



Morphological and Syntactic Abilities in Taiwanese EFL Preschoolers' Oral Narratives

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Abstract

Children's morphological and syntactic abilities have often been used to understand their language development. One common method of assessing children's morphological and syntactic level is to analyze their oral narratives. The present study, therefore, examined the morphological and syntactical abilities of preschool children learning English as a Foreign Language (EFL) in Taiwan. Their Mandarin and English oral narratives were elicited by a wordless picture book, *Frog, where are you?* (Mayer, 1969). The children's language productivity was also measured to determine whether there was a significant language effect on the children's language productivity. Results showed a significant language effect on language productivity measures. Analyses of morphological errors suggested that the children had more morphological error patterns in English, while relatively fewer children made morphological errors in Mandarin. For measures of syntactic structures, the children used more diverse syntactic structures in Mandarin than in English. The findings from this work provide EFL practitioners with useful insights into the morphological and syntactic abilities evidenced in EFL preschoolers' oral narratives in both languages.

Key Words: morphological abilities, syntactic abilities, children's oral narratives, EFL, Taiwan

Introduction

Morphological and syntactic processing are the two basic processes involved in acquiring language skills for young children. Children's morphological and syntactic knowledge has been

used to understand the level of language development (e.g., Baayen, Feldman, & Schreuder, 2006; Reilly, Losh, Bellugi, & Wulfeck, 2004). One challenge for achieving this understanding is that a large number of studies have measured children's morphological and syntactic knowledge on standardized language assessments (e.g., Barnett, Yarosz, Thomas, Jung, & Blanco, 2007; Yamashita, 2008), but these measures may have limited validity and may fail to reflect children's actual abilities. Oral narratives, on the other hand, provide an excellent quasi-naturalistic measure of children's spontaneous languages, and reveal distinctive structural and linguistic knowledge (Reilly et al., 2004). This study, therefore, examined the morphological and syntactical abilities in a group of preschool children learning English as a Foreign Language (EFL) in Taiwan. Examination of children's oral narratives in both their native and second language provides valuable information about these language learners' advancing language skills.

Most studies which analyzed children's oral narratives to gauge children's morphological and syntactic development worked primarily with typically-developing children (e.g., Fiestas & Pena, 2004; Gutierrez-Clellen, 2002; Gutierrez-Clellen & Hofstetter, 1994; Hell, Verhoeven, Tak, & Oosterhout, 2005; Miller et al., 2006; Pearson, 2002), atypically-developing children, such as children with specific language impairment (SLI), early focal brain injury, Williams syndrome, or autism (e.g., Reilly et al., 2004; Tsou & Cheung, 2007; Wulfeck, Bates, Krupa-Kwiatkowski, & Saltzman, 2004), or children with low school achievement (e.g., Chi, 2001; 2003; Gutierrez-Clellen, 1998). Few studies examined EFL children's morphological and syntactic abilities observed in their oral narratives in both English and native languages.

Literature Review

Several researchers suggested that children's oral narrative production can reveal their academic readiness (e.g., Gutierrez-Clellen, 2002). Narrative development at preschool level can predict children's later literacy development (Griffin, Hemphill, Camp, & Wolf, 2004; Snow & Dickinson, 1990; Torrance & Olson, 1984). In addition, oral narratives provide a rich context for researchers to examine children's syntactic structures that serve narrative functions (Reilly et al., 1998).

Different measures have been developed to assess children's language productivity. For example, the mean length of utterance (MLU) has been widely used to evaluate syntactic

