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Production of Korean Case Particles in an English-Korean Bilingual Child with Specific Language Impairment: A Preliminary Study

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Production of Korean Case Particles in a Korean–English Bilingual Child with Specific Language Impairment: A Preliminary Study

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Abstract: The purpose of this study was to investigate the use of Korean case particles in a Korean–English bilingual child with specific language impairment (SLI). The child's production of four types of Korean case particles were compared to those of three typically developing children during probe and storytelling tasks. The Korean–English bilingual child with SLI produced the vocative and the nominative for person case particles similar to children matched on age and mean length of utterance (MLU). He produced the nominative for object and accusative case particles similar to the MLUmatched child but exhibited lower performance than that of his age-matched peers. The results suggest that longer duration of Korean case particles in the phrase-final position may provide perceptual salience and not pose particular difficulty for the Korean–English bilingual with SLI. Frequent omission of the accusative by the child with SLI and his MLU-matched peer, however, supports the argument that frequency effect in linguistic input influences morphological development.

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Children who exhibit normal development in all areas except language are referred to as having *specific language impairment* (SLI). These children otherwise demonstrate normal hearing, neurological, cognitive, behavioral, and emotional skills. Common characteristics of SLI have been well documented in English-speaking children. Previous studies have indicated that children with SLI frequently demonstrate difficulty using grammatical morphemes, which are function words and inflections that modify or connect content words (Bishop, 1992; Leonard, Eyer, Bedore, & Grela, 1997; Oetting & Rice, 1993; Rice, Wexler, Marquis, & Hershberger, 2000; Steckol & Leonard, 1979). Common grammatical errors of children with SLI include the use of third-person singular, regular past tense, plurals, articles, copula and auxiliary *be* forms, and auxiliary *do* forms.

Although relatively few, an increasing number of studies have documented the language patterns of SLI in languages other than English (e.g., Swedish, Chinese, Spanish, Italian, French, German, Hebrew, and Japanese). This body of research has revealed that many patterns of difficulty are similar to those seen in English speakers. Examining a Germanic language, for example, Hansson, Nettelbladt, and Leonard (2000) reported that Swedish children with SLI showed decreased use of verb morphology (i.e., present-tense copula forms and regular past-tense inflections). Other patterns of error appear to reflect the unique linguistic characteristics of a given language. Hansson et al. also found that their Swedish participants with SLI produced frequent word-order errors, a pattern not commonly seen in English speakers. Examining an Asian language, Stokes and Fletcher (2003) found that Cantonese-speaking children with SLI encoded aspect in repetition tasks; however, age-matched controls used aspectual forms with greater facility than did the children with SLI in video narration and conversation tasks. In another study, Fletcher, Leonard, Stokes, and Wong (2005) found that Cantonese speakers with SLI were less likely than their peers to produce aspect markers. In Romance languages such as Italian and Spanish, a hallmark of SLI appears to be difficulty with noun morphology, such as use of articles, number agreement, and gender agreement (Bedore & Leonard, 2001, 2005; Leonard, Bortolini, Caselli, McGregor, & Sabbadini, 1992; Restrepo, & Kruth, 2000). This cross-linguistic research has revealed

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that children with SLI in various languages often display lower morphological performance than children matched on age and/or mean length of utterance (MLU) but that specific morphological features of SLI may vary across languages.

Given that the majority of the world speaks more than one language, examination of SLI in bilingual speakers is of vital interest. Restrepo and Kruth (2000) compared the narrative language samples of one bilingual Spanish–English child with SLI to one typically developing (TD), age-matched bilingual peer. In English, the child with SLI displayed difficulty using definite articles and regular and irregular third person, produced fewer prepositions and pronouns, and used copulas less consistently than did her peer. In Spanish, the child with SLI had significant difficulty using articles and prepositions, and she had some difficulty with article–noun gender agreement and pronouns, when compared to her peer. Interestingly, however, verb production in Spanish appeared less affected than what is often seen with monolingual English speakers. Eng and O'Connor (2000) compared a group of bilingual Spanish–English preschoolers with SLI to a group of TD peers. Specifically, they examined the children's ability to produce and judge the correctness of article–noun gender agreement in Spanish. Results indicate that both groups of children had some difficulty with article–noun gender agreement tasks, particularly when the noun gender was not predictable based on its final sound. The children with SLI, however, presented notably more errors than did their peers. These studies suggest that bilingual children with SLI possess abilities of grammatical rule discovery, although perhaps at a slower rate than that of TD children. Jacobson and Schwartz (2005) examined the elicited English morphological production of Spanish–English bilinguals between the ages of 7 and 9. Approximately half of the participants were diagnosed with SLI, and the other half were TD. They found higher overall accuracy of verb production in the TD bilinguals. Interestingly, they also found different types of errors produced by each group. The TD children demonstrated overgeneralization by producing more errors on irregular verb types. In contrast, the children with SLI demonstrated less overgeneralization by producing a significantly higher percentage of errors on regular and novel verbs, thereby demonstrating less-developed grammatical rule discovery. Paradis, Crago, Genesee, and Rice (2003) compared three

