

Referential Choices in Oral Narratives of Chinese among Immersion Learners

Yifan Wu

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Chan Lü

Zev Handel

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Yifan Wu

University of Washington

**Abstract**

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Yifan Wu

Chair of the Supervisory Committee:

Chan Lǚ

Department of Asian Languages and Literature

Much research has investigated the production of referring expressions made by bilingual children in terms of referential functions. Few studies have focused on bilingual Chinese-English children. This thesis explores the referring expressions (nominal forms, pronominal forms, and null forms) used under different referential functions (reference introduction, reference maintenance, and reference reintroduction) by bilingual Chinese-English children. The research questions are (1) What are the developmental patterns across grades for the three referential functions and referential forms for Chinese? (2) What are the developmental patterns across grades for the three referential functions and referential forms for English? (3) Are referential choices made by the schooled bilinguals differ from monolingual language learners? To answer these questions, the Bilingual and Biliteracy Research Lab at the University of Washington collected Chinese and English oral narratives from a Chinese Dual Immersion elementary

school. The research assistant at the lab used the wordless picture book *Frog Goes to Dinner* (Mayer, 1974) to test first and fifth graders narrative skills. After collecting the data, I compared the referring expressions in Chinese between first-grade and fifth-grade students of bilingual Chinese-English children to speculate the developmental patterns. As for within groups, I calculated and compared the percentage of definite and indefinite noun phrases used by first and fifth graders to investigate their referential ability. Finally, I compared the percentage of referring expressions used by first and fifth graders between bilingual Chinese-English and monolingual Chinese children. The results suggested a striking finding on reference maintenance. When comparing the referring expressions used in the three referential functions between the first and fifth-grade bilingual students, the results indicated that the fifth graders preferred nominal forms. In contrast, first graders tended to use pronominal forms for reference maintenance. When comparing the referring expressions under three referential functions, respectively, in first and fifth-grade students, both grade students tended to use the pronominal form to maintain a referent. With mutual knowledge, both groups preferred definite noun phrases, while in no mutual knowledge condition, fifth graders tended to use indefinite noun phrases. In conclusion, fifth graders developed more appropriate referential ability, and nine might be a critical age for children to become aware of mutual knowledge and acquire the reference maintenance function.

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## **I. Introduction**

Narratives provide a way to interpret, communicate, and transfer information (Sah, 2018), and they have drawn much attention from scholars in various fields over the past years. Narrative ability is crucial for describing events, communicating, and building relationships with others (Sheng et al., 2020). A proficient storyteller needs to learn how to describe an experience in a temporally and causally coherent way (Gagarina et al., 2021) so that the listener can keep track of the events and characters. One way to become a proficient storyteller is to use referring expressions to refer back and forth to the story characters to provide a sufficient common ground between the storyteller and listener (Sah, 2018).

For children, the narrative ability also predicts their reading comprehension ability and academic performance (Sheng et al., 2020; Snow, 2002). To construct a successful narrative, a speaker needs to identify new and given information using referring expressions. Referring expressions are linguistic forms consisting of nominal, pronominal, and null forms that serve discourse-pragmatic functions to introduce a new entity, maintain a referent, or reintroduce a character in the discourse (Chen & Lei, 2013). As bilingual children learn both languages, they acquire the language-specific referring expressions and the two different referential systems (Qi, 2010). This study examined the referential choices that schooled Chinese-English bilingual children made in oral narrative and developmental patterns of referential choices across grades in Chinese and English.

### **Referring Expressions in Chinese and English**

In narrative productions, speakers have to make appropriate referential choices when mentioning more than one character so that listeners can understand the content. In general, referring expressions include nominal, pronominal, and null forms. For Chinese, nominal forms

includes bare nouns (e.g., ‘*qīngwā* 青蛙, frog’), numeral noun phrases (e.g., ‘*yìzhī qīngwā* 一只青蛙, a frog’), proper noun (e.g., ‘*qīngwā māma* 青蛙妈妈, mama-frog’), possessive noun phrases (e.g., ‘*tā de qīngwā* 他的青蛙, his frog’) and relative clauses (e.g., ‘*nàgè chuī yuèqì de rén* 那个吹乐器的人, that person who play the instrument’) (Sung, 2004; Chen & Lei, 2013; Jia & Paradis, 2015; Sah, 2018). Pronominal forms include personal pronouns and demonstrative noun phrases (Chen & Lei, 2013; Sah, 2018). The null form is an empty grammatical slot that specifies the character without any grammatical marking (e.g., ‘*wǒ yǒu yì gè jiějie zài shàng dà xué* 我有一个姐姐在上大学, I have a sister \_\_ attends college.’) (Li & Thompson, 1981, p. 104; Tao, 2005).<sup>1</sup>

Studies have discovered that the choice of referential expression is affiliated with the speakers’ assumption about the accessibility of a referent to the listeners (Ariel, 1990). According to Ariel’s Accessibility Theory, each referential expression is considered a product of evaluating the discourse function based on a specific degree of mental accessibility. In other words, the usage of a referential expression is restricted to just this kind of function. For example, speakers prefer indefinite noun phrases to mention the characters with the least accessibility, while they prefer null forms for the most accessible characters (Givón, 1983). For the accessibility of characters, Ariel found that complex noun phrases were used for low accessibility characters, while pronominal and null forms were used for high accessibility characters.

From the perspective of discourse-pragmatic function in narrative discourse, most research examined the association between referential forms and the three referential functions,

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<sup>1</sup> In Chinese, the word-by-word translation of the example is: I have a sister attends college. In English, the example is: I have a sister who attends college.

involving reference introduction, maintenance, and reintroduction (Colozzo & Whitely, 2014; Hickmann & Hendriks, 1999; Orsolini, Rossi, & Pontecorvo, 1996). The introduction refers to the first time that participants introduce an animated referent. As for maintenance and reintroduction, we follow the definition in Orsolini et al.'s (1996) and Serratrice's (2007) study in coding subsequent mentions. The two criteria for coding reintroduction are: First, the referent has been introduced before the subsequent mention. Second, there is a new referent between the first mention and the subsequent mention. Apart from the reintroduction, all other subsequent mentions were classified as maintenance.

Numerous studies have explored the usage of referring expressions in narratives when introducing and maintaining an entity by children as well as monolingual Chinese and English adult speakers (Chen, 1986; Hickmann, 2003; Hickmann & Hendriks, 1999; Hickmann et al., 1996; Karmiloff-Smith, 1985; Wigglesworth, 1990, 1997). For referential introduction, Hickmann et al. (2003) discovered that children start to use indefinite noun phrases or numeral classifiers reliably at the age of 10 in Chinese and English. For referential maintenance, researchers found that null forms were used more frequently by Chinese monolingual children than by children who speak other languages (Sah, 2018; Chen & Lei, 2013; Hickmann & Hendriks, 1999). For referential maintenance in English, the study showed that speakers tend to use pronominal forms (Fox, 1987). In Chinese, bare nouns, demonstrative determiners, possessive noun phrases, and relative clauses made adequate reference reintroduction (Sung, 2004). In English, definite noun phrases are often used for reference reintroduction.

### **Referential Choices for Three Referential Functions in Chinese and English**

In narrative productions, when the story involves multiple characters, appropriate referential choices keep the story flowing. Although Chinese and English are acknowledged as

two different languages, they have similarities and differences in referring expressions (Matthews, 2010). In general, indefinite noun phrases introduce new entities in narratives while definite noun phrases, personal pronouns, and null forms are used for subsequent mentions. Crosslinguistic research suggests some common usage of referring expressions in reference introduction (Spanish: Álvarez, 2003; Kail & Sanchez-Lopez, 1997; Mandarin: Hickmann & Liang, 1990; German, French, English, and Mandarin: Hickmann, Hendriks, Roland & Liang, 1996; French: Kail & Hickmann, 1992; Italian: Serratrice, 2007). Hickmann (1996) found that speakers tend to use indefinite forms to introduce a referent while they tend to use personal pronouns to maintain the character.

However, apart from the crosslinguistic common usage of referring expressions, some linguistic forms are language-specific for reference introduction. For English, indefinite noun phrases are used for the first mention (Halliday & Hasan, 1976). For language devices used in Chinese, indefinite noun phrases, including bare nouns (nouns without a classifier), proper names, possessive noun phrases, number + classifiers + noun, and relative clauses, to introduce an entity when the speaker believes the listener does not know (Li & Thompson, 1981, p. 104). In Chinese, for first mention, bare nouns (nouns without a classifier), proper names, possessive noun phrases, relative clauses, and numeral noun phrases are used to identify and introduce the target referent as in examples (1), (2), (3), (4) and (5).

