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The Effect of Online Bilingual Shared Book Reading on Vocabulary Learning for Korean-English Bilingual Children

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Objectives: The purpose of this study was to investigate the effects of a bilingual shared book reading intervention on vocabulary learning for Korean-English bilingual children with and without developmental language disorder (DLD). **Methods:** A total of 16 Korean-English bilingual children aged 4-6 (9 typically developing children and 7 children with DLD) participated in this study. Participants participated in a bilingual shared book reading intervention using bridging to L1 techniques twice a week for 3 weeks, for a total of 6 sessions. Korean, English, and conceptual receptive vocabulary, expressive vocabulary, and expressive definitions were assessed at pre and post tests to examine the effect of the intervention on vocabulary learning. **Results:** First, there was a statistically significant increase between pre-test and post-test results on all measures of Korean, English, and conceptually scored receptive vocabulary, expressive vocabulary, and expressive definitions for typically developing children. Second, there was a statistically significant increase between pre-test and post-test results on measures of Korean receptive vocabulary, English receptive and expressive vocabulary, and conceptually scored receptive and expressive vocabulary for children with DLD. **Conclusion:** These results provide preliminary evidence that bilingual shared book reading is an effective method of vocabulary intervention for Korean-English bilingual children with and without DLD.

Keywords: Bilingual shared book reading, Vocabulary intervention, Korean-English bilingual children, Bilingual intervention

There is a growing number of bilingual children both internationally and in Korea (Connor, Cohn, & Gonzalez-Barrera, 2013; Ministry of the Interior and Safety, 2019). Bilingual children have different characteristics in comparison to monolingual children that are impacted by a wide range of factors including their home language exposure, interaction between their L1 and L2, and the timing, context and quality of exposure to each language (Phillips & Lonigan, 2014). Due to the effects of these factors, within group variability is a hallmark characteristic of bilingual children that makes it difficult to assess and develop interventions for this population as a group. In spite of these difficulties, the need for evidence-based interventions for this population remains, and there is a growing number of studies investigating effective intervention approaches for bilingual children (Duran, Hartzheim, Lund, Simonsmeier, & Kohlmeier, 2016). However, despite the growing number of bilingual children in Korea and a growing body of evidence around bilingual interventions, studies that have investigated bilingual interventions for Korean-English bilingual children are scarce.

Monolingual instruction in the majority language for bilingual children has traditionally been the standard educational practice (Ovando, 2003; Wiley & Lukes, 1996). However, there is an increasing body of evidence supporting the effectiveness of home language and bilingual instruction for typically developing bilinguals (Farver, Lonigan, & Eppe, 2009; Lugo-Neris, Jackson, &

Goldstein, 2010; Restrepo et al., 2010), and those with language impairment (Restrepo, Morgan, & Thompson, 2013; Simon-Cereijido & Gutiérrez-Clellen, 2014). In addition, monolingual approaches to instruction have been found to result in English (L2) development but not their Spanish (L1) development; while bilingual approaches have been found to result in gains in both first and second languages (Barnett, Yarosz, Thomas, Jung, & Blanco, 2007; Lugo-Neris et al., 2010). Findings from several studies also suggest that bilingual approaches produce better reading, language, and academic outcomes for bilingual children (Castro, Páez, Dickinson, & Frede, 2011; Rolstad, Mahoney, & Glass, 2005). Furthermore, integrating children's home language in intervention not only has positive effects on improving literacy and language outcomes, but also helps bilingual children retain their connections with their families, who often only speak their home language (Anderson, 2012; Wong-Filmore & Snow, 2000). Several studies have found significant emotional, social, and educational advantages of retaining home language skills (Feliciano, 2001; Hurtado & Vega, 2004; Portes & Hao, 2002).

Vocabulary skills affect various domains including narrative skills (Khan, Logan, Justice, Bowles, & Piasta, 2021) and reading (Proctor, August, Carlo, & Snow, 2006), as well as impacting children's academic achievements for both monolingual and bilingual children (Bleses, Makransky, Dale, Højen, & Ari, 2016; Ramsook, Welsh, & Bierman, 2020). Meta-analyses on vocabulary interventions for young children found a range of different intervention methods including book reading interventions, computer-based interventions, video-related interventions, and technology-enhanced interventions (Kim, Cho, Jeong, & Koh, 2015; Marulis & Newman, 2010). Shared book reading is one of the evidence-based methods of supporting children's vocabulary for monolingual and bilingual children with and without language impairment (Marulis & Neuman, 2010; Park & Yim, 2019; Wasik et al., 2016).