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groups of children with SLI, monolingual French speakers, monolingual English speakers, and bilingual French–English speakers. They found that bilingual children with SLI appeared similar to their monolingual peers with SLI with respect to errors in grammatical morphology. In English, both monolinguals and bilinguals with SLI had more difficulty with tense morphemes (e.g., third-person singular, past tense, copulas and auxiliaries) than nontense morphemes (e.g., progressive, plurals, and prepositions). In French, monolinguals and bilinguals with SLI also had more difficulty with tense morphemes (e.g., copulas and auxiliaries) than with nontense morphemes (e.g., prepositions and determiners). Thus far, results from the few existing investigations with bilinguals with SLI reinforce the need for continued study of bilingual children with SLI.

Research with bilingual speakers is critical in culturally and linguistically diverse countries such as the United States, where it is estimated that in one in five school-age children speak a language other than English at home (U.S. Census Bureau, 2005). Despite these numbers, there is a paucity of information about the language characteristics of bilingual children with SLI, especially in non-Indo-European languages. Given the growing number of bilingual children in the United States, it is necessary to understand the language characteristics of various types of bilingual children with SLI. Such research has both practical and theoretical implications. Practically, it is necessary to understand indicators of SLI in various languages in order to avoid both over- and underidentification of children with language impairment and to develop appropriate treatment plans (Bedore & Peña, 2008). Theoretically, cross-linguistic examination provides further insight into the nature of SLI.

Theoretical Perspectives on Children with SLI

Among the various explanations offered to date regarding the morphological deficits seen in children with SLI (see Leonard et al., 1997; Serratrice, Joseph, & Conti-Ramsden, 2003), Leonard and colleagues (Leonard, 1992; Leonard et al., 1992; Leonard et al., 1997) have proposed a surface account, which emphasizes the acoustic properties of English grammatical morphology. According to this account, grammatical morphemes that are acoustically short in

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duration, thereby less salient, are not easily processed by children with SLI who have slower processing capacities. Specifically, Leonard and colleagues (1997) compared the regular and irregular past-tense verb production of children with SLI with that of age- and MLU-matched peers. They found that irregular past-tense verb production of the children with SLI was similar to that of their MLU-matched peers. The authors argued that because irregular past forms often involve a vowel change in the verb stem and because the changed vowel quality in the strong syllable is more salient than the addition of an unstressed and often nonsyllabic inflection, these findings support the surface account of SLI.

Recent research has suggested that the development of a morphological system also appears to be related to item frequency, which is consistent with connectionist models (Plunkett & Marchman, 1991, 1993). The connectionist model of morphological development proposes that the size of the verb lexicon exceeding a critical mass (Marchman & Bates, 1994) is an important aspect in productive use of verb morphology. Marchman, Wulfeck, and Weismer (1999) examined verb morphology in children with and without SLI. They found that low-frequency past-tense verbs are more likely to be produced with errors than are high-frequency past-tense verbs in children with SLI and TD children. Oetting and Rice (1993) also investigated frequency effect on noun morphology. They reported that English-speaking children with SLI showed a lower correct percentage of use of infrequently pluralized nouns (e.g., *church*) when compared to that of frequently pluralized ones (e.g., *dog*), thereby suggesting that their pluralization skills were affected by input frequency.

In addition to providing important clinical information about SLI, cross-linguistic research provides conditions that further scrutinize the theoretical premises of SLI. If a theory of SLI is valid, it should be supported by research findings across languages. Thus, research in languages other than English is useful in examining the surface account and item frequency effect. Korean serves as a useful test of the surface account because grammatical morphemes tend to be longer in duration than they are in English. Beckman and Edwards (1990) reported that phrase-final syllables are often significantly

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lengthened in languages. In other words, when a phrase is followed by a pause, the lengthening is found at the end of the phrase. Such a phrase is called an intonation phrase, and it is larger than a word but can be smaller than a sentence. According to Jun (1993), when a Korean speaker produces a word and case particle followed by a pause, the case particle in Korean is likely to appear at the end of the intonation phrase. Consequently, production of the case particle is longer, thereby providing perceptual salience (Jun, 1993, 1998).

Korean Morphology

A specific example of Korean case particles follows (Sohn, 1999). Korean has a subject–object–verb sentence structure. Korean case particles follow nouns, indicating whether the noun is being used as a subject or an object—for example,

Subject	Object
Chelswu-ka	*sakwa-lul*
Chelswu-SP	apple-OP

In this example, *Chelswu* is a name; *ka* represents a subject particle (SP); and *lul* represents an object particle (OP), indicating subject and object cases, respectively. If a Korean speaker pauses after the SP and/or the OP, these case particles are generally longer in duration. The surface account would predict that Korean-speaking children with SLI would show relatively few problems in producing case particles owing to their relatively long duration.