1. Bare nouns (nouns without classifier)
  - a. qīngwā 青蛙 ‘frog’
2. Proper names
  1. qīngwā māma 青蛙妈妈 ‘mama-frog’
3. Possessive noun phrases

a. tā de qīngwā 他的青蛙 ‘His frog’

4. Relative clauses

a. nàgè chuī yuèqì de rén 那个吹乐器的人 ‘That person who play the instrument’

5. Numeral noun phrases: Number + classifier + noun

a. yìzhī qīngwā 一只青蛙 ‘A frog’

In example (1), bare nouns are nouns without determiners or classifiers denote new referents (Cheng & Sybesma, 1999; Hickmann, 2003). In example (2) 青蛙妈妈 *mama-frog* is a name for the frog specified in the story, and thus, it is a proper name encoding appropriate information for reference introduction. In example (3), the possessive noun phrase 他的青蛙 *tā de qīngwā* “His frog” is used to define the relationship between the target character and his frog. In example (4), the relative clause modifies the noun 人 *rén* “person.” Thus, the structure of the relative clause is *dìngyǔ* 定语 *modifying clause* + 的 *de particle* + 名词 *míng cí noun* (Jia & Paradis, 2015).

Apart from bare nouns, proper names, possessive noun phrases, and relative clauses, indefinite noun phrases with classifiers can also make adequate reference introductions. A classifier refers to the construction: number + classifier + noun phrases or demonstrative + classifier + noun phrases (Li & Thompson, 1981, p. 104). Generally, there are two types of classifiers in Chinese: (1) 75 sortal classifiers for specific entities (Erbaugh, 2006), e.g., 只 *zhī* is used in 一只青蛙 *yìzhī qīngwā* A frog; (2) the general classifier 个 *gè* for entities that do not normally take a sortal classifier. (Li & Thompson, 1981, p. 112).

For subsequent mentions, the linguistic devices are similar for both English and Chinese. In general, speakers tend to use pronominal forms for reference maintenance in English (Chen, 2002; Clancy, 1992; Fox, 1987), while null forms are used for reference maintenance in Chinese (Cai, 1996; Huang, 1992; Li & Thompson, 1981, pp. 657-658). In Chinese, demonstrative noun phrases and personal pronouns are also adequate to mark given referents, as in example (1) (Sah, 2018).

1. nàzhī qīngwā 那只青蛙, ‘That frog’

As for reference reintroduction, a referent that differs from the previous subject referent tends to be realized using definite noun phrases in English (Chen, 2002). Concerning Chinese, referent switching is accomplished by the use of bare nouns, demonstrative determiners, possessives, and relative clauses (Chen, 2002; Wang, 1998)

Both English and Chinese use indefinite and definite noun phrases to mark referents. However, they differ in whether it is necessary to use nominal determiners to mark the difference between reference introduction, maintenance, and reintroduction (Chen, 2012). Generally, Chinese speakers use numeral noun phrases and bare nouns to introduce a new referent. However, English requires a nominal determiner to mark indefinite and definite references. For example, English speakers tended to use an indefinite determiner preceding noun phrases to introduce a referent. Although there are universal usages of referential forms, English and Chinese each have striking features in their referential system.

Apart from the nominal determiners, the use of the null form is another distinct feature between English and Chinese. Null forms refer to an empty grammatical slot that specifies the referent without causing any ambiguous referent. Generally, the null form in Chinese may occur in four discourse contexts that are not appropriate in English:

(1) Switch-reference condition

This pattern refers to the condition that the subject of the second clause is different from the first clause (Tao, 1993, 2001, & 2005).

E.g., Tā zuótiān qù liùgǒu le. Cháo mòshēngrén jiào.

She yesterday go walk the dog le towards strangers bark

She walked the dog yesterday, and (her dog) barked at strangers.

(2) Embedded clause condition

The condition occurs when the null form replaces the subject of a subordinate clause (Tao, 1993, 2001, & 2005).

E.g., Wǒ yǒu yí gè jiějie shàng dàxué le

I have one classifier older sister go college le

I have a sister (who) attends college.

(3) Direct object condition

The condition refers to the null form replacing the direct object of the verbs when the referents have been mentioned before.

E.g., Wǒ mǎi le yí běn shū. Wǒ zuótiān dú le

I buy le one classifier book. I. yesterday read le

I bought a book. I read (it) yesterday.

(4) Return-pop condition (Reichman, 1981; Fox, 1987; Tao, 1993, 1996, 2001).

The pattern may occur in both English and Chinese. Return-pop occurs when coreferential mentions are interrupted by other topics or referents (Reichman, 1981). English speakers often use personal pronouns to refer to the referent in the return-pop condition (Fox, 1987) while Chinese speakers prefer null form in such situations.

E.g., A: nǐ de shuòshì lùnwén xiě de shěnmé?

A: You de master thesis write de what?

A: What did you write your master's thesis about?

B: Wǒ xiě le yí gè guānyú xiǎohái xùshì nénglì de lùnwén.

B: I write le one classifier about children narrative ability de thesis

B: I wrote a thesis about children's narrative skills.

A: (lùnwén) Nán (xiě) ma?

A: (Thesis) Hard (write) question marker?

A: Was it hard to write?

B: Nán dànshì zhí dé.

B: Hard but worth

B: Yes but it was worth it.

In Chinese grammar, the subject and object can be omitted if it is understood from context (Li & Thompson, 1981, pp. 657-658). However, English has to include a subject to form

a sentence (Chen, 2012). Research suggests that the null form is more frequently used for reference maintenance in Chinese than in English (Tao & Healy, 2005).

### **Children's Narrative Skills Development**

Relevant literature addressing children's first language acquisition found that children's narrative skills start to develop at the age of three (Roth, 2009). In preschool, children grow their oral narrative experience with caregivers' help (Riley & Burrell, 2007). Around the age of five to six, children are able to narrate stories with detailed information, including the characters, actions, and goals (Olson & Gee, 1988).

The development of language and theory-of-mind (ToM) skills are highly correlated (Durkin, 1987). Much research has examined the relationship between narrative skills and ToM abilities and the development of children's narrative skills in typical individuals (e.g., Fernández, 2013). Theory of mind refers to the notion that mental states are associated with people's behavior (Premack & Woodruff, 1978). Fernández's study explored the association between children's pragmatic language skills and the ToM by narrative discourse. Pragmatic language skills refer to the ability to use languages in different social contexts. Participants were 115 Spanish-speaking preschoolers and first-grade children. The examiner measured students' pragmatic language skills with a standardized test, a storytelling task, and first- and second-order ToM tasks. The first-order scaled ToM task is a set of seven scaled tasks that evaluate a child's understanding of a person's mental state, including desires, emotions, and beliefs. The second-order scaled ToM tasks provide children with three vignettes that they need to infer a character's belief on another character's belief. Fernández discovered that children's pragmatic language skills are positively related to higher-order ToM abilities, which refer to higher-order mental state reasoning. In other words, children with better reasoning skills are about making inferences

about the story character's intentions and behaviors. In addition to the ToM ability, narrative skills can also use referring expressions to evaluate.

## **Literature Review**

### ***Referring Expressions in First-language Learners***

Current literature has investigated the production of referring expressions for reference introduction and maintenance in narratives with monolingual Chinese and English children and adult speakers (Chen, 1986; Hickmann, 2003; Hickmann & Hendriks, 1999; Hickmann et al., 1996; Karmiloff-Smith, 1985; Wigglesworth, 1990, 1997). Hickmann et al. (1996) examined the referring expressions used in reference introductions from adults and children at the ages of 4, 7, and 10, learning English, Chinese, French, and German. They found that as age increased, children made more appropriate referential introductions in all four languages. For reference maintenance, the results suggested that children used definite nominal and pronominal forms to maintain referents at all ages. Since preschool, children generally use these two referring expressions because of the instruction received from teachers. As for the patterns of the two referring expressions, Hickmann and Hendriks (1999) also found that most pronominal forms appeared in coreferential contexts, but most nominal forms appeared in non-coreferential contexts. They suggested that "there was an early mastery of forms for reference maintenance but late mastery of referring expressions for reference introduction." (Chen & Lei, 2013)

More recently, Jia and Paradis (2015) presented detailed research on referring expressions for reference introduction in the oral narratives of 38 Chinese heritage children and Chinese monolingual children (N = 38, average age = 8.7 years, SD = 1.2 years, range = 6.9-10.10 years). All children had been exposed to Chinese since birth with twenty-one children from Chinese-English bilingual public schools and seventeen children from English-only public

schools. In addition to the Chinese heritage children, the researchers recruited 15 monolingual Chinese children (N = 15, average age = 7.1 years, SD = 0.2 years, range = 6.8-7.4 years) as a comparison group. They used depict information and story grammar principles to generate three stories. Each story was made up of wordless pictures with two main animal characters. To minimize the effect of mutual knowledge, the researcher sat at the opposite of the children. Their results suggested that Chinese monolingual children outperformed Chinese English bilingual children in terms of Chinese-specific referring expressions: classifiers and proper nouns, but Chinese English bilingual children were close to Chinese monolingual children in terms of possessive noun phrases, numeral noun phrases, and indefinite noun phrases. They suggested that bilinguals require a number of inputs and practice. On the contrary, limited exposure to a language will not hinder the children from acquiring language-specific structures.

Most recently, Sah (2018) conducted a study on oral narratives comparing the referring expressions used for reference introduction, maintenance, and reintroduction between Chinese-speaking children with Autism and Chinese-speaking children. She also used the wordless picture book *Frog, Where Are You?* (Mayer, 1969) as a prompt to solicit storytelling. The study compared 16 Chinese-speaking children (ages 6.6-9.5; Mean age = 7.16) with 16 Chinese-speaking children with autism (ages 6.6-9.5; Mean age = 8.25). Sah's (2018) results suggested that the typical developing children used nominal forms more frequently for reference introduction and reintroduction, and both groups preferred null forms to maintain the referent. She reported that null forms exemplify a Chinese language-specific referring expression and that Children with ASD are inadequate in acquiring and differentiating definite and indefinite noun phrases.