complexity (Brown, 1973; Klee, 1992; Miller & Chapman, 1981). The number of total words (NTW) is used to represent overall language facility (Watkins, Kelly, Harbers and Hollis, 1995). The number of different words (NDW) is used to tap into children's vocabulary diversity (Miller et al. 2006). The present study used the same two productivity measures (i.e., NTW and NDW) but further adapted Loban's (1976) communication units (C-unit) to calculate the number of modified communication units (NMC) and the mean length of modified C-unit in words (MLMCW). Such an adaptation was made to achieve an equivalent comparison of EFL children's language productivity in Mandarin and English. Craig et al. (1998) suggested that when working with older children from diverse linguistic and cultural backgrounds, the average number of C-units is useful as a quantitative index of language ability. Miller et al. (2006) modified Loban's C-unit rules for segmenting utterances in their cross-language study with Spanish-speaking ESL children. Following the same line of reasoning and considering the inherent linguistic differences between Mandarin and English, the present study adapted Loban's original C-unit rules. There are two major differences. First, when two clauses are connected by a linking element (Li & Thompson, 1981), they are considered to have two modified C-units, instead of one. For example, there are two C-units in the utterance, "The boy slept and the frog went away". Second, given that pronouns are often omitted in Mandarin (i.e., pro-drop) when they are semantically inferable from the linguistic context, a linked clause with a long modifier and a co-referential subject deleted is also regarded as having two C-units. For example, the utterance, "A boy wakes up and sees no frog", is treated as having two modified C-units; however, the utterance, "A boy wakes up and cries", is considered consisting of one modified C-unit. The same modified C-unit rules were applied across both English and Mandarin in the present study. Therefore, instead of using number of C-units and MLU, the present study calculated NMC and MLMCW to provide equivalent measures of story and utterance length in both Mandarin and English.

In addition to measuring children's language productivity, the present study also examined children's morphological error patterns and syntactic structures evidenced in their oral narratives in the two languages to help understand the processes and the outcomes of acquiring more than one language (Miller et al., 2006). Morphological knowledge is defined as the knowledge "of the internal structure of words and, of the rules by which words are formed" (Fromkin, Rodman, & Hyams, 2003, p. 76). Syntactic knowledge refers to the knowledge "of sentences and their

structures” (Fromkin et al., 2003, p. 118). Morphological and syntactic knowledge (which together comprise grammar) has been regarded as one of the reliable measures of second language proficiency (Komarova, Niyogi, & Nowak, 2001; Marinova-Todd, 2003). A number of studies have analyzed children’s oral narratives and examined their morphological errors and syntactic structures to reveal their language abilities (Chen, 2007; Chi, 2001; 2003; Fiestas & Pena, 2004; Reilly et al., 2004; Tsou & Cheung, 2007). Morphological errors involve all errors of commission or omission (Reilly et al., 2004). For example, one child made a morphological error in the sentence: “The dog looks *in* the jar.” This is a commission of preposition error. The preposition “in” should be “into” because the dog looks into the jar to check if the frog is there. Syntactic structures refer to various syntactic structures used. For instance, in the sentence with two linked clauses: “The boy is angry *because* the dog falls down”, the main clause is “The boy is angry” and the dependent clause is “because the dog falls down.”

Fiestas and Pena (2004) used a wordless picture book, *Frog, where are you?* (Mayer, 1969), to elicit Spanish-speaking ESL children’s story retelling in both Spanish and English. The children’s retellings were then used to examine their morphological knowledge. Specifically, the participants’ use of pronouns, verb auxiliaries, determiners, verb tenses, number marking and prepositions, and production of noun and verb phrases were analyzed. The results showed that the ESL children demonstrated comparable proportions of grammatical utterances in both languages with a slightly higher percentage of grammatically-correct utterances in their first language. Therefore, it could be inferred that their rate of morphological acquisition in each language was slightly different. Gutierrez-Clellen (1998) compared the syntactic skills of two groups of Spanish-speaking monolingual children from kindergarten to fifth grade, one group with low school achievement and another exhibiting average school achievement. She also used Mayer’s picture book and a film to elicit the children’s story retellings in Spanish. Syntactic structures such as relative clauses, noun clauses, and adverbial clauses were analyzed. The finding indicated that the children with low school achievement exhibited limited use of syntactic structures and found greater difficulty in formulating their narratives than their peers. Thus, it can be concluded that children’s morphological and syntactical abilities evidenced in their oral narratives are closely related to their general language competence and may predict later school achievement.