Not every case particle has the same frequency of occurrence in Korean. A recent study of mothers' speech patterns in Korean (Lee, Davis, & MacNeilage, in press) revealed that certain case particles are easily omitted in conversational speech. For example, accusative particles, indicating object cases, are frequently omitted, whereas subject particles are not. Moreover, Korean case particles have two types of phonological variations based on the existence of a final consonant (i.e., coda) of the final syllable preceding nouns. For example, as can be seen in Table 1, the vocative case particle *ya* is added after no coda (e.g., *Chelswu ya*), whereas *a* is added after the coda (e.g., *Chel a*). The two types of case particles do not occur with

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equal frequency. Because words without codas are more common in Korean than are words with codas, case particles after vowel endings are more frequent (unmarked) than are those after consonant endings (marked; Sohn, 1999).

Together, these characteristics of Korean case particles provide a useful context for examining the degree to which perceptual salience and item frequency affect the productivity of case particles in Korean-speaking children with SLI.

Purpose

The primary purpose of this study was to examine the production of Korean grammatical morphemes in a Korean–English bilingual child with a history of SLI. Because morphological systems vary cross-linguistically, the morphological production of children with SLI should be examined in various language environments. In addition, the investigation of bilingual speakers' home language use is a critical part of the assessment process when identifying bilingual children with SLI. To date, few studies are available on the production of grammatical morphemes in Korean-speaking children with SLI. Consequently, the results of this study provide valuable preliminary information about the characteristics of grammatical morphemes in this population. The second purpose was to analyze these findings in light of current theoretical perspectives of language impairment.

Method

Participants

Three bilingual children (Korean and English speaking) and one monolingual child (Korean speaking) were recruited for this study. The first participant was a bilingual boy with SLI (7 years, 2 months). The controls included one age-matched TD bilingual peer (7 years, 3 months), one MLU-matched TD bilingual child (4 years, 5 months; MLU: 4.6), and one agematched TD monolingual Korean-speaking child (7 years, 3 months). The controls were also male. Bilingual status was based on parent interview, teacher interviews, and child interviews conducted by the first author. Results of these interviews

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revealed similar language histories. The three bilingual children were born and raised in Korean-speaking homes in a large city in the United States, and they had attended English-speaking day cares and schools since they were 1-year-old. All parents were native Korean speakers who came to the United States as adults to attend college. The primary home language was Korean. Parents spoke to their children mainly in Korean and encouraged them to speak Korean at home. The children communicated with their peers at school primarily in English. Thus, all three bilingual children in this study had comparable levels of exposure to Korean and English in the home and at school. The monolingual Korean child was born and lived in Korea, and his data were collected in Korea. This child was not frequently exposed to English and did not have any formal instruction in English. All four participants had no siblings. Thus, comparisons of these children made it possible to characterize morphological error patterns in the bilingual child with SLI.

The child with SLI had a history of speech and language impairment as indicated by converging evidence based on parent concern, teacher concern, and formal and informal speech-language testing. The mother reported that her child had displayed language difficulties since preschool. He produced numerous morphosyntactic errors in both Korean and English, although she suggested there were more errors in Korean than in English. The classroom teacher indicated that he exhibited lower language and reading skills than did other Korean–English bilingual students in his class. The school's speech-language pathologist conducted formal testing using the *Test of Language Development–Second Edition* (Newcommer & Hammill, 1988) and the *Wechsler Intelligence Scale for Children–Third Edition* (Wechsler, 1991). The child's IQ fell within the average range, but his language skills fell below average. There was no evidence of oral–peripheral abnormalities or neurological dysfunction. Because there are no validated measures for identifying language disorders in Korean–English bilingual children, a qualitative assessment was conducted by the first author. This informal evaluation also revealed language deficits in Korean. As observed by his parents, the child generally produced short and simple sentences. Grammatical errors included frequent omissions of noun (e.g., object case particle *ul*) and

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verb morphological markers (e.g., past-tense marker *ess*) in obligatory contexts.

Target Case Particles

Four types of case particles (vocative, nominative for person, nominative for object, accusative) were examined in this study (see Table 1). In Korean, vocative case particles are used to mark the person or thing that is being directly addressed. Nominative case particles are used to mark the subject, and the specific nominative case particles required depends on whether the subject is human or nonhuman. The accusative is used to mark direct objects. Each type of case particle has two phonological forms based on the presence of a final vowel (no coda) or final consonant (coda) of the final syllable preceding the noun. Eight case particles were evaluated during a probe task and a spontaneous narrative production task. Because certain case particles may be omitted in natural conversation, the probe task was constructed to create obligatory contexts for the morphemes of interest. In this task, unfamiliar person and object names were used to decrease the effects of frequency and lexical learning.