Bilingual children's lexical knowledge is spread across their two languages. That is, bilingual children may have some words in their L1 but not in their L2, and vice versa, and this distributed nature of bilinguals' vocabulary can be attributed to the different contexts in which bilinguals are exposed to and use a language. The revised hierarchical model (RHM; Kroll & Stewart, 1994) suggests that L1 can be used as a mediator for learning new words in L2 for bilinguals. The RHM suggests that bilinguals have two separate lexical stores for their L1 and L2 that are linked both to each other and to a common conceptual store. The strength of the lexical and conceptual links between these stores is affected by language proficiency. For example, a Korean-English bilingual child who is more proficient in Korean (L1) will have stronger connections between Korean words and concepts compared to English (L2). Therefore, in order to access the conceptual store, the child will initially use their L1 lexical knowledge, which has stronger connections and easier access to the conceptual store. As L2 vocabulary learning occurs, and the child becomes more proficient in L2, the connections between the L2 lexical store and the conceptual store will become stronger and they will be better able to access the conceptual store via the L2 lexical store. This model suggests that L2 vocabulary learning may be enhanced by using bridging to L1 techniques for bilingual children.

There is emerging evidence supporting the use of bridging to L1 techniques during shared book reading for bilingual children (Mendez, Crais, & Kainz, 2018; Wood et al., 2018). Bridging to L1 techniques are one of the bilingual approaches to supporting children and refers to using L1 to support L2 language skills and can involve providing vocabulary instruction in L1 or asking discussion questions in L1 during shared book reading in L2. This technique takes advantage of the interconnection between L1 and L2, and involves explicitly connecting novel words to their conceptual store in both languages in order to facilitate word learning. By using this bilingual approach, children can use linguistic resources from both L1 and L2 to support their learning in both languages (Cummins, 1979).

Cross-linguistic effects on vocabulary learning for bilingual children have been widely studied. Some studies have found positive interactions between bilingual children's lexicon for languages that were typologically dissimilar (Prevoo, Malda Emmen, Yeniad, & Mesman, 2015; Scheele, Leseman, & Mayo, 2010), while other studies found that bilingual children are able to retrieve words that have a common derivation and are semantically and phonologically similar when the two words in their two languages are cognates (Poarch & Van Hell, 2012; Sheng, Lam, Cruz, & Fulton, 2016). However, studies on bilingual instruction have mainly been conducted for Spanish-English bilinguals (Duran et al., 2016)

which are linguistically and phonetically very similar languages compared to Korean and English, which are typologically very different. Given these cross-linguistic differences, it is unclear whether the treatment effects observed for vocabulary intervention using a bilingual shared book reading approach will also be observed in Korean-English bilinguals.

In light of these gaps in the evidence, the current study aimed to investigate whether a bilingual approach is effective for Korean-English bilingual children with and without developmental language disorder (DLD).

METHODS

Participants

A total of 16 children aged 4.0-6.5 years old who live in Korea, USA, Canada, and Belgium participated in this study. Among the 16 children, there were 9 typically developing Korean-English bilingual children and 7 Korean-English bilingual children with DLD.

9 Korean-English bilingual children with typical development who participated in this study met the following criteria: children (1) who are exposed to Korean, or English and Korean by their parents at home, (2) who are exposed to English for more than 6 hours a day, (3) whose nonverbal intelligence is above -1 SD (standard score 85) on the Korean Kaufman Brief Intelligence Test (KBIT-2; Moon, 2020), (4) who score above -1.25 SD on the Receptive & Expressive Vocabulary Test (REVT; Kim, Hong, Kim, Jang, & Lee, 2009), the Peabody Picture Vocabulary Test (PPVT-V; Dunn, 2018), and the Expressive One Word Picture Vocabulary Test (EOWPVT-II; Brownell, 2000), and (5) who have no physical, sensory, or neurological impairment.

7 Korean-English bilingual children with DLD who participated in this study met the following criteria: children (1) who are exposed to Korean, or English and Korean by their parents at home, (2) who are exposed to English for more than 6 hours a day, (3) who score below -1.25 SD on two or more of the following standardized vocabulary tests: REVT-R (Kim et al., 2009), REVT-E (Kim et al., 2009), PPVT-V (Dunn, 2018), or EOWPVT-II (Brownell, 2000), (4) whose parents reported a diagnosis of language delay in both Korean and English, and (5) who have no physical, sensory, or neurological impairment. Non-verbal intelligence was not included as part of the exclusion criteria in line with the definition of DLD (Bishop et al., 2017), and in order to include a more representative sample of children with language disorders who have typical and borderline cognitive skills (Restrepo et al., 2013).

A Mann-Whitney *U*-test was conducted to evaluate group differences on chronological age, non-verbal intelligence, and Korean and English vocabulary measures. There were no significant differences between the two groups with regards to chronological age (Z = -1.646, p = .100). The differences between the two groups on the non-verbal intelligence test (Z = -2.014, p = .044), English receptive vocabulary test (Z = -2.542, p = .011), English expressive vocabulary test (Z = -2.807, p = .005), Korean receptive vocabulary test (Z = -2.593, p = .010), and the Korean expressive vocabulary test (Z = -3.125, p = .002) were statistically significant. The descriptive statistics and Mann-Whitney *U*-test results are presented in Table 1.