Based on the reviewed studies, three research questions were proposed as follows:

1. Do Mandarin-speaking EFL children have differential language productivity in their Mandarin and English narratives?
2. What types of Mandarin and English morphological errors do Mandarin-speaking EFL children make in their oral narratives?
3. What types of Mandarin and English syntactic structures do Mandarin-speaking EFL children use in their oral narratives?

Method

Participants

A total of 22 Taiwanese EFL children (10 boys and 12 girls) with a mean age of 5 years and 10 months old (rang = 4;10-6;10) participated in this study. The children were recruited from two different programs in the same kindergarten in Tainan, a southern city in Taiwan. One of the two programs was an English immersion program (19 students) and the other was a bilingual program (3 students) in which the children studied in the English immersion course in the morning and learned in Mandarin in the afternoon. They were from similar socioeconomic backgrounds.

Procedures

All narratives were elicited from the children using the 24-page wordless picture book, *Frog, where are you?*. This storybook is about a boy and his dog, and their search for their missing pet frog. The data collection period lasted approximately 5 weeks. Prior to data collection, school and parental permission were first obtained, and parents also completed a brief demographic questionnaire about their children. In order to ensure that the data collection procedures were feasible in this kindergarten, a pilot study was conducted beforehand. Next, a 2-week classroom observation was conducted by the first author to familiarize herself with the children. The classroom observation was followed by two major data collection sessions: a Mandarin narrative task and an English narrative task. All sessions were administered during the children's break time.

For both Mandarin and English narrative tasks, each child was invited to tell a story starting with browsing through the wordless picture book in the presence of the researcher. The researcher then encouraged the child to narrate a story. The child used the pictures in the book as an aid in the narration. Each child spent around 5 to 15 minutes telling the story. To obtain best

narrative samples, the children were asked to tell a Mandarin story first. By telling the same story in Mandarin, their stronger language first, students were given the opportunity to familiarize themselves with their following English narration (Miller et al., 2006). In addition, there was a more than 4-day time interval between the two narrative sessions to avoid the practice effect and create independent performance for each language. At the end of each task, the children were rewarded with praises and stickers.

Transcriptions and Coding Procedures

All narratives were digitally audio-recorded and transcribed verbatim. The first author transcribed the English oral narratives into computer text files based on the conventions from the *Systematic Analysis of Language Transcripts* (SALT, Miller et al., 2006). The Mandarin oral narratives were manually transcribed by the same researcher into *Microsoft Word* files. Both Mandarin and English narrative samples were segmented into the modified C-units. Once transcribed, the results of language productivity measures in each language were first calculated. English productivity measures were generated from SALT. Since the current version of SALT only allows language sample transcriptions and coding in alphabetical languages such as English and Spanish, and not in logographic languages such as Mandarin, Mandarin measures of the present study were calculated manually. Following Au's (2002) procedures for oral language analysis, mazes (e.g., false starts, repetitions, reformulations, and unfinished attempts), comments, habitual starter, and place-fillers irrelevant to the narratives were excluded from the word counts for the calculation of language productivity. Next, linguistics structures, such as morphological error patterns and types of syntactic structure in both languages were coded.

Transcription and Coding Reliability

Approximately 20% of the narrative samples in each language were independently transcribed by another trained first-year graduate student in the Graduate Institute of Teaching English to Speakers of Other Languages (TESOL). A point-to-point comparison at the word level was high, 87% in Mandarin stories and 88% in English stories. A trained second-year graduate student in TESOL also independently coded 20% of the transcripts in each language. Coding reliabilities were established at 89% agreement in Mandarin stories and 88% in English stories. The remaining percentages of disagreements in transcription and coding were resolved between the researchers for final 100% agreement.

Measures of Language Productivity

Language productivity measures included the number of modified communication units (NMC), the mean length of modified communication unit in words (MLMCW), the number of total words (NTW), and the number of different words (NDW). The number of the children's utterances defined by modified C-units was calculated. The number of total words was divided by the total number of modified C-units to calculate MLMCW. The NTW provided a measure of story length. Each word in the story was calculated. The NDW measured vocabulary diversity. The NDW was calculated by counting the number of different lexemes, specifically their word roots without inflection.

