Metalinguistic Awareness in Children with Specific Language Impairment

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ABSTRACTS

The purpose of the present study was to investigate the characteristics of metalinguistic awareness of children with specific language impairment. Forty-five children participated in this study; 15 children with specific language impairment (SLI group) whose range of the language age was 4;6-6;6, 15 normal children chronological age matched (CA controls) and 15 normal children language age matched with the SLI group (CA controls). A metalinguistic task involving the identification and revision of syntactic, semantic, and phonologic errors was used. The SLI group performed significantly poorer than CA controls as well as LA controls in identifying and correcting error sentences, especially sentences with syntactic error. These results revealed the relation between language problems of children with SLI and metalinguistic abilities.

Keywords: SLI, CA, LA

1. Introduction

Metalinguistic awareness has been defined as the ability to reflect consciously on the nature and properties of language. Metalinguistic judgments involve treating language as an object of thought as opposed to using the language system to comprehend and produce sentences (van Kleeck, 1984, 1994).

In general, metalinguistic awareness is known as a notable characteristic of language development during the school years, and closely related with overall language ability and with reading. However, it plays little or no role in oral language acquistion (Gleason, 2005; Hakes, 1982). However, some researchers reported that metaliniguistic awareness is important to language learning, especially in case of children with language problems. Children with inefficient comprehension and production processes might have to rely on their metalinguistic abilities in order to learn certain aspect of language. Because many intervention procedures have strong metalinguistic component (Kamhi, 1987; Tunmer &

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Herriman, 1984).

Metalinguistic awareness is important to language use like repairing utterances which were also produced incorrectly (Levy, 1999; Levy, Tennenbaum, & Orony, 2003). In order to make any repair, children must be able to reflect on their utterances so as to work out what has to be repaired on any occasion. Metalinguistic abilities play an important role in not only the remediation process, but also in language use.

There have been a few studies that examined metalinguistic abilities of children with language disorders (Kamhi & Koenig, 1985; Levy, 1999; Liles, Schulman, & Bartlett, 1977). Liles, Schulman, & Barlett (1977) and Kamhi & Koenig (1985) compared metalinguistic ability of children with language disorders who have normal intelligence and normal children using judgment task. They reported that children with language disorders showed poorer performance in metalinguistic judgement than normal children and they had the most difficulty in identifying and correcting syntactic errors. They discussed that problems of language acquistion and use might be related with metalinguistic awareness.

Recently, Hirschman (2000) conducted metalinugistic training to children with specific language impairment and reported that the children with specific language impairment were significantly improved in the oral language as well as written language. The results of these studies showed that language problems of children with specific language impairment might be related to metalinguistic ability also.

Several studies have explained the relationship between child language disorder and metalinguistic awareness, but there has been no attempt to investigate the metalinguistic awareness of Korean children with specific language impairment. Therefore, this study were conducted to examin on metalinguistic awareness of Korean children with language disorders.

The purpose of this study was to explore whether children with specific language impairment differ from normal children in metalinguistic judgement as the results of previous studies. The results of this study will help understand the relations between language problems of specific language impairment and metalinguistic awareness.

2. Methods

2.1 Participants

Forty-five children participated in this study: 15 children with specific language impairment (the SLI group) whose language age were 4;6-6;6, 15 normal children matched on chronological age with the SLI children (CA controls), and 15 normal children matched on language age with the SLI children (LA controls).

The mean chronological age for the SLI group and CA controls were 71.73 (SD = 8.28) and 70.00 (SD = 10.97). no statistical difference between groups ($t = .488$, $p < .001$), and the mean language score for the SLI group and LA controls were 55.07 (SD = 13.97) and 55.73 (SD = 13.38), no statistical difference between groups ($t = -.134$, $p < 001$). Table 1 shows means and standard deviations for chronological age, language score, and nonverbal IQ across three subject groups.

All of the children with SLI were selected on the basis of Stark & Tallal's criteria: (1) they performed at least 1 year below age level on the Preschool Language Scale (Zimmerman & Steiner, 1979, translated by Kim, 1994), (2) their nonverbal IQ were above 85 on the Leiter International Performance Scale , (3) they didn't have any emotional, sensational, and physical problems.