In summary, previous studies have examined a lengthy development of monolingual children's acquisition of form-function mapping of referring expressions in reference introduction, maintenance, and reintroduction. In the next section, we review studies about bilingual acquisition to compare the developmental patterns.

### ***Referring expressions in bilingual children***

Existing literature on the development of the referring expressions of young bilingual learners' narratives mainly focuses on the forms. The syntax of a language provides a number of referential forms. However, a certain inventory of referential form is restricted by discourse-pragmatic notions, for example, newness, joint attention, etc. (Serratrice, L. & Hervé, C., 2015). Current research about referring expressions in bilingual acquisition examines the forms at the subject place, especially focusing on the languages that have typological differences, for example, English and Chinese, English and French (Serratrice, L. & Hervé, C., 2015).

Serratrice (2007) conducted detailed research on the production of referring expressions with reference introduction, maintenance, and reintroduction on English-Italian bilingual children and their monolingual peers. She used *Frog, where are you?* (Mayer, 1969) as a prompt to elicit oral narratives in English and/or Italian. The participants consisted of 12 eight-year-old children from three groups: simultaneous English-Italian children, monolingual English-speaking children, and monolingual Italian-speaking children. The bilingual children have been exposed to both English and Italian since birth and they used both languages daily. Serratrice's (2007) result did not detect significant differences between the bilingual English-Italian children and monolingual children in referring expressions for reference introduction, maintenance, and reintroduction. She suggested that children were able to acquire the language-specific forms of

form-function mapping in the referring expressions if they had consistent exposure and regular practice of two languages from birth.

To my knowledge, three studies (Chen & Pan, 2009; Chen & Lei, 2013; Sung & Chang, 2013) have investigated the development and use of referring expressions in the discourse of Chinese and English bilingual children. These children are believed to acquire English and Chinese simultaneously. Chen and Pan (2009) examined the development of English referring expressions for reference introduction and maintenance among sixty Chinese-English bilingual speakers at four ages – 5 years, 8 years, 10 years, and young adult in the United States. They analyzed and compared the English referring expressions used in spoken narratives using the wordless picture book *Frog, Where Are You?* (Mayer, 1969). Their result is in accord with many studies that the development of referential ability is influenced by discourse function (reference introduction, reference maintenance, and reference reintroduction) that indefinite noun phrases and possessive noun phrases are used for appropriate reference introduction while there is also some infrequent use of definite noun phrases and pronoun for reference introduction. The results suggested that children made more appropriate introductions as they grew. As for reference maintenance, definite noun phrases, pronouns, and ellipses are appropriate referential devices; they found that five-year-old tended to use pronouns while eight-year-olds used more definite noun phrases. Apart from the patterns, their study did not address the Chinese referring expressions in bilingual children's narratives.

Chen and Lei (2012) investigated the referring expressions in spoken narratives of Chinese-English bilingual children. They aimed to explore the extent to which the production of the referring expressions and discourse function between Chinese and English monolingual and bilingual children. They recruited 30 monolingual Chinese-speaking children, 30 monolingual

English-speaking children, and 30 Chinese-English bilingual children all from age 8 to 10. They also compared the monolingual children with bilingual children about their Chinese and English referring expressions for reference introduction, maintenance, and reintroduction in oral narratives using the wordless picture book *Frog, Where Are You?* (Mayer, 1969). Their results suggested “complex interactions between bilingual status, language status, and discourse functions (Chen & Lei, 2013).” For reference introduction, bilingual children used more definite noun phrases in English than English monolingual children. There was no significant difference between monolingual and bilingual children in Chinese referring expressions. For reference maintenance, there was no significant difference between Chinese and English monolingual and bilingual children. For reference reintroduction, bilingual children produced more definite noun phrases but fewer null forms in Chinese than Chinese monolingual children. No significant difference was found between monolingual and bilingual children in English-referring expressions.

The research on referring expressions in Chinese-English bilingual students is still relatively recent and sparse, especially in Chinese-English dual language immersion. It remains to be seen whether and in what ways will the different language systems impact each other. For example, will the patterns of referring expressions used by Chinese-English bilingual students differ from monolingual Chinese students? What are the preferable referring expressions for three reference functions of Chinese English dual language immersion students? To answer these questions, the present study examined the choices of Chinese English dual language immersion students made in the first mention, second mention, and subsequent mention.

## Research Questions

This study aimed to explore the patterns that Chinese-English dual language immersion children used in the introduction, maintenance, and reintroduction of narratives in English and Chinese.

The following three questions were addressed in this study.

- (1) What are the developmental patterns across grades for the three referential functions and referential forms for Chinese?
- (2) What are the developmental patterns across grades for the three referential functions and referential forms for English?
- (3) Are referential choices made by the schooled bilinguals differ from monolingual language learners?

## II. Method

### Participants

The participants for this study were recruited as a part of a larger study on bilingual development in Dual Language Immersion setting (Pace, Lü, Zhou & Guo, submitted; Lü, Pace & Ke, 2022; Lü, Pace & Liu, 2023). The current study included a subset of 39 elementary school students in first grade ( $N = 20$ , average age = 91.8 mos,  $SD = 4.58$  mos) and fifth or sixth grade ( $N = 19$ , average age = 140 mos,  $SD = 7.26$  mos). The two groups of students with a significant age range were selected because of our interest in children's trajectory of language development in elementary school years.

The school adopted a 90/10 model in kindergarten to first grade, and gradually transitioned to a 70/30 model in third grade, and a 50/50 model in fifth grade. The 90/10 model refers to the condition that 90 percent of the instruction is carried out in Chinese and 10 percent

of the instruction is carried out in English. Table 1 below illustrates the distribution of the two school languages across different subjects for our participants.

**Table 1**

*Chinese immersion model*

Grades	Instruction % in Mandarin	Subject taught in Mandarin	Subject taught in English
K-2	90%	Chinese, Math, History/Social Studies, Art, Science	English, P.E., Music
3-4	70%	Chinese, Math, Science	English, Science, History/Social Studies, Art, Music, P.E.
5-6	50%	Chinese, Math, History/Social Studies	English, History, Art, Music, P.E.

**Tasks, Transcription, and Coding**

***Task***

Before conducting tasks, parental consent and children’s verbal agreement were attained. Each child was tested with a research assistant who was a native speaker of Chinese or English. All data were recorded and collected through Zoom virtually and then transcribed with CLAN (Computerized Language Analysis).

To compare the results with previous research, we used a wordless picture book *Frog Goes to Dinner* (Mayer, 1974) to elicit a narrative from each participant. The story included 22 pictures portraying a series of events involving animated characters. The main characters were a boy, his pet frog, and his family members. The boy went to dinner with his family while the frog hid in his pocket. The frog came out from the pocket and jumped around the restaurant, encountering several secondary characters: a musician, a waiter, and two customers. Introducing,

maintaining, and reintroducing the animate referent as they interacted with each other providing a rich context for analyzing the referring expressions in narratives.

During the task, participants were first informed that they would tell a story after reviewing the wordless picture book. The participants had already read through the entire book by themselves and then told the story while the experimenter showed pictures through Zoom. Researchers guided the participants to tell the story in Chinese. For example, researchers asked: ‘你看到了什么?可以用中文说吗?/What did you see? Can you tell me in Chinese?’. After the participants responded, the researcher followed with ‘还有吗?/Anything else?’. All the narratives were recorded and transcribed using CLAN (Computerized Language Analysis).

### ***Transcription***

The narratives were transcribed and analyzed by research assistants who were native speakers of English or Chinese. Research assistants conducted the CLAN, a series of language analysis programs, to compute language sample analysis. 20% of the transcript was double-coded by two research assistants. Each animate reference as subject was coded in terms of referential forms and functions.

### ***Coding***

Since the topic of the study was referential patterns, we counted the number of various referring expressions used by students and evaluated their referential expressions. Each animate reference as the subject was coded in terms of referential form and function. Given that referents' animacy may influence participants' referring expressions (Fukumura & van Gompel, 2011; Serratrice, 2013), this study followed Colozzo and Whitely's (2014) and Serratrice's (2007) methodology to control animacy. The major animate referents were a boy, a frog, and the boy's family members.

**Chinese Referential Form Coding.** Referring expressions were classified into 3 form categories: nominal form, pronominal form, and null form (Clancy, 1997; Huang, 2013, Sah, 2018). According to Ariel's accessibility scale (1990), null forms and personal pronouns were used less when referring to a character. In other words, speakers preferred nominal forms than pronominal and null forms in coding material. However, null forms and pronominal forms were used more often in Chinese coding material. Since the null form was as important as the nominal form and pronominal form, the null form was considered a separate category. The definitions of these three categories were as follows and Table 2 shows an example of each category:

**Nominal form:** bare nouns, possessive noun phrases, proper names, indefinite noun phrases (measure word + classifier + noun phrases), and relative clauses.