Measures of Linguistic Structures

Morphological errors and syntactic structures in both languages were identified, tallied, and categorized. For morphological errors, all errors of commission or omission were counted. Morphological errors were categorized and limited to only certain types in Mandarin and English narratives respectively. The number of students making each type of morphological errors was calculated. For measures of syntactic structures, the present study limited analyses to only certain types of syntactic structures in Mandarin and English stories respectively. The number of students using each type of syntactic structures was counted. Unlike the morphological errors, using various syntactic structures is a rhetorical choice the narrator makes when telling a story. Hence, the children's uses of various syntactic types rather than their syntactic errors were examined. Categories of morphological errors and syntactic structures were listed below.

Mandarin morphological errors consist of the erroneous usage of the following (Tse et al., 1991):

1. A deictic expression refers to the interpretation of a unit depending on the context of the utterance. A deictic expression could be (1) demonstrative such as *zhe4ge0* 'this', (2) temporal, *jin1tian1* 'today', or (3) spatial, *na4li3* 'there'.
2. Particles serve various functions, such as *ma1* used to form a typical question sentence.
3. Aspect markers refer to how the situation itself is being viewed with respect to its own internal makeup, such as *le0* as the perfective marker.
4. Adverbs express speaker's attitude, manner of action, frequency or qualification.
5. Classifiers occur with numbers, demonstratives or certain quantifiers, such as *ge0*.

6. Modal auxiliaries are not full-fledged verbs such as *hui4* 'know how' or 'will.'
7. Personal pronouns are used to substitute the person or people mentioned previously.
8. Coverbs introduce a noun or noun phrase, such as *gen1* 'with', *cong2* 'from', *zai4* 'at', *bei4*, the marker of the passive construction, and *ba3* the marker of the ba construction (Li & Thompson, 1981). The ba-construction, similar to the passive construction, is associated with the SOV structure.
9. Connectors are units used to connect two utterances, such as *ke3shi4* 'but.'

English morphological errors include the erroneous usage of (1) pronouns, (2) verb auxiliaries, (3) determiners, (4) noun plurals, (5) verb tenses, (6) number marking, and (7) prepositions (Reilly et al., 2004).

Mandarin syntactic structures analyzed contain the following types (Li and Thompson, 1981; Tse et al., 1991; Tsou and Cheung, 2007):

1. The serial verb construction is a sentence consisting of two or more verb phrases or clauses juxtaposed without any marker signifying what the relationship is between them.
2. Sentence linking is a structure including at least two linked clauses containing linking elements. The meaning completion of each clause depends on the other clause.
3. The ba-construction has the basic sentence structure that the direct object is placed immediately after *ba3* and before the verb.
4. The bei-construction refers to the passive voice. It has the sentences structure such as this, NP Bei (NP) verb, where NP represents noun phrase.

English syntactic structures were categorized into the following four types adopted from Reilly et al.'s (2004) and Gutierrez-Clellen's (1998) studies. They are (1) noun clauses, (2) clauses connected by conjunctives which are connective words, especially a conjunction or conjunctive adverb (e.g., a temporal adverb), (3) relative clauses, and (4) passive sentences.

Results and Discussion

Language Productivity in Mandarin and English Narratives

Table 1 presents the descriptive statistics of the language productivity measures. The effect of language on productivity measures was explored using paired sample *t*-tests with scores (NMC, MLMCW, NTW, and NDW) as dependent variables and languages as the independent variable

(Mandarin and English). Pearson-Product Moment correlational analysis was further conducted to investigate whether NMC, MLMCW, NTW, and NDW in their Mandarin stories correlated with the same measures in their English stories. Correlations between Mandarin and English productivity measures are reported in Table 2. Results demonstrated that NMC in their Mandarin stories was slightly higher than that in their English stories. However, the difference was not significant $t(21) = 1.34, p = 0.20$. In addition, the children produced a slightly larger NTW in their Mandarin rather than English stories but the difference was also not significant ($t(21) = 0.07, p = 0.94$). This finding is consistent with that of Fiestas and Pena (2004). In their study, the children primarily spoke their native language at home and learned English at school. They indicated that the children’s expectations about story length in a specific storytelling task in each language were interrelated. In the present study, the children primarily spoke Mandarin at home and studied English at school. As observed in their narratives, the story lengths in terms of NTW in both languages were comparable.