Table. 1 Characteristics of participants

	SLI		LA controls		CA controls	
	Mean	SD	Mean	SD	Mean	SD
Chronological Age	71.73	8.28	61.13	11.95	70.00	10.97
Language Score*	55.07	13.97	55.73	13.38	69.00	17.55
Nonverbal IQ**	106.60	13.56	125.20	5.87	123.45	6.36

* LS were tested on the Korean Picture Vocabulary Test (Kim et al., 1995)
** IQ were tested on the Leiter International Performance Scale (Leiter, 1986)

2.2 Stimuli

The metalinguistic task consisted of 40 randomly arranged sentences that were classified into three types of sentence: 30 anomalous sentences (10 sentences with syntactic error, 10 sentences with semantic error, 10 sentences with phonological error) and 10 sentences contained no error. Target sentences are presented in Appendix.

2.3 Procedures

Children were tested individually in a quiet room. The responses to the target sentences were elicited using a puppet. The child was asked to teach a puppet because the puppet can't so well in speaking. And then target sentences were presented. For each sentence, the experimenter asked the child whether the sentence was good or not. If the child replied that it was not, the child was asked to correct it. Children's responses were recorded and transcribed during the experimental session.

2.4 Analyses

Frequency of correct judgments (identification) and revision for each child were

recorded. And error reponses in revision on the task were analysed into one of 4 error types (phonological error, semantic error, syntactic error, and others). Phonological error was the case that the child revised a sentence with syntactic or semantic error phonologically. Semantic error was the case that the child revised a target sentence with phonological or syntactic error semantically. Syntactic error was the case that the child revised a sentence with phonological or semantic error. And others contained reponses such as "Don't know", whole sentence or partial sentence repetition.

3. Results

The number of correct judgments and revisions children made are presented in Table 2.

Table 2. Identification and revision of anomalous sentences

group \ sentence type		phonolgy		semantic		syntactic	
		ident.	rev.	ident.	rev.	ident.	rev.
SLI	Mean	5.73	3.73	7.00	4.00	2.47	.80
	SD	.54	.66	.47	.51	.70	.60
LA controls	Mean	8.87	8.07	8.93	6.67	6.93	4.00
	SD	.54	.66	.47	.51	.70	.61
CA controls	Mean	9.73	9.07	9.53	7.80	8.60	6.80
	SD	.54	.66	.47	.51	.70	.60

Repeated measures two-way ANOVA [group(3)×sentence type(3)] with frequency of identification and revision as dependent variables revealed a significant effect for group [$F_{(2, 42)}=21.74$, $p<.001$; $F_{(2, 42)}=28.82$, $p<.001$] and sentence type [$F_{(2, 84)}=32.67$, $p<.001$; $F_{(2, 84)}=41.99$, $p<.001$]. The SLI group significantly poorer than LA controls as well as CA controls in identification and revision. And all groups performed more poorly in identifying and revising synctactic errors than phonologic and semantic errors (see Fig. 1).

There was interaction effect between groups and sentence type [$F_{(4, 42)}=5.24$, $p<.01$; $F_{(4, 84)}=2.73$, $p<.05$]. Three groups performed more poorly in identifying and revising synctactic error sentences than phonologic and semantic error sentences However, the SLI group had more difficulties in identifying and revising syntactic errors than other two normal groups (see Fig. 1)

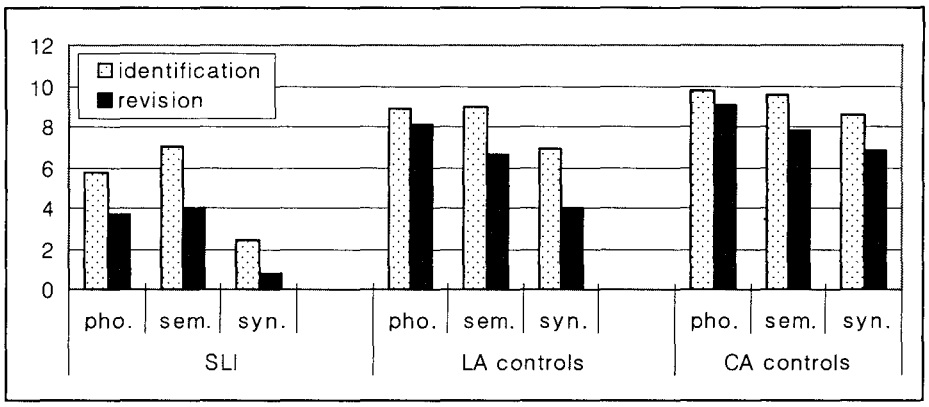

Fig. 1 Identification and revision of anomalous sentences

The result of error analysis is presented in Table 3.