1. Bare nouns refer to noun phrases without determiners and quantifiers. According to Li and Thompson (1981), one big difference between English and Chinese is that the use of determiners is not necessary for nominal phrases in Chinese (pp. 103-104). Generally speaking, most bare nouns are indefinite for first mention and they become definite for subsequent mention.
2. Possessive noun phrases refer to the noun phrases used to indicate the relationship between the target and the given referent.
3. Proper name is a specific name for the referent
4. Indefinite noun phrases:

This category refers to numeral noun phrases with the structure of "Numeral word + classifier + noun phrase (Li & Thompson, 1981, p. 104)." The structure is similar to English indefinite noun phrases and often used to introduce a new referent.

5. Relative clause refers to the structure of “modifying clause + particle de + noun”

**Pronominal form:** pronouns and demonstratives.

1. Pronouns
2. Demonstratives

In Chinese, definite noun phrases referred to noun phrases preceded by a demonstrative marker ‘*zhè* 这 this’ and ‘*nà* 那 that’. The structure was ‘*zhè/nà* 这/那, ‘this/that’ + classifier + noun phrase’. In general, the Chinese demonstrative noun phrases were identical to English definite noun phrases (Chu, 1979).

**Null form:** absence of overt subject.

1. Null form was used when the speaker and listener both knew the subject and the speaker omitted the subject without causing any ambiguity. Chinese speakers used an empty grammatical slot to refer to a previously introduced character.

**Table 2**

*Examples of referential forms from Chinese narratives*

Example	Analysis unit	Form
一个男孩在他的房间里。 A boy was in his room.	一个男孩 A boy	Nominal (4) Numeral noun phrase
跟他的狗、青蛙还有乌龟准备去一个地方。 He wanted to go to a place with his dog and his frog.	他的狗 His dog	Nominal (2) Possessive noun phrase

<u>吹音乐的人</u> 不知道发生什么事。	吹音乐的人	Nominal (5) Relative clauses
The person who played the instrument did not know what happened.	The person who played the instrument	
<u>音乐人</u> 感觉不可以吹了。	音乐人	Nominal (1) Bare noun
<u>Musician</u> thought (the saxophone) could not be played.	Musician	
___就去把他的乐器看里面 是什么东西挡住了它 。	___(他) ___(he)	Null
Then (he) checked what blocked the instrument.		
<u>青蛙</u> 跳了出来到他的头上.	青蛙	Nominal (1) Bare noun
<u>Frog</u> jumped out and reached his head.	Frog	
他害怕地到后面.	他	Pronominal 1. Pronoun
He/it fearfully(went/jumped) to the back.	He/it	
然后他不小心进去了鼓 , 把 鼓弄坏了.	他	Pronominal 1. Pronoun
Then he/it went into the drum by accident and broke the drum.	He/it	

**Chinese Referential Function Coding.** Each referential expression in the subject position was coded for its functions in the discourse. Introduction, Maintenance, and Reintroduction. The introduction referred to the first time that participants introduce an animated character. As for maintenance and reintroduction, we followed the definition in Orsolini et al.'s (1996) and Serratrice's (2007) study in coding subsequent mentions. The two criteria for coding reintroduction were: First, the referent has been introduced before the subsequent mention.

Second, there was a new referent between the first mention and the subsequent mention. Apart from the reintroduction, all other subsequent mentions were classified as maintenance.

The coding system for Chinese narrative was adapted from Clancy’s (1997), Huang’s (2013), and Sah’s (2018) coding schema and Li and Thompson’s (1981) analysis of referential strategies (pp. 103-113, 657-658). Table 3 illustrated the three referential functions. As we could see, the story started by introducing a character with an indefinite NP 一个男孩 *yí gè nán hái* ‘a boy’ (first row). Then a pronoun ‘*tā* 他 he’ maintained the character ‘boy’ (second row). There were two new characters, his dog and his frog, between the first mention and the second mention, the ‘*nà gè nán hái* 那个男孩 that boy’ (fourth row) re-establishes ‘the boy’ as the focus of the narrative and thus coded as a reintroduction.

**Table 3**

*Introduction, maintenance, and reintroduction from Chinese narratives*

	Analysis unit	Form	Function
有一个男孩。	一个男孩	Quantifier NPs	Introduction
There is a boy.	A boy		
他在穿衣服。	他	Personal pronoun	Maintenance
He is wearing clothes.	He		
他的狗和他的青蛙在看他。	他的狗	Possessive NPs	Introduction
His dog and his frog are watching him.	His dog		
	他的青蛙	Possessive NPs	Introduction
	His frog		
狗和青蛙不知道为什么那个男孩穿那个衣服。	狗	Bare noun	Maintenance

The dog and the frog don't know why that boy is wearing those clothes.

Dog

青蛙

Bare noun

Maintenance

Frog

那个男孩

Demonstrative

Reintroduction

That boy

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### Data Analysis

From the coded scripts, we calculated the raw frequencies and percentages of nominal, pronominal, and null forms used for introducing, maintaining, and reintroducing a referent. In this way, we can compare and assess the similarities and differences between Chinese-English immersion students and monolingual speakers. Due to the non-normal distribution of the variables, the study adopted nonparametric statistical tests. Based on Colle et al. (2008) and Sah (2018), the Mann-Whitney U tests were used to analyze differences between different grade students. Wilcoxon signed-rank tests for within-group comparisons were conducted.

In the following analyses, the production of Chinese narratives made by Chinese-English speakers was reported first, followed by the production of definite noun phrases (demonstrative noun phrases) and indefinite noun phrases (numeral noun phrases). For each discourse function, we compared the difference between the first and fifth-grade groups, followed by the comparison of referring expressions in the first and fifth-grade groups. Then, we presented the English narratives of referring expressions in terms of reference introduction, maintenance, and reintroduction using the same analysis procedure.

### III. Results

#### Research Question 1:

#### *What Are The Developmental Patterns across Grades for The Three Referential Functions and Referential Forms for Chinese?*

To find the patterns among these three referential functions (introduction, maintenance, and reintroduction) used by the bilingual participants, the raw scores and percentages of the three referential forms against total referential forms used were calculated and compared in relation to referential functions and grades.

Table 4 presented a summary of the data for all variables covering the total sample ( $N=34$ ), first-grade group ( $N=17$ ), and fifth-grade group ( $N=17$ ). These referential forms were grouped under three general types: nominal forms, pronominal forms, and null forms. Due to the non-normal distribution of the data, the study used nonparametric statistical tests. Based on Colle et al. (2008) and Sah (2018), the Mann-Whitney U tests were used to analyze differences between the two grade groups. Wilcoxon signed-rank tests for within-group comparisons were conducted. Descriptive results for Chinese were listed in Table 4.

**Table 4**

*Descriptive Results of Referential Forms, by Function and Group for Chinese.*

Referential function	Referential form	Grade	Mean (SD)
Introduction	Nominal	1	0.961 (0.162)
		5	0.962 (0.102)
	Pronominal	1	0.039 (0.162)
		5	0.038 (0.102)

	Null	1	0
		5	0
Maintenance	Nominal	1	0.396 (0.275)
		5	0.447 (0.171)
	Pronominal	1	0.553 (0.267)
		5	0.468 (0.206)
	Null	1	0.051 (0.064)
		5	0.085 (0.077)
Reintroduction	Nominal	1	0.611 (0.480)
		5	0.988 (0.035)
	Pronominal	1	0.036 (0.123)
		5	0.012 (0.035)
	Null	1	0
		5	0

Table 5 showed the raw frequencies and percentages of the three referential forms: nominal, pronominal, and null forms related to referential functions: reference introduction, maintenance, and reintroduction. Next, we examined if there were any statistically significant differences in referring expressions across grades. For reference introduction, Mann-Whitney U tests showed no significant differences between first-grade group and fifth-grade group in any type of the referential forms (nominal:  $U=166$ ,  $p=.893$ ; pronominal:  $U=157$ ,  $p=.893$ ; null:

U=161, p=1.0). This suggested that first-grade and fifth-grade students were at the same level in making referential choices for reference introduction.

For introduction, however, Wilcoxon signed-rank tests detected significant differences in referential forms within each group. For the first grade group, nominal forms were used significantly more often than pronominal forms ( $Z= 2.818, p = .004$ ), and than that of null forms ( $Z= 3.479, p < .001$ ); the percentage of pronominal forms was significantly larger than that of null forms ( $Z= 2.366, p = .022$ ). Similar patterns were found in the fifth-grade group, with significant differences shown between nominal and pronominal forms ( $Z= 3.724, p < .001$ ), between nominal and null forms ( $Z= 3.823, p < .001$ ), and between pronominal and null forms ( $Z= 3.059, p = .002$ ). The results suggested that both groups demonstrate similar usage of referential forms and both groups used more nominal than pronominal forms, more nominal than null forms, and more pronominal than null forms. In other words, in making reference introductions, the participants at both grade levels preferred to use nominals the most, followed by pronominal forms.