Procedures

The tasks were presented to each child in random order by the first author, who is a native speaker of Korean. The samples were audio-recorded and transcribed by another native speaker of Korean with a degree in linguistics.

The spontaneous language samples were collected in a conversational setting without specific instruction other than to communicate in Korean. The first several minutes were devoted to conversation about the child's family, friends, and school activities. Then, the target picture book titled *Frog, Where Are You?* (Mayer, 1969) was presented to the child. The child was asked to tell a story about the book in Korean, which was recorded and transcribed.

The probe task used eight picture cards and four unfamiliar shapes of objects. The first four pictures, designed to elicit production of vocative case particles, depicted a child calling another child. Each

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of the other four picture cards was designed to elicit the correct nominative case particle (no coda or coda), and it showed a child, whom the examiner named an unfamiliar name, eating a hamburger. Four unfamiliar shapes of objects, which the examiner labeled using nonsense words, were presented to elicit the nominative for object and the accusative case particles. Table 2 shows the unfamiliar names and nonsense words.

The unfamiliar names were selected after the experimenter interviewed the mother of each child about whether the child knew anyone with the targeted names. There was no evidence that any child knew the names. The selection of the four unfamiliar names was based on gender variance and the existence of a coda. Two were feminine names and two were masculine. One of each gender's names had a coda, whereas the other had no coda. The four 2-syllable nonsense words were created to minimize demands on articulation (e.g., excluding /*l*/ or /*s*/ sounds). Like the unfamiliar names, two of the nonsense sounds were composed of codas, whereas the other two did not.

Before administering the probe task, the experimenter taught the children the unfamiliar names and the nonsense object words. After the child demonstrated having learned the words, the experimenter asked him or her to follow the experimenter's model using the unfamiliar names and nonsense words. The order of task presentation was as follows: vocative, nominative for person, nominative for objects, and accusative. Two common proper names, *Chelswu* and *Minceng*, and two common objects, *sakwa* (apple) and *yenphil* (pencil) were used for modeling utterances—for example,

Model:	*Sakwa-ka*	*sang-ey*	*issney*
	Apple-SP	table-on	is
	There is an apple on the table.		
Child:	*Patom-i*	*sang-ey*	*Issney*
	Nonsense word–SP	table-on	is
	There is a padom on the table.		

In half of the tasks, the experimenter's prompt was different from the required form with respect to the presence or absence of a coda. For example, when the nominative case particle for the object *ka*

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was provided in the modeling, the form elicited by the child was *i* or vice versa.

Model:	*Sakwa-ka*	*sang-ey issney*	There is an apple on the table.
Child:	*Patom-i*	*sang-ey issney*	There is a padom on the table.
Model:	*Yenphil-i*	*sang-ey issney*	There is a pencil on the table.
Child:	*Pipo-ka*	*sang-ey issney*	There is a pipo on the table.

For the remaining models, the experimenter's prompt was the same as the elicited form. For example, the experimenter's prompt and elicited forms were both *ka*.

Model:	*Sakwa-ka*	sang-ey issney	There is an apple on the table.
Child:	*Pipo-ka*	*sang-ey issney*	There is a pipo on the table.
Model:	*Yenphil-i*	*sang-ey issney*	There is a pencil on the table.
Child:	*Patom-i*	*sang-ey issney*	There is a padom on the table.

If a child did not use the same structure or if his productions were not correct during the first and second trials, at the third trial, the investigator then provided the rephrased sentences by placing the desired noun at the end of the sentence to increase the target word's salience. Then, the investigator repeated the sentence, excluding the unfamiliar names, nonsense words, and case particles. The examiner provided up to three trials—for example,

Model:	*Sang-ey*	*issney*	*sakwa-ka*
	One the table	is	an apple
	Sang-ey	*issney*	_____?
	On the table	is	_____?
Child:	*Patom-i*		
	Patom		

Results

Probe Task

Examination of children's case particle production revealed some similarities and some differences between the production of the child

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with SLI and that of his peers. Analysis of vocative case production revealed that the child with SLI correctly produced the vocative case particles during the unfamiliar name probe task, as did the bilingual age-matched, bilingual MLU-matched, and monolingual age-matched children (see Table 3). In terms of the nominative for person case particles, the child with SLI initially produced the vocative case particle rather than the nominative at the first response. He responded *Swumin-a*, although the correct response should have been *Swumin-ika*. However, this child correctly produced the remaining nominative case particles (see Table 4). All TD children produced the nominative for person case particles correctly.