Table 3. Result of error analysis

Group \ error type		phon.	sem	syn	etc
SLI	Mean	.00	4.13	.73	1.80
	SD	.00	.68	.32	.43
LA controls	Mean	.00	3.00	1.13	1.80
	SD	.00	.67	.32	.43
CA controls	Mean	.00	2.00	.93	1.27
	SD	.00	.68	.32	.43

Repeated measures two-way ANOVA [group(3)×error type(3)] with frequency of each error as dependent variable revealed a significant effect for error type [$F(3, 126)=27.14$, $p<.001$]. All groups tended to revise target sentences semanctically even though the sentences had phonological or syntactic errors (see Fig. 2). The SLI group revised error sentences semantically more than other two controls but there wasn't significant interaction effect.

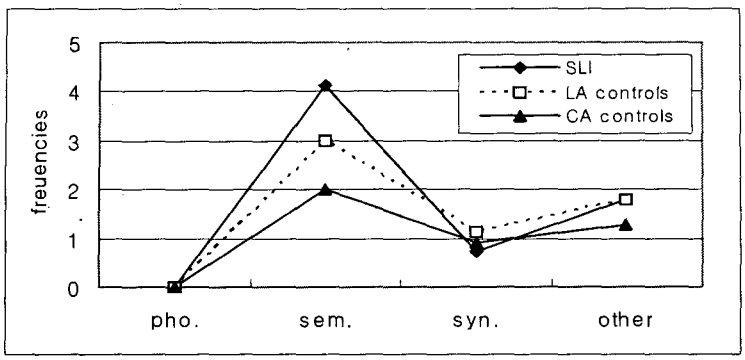

Fig. 2 Result of error analysis

4. Conclusion

This study compared the ability of children with specific language impairment and normal children in identifying and revising syntactic, semantic, and phonologic errors. The results showed that the children with specific language impairment have more difficulty than normal children chronological age matched as well as language age matched. These results are consistent with the results of previous studies (Liles, Schulman, & Bartlett, 1977) and showed that there are some relations between metalinguistic ability and language problem of children with specific language impairment.

The children with specific language impairment had particular difficulty identifying and revising syntactic errors. This result reveal that the children with specific language impairment have difficulty in awareness of syntactic error. This result is similar to the result of Kamhi & Koenig's study also. Kamhi & Koenig (1985) raised several possible explanations for language-disordered children's difficulty in making grammatical judgments. First, these children might have insufficient knowledge of syntactic forms targeted by the matalinguistic task and less well-established and stable representative of syntactic forms because they have acquired knowledge and control of these forms later than normal children. Many researchers reported that the children with specific language impairment have problems in morpho-syntactic area (Marchman, Wulfeck, & Weismer, 1999; Leonard, 1998). Morpho-syntactic problem of children with specific language impairment caused weakness in syntactic awareness, on the contrary, weakness in syntactic awareness caused morpho-syntactic problem of children with specific language impairment. At any cases, it seems likely that metalinguistic abilities are closely related to language problems, especially syntactic problem(,) of the children with specific language impairment.

Second, Kamhi & Koenig (1985) explained the reason of poor performance in grammatical judgement that the language-disordered children might use less efficient strategies for retrieving linguistic information. Many researchers in these days tried to explain language problems of children with specific language impairment on the basis of language processing theory (Leonard, 1998).

Metalinguistic abilities might contributed that not only do children with specific language impairment take longer to understand and produce various linguistic forms, but also they take longer to access this knowledge. From this point of view, the second explanation is regarded as more valid one.

Except for poor syntactic awareness, performance of children with specific language impairment in metalinguistic task was similar to younger normal children. And the result of error analysis showed that error pattern of children with specific language impairment was very similar to two normal controls except they produced more semantic error. This result showed that children with specific language impairment attended to semantic features of target sentences rather than phonolgical and syntactic features, which was also very similar to younger children.