**Table 5**

*Frequencies (n) and percentages (%) of referential forms by function and groups for Chinese*

Referential function	Referential form	First grade	Fifth grade
		n (%)	n (%)
Introduction	Nominal	80 (83.33)	162 (91.53)
	Pronominal	16 (16.67)	15 (8.47)
	Null	0 (0)	0 (0)
Maintenance	Nominal	76 (19.48)	198 (32.35)
	Pronominal	290 (74.36)	345 (56.37)

	Null	24 (6.15)	69 (11.27)
Reintroduction	Nominal	20 (64.52)	104 (85.25)
	Pronominal	11 (35.48)	18 (14.75)
	Null	0 (0)	0 (0)

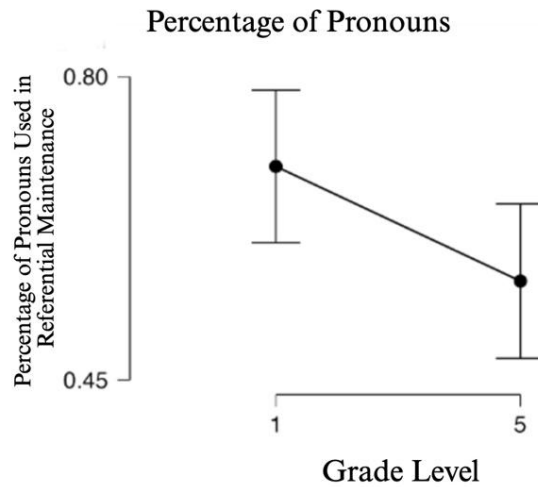
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With respect to reference maintenance, Mann-Whitney U tests detected significant differences in nominal forms and pronominal forms between the first-grade group and fifth-grade group (nominal:  $U=96.5$ ,  $p=.041$ ; pronominal:  $U=227$ ,  $p=.039$ ); while there were no significant differences in null forms (null:  $U=107$ ,  $p=0.082$ ). Figures 1 and 2 suggested that the first-grade group was more likely to use pronominal forms for reference maintenance while the fifth-grade group tended to use nominal forms to maintain the reference.

Wilcoxon signed-rank tests revealed significant differences in referential forms within each group. For the first grade group, the percentage of pronominal forms was significantly larger than that of nominal forms ( $Z= 3.527$ ,  $p < .001$ ), and pronominal forms were used more frequently than the null forms ( $Z= 3.621$ ,  $p < .001$ ); nominal forms were used significantly more often than null forms ( $Z= 2.585$ ,  $p = .01$ ). A similar pattern was found in the fifth-grade group, in making reintroductions, pronominal forms were used significantly more than nominal forms ( $Z= 2.918$ ,  $p = .004$ ), and the percentage of pronominal forms was significantly larger than null forms ( $Z= 3.823$ ,  $p < .001$ ), and nominal forms were more often significantly used than null forms ( $Z= 3.179$ ,  $p = .002$ ). The results suggest that both groups used more pronominal than nominal and null forms to maintain referents.

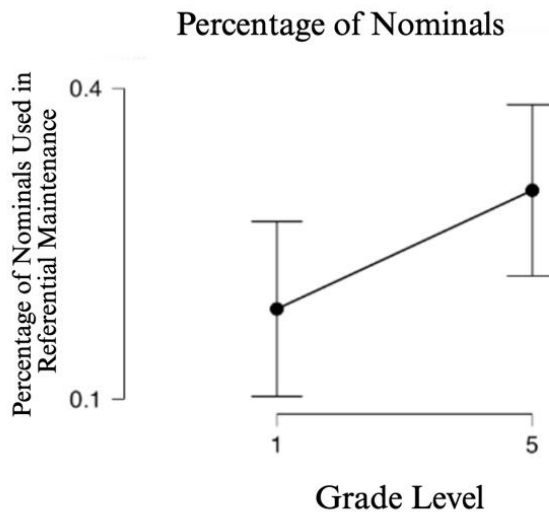
**Figure 1**

*Descriptive plots of referential maintenance, by pronominal form and group*



**Figure 2**

*Descriptive plots of referential maintenance, by nominal form and group*

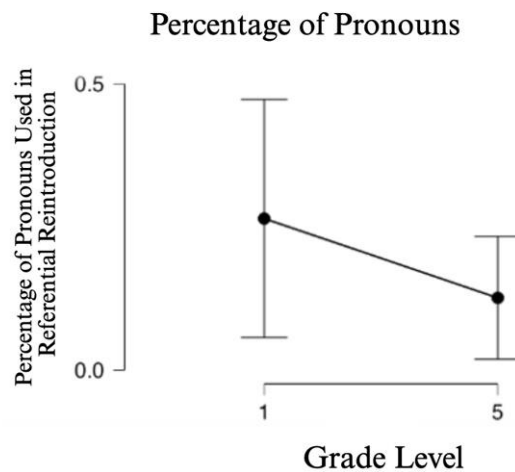


Concerning reference reintroduction, between the two groups, Mann-Whitney U tests revealed significant differences in nominal forms ( $U=72, p=.003$ ) while it showed no significant difference in pronominal form ( $U=170, p=0.773$ ). Figures 3 and 4 suggested that the first-grade group tended to use the pronominal form to reintroduce the referents while the fifth-grade group used more nominal forms for reference reintroduction. Within each grade group, there was also a

difference: for the first grade group, nominal forms were used more often than pronominal forms but the difference was non-significant ( $Z= 0.663$ ,  $p = 0.517$ ). However, in making reintroductions, the fifth-grade group employed significantly more nominal forms than pronominal forms ( $Z=3.561$ ,  $p<.001$ ).

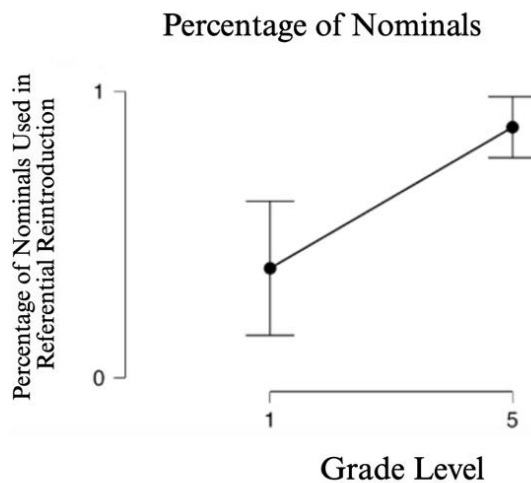
**Figure 3**

*Descriptive plots of referential reintroduction, by pronominal form and group*



**Figure 4**

*Descriptive plots of referential reintroduction, by nominal form and group*



Overall, our results suggested that first-grade and fifth-grade participants made similar referential choices for reference introduction but their choices for reference maintenance and reintroduction differed. The first-grade group preferred pronominal forms when maintaining and reintroducing a referent. The fifth-grade group tended to use more nominal forms for maintenance and reintroduction.

**Numeral and Demonstrative Noun Phrases for The Three Referential Functions and Referential Forms for Chinese.** Regarding referential forms, this study also explored bilingual children’s ability to use definite and indefinite noun phrases, including quantifier classifier noun phrases and demonstrative noun phrases. Table 6 showed the frequencies and percentages of the noun phrases compared to each referential form.

**Table 6**

*Frequencies (n) and percentages (%) of definite and indefinite NPs.*

		Grade	
		First n (%)	Fifth n (%)
Referential function	Noun Phrases		
	Definite	14 (17.50)	11 (6.79)
Introduction	Indefinite	32 (40.00)	40 (24.69)
	Definite	63 (82.89)	49 (24.75)
Maintenance	Indefinite	11 (14.47)	10 (5.05)
	Definite	9 (45.00)	16 (15.38)
Reintroduction	Indefinite	2 (10.00)	9 (8.65)

For introduction, Mann-Whitney U tests showed that there was no significant difference between the two grade groups for definite noun phrases and indefinite noun phrases. For the first-grade group, Wilcoxon signed-rank tests detected that the difference between definite and

indefinite noun phrases was not significant. This finding reinforced the result in Research Question 1 that the two grade groups made similar choices in the reference introduction. However, in the introduction, the fifth-grade group used significantly more indefinite noun phrases than definite noun phrases ( $Z=2.017$ ,  $p = 0.046$ ). The results implied that the fifth-grade group developed a more appropriate reference introduction since in making introductions to new characters, indefinite nouns or noun phrases were more appropriate than definite nouns.

For maintenance, Mann-Whitney U tests revealed that the difference between the two grade groups was non-significant. For the first-grade group, Wilcoxon signed-rank tests showed that definite noun phrases were used significantly more often than indefinite noun phrases ( $Z=2.656$ ,  $p = 0.009$ ). For the fifth-grade group, the percentage of definite noun phrases was also larger than indefinite noun phrases ( $Z= 2.556$ ,  $p = 0.011$ ). The results suggested that both groups have developed appropriate referential ability since existing studies found that definite noun phrases were more appropriate for reference maintenance (Chen & Lei, 2013; Colozzo & Whitely, 2014; Wong & Johnston, 2004).

For reintroduction, Man-Whitney U tests presented that the difference between definite and indefinite noun phrases was not significant. Wilcoxon signed-rank tests detected that the difference between definite and indefinite noun phrases was not significant for both grade groups. The results indicated that the first-grade group and fifth-grade group made similar reference reintroduction.