On the other hand, for the measure of MLMCW, the children produced shorter utterances in Mandarin than in English and the difference was significant $t(21) = -4.25, p = 0.00$. A moderate, but still positive and significant, correlation exists between the children’s MLMCW in Mandarin and English stories ($r = 0.48, p < 0.05$). A significant difference of $t(21) = 5.93, p < 0.00$ was also observed for NDW. In other words, the children used more different words in their Mandarin stories than in their English stories. Although the children might have been expected to have better language productivity in Mandarin than in English, here, the children tended to produce significantly longer MLMCW in English than in Mandarin. One possible explanation is that English has a strict Subject-Verb-Object word order and in nearly all cases, pronominal subjects or objects cannot be omitted. In contrast, Mandarin is a pro-drop language (Gelman & Tardif, 1998); that is, pronouns can be omitted when they are pragmatically inferable from the context. This is further complicated by the fact that pronouns are expressed more frequently in English than in Mandarin (Gelman & Tardif, 1998). Thus, the children in the present study tended to express pronouns more frequently in their English stories, but drop pronouns in their Mandarin stories. This may have increased the children’s MLMCW in English.

Table 1 Means, Standard Deviations, and Ranges for Mandarin and English Productivity Measures (N = 22)

Measures	<i>M</i>	<u>Mandarin</u>		<u>English</u>			<i>t(p)</i>
		<i>SD</i>	<i>Range</i>	<i>M</i>	<i>SD</i>	<i>Range</i>	

NMC	38.73	10.13	26-69	35.64	8.94	20-50	1.34(0.20)
MLMCW	4.80	0.49	3.94-5.6	5.32	0.60	4.27-6.24	-
NTW	185.27	50.92	126-315	184.32	54.13	105-281	0.07(0.94)
NDW	92.14	22.10	64-141	61.64	13.29	42-95	5.93(0.00*)

Note. * $p < .05$; NMC= number of modified C-units, MLMCW = mean length of modified communication unit in words, NTW = number of total words, NDW = number of different words.

Table 2 Correlations between Mandarin and English Productivity Measures (N = 22)

Measures	Mandarin			
	NMC	MLMCW	NTW	NDW
<u>English</u>				
NMC	0.36			
MLMCW		0.48*		
NTW			0.28	
NDW				0.14

Note. * $p < .05$, NMC= number of modified C-units, MLMCW = mean length of modified communication unit in words, NTW = number of total words, NDW = number of different words.

Further, the children's vocabulary diversity in their Mandarin stories was significantly higher than that found in their English counterparts. There are two possible reasons. First, the children's tendency to use significantly fewer different words in their English stories may be related to the fact that Mandarin was their dominant language. Secondly, when the data were being collected, all of the children were taking a 2-week intensive Mandarin course in which they learned how to pronounce and recognize Mandarin vocabulary. Intensive instruction can improve students' academic achievement to a large extent (Hardman & Dawson, 2008). The children's intensive Mandarin course may have enlarged their Mandarin vocabulary in a short period of time when the story samples were being collected.

Morphological Errors in Mandarin and English Narratives

The present study limited analyses to nine predetermined types of morphological errors in Mandarin stories and seven types in English stories. The analyses revealed that Mandarin morphological errors identified included erroneous uses of adverbs ($n = 2$, 9% of total students), personal pronouns ($n = 1$, 5%), coverbs ($n = 3$, 14%), and connectors ($n = 1$, 5%). The number of children making each type of error was small. Given that Mandarin is the children's native and dominant language, the children were expected to make few Mandarin morphological errors. For English morphological errors, the most common errors which almost all children made were

number marking ($n = 22$, 100%), prepositions ($n = 21$, 95%), and determiners ($n = 21$, 95%). More than half of the children ($n = 13$, 59%) produced errors in noun plurals as well as verb tenses, and 12 out of the 22 children (55%) had errors in verb auxiliaries, while 7 out of the 22 children (31%) used inaccurate pronouns. These results were partially consistent with the findings of Reilly et al. (2004), which also showed that monolingual children made English morphological errors in the aforementioned seven types. These types of morphological error seemed to be typical in language development for both monolingual English-speaking and EFL children.