Measures and Materials

The KBIT-2 (Moon, 2020) was used to evaluate children's non-

Table 1. Descriptive statistics and Mann-Whitney *U*-test results by group

	TD (N = 9)		DLD (N = 7)		*Z*	*p*
	Mean	SD	Mean	SD		
CA (months)	65.333	7.450	57.571	8.886	-1.646	.100
KBIT-2	111.222	21.200	82.286	20.048	-2.014	.044*
PPVT-5	109.778	17.210	86.857	10.637	-2.542	.011*
EOWPVT-2	109.444	8.988	88.571	12.621	-2.807	.005*
REVT-R	73.000	17.051	32.714	24.357	-2.593	.010*
REVT-E	69.222	15.603	34.857	14.622	-3.125	.002*

TD = typically developing; DLD = developmental language disorder; CA = chronological age; KBIT-2 = Korean Kaufman Brief Intelligence Test (Moon, 2014); PPVT-5 = Peabody Picture Vocabulary Test 5th edition (Dunn & Dunn, 2019); EOWPVT-2 = Expressive One Word Picture Vocabulary Test 2nd edition (Brownell, 2000); REVT-R = Receptive & Expressive Vocabulary Test-receptive (Kim et al., 2009); REVT-E = Receptive & Expressive Vocabulary Test-expressive (Kim et al., 2009).
*p < .05.

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verbal intelligence. The instructions were provided in Korean, then in English if the child did not understand. The REVT (Kim et al., 2009) was used to evaluate children's receptive and expressive vocabulary in Korean, the PPVT (Dunn, 2018) was used to measure children's receptive vocabulary in English, and the EOWPVT (Brownell, 2000) was used to measure children's expressive vocabulary in English. To minimize the risk of misdiagnosing a language difference as a language disorder, conceptual scoring was applied to all assessments to assess the children's knowledge of the conceptual representation of the word regardless of the language used (Bedore, Peña, Garcia, & Cortez, 2005; Gross, Buac, & Kaushanskaya, 2014; Yim, Chung, Han, Baek, & Lim, 2022).

An experimental vocabulary test was developed in order to investigate children's vocabulary learning before and after the shared book reading intervention. Scoring criteria for the definitions test was based on previous studies (Lugo-Neris et al., 2010; Storkel, 2017) and a score of 0-3 was applied. A score of 0 was given for no or incorrect response, a score of 1 was given for a vague definition, synonym or contextual sentence, a score of 2 was given for a partial definition, and a score of 3 was given for a complete definition. Conceptual scoring was applied for the definitions test, and responses were scored correct regardless of the language used to provide the definition. Conceptual vocabulary results were obtained by combining the English and Korean vocabulary test results and scoring 1 for a correct response in either Korean or English.

The books used in the study were chosen from the Kim, Chae, & Yim (2020) study and supplemented with additional books. Supplementary books were chosen to match the books from the previous study using the same criteria. Additional selection criteria were if they had Korean and English translation equivalents, and based on criteria from Hargrave & Senechal (2000). Books that fulfilled the above criteria were chosen from The Children's Book Research Foundation recommended reading list and validated by one Speech Pathology doctoral student, one early childhood educator, and one elementary school teacher, all of whom are Korean-English bilinguals with more than 3 years experience in their respective fields. They were asked to rate the books on a scale of 0 to 4 (0 = highly inappropriate, 1 = not appropriate, 2 = average, 3 = appropriate, 4 = highly appropriate). 4 books were chosen from a pool of 6 that received a score of 3 or 4 from all raters. The book list is provided in Appendix 1.

The target vocabulary used in the study were partially chosen from Kim et al. (2020) and supplemented with additional vocabulary that matched the criteria used in the previous study. The validity of the target vocabulary were assessed by one Speech Pathology doctoral student and two Korean-English bilingual teachers, who were asked to rate the vocabulary on a scale of 0 to 4 (0 = highly inappropriate, 1 = not appropriate, 2 = average, 3 = appropriate, 4 = highly appropriate) based on the above criteria and whether the Korean-English translations had a similar level of difficulty. 32 words were chosen from a pool of 48 that received a score of 3 or 4 from all raters. The scripts of the books were partially altered in order to make sure that the target words did not appear multiple times in the story or in the other intervention books.

Procedures

A pre-post test design was used to investigate the effects of a bilingual shared book reading intervention on the language skills of Korean-English bilingual children with and without DLD. Experimental procedures involved recruitment, screening test, pre-test, and 6 shared book reading sessions, followed by a post-test. Sessions were conducted online via Zoom.

The pre-test was conducted one-to-one via Zoom to investigate the child's knowledge of the 32 target vocabulary words, and select the intervention vocabulary specific to the child. A total of 20 target vocabulary, 5 from each of the 4 books, were selected for each child based on their pre-test results. The target vocabulary were selected based on the following criteria: (1) the child does not know the expressive vocabulary, (2) words that the child does not know receptively and expressively are selected first, (3) if there are multiple words that the child knows receptively but not expressively, words that the child scored 0 for definitions are selected first. Based on the selection criteria, pre-test scores for receptive vocabulary varied across participants.