This study reveals that children with specific language impairment have difficulties in metalinguistic awareness, and this helps explain why children with specific language impairment have problems in language acquisition and learning.

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Appendix. Target sentences

	target sentences			error type
phonological error sentences	아빠가 appa-ga daddy-NOM	바디를 badi-leul pants-ACC	입어요. ibeo-yo wear-POL	**consonant substitution** baji [paci] → badi [pati]
	오빠가(형이) oppa-ga older brother-NOM	다던거를 dadeonge-leul bicycle-ACC	타요. ta-yo take-POL	**consonant substitution** jajeongeo [cacʌgə] → dadeonge [dadʌgə]
	언니(누나)가 eonni-ga elder sister-NOM	그임을 geuim-eul picture-ACC	그려요. geuryeo-yo paint-POL	**consonant deletion** geurim [kɯrim] → geuim [kɯim]
	언니(누나)가 eonni-ga elder sister-NOM	머이를 meoi-leul hair-ACC	빗어요. biseo-yo comb-POL	**consonant deletion** meori [mʌri] → meoi [mʌi]
	오빠가(형이) oppa-ga elder brother-NOM	풍선을 pungseon-eul balloon-ACC	부어요. bueo-yo inflate-POL	**consonant deletion** buleo-yo [pulʌjo] → bueo-yo [puʌjo]
	오빠가(형이) oppa-ga elder brother-NOM	양말을 yangmal-eul socks-ACC	시어요. sieo-yo wear-POL	**consonant deletion** sineo-yo [sinʌjo] → sieo-yo [siʌjo]
	호건으로 hugeon-euro towel-INS	얼굴을 eolgul-eul face-ACC	닦아요. dakka-yo clean-POL	**consonant substitution** sugeon [sugən] → hugeon [hugən]
	칼로 kal-ro knife-INS	하과를 hagwa-lul apple-ACC	잘라요. jalla-yo cut-POL	**consonant substitution** sagwa [sakwa] → hagwa [hakwa]
	빗자우로 bisjau-ro broomstick-INS	얼굴을 eolgul-eul face-ACC	닦아요. dakka-yo clean-POL	**consonant deletion** bisjaru [pitcaru] → bisjau [pitcau]
	연필로 yeonpil-ro pencil-INS	동가미를 donggami-leul circle-ACC	그려요. geuryeo-yo draw-POL	**consonant/syllable deletion** dongeurami [toŋgrami] → donggami [toŋgami]
semantic error sentences	할아버지가 harabeji-ga grandfather-NOM	신발을 sinbal-eul shoes-ACC	써요. sseo-yo put (on)-POL	**lexical error** sineo → sseo
	오빠가(형이) oppa-ga elder brother-NOM	빵을 ppang-eul bread-ACC	마셔요. masyeo-yo drink-POL	**lexical error** meogeo (eat) → masyeo (drink)
	택시가 taegsi-ga taxi-NOM	놀이터에서 noriteo-eseo playground-LOT	놀아요. nora-yo play-POL	**lexical error** taegsi (taxi) → Have to change to an animate subject.
	버스가 beoseu-ga bus-NOM	유치원에서 yuchiwon-eseo kindergarten-LOT	공부해요. gongbuhae-yo learn-POL	**lexical error** beoseu (bus) → Have to change to an animate subject.

Target sentences were transcribed by a Romanized address.
NOM: Nominative case particle, ACC: Accusative case particle, INS: Instrumental case particle, LOT: Locative case particle POL: polite speech level suffix