With respect to the nominative for object case particles, the child with SLI showed unique characteristics when compared to those of the other children. As can be seen in Table 5, the age-matched bilingual child and the monolingual child produced the nominative case particles correctly with all four nonsense words. However, the child with SLI and his MLU-matched peer omitted the particles in all targeted words of the first trial. During the second trial, the MLU-matched child continued to omit the particles on all four targeted words. Similarly, the child with SLI omitted the particles for the first two targeted words but correctly produced *ka* on the third targeted word. For the last targeted word, the child with SLI responded incorrectly by producing *kupam-ka* rather than *kupam-i*, thereby substituting *ka* for *i.* Because both children produced case particles incorrectly during the first and second trials, the experimenter rephrased the sentences by placing the subject phrase at the end of the sentences during the third trial. Although the MLU-matched child continued to omit the nominative case particles in all targeted words during the third trial, the child with SLI included a particle all four instances but tended to produce *ka* for *i*. Interestingly, the bilingual child with SLI also used a deviant form, *ki*.

Last, Table 6 shows results of the four children's accusative case production during the nonsense word probe task. The child with SLI produced the same patterns as the MLU-matched child. Although the child with SLI and the young MLU-matched child omitted the accusative case particles in all instances at the first and second trials,

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the bilingual and monolingual agematched TD children produced them correctly.

Narrative Production Task

Figure 1 shows the percentage of use of the four case particles combined with the two variations by the four children in their storytelling task. The percentage of use of each case particle was measured by calculating the total number of correct case particle productions divided by the total number of opportunities (e.g., subject or object nouns). Because Korean case particles may be omitted in spontaneous speech, less than 100% use would be acceptable, even in TD children. In general, the child with SLI displayed no production pattern of case particles that deviated from the norm. In other words, he did not produce unusual or nondevelopmental errors (such as *ki*) for the accusative case particle *ka* as he had during the probe task.

All four children produced the vocative case particles correctly (100%) in their spontaneous speech during the storytelling task. No child showed difficulty using the *ya* or *a* variation. The child with SLI, the bilingual age-matched child, and the monolingual child described the pictures in Korean, as instructed. However, the younger MLU-matched child often used Korean and English words interchangeably. Although he used the vocative case particle correctly in obligatory contexts when describing in Korean, he frequently used English words, particularly *frog*. As a result, he did not produce vocative case particles when he said "Frog *eti issni*?" instead of "Frog-*a edi issni*?" (Frog, where are you?).

In terms of the nominative case particles for person, the three older children, including the child with SLI, produced the nominative case particles for person with 100% accuracy. Nominative case particles are not frequently omitted in Korean (although omission is permissible), and the children did indeed use this type of case particle for person whenever they produced subject nouns. However, the younger MLU-matched child dropped the particle when he produced subject nouns for person. In contrast, he did not make this error during the probe task targeting nominative case particles.

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When compared to the age- and MLU-matched children, the child with SLI showed a much lower percentage of use of the nominative case particles for objects. He produced the particle in only 22% of total nominative cases. He omitted these particles and often used *ka* for most instances in the narrative task—for example, *bel*(bee)-*ka* instead of *bel-i*. Although the younger bilingual child showed a higher percentage of use as compared to that of the child with SLI, he displayed errors similar to those of the child with SLI—for example, producing *sasum*(deer)-*ka* for *sasum-i*. The child with SLI and the younger bilingual child often used *ka* for *i* for words with codas. Comparing the age-matched bilingual child to the age-matched monolingual child, the bilingual child produced the particles with 100% accuracy, whereas the monolingual child occasionally omitted them in the conversational setting.

Finally, unlike his peers, the child with SLI consistently omitted the accusative case particle, thereby resulting in 0% accuracy. Although Korean case particles may be omitted, the TD age-matched bilingual and monolingual children showed over 80% correct use. Compared to the child with SLI, the MLU-matched child produced a higher percentage of use (33%). Comparing the TD age-matched bilingual and monolingual children, the age-matched bilingual child produced the particle 100% of the time, which indicates that he added particles whenever he produced noun objects, even when particle omission during spontaneous speech would have been acceptable. In contrast, the monolingual child produced the particles 12 times of 18 instances.

Discussion

This study was designed to investigate the production of Korean grammatical morphemes in a Korean–English bilingual child with SLI and to analyze the child's difficulties in light of current theoretical perspectives of language impairment. Overall results indicate that the use of case particles by the bilingual child with SLI can be explained by both the surface account and a frequency effect.

Given that there are no formal or informal tests specifically developed to identify SLI in Korean–English bilinguals, strong support

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for this diagnosis was necessary. In addition to converging evidence from the child's parents, teacher, school speech-language pathologist, and the first author, we compared his production of case particles to that of three controls: one agematched TD bilingual peer, one MLU-matched TD bilingual child, and one age-matched TD monolingual Korean-speaking child. We used these controls for several reasons. First, we wanted to determine if the child's errors could be attributed to having language impairment or if the errors were simply characteristic of bilingual speakers raised in the United States. We found that the child's production of the vocative and nominative for person case particles was similar to that of his age-matched TD peer. However, he had significant difficulty with nominative for object and accusative case particles that were less salient and shorter in duration. If this difficulty was characteristic of Korean–English bilinguals, we would have expected the TD agematched bilingual child to exhibit similar errors. However, the TD bilingual child showed no difficulty producing these particles and, in fact, produced them with 100% accuracy.