In sum, for reference introduction, the fifth-grade group used more indefinite noun phrases. For reference maintenance, both grade groups used definite noun phrases more frequently than indefinite noun phrases. However, for reference reintroduction, both grade groups used a similar amount of definite and indefinite noun phrases.

**Research question 2:**

***What Are the Developmental Patterns across Grades for The Three Referential Functions and Referential Forms for English?***

Descriptive results were listed in Table 7 which showed a summary of the data for all variables covering the full sample ( $N=34$ ), first-grade group ( $N=17$ ), and fifth-grade group ( $N=17$ ). As could be seen, the participants made similar referential forms but fewer null forms were used in the referent introduction and reintroduction. To find the patterns for the three referential functions and forms in English, Mann-Whitney U tests were used to analyze differences between the two grade groups, and within each group, between the three different referring expressions. Wilcoxon signed-rank tests for within-group comparisons were conducted.

**Table 7**

*Descriptive results of referential forms, by function and group for English.*

Referential function	Referential form	Grade	Mean (SD)
Introduction	Nominal	1	0.950 (0.103)
		5	0.960 (0.099)
	Pronominal	1	0.050 (0.103)
		5	0.040 (0.099)
	Null	1	0
		5	0
Maintenance	Nominal	1	0.508 (0.133)
		5	0.449 (0.173)

	Pronominal	1	0.403 (0.161)
		5	0.378 (0.203)
	Null	1	0.089 (0.068)
		5	0.173 (0.111)
Reintroduction	Nominal	1	0.760 (0.391)
		5	0.827 (0.323)
	Pronominal	1	0.064 (0.149)
		5	0.114 (0.244)
	Null	1	0
		5	0

Table 8 presented the raw frequencies and percentages of the three referential forms in terms of referential functions. For reference introduction, Mann-Whitney U tests showed no significant differences between first-grade group and fifth-grade group in any type of the referential forms (nominal:  $U=157$ ,  $p=.597$ ; pronominal:  $U=181.5$ ,  $p=0.641$ ; null:  $U=NA$ ,  $p=NA$ ). The result suggested that the first-grade group and fifth-grade group made similar referential choices regarding the three referential functions. For introduction, however, Wilcoxon signed-rank tests detected significant differences between nominal and pronominal form, nominal and null form. For the first grade group, nominal forms were used significantly more often than pronominal forms ( $Z= 3.92$ ,  $p < .001$ ), and than that of null forms ( $Z= 3.92$ ,  $p < .001$ ); the usage of pronominal forms between null forms did not reach significant ( $Z= 1.826$ ,  $p = 0.1$ ) because the percentages were equally small. As for fifth grade, the percentage of nominal forms

was significantly larger than the pronominal forms ( $Z= 3.621, p < .001$ ) while there was no significant difference between nominal and null forms or between pronominal and null forms.

**Table 8**

*Frequencies (n) and percentages (%) of referential forms by function and groups for English*

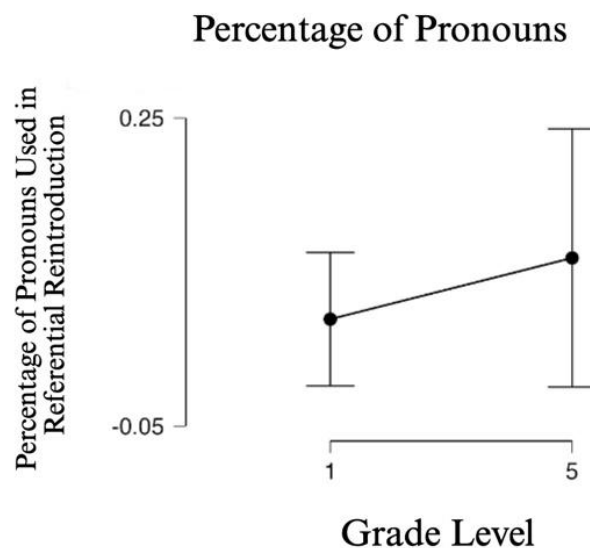
Referential function	Referential form	First grade	Fifth grade
		n (%)	n (%)
Introduction	Nominal	91 (91.92)	62 (93.94)
	Pronominal	7 (7.07)	4 (6.06)
	Null	1 (1.01)	0 (0)
Maintenance	Nominal	352 (48.75)	198 (45.12)
	Pronominal	303 (41.97)	164 (37.61)
	Null	67 (9.3)	74 (16.97)
Reintroduction	Nominal	50 (94.34)	157 (100)
	Pronominal	3 (5.67)	0 (0)
	Null	0 (0)	0 (0)

With regard to reference maintenance, Mann-Whitney U tests detected significant differences in null forms (null:  $U=90, p=0.015$ ) between the first-grade group and the fifth-grade group; Figure 5 suggested that the fifth-grade group used more null forms than the first-grade group. While there were no significant differences in nominal forms and pronominal forms. Wilcoxon signed-rank tests revealed significant differences between pronominal and null forms, and nominal and null forms between the two grade groups. As for the first grade, the differences between nominal forms and pronominal forms were non-significant ( $Z= 0.859, p =0.409$ ), while

the percentage of pronominal forms used for maintenance was significantly higher than that for null forms ( $Z= 3.883, p < .001$ ) and the nominal forms were significantly used more often than null forms ( $Z= 3.920, p < .001$ ). A similar pattern was found in the fifth-grade group, the difference between nominal forms and pronominal forms did not differ significantly ( $Z= 0.879, p =0.394$ ), while the pronominal forms were used more often than null forms ( $Z= 2.485, p = .011$ ) and the difference between nominal forms and null forms were significant ( $Z= 3.154, p = .002$ ). The results suggested that both groups prefer pronominal forms for reference maintenance. However, the difference of pronominal forms was not significant between the two groups but fifth grade used more null forms than first grade when maintaining a referent.

**Figure 5**

*Descriptive plots of referential reintroduction, by pronominal form and group*



Concerning reference reintroduction, Mann-Whitney U tests revealed no significant differences in nominal forms (nominal:  $U=180.5, p=0.735$ ) or pronominal form (pronominal:  $U=123, p=0.079$ ) between the two groups. This suggested that first grade and fifth grade used

similar referential forms to reintroduce the referents. Within the first-grade group, nominal forms were used significantly more often than pronominal forms when reintroducing a referent ( $Z=3.408, p < .001$ ). A similar pattern was shown in the fifth-grade group, the difference between nominal forms and pronominal forms was significant ( $Z= 2.896, p = .003$ ).

In sum, the results showed that both groups made similar referential choices when introducing and reintroducing a referent while the fifth-grade group tended to use the null form to maintain the character.

### **Research question 3**

#### ***Are Referential Choices Made by The Schooled Bilinguals Differ from Monolingual Language Learners?***

Few studies have been conducted on referential choices among children who are Chinese-speaking, including those who were native Chinese-speaking and those who spoke Chinese as a heritage language. For the current study, we compared our results with studies involving age-comparable Chinese-speaking populations. Sah's (2018) study investigated and compared the referential ability of Chinese-speaking children with Autism spectrum disorder and those who were typically developing in terms of referential form and function. Similar to the current study, Sah (2018) used the wordless picture book *Frog, Where Are You?* (Mayer, 1969) as a prompt to solicit storytelling. Participants were from two groups of Chinese-speaking children, 16 children in the autism spectrum disorder group (ages 6.6-9.5; Mean age = 8.25) and 16 children typical-developing group (ages 6.6-9.5; Mean age = 7.16), from the the the the early elementary school. The study also conducted Wilcoxon signed-rank tests to compare the frequency of referential forms used under three referential functions. We compared the results from the first-grade group against the typical-developing children in Sah's (2018) study. Table 9 summarized the

comparisons between our results with Sah’s (2018) results concerning reference introduction, maintenance, and reintroduction.

**Table 9**

*Comparison of referring expressions used for referent introduction, maintenance, and reintroduction as a function of language between monolingual and bilingual.*

Research	Introduction	Maintenance	Reintroduction
Sah (2018) typically developing children (Monolingual Chinese)	Nominal>Pronominal Nominal> Null	Null>Pronominal>Nominal	Nominal>Pronominal Nominal>Null
Wu (2023) first-grade group (Bilingual)	Nominal>Pronominal> Null	Pronominal>Nominal>Null	NA
Wu (2023) fifth-grade group (Bilingual)	Nominal>Pronominal> Null	Pronominal>Nominal>Null	Nominal>Pronominal

As for the introduction, our finding was partially in accordance with Sah’s results. They discovered significant differences between nominal and pronominal forms, and between nominal and null forms while the difference was not significant between pronominal and null forms. Similarly, our results also detected significant differences within three referential forms for both groups: between nominal and pronominal forms, and between nominal and null forms, but unlike Sah’s study, our study identified significant differences across the two age groups with regard to pronominal and null forms.

Pertaining to maintenance, a reverse pattern was displayed when compared with the typical developing group in Sah’s (2018) research. For reference maintenance, Sah’s result

revealed that the difference between nominal and pronominal forms, and between nominal and null forms were not significant while null forms were used significantly more often than pronominal forms. However, our results suggested that the pronominal forms of both groups were used more frequently than nominal forms and null forms. The difference between nominal and null forms was significant. In other words, our participants, compared to Chinese-speaking children, did not prefer to use null forms. We would further elaborate on this point in the discussion section.