This study combined the shared book reading protocol from previous studies (Kim et al., 2020; Park & Yim, 2019) and the bilingual book reading approach involving bridging to L1 techniques for vocabulary instruction from Mendez et al. (2018) to foster vocabulary learning for bilingual children through shared book reading. The intervention session plan and vocabulary instruction pro-

tocols are provided in Appendices 2 and 3. Children participated in online shared book reading sessions via zoom 2 times a week for 3 weeks, for a total of 6 sessions, and were exposed to 4 books in total. Each session lasted around 30 minutes and children read 2 books every session. Children were exposed to 5 target words per book 10 times during 1 session, and each book was read across 3 sessions with a total of 30 total exposures of each target word throughout the intervention. In the first session, the book reading and vocabulary instruction were both conducted in Korean, in the second session, the book was read in English and vocabulary instruction was conducted in Korean, and in the third session, the book reading and vocabulary instruction were both conducted in English. The intervention schedule is provided in Table 2.

Reliability

Video or audio recordings of the book reading sessions were reviewed by a speech pathology master's student to ensure the following were completed during each book reading session: (1) the book reading and vocabulary instruction was provided in the correct language, (2) the book was read according to the scripted text, and (3) the vocabulary instruction was provided according to the script. The interventionist followed the intervention script 98% of the time. In order to verify the reliability of the experimental task scores, a bilingual Speech Pathology master's student, and a bilingual school teacher who were blind to the participant's assignment condition were asked to independently score children's responses in the expressive definitions task on a scale of 0-3. The probes were scored by two examiners with 74.2% agreement. For the items on which the two examiners had different scores, the third examiner served as tie breaker to derive the final score.

Statistical Analysis

Wilcoxon signed-rank tests were used to compare: (1) differences between pre-test and post-test scores on measures of Korean receptive vocabulary, expressive vocabulary, and definitions for each group, (2) differences between pre-test and post-test scores on measures of English receptive vocabulary, expressive vocabulary, and definitions for each group, and (3) differences between pre-test and post-test scores on measures of Korean and English receptive vocabulary, expressive vocabulary, and definitions, with conceptual scoring for each group. Effect sizes were also calculated in order to determine the magnitude of the effect of the intervention. Effect size was calculated with the Z statistic from the Wilcoxon signed-rank test divided by the square root of the sample size (Fritz, Morris, & Richler, 2012). According to Cohen (1988), an effect size of .10 was considered as a small effect, .30 was considered as a medium effect, and .50 was considered as a large effect. All statistical analyses were conducted using SPSS ver. 29.0 (IBM, Armonk, NY, USA).

RESULTS

Comparison of Pre–test and Post–test Vocabulary Results for Children without DLD

The Wilcoxon signed-rank test was used to examine the difference between pre-test and post-test scores following a bilingual shared book reading intervention on measures of Korean, English, and conceptual receptive vocabulary, expressive vocabulary, and expressive definitions.

Korean vocabulary results for children without DLD

Pre and post test results for all three measures of vocabulary in Korean were compared for children without DLD. Comparison of the means revealed an increase in all three measures, with the highest increase in receptive vocabulary. There was a statistically significant difference between pre and post test results for Korean receptive vocabulary (Z=-2.670, p=.008), expressive vocabulary (Z=-2.533, p=.011), and expressive definitions (Z=-2.668, p=.008). Examination of the effect sizes for each vocabulary measure revealed a large effect for all three measures: receptive vocabulary (r=.890), expressive vocabulary (r=.844), and expressive defini-

Table 2. Intervention schedule

Session 1 (Korean)	Session 2 (English+Korean)	Session 3 (English)	Session 4 (Korean)	Session 5 (English+Korean)	Session 6 (English)
Book A Book B	Book B Book A	Book A Book B	Book C Book D	Book D Book C	Book C Book D

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tions (r = .889). The results are presented in Table 3.

English vocabulary results for children without DLD

Pre and post test results for all three measures of vocabulary in English were compared for children without DLD. Comparison of the means revealed an increase in all three measures, with the highest increase in receptive vocabulary. There was a statistically significant difference between pre and post test results for English receptive vocabulary (Z = -2.677, p = .007), expressive vocabulary (Z = -2.666, p = .008), and expressive definitions (Z = -2.668, p = .008). Examination of the effect sizes for each vocabulary measure revealed a large effect for all three measures: receptive vocabulary (r = .892), expressive vocabulary (r = .889), and expressive definitions (r = .889). The results are presented in Table 4.