To probe this issue further, we compared the case particle production of the TD agematched bilingual child to that of his monolingual Korean-speaking peer. If errors with case particle production are characteristic of TD Korean–English bilinguals, we would have expected lower accuracy in the bilingual child than in the monolingual child. On the contrary, results indicate that the bilingual child produced the particles with higher accuracy than that of his monolingual peer. Together, these findings support our conclusion that the difficulties of the child with SLI were due to language impairment rather than bilingualism.

As a third step, we compared the case particle production of the bilingual child with SLI to a younger MLU-matched bilingual peer who was TD. We used this control to examine whether the child with SLI would show patterns of language development that were consistent with previous research. Investigations of monolinguals in other languages have revealed some differences—yet also several similarities—between the morphological production of children with SLI and their younger MLU-matched peers (Bedore & Leonard, 2001; Bortolini, Caselli, & Leonard, 1997; Leonard et al., 1992). Our

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bilingual participant with SLI displayed similar skill in producing the vocative and nominative for person case particles but had greater difficulty with the nominative for object and accusative case particles than did his MLU-matched peer during the narrative production task. Thus, our findings are consistent with past research on SLI, suggesting that the errors observed were due to more than a developmental lag but rather to SLI.

Procedures for examining case particle production included both probe and spontaneous narrative production tasks. Because omission of the Korean case particles is permissible, it would have been difficult to examine children's use of case particles had this ability been examined with a narrative production task alone. Analysis revealed that the Korean–English bilingual child with SLI showed similar characteristics to the age-and MLU-matched children in terms of the vocative and nominative for person case particles during both the narrative and the probe task. However, the child produced more errors on nominative for object and accusative case particles than did his bilingual and monolingual age-matched peers, and his performance was comparable to that of his younger MLU-matched peer. Although the MLU-matched child showed higher accuracy on the nominative for object and accusative case particles during the narrative task (see Figure 1), evidence that the MLU-matched child was more adept in producing grammatical morphemes than the child with SLI is weak because of the limited number of case particles that the MLU-matched child produced; that is, the child produced three object nouns. Performance on the probe task provided more robust evidence that the child with SLI and his MLU-matched peer showed similar abilities.

The lack of specific difficulties in using the vocative and nominative for person case particles in the child with SLI, compared to the age- and MLU-matched children, may be attributed to the fact that Korean case particles appear in the phrase-final position and are therefore likely to be longer in duration. In particular, most Korean case particles end with a vocalic, and such aspect could make case particles perceptually salient to children with SLI. Consequently, the acoustic characteristic of these grammatical morphemes might help the child with SLI compensate for his limited processing abilities. This assumption is line with the surface account hypothesis of SLI.

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The role of perceptual salience on grammatical morphemes can also be supported by our data, suggesting that the production of case particles in the child with SLI was influenced by the rephrased sentence structure. At the third trial with the rephrased sentences, the child with SLI produced the nominative for object case particles. An interesting aspect of the production of the child with SLI was that the production of *ka* was influenced by the preceding particle *i* in the experimenter's prompt so that his final production became *ki* rather than *ka* or *i*. By placing the particles in the utterance-final position, the particles became more perceptually salient than particles in the utterance-middle position. The salient final vowel may have encouraged the child to produce the case particles with vowel substitution.

In addition to perceptual salience, the results of this study suggest that item frequency plays an important role in production characteristics of Korean case particles in the child with SLI. Although the nominative for object and accusative case particles appears in the phrasefinal position in Korean (like the vocative and nominative for person case particles), the child with SLI did not exhibit higher percentages of use of these particles. Such discrepancies may be due to the fact that frequent omissions of accusative case particles are acceptable in Korean and may thus occur in linguistic input (Lee et al., in press) and in less frequent production of the nonhuman subject in Korean. These findings are consistent with previous research indicating that English-speaking children with SLI show lower correct percentage of use of infrequently pluralized nouns than frequently pluralized ones (Oetting & Rice, 1993) and use of lowfrequency past tense than high-frequency past tense (Marchman et al., 1999). Therefore, perceptual salience related to duration and frequency effects should be considered when examining morphological errors in monolingual and bilingual children with SLI in various languages, including Korean.

The fact that the child with SLI could produce the case particles after several trials suggests that his production was supported by repetition. To learn grammatical targets, children with SLI often need more models than do their TD peers (Conti-Ramsden & Jones, 1997).

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Representation of grammatical morphemes may be formed in children with SLI once a minimum threshold of exposure to various exemplars is reached. The current findings are consistent with the argument in connectionist models that the production of verb morphology depends on the size of the verb lexicon—namely, its exceeding a critical mass. The child with SLI may produce the case particles correctly with an increased number of exposures to case particles.