Syntactic Structures in Mandarin and English Narratives

The analyses of the children's Mandarin syntactic skills demonstrated that all of the children (100%) told stories using the serial verb construction and sentence linking, 15 of them (68%) used the ba-construction, and 7 (32%) made sentences with the bei-construction.

All the 22 children used the serial verb construction and sentence linking in their stories. This finding was partially consistent with that of Au's (2002) study, which reported that all 100 Cantonese-speaking children in her study used the serial verb construction in their story-retelling task. The possible explanation for the children's frequent use of the serial verb construction and sentence linking is that they can use them to make sentences longer. In comparison to the serial verb construction and sentence linking, a smaller number of the children used the ba- and bei-constructions. One possible reason for this may be that the ba- and bei-constructions have a unique structure and function (Tse et al., 1991); therefore, these two sentence structures do not frequently appear in children's naturalistic language samples.

For the analyses of the children's English syntactic skills, the results demonstrated that all the 22 children (100%) connected sentences with conjunctives, 12 (55%) embedded noun clauses into sentences, 4 (18%) used the passive construction to describe the action of story characters, but none (0%) produced relative clauses. All the children produced stories with conjunctives, which help to enhance semantic complexity of the stories. Twelve of the 22 children embedded noun clauses into sentences. One possible explanation for this finding was that the children had not yet mastered the structure of noun clauses. By the age of 3, most English-speaking monolingual children begin to produce embedded clauses (Fromkin et al., 2003). Although the Taiwanese EFL children in the present study were older than 3 years old, they possibly lagged

behind their English-speaking monolingual peers in acquiring noun clauses.

Four of the children incorporated the passive constructions into their English stories. Yet, the children's abilities to use the passive construction at this stage were doubted for two reasons. First, all of them produced the passive structure as the auxiliary verb "be" together with the past participle "broken" (e.g., The glass *is broken*). However, "broken" can also function as an adjective in the predicate, like the auxiliary verb "be" together with an adjective (e.g., The bee's house *is beautiful*). Therefore, when a child uttered, "The jar is broken," it was difficult to determine whether the word "broken" was used as a past participle or simply as an adjective. Secondly, there was a high possibility that the children had not yet mastered the passive construction at the mean age of 5;10. According to Beilin (1975, as cited in Elliot, 1981), it was not until the age of 7 years that children understood the relation between active and passive constructions. Thus, the children in the present study might still be in the process of acquiring the passive construction.

With respect to the children's performance on relative clauses, none of the 22 children was observed to embed relative clauses in sentences. This result was partially consistent with that of Ingram (1989), who found that there was a lack of relative clauses in spontaneous speech of English-speaking children between 2 and 5 years old. In light of the phenomenon that ESL children often lag behind their English-speaking monolingual peers in acquiring complex English syntax, similarly, the Taiwanese EFL children in this study may also lag behind their English-speaking monolingual peers in acquiring relative clauses.

Conclusions

The present study was designed to examine Taiwanese EFL children's morphological and syntactic abilities observed in their Mandarin and English narratives. The findings showed that these preschool children produced more modified communication units, greater number of total words and different words in their Mandarin narratives than in English ones. Analyses of morphological errors indicated that the children had more variety of English morphological error patterns, while only a few children in the study produced morphological errors in Mandarin. For measures of syntactic structures, more diverse syntactic structures were found in the children's Mandarin stories than in the English stories. These findings were consistent with the observation that Mandarin was these preschool children's stronger and more proficient language despite the

fact that they had studied English since young ages.