Conceptual vocabulary results for children without DLD

Pre and post test results for all three measures of conceptual vocabulary were compared for children without DLD. Comparison of the means revealed an increase in all three measures, with the highest increase in receptive vocabulary. There was a statistically significant difference between pre and post test results for Korean receptive vocabulary (Z = -2.673, p = .008), expressive vocabulary (Z = -2.692, p = .007), and expressive definitions (Z = -2.666, p = .008). Examination of the effect sizes for each vocabulary measure revealed a large effect for all three measures: receptive vocabulary (r = .891), expressive vocabulary (r = .897), and expressive definitions (r = .889). The results are presented in Table 5 and Figures 1-3.

Comparison of Pre–test and Post–test Vocabulary Results for Children with DLD

The Wilcoxon signed-rank test was used to examine the difference between pre-test and post-test scores following a bilingual shared book reading intervention on measures of Korean, English, and conceptual receptive vocabulary, expressive vocabulary, and expressive definitions.

Korean vocabulary results for children with DLD

Pre and post test results for all three measures of vocabulary in

Table 3. Descriptive statistics and Wilcoxon signed-rank test results for pre-post Korean vocabulary measures for children without DLD (N = 9)

	Pre		Post		*Z*	*p*	*r*
	Mean	SD	Mean	SD			
Receptive vocabulary	31.111	19.808	88.889	12.443	-2.670	.008*	.890
Expressive vocabulary	0	0	20.560	13.794	-2.533	.011*	.844
Expressive definitions	0	0	50.037	20.194	-2.668	.008*	.889

*p < .05.

Table 4. Descriptive statistics and Wilcoxon signed-rank test results for pre-post English vocabulary measures for children without DLD (N = 9)

	Pre		Post		*Z*	*p*	*r*
	Mean	SD	Mean	SD			
Receptive vocabulary	28.889	16.541	93.333	7.5	-2.677	.007*	.892
Expressive vocabulary	0	0	30	13.693	-2.666	.008*	.889
Expressive definitions	0	0	41.111	14.103	-2.668	.008*	.889

*p < .05.

Table 5. Descriptive statistics and Wilcoxon signed-rank test results for pre-post conceptual vocabulary measures for children without DLD (N = 9)

	Pre		Post		*Z*	*p*	*r*
	Mean	SD	Mean	SD			
Receptive vocabulary	47.222	20.173	95.556	6.82	-2.673	.008*	.891
Expressive vocabulary	0	0	41.111	14.530	-2.692	.007*	.897
Expressive definitions	0	0	58.702	16.899	-2.666	.008*	.889

*p < .05.

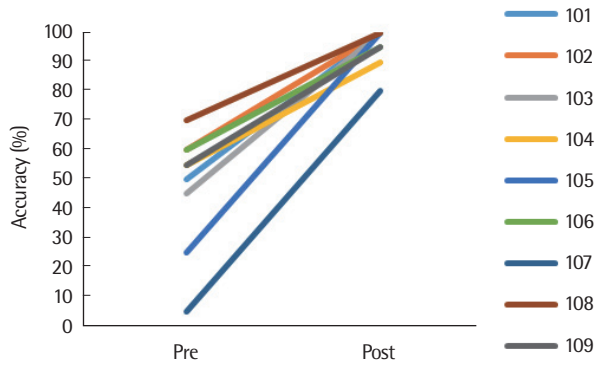

Figure 1. Conceptual receptive vocabulary pre-post test scores for children without DLD.

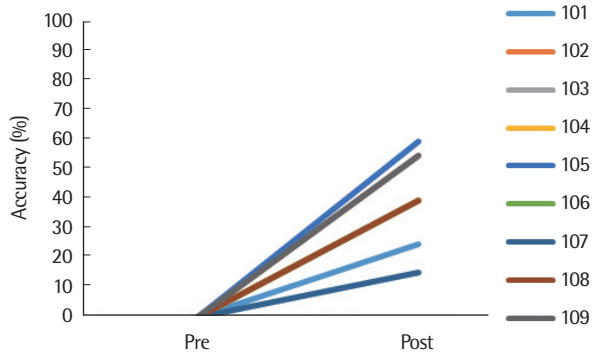

Figure 2. Conceptual expressive vocabulary pre-post test scores for children without DLD.

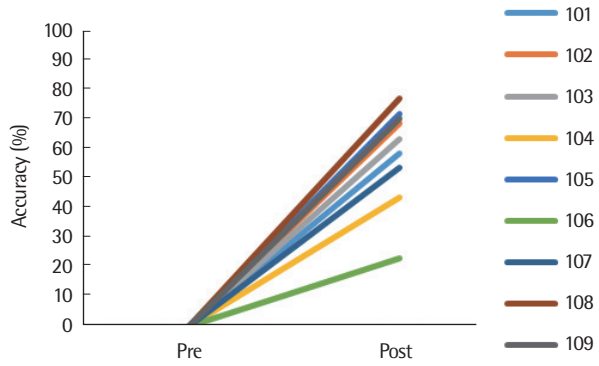

Figure 3. Conceptual expressive definitions pre-post test scores for children without DLD.