Finally, the results from this research provide new information about morphological characteristics of TD Korean–English bilingual children. In this study, the TD bilingual child produced case particles whenever he produced subject or object nouns, although they are not obligatory in Korean. In contrast, the monolingual child omitted these particles in some situations, which is appropriate in spontaneous speech. These findings suggest that TD bilingual children might be more sensitive than monolingual children to case particles in their speech. Researchers have argued that bilingual children may demonstrate better metalinguistic skills than monolingual children because the former are trained to attend to and learn two linguistic systems rather than one (Campbell & Sais, 1995; Ricciardelli, 1992). If this is true, this principle may partially explain that finding. Because of enhanced metalinguistic skills, bilingual Korean–English children may demonstrate more sensitivity to use of case particles. This argument should be examined further, however, given that we found that the bilingual child produced an error in use of the nominative for object case particles on the probe task. The results also suggest that the 7-year-old Korean–English bilingual child with SLI may have developed a representation for the vocative and nominative for person case particles but not yet for the nominative for object and accusative case particles.

Clinical Implications

A common recommendation for clinicians working with children with SLI is to increase the perceptual salience of linguistic input. As in this study, one way that this objective can be achieved is to present the target in the word- or utterance-final position. Because children with SLI benefit from frequent input, clinicians should also provide

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numerous meaningful exposures to the target. As an example, our participant with SLI demonstrated improved production of case particles when the clinician moved the case particle to the utterance-final position and when he was exposed to repetition during the second and third trials of the probe task.

In terms of language assessment, there are no standardized measures designed for Korean speakers or for Korean–English bilinguals. To make an accurate diagnosis, clinicians should therefore look for converging evidence from parents, teachers, and clinician observation of the child's performance on a variety of formal and informal measures in both languages. Narrative sample analysis is beneficial because a child's narrative production reflects his or her linguistic abilities in a functional context, as well as his cognitive and social understanding of the world (Gutierrez-Clellen, Peña, & Quinn, 1995). Narrative production also appears to be related to reading performance (Cain, Oakhill, & Bryant, 2004). In addition, the use of specific probe tasks is beneficial to facilitate evaluation of linguistic targets that the child might not produce spontaneously. When clinicians evaluate Korean case particles, they should consider evaluating various types of case particles, such as the vocative, the nominative for person, the nominative for object, and the accusative case particles, because they are not always produced with the same frequency in Korean. In addition, evaluation of case particles may provide information about the nature of the child's processing difficulties, such as whether the child has difficulty with less salient or less frequent morphemes or whether the difficulties are more general.

Future Directions

This study provides preliminary results of case particle production of bilingual Korean–English speakers. To our knowledge, this is the first study published in which SLI has been examined in bilingual Korean–English speakers. A primary limitation of the study is that only one participant had SLI. Because no standardized data for Korean–English bilinguals exist, the diagnosis was based on parent report, teacher report, standardized testing in English, and informal testing in Korean. Further research with larger samples is warranted to better understand TD bilinguals, to more thoroughly investigate the

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clinical markers of SLI in this population in both Korean and English, and to develop valid and reliable measures to accurately distinguish bilingual Korean–English speakers with SLI from their TD peers. The current study has provided useful information to guide these future research efforts. Further investigation of case particle production in Korean is a promising area of continued research.

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Appendix

Table 1
Summary of Description of Target Particles

Case Particles	No Coda (After *CV)	Coda (After *CVC)
Vocative	*CV + *ya*	*CVC + *a*
Nominative for person	*CV + *ka*	*CVC + *ika*
Nominative for object	*CV + *ka*	*CVC + *i*
Accusative	*CV + *lul*	*CVC + *ul*

Note: C = consonant; V = vowel.

Table 2
Examples of Unfamiliar Names and Nonsense Words for Unfamiliar Objects Used for the Probe Task

Unfamiliar Name				Unfamiliar Object			
Without Coda		With Coda		Without Coda		With Coda	
Yuni	*Unmi*	*Swumin*	*Miyeng*	*kumi*	*pipo*	*patom*	*kupam*

Table 3
Production of Vocative Case Particles in Unfamiliar Name Probe Task

	Participant			
Modeling	Specific Language Impairment	Bilingual (Age Matched)	Bilingual (MLU Matched)	Monolingual
Chelswu-ya	*Swumin-a*	*Swumin-a*	*Swumin-a*	*Swumin-a*
Minceng-a	*Unmi-ya*	*Unmi-ya*	*Unmi-ya*	*Unmi-ya*
Chelswu-ya	*Yuni-ya*	*Yuni-ya*	*Yuni-ya*	*Yuni-ya*
Minceng-a	*Miyeng-a*	*Miyeng-a*	*Miyeng-a*	*Miyeng-a*

Note: MLU = mean length of utterance.