With regard to reintroduction, Sah's result detected significant differences between nominal and pronominal forms, and between nominal and null forms while the difference between pronominal and null forms did not reach significance. Our result showed that no significant difference was found between nominal and null forms, and between pronominal and null forms because the variance was almost equal to zero for the two comparisons. This showed that the Chinese learners in our study demonstrated the biggest difference from their Chinese-speaking counterparts when it came to reintroducing characters in their narrative.

In summary, for reference introduction, our results suggested that both grade groups tended to use nominal over pronominal forms, nominal over null forms, and pronominal over null forms while Sah's result indicated that typical developing group students preferred nominal over pronominal forms, nominal over null forms, and no preference between pronominal and null forms. For reference maintenance, our results suggested that both grade groups used more pronominal than nominal forms, pronominal than null forms, and nominal than null forms while Sah's result suggested that the typical developing group used more null than pronominal forms but no preference between nominal and pronominal forms, nominal and null forms. For reintroduction, our results suggested that the first-grade group used a similar amount of nominal

and pronominal forms, while the fifth grade used more nominal than pronominal forms. Since the variance was almost equal to zero between nominal and null forms and between pronominal and null forms for both groups, there was no difference between the two comparisons. However, Sah's results suggested that the typical developing group used more nominal than pronominal forms and more nominal than null forms with no preference between pronominal and null forms.

#### **IV. Discussion**

This study examined Chinese English dual language immersion children's uses of referring expressions to introduce, maintain, and reintroduce referents at the subject place in narratives based on a picture book. The analysis focused on the form-function mapping of the referring expressions in reference introduction and maintenance. We compared two groups and their subset within these two groups. First, we presented the comparison between the first and fifth-grade groups on the production of referring expressions under different referential functions. Following the between-groups analysis, we presented the comparison between referring expressions under different referential functions in each group.

The main results were as follows. Compared the two groups, first and fifth-grade students used similar referring expressions to introduce a new referent. However, the first graders tended to use the pronominal form for reference maintenance while the fifth graders preferred the nominal form for reference maintenance. In addition to reference maintenance, they differed in reference reintroduction in that first graders showed a preference for pronominal forms, while fifth graders tended to use nominal forms. For within-group findings, first and fifth-grade children preferred pronominal forms over nominal and null forms for reference maintenance whereas null forms were more frequently used in monolingual Chinese speakers in performing

reference maintenance. The typological differences between Chinese and English and the mutual knowledge had a strong impact on the production used by the two groups.

## Referring Expressions and Referential Functions in Chinese

### *Comparison Between First and Fifth-grade Groups*

For reference introduction, the difference between the two groups was not significant. Both groups preferred nominal forms to introduce a new referent the most. Followed by the pronominal forms and then the null forms for reference introduction. The results suggested that both groups developed appropriate referential ability in performing reference introduction. For reference maintenance, the first-grade group was more likely to use pronominal forms while the fifth-grade group tended to use nominal forms. Below Table 10 was a part of a script from the fifth-grade group. The participant used numeral noun phrase ‘yígè nánhái 一个男孩, a boy’ to introduce a referent. Then the fifth grader used possessive noun phrase ‘Tā de qīngwā 他的青蛙, hid frog’ to specify the subject to reduce the ambiguities of Chinese personal pronoun for reference maintenance and reintroduction.

**Table 10**

*Example of fifth grade’s referential form and function*

	Analysis unit	Form	Function
Yígè nánhái zài tā de fángjiān lǐ 一个男孩 在 他的 房间里	Yígè nánhái 一个男孩	Numeral noun phrase	Introduction
One boy in his room There is a boy in his room.	One boy	Nominal	
Tā zhǔnbèi qù yígè dìfāng Tā	Tā	Personal pronoun	Maintenance

他准备 去 一个地方	他	Pronominal	
He prepare to a place	He		
He was going to a place.			
Tā de qīngwā wait	Tā de qīngwā	Possessive noun phrase	Reintroduction
他的 青蛙 wait.	他的青蛙	Nominal	
He de frog wait	He de frog		
His frog wait.			
Tā zhǔnbèi zǒu de shíhòu ná tā de jiákè	Tā	Personal pronoun	Maintenance
他准备 走 的时候，（他）拿他的夹克	他	Pronominal	
He prepare walk time take he de jacket	He		
When he was going to leave, (he) took his jacket.	(Tā)	Null	Maintenance
	(他)		
	(Tā)		
Dànshì tā de qīngwā tiào jìnqù le	Tā de qīngwā	Possessive noun phrase	Maintenance
但是 他的 青蛙 跳 进去了	他的青蛙	Nominal	
But he de frog jump inside le	He de frog		
But his frog jumped in.			
Qīngwā tiàodào rén de tóu shàng	qīngwā	Bare noun	Reintroduction
青蛙 跳到 人 的 头上。	青蛙	Nominal	
Frog jump person de head up	Frog		
Frog jumped to a person's head.			

However, Hickmann and Hendriks's (1999) finding about bilingual English-French children for reference maintenance reported a different pattern: seven-year-olds preferred nominal forms over pronominal forms while ten-year-old used more pronominal forms than nominal forms. Sah's (2018) study on reference maintenance also displayed that seven-year-olds tended to use nominal forms more than pronominal forms. Considering this, one question was why the first grade preferred pronominal forms. The language feature and previous relevant studies suggested several plausible explanations for the patterns.

For language differences, the third person pronoun 'tā 他 he' could refer to multiple referents. The pronoun 'tā 他 he' represented both genders for humans and animals which might confuse listener and cause ambiguous referent. In our study, the fifth-grade group preferred bare nouns and proper nouns to maintain the referent. This pattern revealed the fifth grade noticed the personal pronoun might cause confusion so that they attempted to avoid the ambiguities by using nominal forms to refer to previous characters. In consideration of this, our results revealed that the first-grade group was not sensitive enough to be aware of the coreferential situation while the fifth graders developed a more appropriate referential ability for reference maintenance.

Chen and Pan's (2009) findings about reference maintenance are related to this pattern. They explored the referring expressions of English language learners made in reference to introduction and maintenance. Their results presented that five-year-old and adults preferred pronominal forms over nominal forms for reference maintenance while eight-year-old children and ten-year-old children tended to use nominal forms to maintain a referent. The reason might be that ten-year-old bilingual Chinese-English children may develop a higher level of awareness. They might notice that the use of pronominal forms might cause ambiguity so they used the nominal forms to minimize the ambiguities. Considered together, these conclusions led us to

speculate whether the use of nominal forms for reference maintenance was specific to Chinese speaking children in elementary school. Although Chen and Pan (2009) examined the production of referring expressions of English language learners for reference introduction and maintenance, further research is needed for referential appropriateness of the developmental trend on referring expressions of bilingual Chinese-English children's Chinese narratives.

Finally, for reference reintroduction, the first graders tended to use pronominal forms while the fifth-grade group used more nominal forms. The result was anticipated with previous research for reference reintroduction of the Chinese referential system that the reference reintroduction was accomplished with bare nouns, demonstrative determiners, possessives, and relative clauses (Chen, 2002; Wang, 1998).

In summary, compared between the two groups, fifth graders developed more appropriate referential abilities. One question that remained open for further research was the referential appropriateness of their referring expressions for reference maintenance and reintroduction with the patterns that fifth graders preferred nominal forms for both reference maintenance and reintroduction while first graders tended to use pronominal forms for these two referential functions. The results revealed that the fifth grade developed the more appropriate referential ability and the use of nominal forms for referent maintenance might be specific to the Chinese referential system because the fifth graders attempted to minimize the ambiguities caused by the Chinese personal pronoun.

**Definite and Indefinite Noun Phrases.** The analysis of the use of definite and indefinite noun phrases in referential forms found that both groups used significantly more definite noun phrases than indefinite noun phrases to maintain a referent and the fifth-grade group used more indefinite than definite noun phrases. Table 11 summarized the comparison of definite and

indefinite noun phrases in terms of numeral and demonstrative noun phrases. According to Sah’s (2018) study, the Wilcoxon signed-rank tests showed that Chinese-speaking children used significantly more indefinite noun phrases than definite noun phrases to introduce new characters. However, our results showed that only the fifth-grade group showed a preference for indefinite noun phrases for reference introduction. Although the Mann-Whitney test suggested that first and fifth-grade groups made similar referential forms, the fifth-grade group used more appropriate referential forms when introducing a new referent.