	target sentence			error
semantic error sentences	옷장에서 osjang-eseo chest of drawers-LOT	미끄럼을 *mikkeureom*-eul slide-ACC	타요. ta-yo take-POL	**lexical error** osjang (chest of drawers) → playground
	가방에서 gabang-eseo bag-LOT	시소를 siso-leul seesaw-ACC	타요. ta-yo take-POL	**lexical error** gabang (bag) → playground
	연필로 yeonpil-ro pencil-INS	밥을 bab-eul rice-ACC	먹어요. meogeo-yo eat-POL	**lexical error** yeonpil (pencil) → silverwear (e.g. pork, spoon)
	포크로 phokheu-ro fork-INS	그림을 geulim-eul picture-ACC	그려요. geuryeo-yo paint-POL	**lexical error** phokheu (fork) → instrument for drawing (e.g. pencile, crayon)
	아빠가 appa-ga daddy-NOM	글씨를 geulssi-leul letter-ACC	그려요. geuryeo-yo paint-POL	**lexical error** geuryeo (paint) → sseo (write)
	엄마가 eomma-ga mommyr-NOM	머리를 meori-leul hair-ACC	씻어요. ssiseo-yo wash-POL	**lexical error** ssiseo (wash hands or face) → gamda (wash hair)
syntactic error sentences	아기를 agi-leul baby-NOM	우유를 uyu-leul milk-ACC	마셔요. masyeo-yo drink-POL	**morphological error** agi-leul (ACC) → agi-ga (NOM)
	언니(누나)를 eonni-leul elder sister-ACC	노래를 norae-leul song-ACC	불러요. bulleo-yo sing-POL	**morphological error** eonni-leul (ACC) → eonni-ga (NOM)
	엄마가 eomma-ga mommy-NOM	빨래가 ppallae-ga cloth-ACC	해요. hae-yo wash-POL	**morphological error** ppallae-ga (NOM) → ppallae-leul (ACC)
	아빠가 appa-ga daddy-NOM	잠이가 jam-i-ga sleep-NOM-NOM	자요. ja-yo go (to)-POL	**morphological error** jam-i-ga (NOM-NOM) → jam-eul (ACC)
	가게를 gage-leul shop-ACC	과자를 gwaja-leul cookies-ACC	사요. sa-yo buy-POL	**morphological error** gage-leul (ACC) → gage-eseo (LOT)
	학교를 haggyo-leul school-ACC	공부를 gongbu-leul study-ACC	해요. hae-yo work on-POL	**morphological error** haggyo-leul (ACC) → haggyo-eseo (LOT)
	방에서 bang-eseo room-LOT	옷에서 os-eseo room-LOT	입어요. ibeo-yo wear-POL	**morphological error** os-eseo (LOT) → os-eul (ACC)
	방에서 bang-eseo room-LOT	잠에서 jam-eseo sleep-LOT	자요. ja-yo go (to)-POL	**morphological error** jam-eseo (LOT) → jam-eul (ACC)
	연필을 yeonpil-eul pencil-ACC	글씨를 geulssi-leul letter-ACC	써요. sseo-yo write-POL	**morphological error** yeonpil-eul (ACC) → yeonpil-ro (INS)
	가위를 gawi-leul scissors-ACC	종이를 jongi-leul paper-ACC	잘라요. jalla-yo nip-POL	**morphological error** gawi-eul (ACC) → gawi-ro (INS)

	target sentences			error
control sentences	친구가	우유를	마셔요.	none
	chingu-ga	uyu-leul	masyeo-yo	
	he/she-NOM	milk-ACC	drink-POL	
	친구가	아이스크림을	먹어요.	none
	chingu-ga	aiskheurim-eul	meogeo-yo	
	he/she-NOM	ice cream-ACC	eat-POL	
	친구가	유치원에	가요.	none
	chingu-ga	yuchiwon-e	ga-yo	
	he/she-NOM	kindergarten-LOT	go-POL	
	언니(누나)가	학교에	가요.	none
	eonni-ga	haggyo-e	ga-yo	
	elder brother-NOM	school-LOT	go-POL	
	병원에서	주사를	맞아요.	none
	byeongwon-eseo	jusa-leul	maja-yo	
	hospital-LOT	bicycle-ACC	take-POL	
	목욕탕에서	세수를	해요.	none
	mogyogtang-eseo	sesu-leul	hae-yo	
	bathroom-LOT	face-ACC	wash-POL	
	발로	공을	차요.	none
	bal-ro	gong-eul	cha-yo	
	foot-INS	ball-ACC	kick-POL	
	손으로	박수를	쳐요.	none
	son-euro	bagsu-leul	chyeo-yo	
	hand-LOT	hand-ACC	clap-POL	
	아빠가	텔레비전을	봐요.	none
	appa-ga	telebijeon-eul	bwa-yo	
	daddy-NOM	television-ACC	watch-POL	
	엄마가	책을	읽어요.	none
	eomma-ga	chaeg-eul	ilgeo-yo	
	mommy-NOM	book-ACC	read-POL	