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Table 4
Production of Nominative for Person Case Particles in Unfamiliar Name Probe

	Participant			
Modeling	Specific Language Impairment	Bilingual (Age Matched)	Bilingual (MLU Matched)	Monolingual
Chelswu-ka	*Swumin-a (ika)*	*Swumin-ika*	*Swumin-ika*	*Swumin-ika*
Minceng-ika	*Unmi-ka*	*Unmi-ka*	*Unmi-ka*	*Unmi-ka*
Chulsoo-ka	*Yuni-ka*	*Yuni-ka*	*Yuni-ka*	*Yuni-ka*
Minceng-ika	*Miyeng-ika*	*Miyeng-ika*	*Miyeng-ika*	*Miyeng-ika*

Note: Parentheses indicate correct production. MLU = mean length of utterance.

Table 5
Production of Nominative for Object Case Particles in Nonsense Word Probe

		Participant			
Trial	Modeling	Specific Language Impairment	Bilingual (Age Matched)	Bilingual (MLU matched)	Monolingual
1	*sakwa-ka*	*patom*	*patom-i*	*patom*	*patom-i*
	yenphil-i	*pipo*	*pipo-ka*	*pipo*	*pipo-ka*
	sakwa-ka	*kumi*	*kumi-ka*	*kumi*	*kumi-ka*
	yenphil-i	*kupam*	*kupam-i*	*kupam*	*kupam-i*
2	*sakwa-ka*	*patom*		*patom*	
	yenphil-i	*pipo*		*pipo*	
	sakwa-ka	*kumi-ka*		*kumi*	
	yenphil-i	*kupam-ka (i)*		*kupam*	
3	*sakwa-ka*	*patom-ka (i)*		*patom*	
	yenphil-i	*pipo-ki (ka)*		*pipo*	
	sakwa-ka	*kumi-ka*		*kumi*	
	yenphil-i	*kupam-ki (i)*		*kupam*	

Note: Parentheses indicate correct production. MLU = mean length of utterance.

Table 6
Production of Accusative Case Particles in Nonsense Word Probe

		Participant			
Trial	Modeling	Specific Language Impairment	Bilingual (Age-Matched)	Bilingual (MLU-Matched)	Monolingual
1	*sakwa-lul*	*patom*	*patom-ul*	*patom*	*patom-ul*
	yenphil-ul	*pipo*	*pipo-lul*	*pipo*	*pipo-lul*
	sakwa-lul	*kumi*	*kumi-lul*	*kumi*	*kumi-lul*
	yenphil-ul	*kupam*	*kupam-ul*	*kupam*	*kupam-ul*
2	*sakwa-lul*	*patom*		*patom*	
	yenphil-ul	*pipo*		*pipo*	
	sakwa-lul	*kumi*		*kumi*	
	yenphil-ul	*kupam*		*kupam*	

Note: MLU = mean length of utterance.

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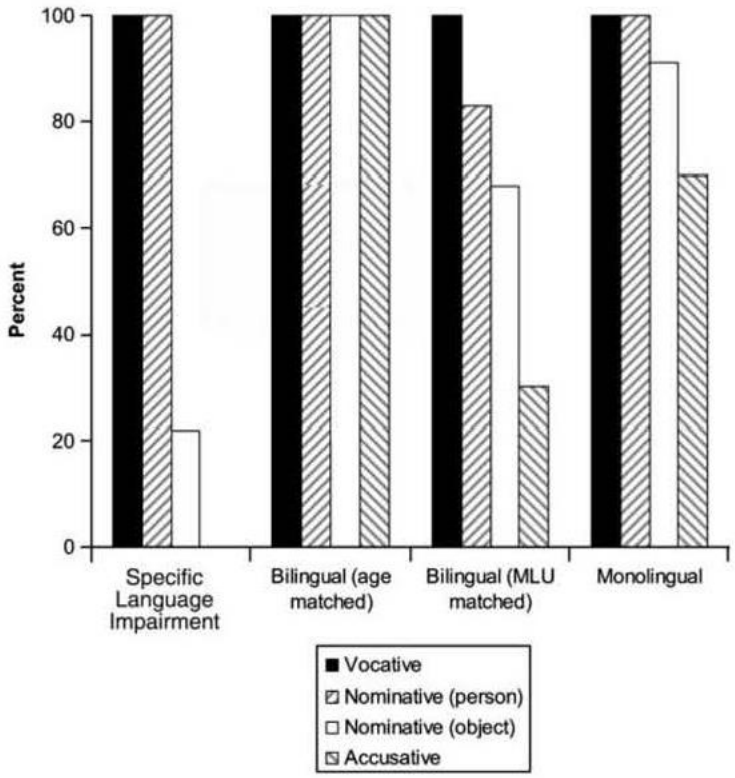
Figure 1
Percentage of Use of Case Particles in Spontaneous Speech



Note: MLU = mean length of utterance.