Korean were compared for children with DLD. Comparison of the means revealed an increase in all three measures, with the highest increase in receptive vocabulary. There was a statistically significant difference between pre and post test results for Korean receptive vocabulary (Z=-2.232, p=.026). Although pre-post test results for expressive vocabulary (Z=-1.633, p=.102), and expressive definitions (Z=-1.633, p=.102) were not statistically significant, examination of the effect sizes for each vocabulary measure revealed a large effect for all three measures: receptive vocabulary (r=.843), expressive vocabulary (r=.617), and expressive definitions (r=.617). The results are presented in Table 6.

English vocabulary results for children with DLD

Pre and post test results for all three measures of vocabulary in English were compared for children with DLD. Comparison of the means revealed an increase in all three measures, with the highest increase in receptive vocabulary. There was a statistically significant difference between pre and post test results for English receptive vocabulary (Z=-2.371, p=.018) and expressive vocabulary (Z=-2.041, p=.041). Although pre-post test results for expressive definitions (Z=-1.604, p=.109) was not statistically significant, examination of the effect sizes for each vocabulary measure revealed a large effect for all three measures: receptive vocabulary (r=.896), expressive vocabulary (r=.771), and expressive definitions (r=.606). The results are presented in Table 7.

Conceptual vocabulary results for children with DLD

Pre and post test results for all 3 measures of conceptual vocabulary were compared for children with DLD. Comparison of the means revealed an increase in all three measures, with the highest increase in receptive vocabulary. There was a statistically significant difference between pre and post test results for conceptual receptive vocabulary (Z=-2.388, p=.017), and expressive vocabulary (Z=

Table 6. Descriptive statistics and Wilcoxon signed-rank test results for pre-post Korean vocabulary measures for children with DLD (N=7)

	Pre		Post		Z	p	r
	Mean	SD	Mean	SD			
Receptive vocabulary	9.286	10.965	22.143	17.043	-2.232	.026*	.843
Expressive vocabulary	0	0	2.857	3.934	-1.633	.102	.617
Expressive definitions	0	0	5.239	6.557	-1.633	.102	.617

*p<.05.

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Table 7. Descriptive statistics and Wilcoxon signed-rank test results for pre-post English vocabulary measures for children with DLD (N=7)

	Pre		Post		*Z*	*p*	*r*
	Mean	SD	Mean	SD			
Receptive vocabulary	10.714	10.177	40.714	17.182	-2.371	.018*	.896
Expressive vocabulary	0	0	10.714	8.864	-2.041	.041*	.771
Expressive definitions	0	0	6.429	9.048	-1.604	.109	.606

*$p<.05$.

Table 8. Descriptive statistics and Wilcoxon signed-rank test results for pre-post conceptual vocabulary measures for children with DLD (N=7)

	Pre		Post		*Z*	*p*	*r*
	Mean	SD	Mean	SD			
Receptive vocabulary	19.286	16.938	50.714	16.938	-2.388	.017*	.903
Expressive vocabulary	0	0	13.571	6.268	-2.388	.017*	.903
Expressive definitions	0	0	8.809	11.575	-1.604	.109	.606

*$p<.05$.

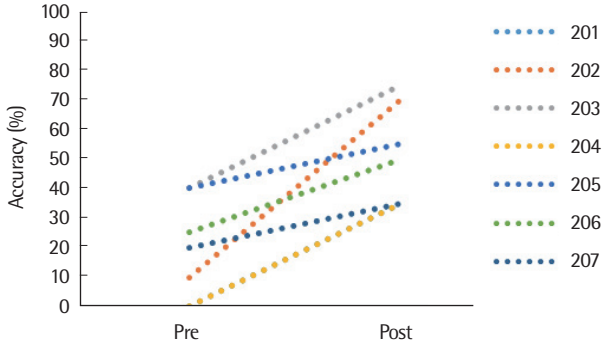

Figure 4. Conceptual receptive vocabulary pre-post test scores for children with DLD.

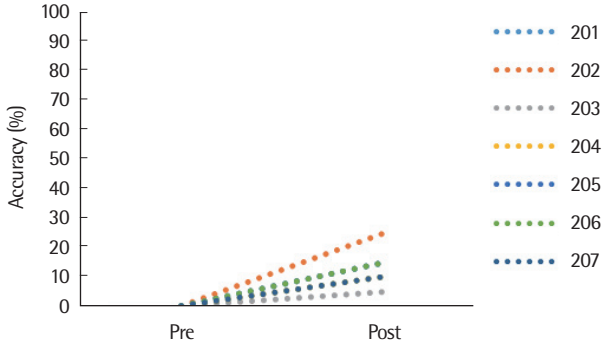

Figure 5. Conceptual expressive vocabulary pre-post test scores for children with DLD.