Limitations and Future Directions

Several limitations of this study are noteworthy. For one, the study limited analyses to only certain types of morphological errors and syntactic structures in Mandarin and English narratives respectively. Further research could address other types of morphological errors and syntactic structures shown in Taiwanese EFL children's narratives in Mandarin and English. In addition, the small sample size and the inclusion of only one age group of the Taiwanese EFL children did not provide sufficient evidence to chart the process of acquiring morphological and syntactic knowledge. It would be of future interest to include a larger number of Mandarin-speaking EFL preschoolers of a wider age range. Finally, the present study used SALT to analyze the children's English productivity measures. The analyses of Mandarin productivity measures, however, were carried out manually because SALT cannot analyze Mandarin language samples. Other studies (e.g., Au, 2002) used the CHAT format from the Children's Data Exchange System (CHILDES, MacWhinney, 1994) to analyze children's Mandarin language samples. It would be of particular importance to use other computerized language sample analysis tools to calculate children's language productivity measures in their English as well as Mandarin narratives and to see whether the results of language productivity measures are comparable.

Note

1. All examples for modified C-units were taken from the children's narrative samples in the present study.

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References

- Au, W. S. (2002). *Story-retelling as a measure of expressive language in school-aged children: A normative study*. Unpublished bachelor's thesis, The University of Hong Kong, Hong Kong.
- Baayen, R. H., Feldman, L. B., & Schreuder, R. (2006). Morphological influences on the recognition of monosyllabic monomorphemic words. *Journal of Memory and Language*, 55, 290-313.
- Barnett, W.S., Yarosz, D. J., Thomas, J., Jung, K., & Blanco, D. (2007). Two-way and monolingual English immersion in preschool education: An experimental comparison. *Early Childhood Research Quarterly*, 22, 277-293.
- Beilin, H. (1975). *Studies in the cognitive basis of language development*. New York: Academic Press.
- Brown, R. (1973). *A first language: The early stages*. Cambridge, MA: Harvard University Press.
- Chen, C. T. (2007). *Narrative abilities in high-functioning children with autism spectrum disorder*. Unpublished master's thesis, National Yang-Ming University, Taipei, Taiwan.
- Chi, P. (2001). Language performance in spoken narrative of poor readers. *Journal of Special Education*, 15, 129-175.
- Chi, P. (2003). Cohension in the oral narratives of children with poor reading abilities. *Bulletin of Special Education*, 24, 63-84.
- Craig, H. K., Washington, J. A., & Thompson-Porter, C. (1998). Average C-unit lengths in the discourse of African American children from low-income, urban homes. *Journal of Speech and Hearing Research*, 41, 433-444.
- Elliot, A. (1981). *Child language*. Cambridge: Cambridge University Press.
- Fiestas, C. E., & Pena, E. D. (2004). Narrative discourse in bilingual children: Language and task effects. *Language, Speech, and Hearing Services in Schools*, 35, 155-168.
- Fromkin, V., Rodman, R., & Hyams, N. (2003). *An introduction to language*. Boston, MA: Heinle.
- Gelman, S. A., & Tardif, T. (1998). A cross-linguistic comparison of generic noun phrases in English and Mandarin. *Cognition*, 66(3), 215-248.

