in HLP than SKn parents, who may have a richer home literacy and sociocultural environment. It therefore seems possible that the aspects of the HLE in SK reflect particular cultural practices and beliefs in the SKn context that may not extend to the NKn context (see Jang, 2021), and vice versa. Positive associations between culture specific characteristics and HLP have been reported in previous research (Kim, 2009; Leseman & de Jong, 1998; Scollon & Scollon, 1981). Leseman and de Jong (1998) suggested that the home learning environment is embedded within a larger socio-cultural environment. In addition, Kim (2009) argued that culture-specific characteristics should be incorporated into home literacy models. Our findings align with this body of research and further indicate that it is necessary to link the present study about differences in parents' HLP between the two groups with established research about home literacy models in the SKn context.

Relationship between academic achievement, SES and HLP

We found that, for both groups, SES was significantly correlated with academic achievement, although the strength of the relationships varied between the two groups. At the same time, our results showed that the relationships between academic achievement, SES, and HLP were different across the two groups. When controlling for SES, for the NKn students, only one HLP variable—the number of digital devices—was significantly correlated with all of the academic outcome measures. For the SKn

students, SES explained a larger number of differences in GPA and Math than HLP; whereas the opposite was true for English. Our findings align with prior results documenting the relationship of SES to academic achievement (e.g., Bloom, 1964; Feinstein, 2003; Johnson et al., 2007; Sirin, 2005; White, 1982) and suggest that SES influences the relationship between HLE and academic achievement.

Interestingly, the number of digital devices, such as laptops, tablets, electronic book readers, and smartphones, was significantly and positively associated with all of the academic outcome measures for the NKn students. Prior research has reported contradictory findings regarding the relationship between digital device use and academic achievement. For example, AlBahri et al. (2018) found a negative correlation between digital media exposure and academic performance of adolescents. In contrast, Malhi et al. (2016) have shown that time spent on the computer is positively associated with academic achievement. For our findings, it is plausible that the number of digital devices in the NKn students' home may reflect the influence of SES, which is significantly correlated with the NKn students' academic achievement.

For the SKn students, the number of hours per day spent using educational programs (e.g., video lessons and tutorials, test prep materials, and web resources in academic subjects) was a significant positive predictor for GPA. We should note that use of online educational programs is one type of private education in SK. As previously mentioned, there is a widening gap in spending on private education between low and high-income families (e.g., Ministry of Education, 2017; Statistics Korea, 2018). This spending gap increases the achievement gap between students from low-income and high-income families (e.g., Kim, 2007; Moon & Kim, 2003). Our findings concur with prior research and suggest that attending after-school learning activities (private education) is an especially important factor that contributes to the achievement gap among SKn students.

Interestingly, parents' internet time was a significant negative predictor of students' GPA and of achievement in both English and Science, for SKn students. As there has been little research on parents' internet use (the number of hours per day the parents spent on the internet), it is difficult to compare our findings with prior findings. However, it is possible that when they are distracted by the internet, parents are less able to help their children with homework, to support and acquire special services when necessary, and to assist their children in considering alternative strategies and solutions.

Conclusion

The relationship between the HLP and academic achievement of NKn students in SKn schools has not previously been examined. This study has investigated how students' family background and HLP impact the achievement gap between the NKn students and their SKn peers. Several findings are notable. First, SES, as reflected by parents' education and household income, largely explained the observed academic achievement differences between the two groups. The two groups differed significantly in the relationship between SES, HLP, and academic achievement. Furthermore, SES was significantly correlated with academic achievement for both groups, but the strength of

the relationships varied between them. Accordingly, in considering the challenges facing NKn students in SKn schools, it is essential to explore the associations between their academic achievement and HLE as a part of the overall environment that influences academic achievement.

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