-2.388, $p=.017$). Although pre-post test results for expressive definitions ($Z=-1.604$, $p=.109$) was not statistically significant, examination of the effect sizes for each vocabulary measure revealed a large effect for all three measures; receptive vocabulary ($r=.903$), expressive vocabulary ($r=.903$), and expressive definitions ($r=.606$). The results are presented in Table 8 and Figures 4-6.

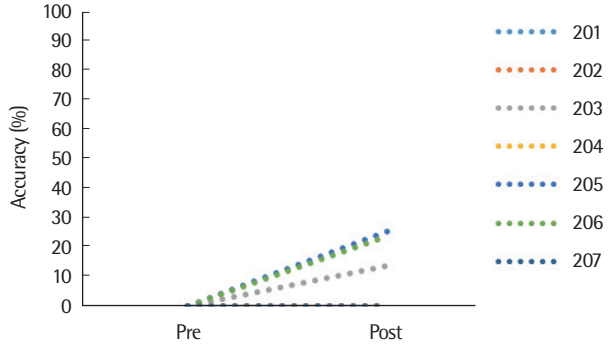

Figure 6. Conceptual expressive definitions pre-post test scores for children with DLD.

DISCUSSION & CONCLUSION

This study investigated the effects of a bilingual shared book reading intervention on the vocabulary learning of Korean-English bilingual children with and without DLD.

First, pre-post test results for Korean, English, and conceptual receptive vocabulary, expressive vocabulary, and expressive definitions were compared in order to examine the effect of a bilingual shared book reading intervention on the vocabulary learning of Korean-English bilingual children without DLD. Results showed a statistically significant increase with a large effect between pre and post test scores on all vocabulary measures. This suggests that

the bilingual shared book reading intervention with embedded explicit vocabulary instructions and bridging to L1 techniques used in this study facilitated vocabulary learning for typically developing Korean-English bilingual children. These results corroborate findings from previous studies that found bilingual shared book reading interventions for typically developing Spanish-English bilingual children resulted in gains in both L1 and L2 vocabulary (Mendez et al., 2018; Tsybina & Eriks-Brophy, 2010). The Mendez et al. (2018) study only looked at receptive vocabulary in Spanish and English, and found that bilingual instruction resulted in greater gains in receptive vocabulary compared to monolingual instruction in English. However, the current study investigated the effect of a bilingual intervention on both vocabulary breadth and depth, and found gains in all measures. The biggest increase was found for receptive vocabulary, followed by expressive definitions, and expressive vocabulary for Korean, English, and conceptual vocabulary. Previous studies targeting monolinguals with typical development found lower definitions scores compared to expressive scores (Park & Yim, 2019). However, higher average scores were found for expressive definitions compared to expressive vocabulary in the current study. Qualitative analysis of children's responses in the expressive vocabulary probe revealed that many children often produced synonyms or descriptions of the target word which was scored as incorrect. Producing synonyms and semantically related descriptions, however, shows that the children have begun to form a semantic network around the target word and suggests that vocabulary learning is taking place.

Second, pre-post test results for Korean, English, and conceptual receptive vocabulary, expressive vocabulary, and expressive definitions were compared in order to investigate the effect of a bilingual shared book reading intervention on the vocabulary learning of Korean-English bilingual children with DLD. Results showed a statistically significant increase in Korean receptive vocabulary, English receptive and expressive vocabulary, and conceptual receptive and expressive vocabulary. There was no statistically significant increase for expressive definitions across both Korean and English. However, examination of effect sizes revealed a large effect across all vocabulary measures. This suggests that although comparison of pre-post results for some vocabulary measures were not statistically significant, the bilingual shared book reading intervention, with embedded explicit vocabulary instruction and bridging to L1 techniques used in this study facilitated vocabulary learning for Korean-English bilingual children with DLD. These results corroborate findings from previous studies that found bilingual shared book reading interventions for Spanish-English bilingual children with language impairment to be an effective method of vocabulary instruction (Restrepo et al., 2013).

Children with DLD demonstrated the biggest growth in receptive vocabulary measures, which was in line with the findings for typically developing children and other previous studies mentioned above. However, children with DLD demonstrated greater gains in expressive vocabulary measures compared to expressive definitions for English and conceptual vocabulary, which contrasts with the findings for typically developing children. Qualitative analysis of children's responses revealed that many children responded with "I don't know" for many of the items for expressive vocabulary and definitions instead of providing a vague or incorrect response. This suggests that children with DLD may experience more difficulty learning vocabulary depth compared to vocabulary breadth, and reflects the difficulty that children with language impairments have in formulating definitions using syntactic knowledge, and with semantic specificity and relevance (Gutierrez-Cleflen & DeCurtis, 1999). Children with DLD also demonstrated greater gains in English vocabulary measures compared to Korean vocabulary measures. Previous studies have found that bilingual children appear to be more able to learn new vocabulary in their stronger language (Kan, 2014; Kan & Kohnert, 2012; Kan, Sadagopan, Janich, & Andrade, 2014). As the majority of the participants in this study were children living overseas who used English as the social language, this may have influenced the greater gains in English vocabulary.