- Griffin, T. M., Hemphill, L., Camp, L., & Wolf, D. P. (2004). Oral discourse in the preschool years and later literacy skills. *First Language, 24*(2), 123-147.
- Gutierrez-Clellen, V. F. (1998). Syntactic skills of Spanish-speaking children with low school achievement. *Language, Speech, and Hearing Services in Schools, 29*, 207-215.
- Gutierrez-Clellen, V. F. (2002). Narratives in two languages: Assessing performance of bilingual children. *Linguistics and Education, 13*, 175-197.
- Gutierrez-Clellen, V. F., & Hoffstetter, R. (1994). Syntactic complexity in Spanish narratives: A developmental study. *Journal of Speech and Hearing Research, 37*, 645-654.
- Hardman, M. L., & Dawson, S. (2008). The impact of federal public policy on curriculum and instruction for students with disabilities in the general classroom. *Preventing School Failure, 52*(2), 5-11.
- Hell, J. G., Verhoeven, L., Tak, M., & Oosterhout, M. (2005). To take a stance: A developmental study of the use of pronouns and passives in spoken and written narrative and expository texts in Dutch. *Journal of Pragmatics, 37*, 239-273.
- Ingram, D. (1989). *First language acquisition: Method, description and explanation*. Cambridge: Cambridge University Press.
- Klee, T. (1992). Developmental and diagnostic characteristics of quantitative measures of children's language production. *Topics in Language Disorders, 12*(2), 28-41.
- Komarova, N. L., Nivoai, P., & Nowak, M. A. (2001). The evolutionary dynamics of grammar acquisition. *Journal of Theoretical Biology, 209*(1), 43-59.
- Li, C. N., & Thompson, S. A. (1981). *Mandarin Chinese: A functional reference grammar*. Berkeley and Los Angeles, CA: University of California Press.
- Loban, W. (1976). *Language development: Kindergarten through grade twelve*. Urbana, IL: National Council of Teachers.
- MacWhinney, B. (1994). *The CHILDES project: Tools for analyzing talk* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.
- Marinova-Todd, S. H. (2003). Knowledge of syntax and morphology in an L2 reveals about the critical period for second/ foreign language acquisition. In G. Mayo, M. Pilar, G. Lecumberri & M. Luisa (Eds.), *Age and the acquisition of English as a foreign language* (pp. 59-76). Buffalo: Multilingual Matters.
- Mayer, M. (1969). *Frog, where are you?*. New York: Dial Press.

- Miller, J. F., Heilmann, J., Nockerts, A., Iglesias, A., Fabiano, L., & Francis, D. J. (2006). Oral language and reading in bilingual children. *Learning Disabilities Research & Practice, 21*(1), 30-43.
- Miller, J. R., & Chapman, R.S. (1981). The relation between age and mean length of utterance in morphemes. *Journal of Speech and Hearing Research, 24*, 154-161.
- Pearson, B. Z. (2002). Narrative competence among monolingual and bilingual school children in Miami. In D. K. Oller & R. E. Eilers (Eds.), *Language and literacy in bilingual children* (pp. 135-174). Tonawanda, NJ: Multilingual Matters Ltd.
- Reilly, J., Bates, E., & Marchman, V. (1998). Narrative discourse in children with early focal brain injury. *Brain and Language, 61*, 335-375.
- Reilly, J., Losh, M., Bellugi, U., & Wulfeck, B. (2004). "Frog, Where are you?" Narratives in children with specific language impairment, early focal brain injury, and Williams syndrome. *Brain and Language, 88*, 229-247.
- Snow, C., & Dickinson, D.K. (1990). Social sources of narrative skills at home and at school. *First Language, 10*, 87-103.
- Torrance, N., & Olson, D. (1984). Oral language competence and the acquisition of literacy. In A. Pellegrini & T.D. Yawkey (Eds.), *The development of oral and written language in social contexts* (pp. 167-81). Norwood, NJ: Ablex.
- Tse, K. P., Tang, T. C., Shih, Y. H., & Li, C. Y. (1991). *Chinese children's language acquisition and development* (NSC 79-0301-H003-23). Taipei: Nation Taiwan Normal University, Department of English.
- Tsou, C., & Cheung, H. (2007). Narrative story telling of high-functioning children with Autism spectrum disorders. *Bulletin of Special Education, 32*(3), 87-109.
- Watkins, R. V., Kelly, D. J., Harbers, H. M. and Hollis, W. (1995). Measuring children's lexical diversity: Differentiating typical and impaired language learners. *Journal of Speech & Hearing Research, 38*(6), 1349-1355.
- Wulfeck, B., Bates, E., Krupa-Kwiatkowski, M., & Saltzman, D. (2004). Grammaticality sensitivity in children with early focal brain injury and children with specific language impairment. *Brain and Language, 88*, 215-228.
- Yamashita, J. (2008). Extensive reading and development of different aspects of L2 proficiency. *System, 36*, 661-672.