Meta-analysis studies on the effect of shared book reading interventions for monolingual (Noble et al., 2019) and bilingual (Fitton, McIlraith, & Wood, 2018) children found them to be effective in enhancing children's vocabulary skills. The results from this study found gains in target vocabulary for both groups despite the relative brevity of the intervention period (6 sessions) which adds to previous findings on the efficiency of shared book reading for vocabulary instruction. In addition, although the intervention period was relatively short, the intervention was designed to provide a

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high intensity of target vocabulary exposure, in line with previous studies (Kim et al., 2020; Park & Yim, 2019) which found greater gains with greater exposure to target words. Thus, shared book reading interventions are an efficient way of teaching children vocabulary, especially with a high number of exposures and explicit teaching of vocabulary.

Some of the limitations of this study were the small sample size which resulted in limitations to generalizing the findings of this study. In addition, this study this study only examined vocabulary learning immediately following the intervention and maintenance of the acquired vocabulary was not assessed. Future studies should include more participants with a normal distribution to increase the power and produce findings that can be generalized, and also investigate maintenance and generalization of vocabulary skills following the intervention in order support the clinical applicability of this intervention approach. Furthermore, future studies should compare the effects of monolingual and bilingual shared book reading intervention for bilingual children to investigate the most efficient method of intervention for this group of children.

In conclusion, this study corroborated findings from previous research that found shared book reading interventions to be an effective method of vocabulary instruction for monolingual children with and without DLD. In addition, this study confirmed that bilingual shared book reading interventions can facilitate vocabulary learning for Korean-English bilingual children, and provides preliminary evidence that bilingual interventions and bridging to L1 techniques may be effective for languages that are typologically and linguistically distant.

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Appendix 1. Intervention book list

No.	English title	Korean title	Author
1	Doctor De Soto	치과 의사 드소토 선생님	William Steig
2	Sudsy Mom's Washing Spree	도깨비를 빨아버린 우리 엄마	Waikiko Sato
3	Extra Yarn	애너벨과 신기한 털실	Mac Barnett
4	Last Stop on Market Street	행복을 나르는 버스	Matt De La Pena

Appendix 2. Session Plan

Book	Activity	Time
Book A	Pre-reading activity	2 min
	Shared book reading	11 min
	Post-reading activity	2 min
Book B	Pre-reading activity	2 min
	Shared book reading	11 min
	Post-reading activity	2 min

Appendix 3. Vocabulary instruction protocol

Activity	Auditory stimuli	Visual stimuli
Pre-reading	1. He is **polishing** his shoes. [contextual sentence]	Picture stimuli
	2. **Polish** is to shine [synonym]	
	3. **Polish** is to make something smooth and glossy by rubbing it [definition]	
Shared book reading	4. "…tooth of pure gold and **polished** it." [in text]	Book
	5. **Polish** is to shine [synonym]	
	6. **Polish** is to make something smooth and glossy by rubbing it [definition]	
	7. She is **polishing** the tooth. [contextual sentence]	
Post-reading	8. He is **polishing** his car. [contextual sentence]	Picture stimuli
	9. **Polish** is to shine [synonym]	
	10. **Polish** is to make something smooth and glossy by rubbing it [definition]	

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국문초록

비대면 이중언어 상호작용적 책읽기 중재가 한국어–영어 이중언어 아동의 어휘학습에 미치는 영향

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배경 및 목적: 본 연구는 이중언어 상호작용적 책읽기 중재가 한국어-영어 이중언어 아동들의 어휘학습에 미치는 영향을 알아보고자 하였다. 방법: 본 연구에는 4-6세 정상발달과 언어발달장애 한국어-영어 이중언어 아동들 16명이 참여하였다. 대상자들은 주 2회, 3주, 총 6회기의 이중언어 상호작용적 책읽기 중재에 참여했으며 중재 후 수용어휘, 표현어휘, 정의하기 능력을 한국어, 영어, 개념적 어휘(conceptual vocabulary)검사를 통하여 어휘학습에 대한 중재 효과를 살펴보았다. 결과: 본 연구의 결과, 정상발달 아동들은 한국어와 영어 수용어휘, 표현어휘, 정의하기 사후평가 결과에서 유의하게 높은 수행력을 보였으며 언어발달장애 아동들은 한국어 수용어휘, 영어 수용어휘와 표현어휘에서 유의하게 높은 수행력을 보였다. 논의 및 결론: 본 연구의 결과는 이중언어 상호작용적 책읽기 중재가 한국어-영어 이중언어 아동들의 어휘학습에 효과적이며, 언어발달장애 이중언어 아동의 경우 정상발달 아동보다 높은 강도의 중재가 필요할 수 있음을 시사한다.

핵심어: 이중언어 상호작용적 책읽기, 어휘 중재, 한국어–영어 이중언어 아동, 이중언어 중재

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