**Table 11**

*Comparison of definite and indefinite noun phrases used for referent introduction, maintenance, and reintroduction as a function of language*

Research	Introduction	Maintenance	Reintroduction
Sah (2018) typically developing children (Monolingual Chinese)	Indefinite NPs>Definite NPs	Definite NPs>Indefinite NPs	Definite NPs>Indefinite NPs
Wu (2023) first-grade group (Bilingual)	NA	Definite NPs>Indefinite NPs	NA
Wu (2023) fifth-grade group (Bilingual)	Indefinite NPs>Definite NPs	Definite NPs>Indefinite NPs	NA

One of the reasons that led to the situation might be mutual knowledge. Previous research by Kail and Hickmann (1992) suggested that both 6- and 9-year-old children used definite and indefinite noun phrases with mutual knowledge while without mutual knowledge they preferred indefinite over definite noun phrases. However, the 9-year-old group developed appropriate referential ability to identify the reference introduction as a function of mutual knowledge. Nine-year-old used more indefinite noun phrases to introduce a new referent while more definite noun phrases to maintain a referent. Fifth grade was around the age of 9 and their performance revealed a similar pattern in Kail and Hickmann (1992)’s study. Since we recorded the first and

fifth-grade group's narratives through Zoom, our participants assumed there was mutual knowledge between the experimenter and them. The first-grade group used both indefinite and definite noun phrases to introduce a referent while fifth grade used significantly more indefinite noun phrases. Comparing the reference maintenance, three groups of children used more definite noun phrases than indefinite noun phrases in narratives. The comparison between the first and fifth-grade reference introductions showed that the fifth-grade group did develop appropriate referential ability in reference introduction. Their performance reinforced Kail and Hickmann (1992)'s study.

For reference reintroduction, Sah (2018)'s study suggested that definite noun phrases were significantly more used than indefinite noun phrases. However, our results showed that the difference between definite and indefinite noun phrases did not reach significance. Our results of the reference reintroduction might be due to the few usages of numeral and demonstrative noun phrases.

### ***Comparison Within First and Fifth-grade Groups***

For reference introduction, both first and fifth-grade groups preferred to use nominals the most, followed by pronominal forms. The finding was in accordance with Sah (2018)'s results about Chinese-speaking children.

For reference maintenance, both groups tended to use more pronominal than nominal and null forms. Related studies suggested that pronominal forms are more appropriate for reference maintenance (Chen & Lei, 2013; Colozzo & Whitely, 2014; Wong & Johnston, 2004). Table 12 was several examples from our fifth-grade script. The participant used personal pronoun for half of the referent maintenance in the script.

### **Table 12**

*Example of fifth grade's referential form and function*

	Analysis unit	Form	Function
Yí gè nán hái zài huàn yī fú 一个男孩在换衣服	Yí gè nán hái 一个男孩	Numeral noun phrase	Introduction
One boy is change clothes A boy was changing his clothes.	One boy	Nominal	
Tā méi kàn jiàn tā de xiǎo qīng wā tiào jìn tā de yī fú lǐ 他没看见他的小青蛙跳进他的衣服里。 He not see he de little frog jump into he de clothes inside He did not see his little frog jump into his clothes.	他	Personal pronoun Pronominal	Maintenance
Tā chū le tā de fáng jiān 他出了他的房间。 He out le he de room He went out his room.	他	Personal pronoun Pronominal	Maintenance
Tā men kāi dào yí gè róng huá fù guì de cān tīng 他们开到一个荣华富贵的餐厅。 They drive arrive a nice de restaurant. They drove to a nice restaurant.	他们	Personal pronoun Pronominal	Maintenance
Tā men zài xuǎn tā men xiǎng chī de fàn shí 他们在选他们想吃的饭时。	他们	Personal pronoun Pronominal	Maintenance

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They are choose they want eat de rice time

They were choosing the dished they wanted.

Xiǎonánhái de qīngwā cóng tā de yīfú lǐ tiào  
chūlái

小男孩的青  
蛙

Relative clause

Maintenance

Nominal

小男孩 的 青蛙 从 他的 衣服 里跳  
出来。

Little boy de frog from he de clothes  
inside jump out

Little boy's frog jumped out from his  
clothes.

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However, Sah's (2018) study revealed a reverse pattern showing that Chinese-speaking children preferred null forms while Chinese-English bilingual children tended to use more pronominal forms. Given this, the question was why Chinese English bilingual children demonstrated this preference, while Chinese-speaking children presented the reverse. Closer analysis suggested several possible explanations for the different results.

First, Chinese and English are different in terms of pro-drop and zero-topic which are two parameters determining whether null forms are appropriate in grammatical contexts (Jaeggli & Safir, 1989). Chinese is assumed to be a pro-drop and zero-topic language (Huang, 1984) while English is non-pro-drop and non-zero-topic. Pro-drop languages can omit the pronoun while non-pro-drop language cannot omit the pronoun for reference maintenance. Thus, null forms are frequently used in Chinese for reference maintenance and reintroduction. In consideration of this, it is plausible that Chinese-speaking children prefer null forms for reference maintenance. Null forms occur in Subject-Subject-coreferential contexts more often than overt pronouns (e.g., He went to a library and borrowed a book). In other words, the null form is used more frequently

than the pronominal form with the same subject in one sentence with a clause. In contrast, English is non-pro-drop, it requires a pronoun for listeners to fully understand the context. It is possible the result that Chinese English bilingual children prefer pronominal rather than null forms for reference maintenance are influenced by the English referential systems.

Second, the impact of mutual knowledge affects children's referring expressions in the narrative. When the children think the listeners and speaker share the same background knowledge, they use definite noun phrases to mention a referent while lacking the background knowledge they use indefinite noun phrases. Previous studies have explored the impact of mutual knowledge and found age-related results. Kail and Hickmann (1992) compared the referent introductions made in French narratives by children of 6, 9, and 11 years old in two conditions: in a mutual knowledge situation, the child and the adult experimenter looked at the picture book together; in no mutual knowledge situation, only the child looked at the picture book while the adult experimenter showed the picture book to the child. The results indicated that children 6-, 9-, and 11-year-olds used definite and indefinite forms with mutual knowledge while indefinite forms were used more frequently without mutual knowledge. However, the 9-year-old group differed in terms of choosing indefinite forms with no mutual knowledge and definite forms with mutual knowledge. In other words, the age of 9 is the critical age at which children can identify referent introductions as a function of mutual knowledge formally. Nine years old is probably also the critical age for them to realize to some extent the reference maintenance change. Especially, some children use more pronouns to maintain the main character the boy without mutual knowledge, showing a better understanding of the discourse context.

Another research has investigated the influence of mutual knowledge by comparing the reference maintenance in narratives among three age groups of monolingual French children

(Hickmann et al., 1995). They found out that local coreference is a strong factor in the production of reference maintenance in narratives. Pronominals are often used in coreferential situations while nominals for non-coreferential. In other words, children use pronominal forms when an immediate coreference occurs in the sentence while nominal forms when there is no coreferential tie.

In our current study, the experimenter and the children shared the visible referential knowledge which indicates that they have mutual knowledge of the story. Local coreference is one of the factors accounting for subsequent mentions. In co-referential contexts, speakers are more likely to use pronominal forms. In non-coreferential contexts, nominal forms are most likely to occur. In subject-subject relations, noun phrases are more often pronominalized than other relations (Hickmann, 1999). The presence of mutual knowledge potentially led to the results that Chinese-English bilingual children in our study used more pronominal forms than nominal and null forms.

For reference reintroduction, both groups showed a significant preference for nominal forms. However, our results revealed no significant differences between nominal and null forms, and between pronominal and null forms while Sah's study suggested that children used more nominal than pronominal forms and more nominal than null forms.

Our analysis revealed that bilingual Chinese-English speakers showed a preference for pronominal forms to maintain reference. However, monolingual Chinese speakers preferred null forms for reference maintenance. Considering that Chinese and English are typologically different, the use of pronouns is more common in English while null forms are widely used by Chinese speakers (Li & Thompson, p. 657). The patterns showed that bilingual Chinese-English speakers were greatly affected by the English referential systems. This may be the reason why

bilingual Chinese-English speakers used more pronominal forms in reference maintenance.

Another reason that may explain the use of pronominal forms might be the mutual knowledge of the picture book. Kail and Hickmann (1992) found that bilingual French-English children tended to use pronominal forms to maintain the referents with mutual knowledge. From this view, the mutual knowledge between our experimenter and children is likely to have caused the patterns.

### **Conclusion and Limitation of The Study**

In summary, the study compared and extended previous research on Chinese-English bilingual children's referential ability by analyzing referring expressions and reference functions. Our results showed two noteworthy findings. First, for reference maintenance, fifth graders preferred nominal forms while first grade tended to use pronominal forms. The fifth-grade group was aware of the ambiguities of Chinese personal pronouns so they used more nominal forms to reduce ambiguities. Second, Chinese-English bilingual children were affected by the English referential system. Chinese-English bilingual children tended to use pronominal forms to maintain a referent while Chinese monolinguals preferred null forms for reference maintenance.

Several limitations of this research should be acknowledged. First, due to the method of recording the narratives, our results were affected by mutual knowledge, and the use of bare nouns was not included in the definite and indefinite noun phrase analysis. Further research is needed to address and minimize the impact of mutual knowledge. Secondly, the present study was constrained by the production and patterns of referring expressions made by first and fifth-grade students. Further research should extend by evaluating the referential appropriateness of the referring expressions. Third, the study emphasized Chinese narratives produced by first and fifth grades. Further investigation should evaluate the bilingual children's target language and native language. Finally, the input of Chinese narratives should be considered. For example, the

exposure to their teachers' oral narratives in classrooms and the types, quantity, and quality of input they receive at home is crucial.

This is the first study exploring Chinese and English immersion students' use of numeral and demonstrative noun phrases among referential functions. Our results suggest that both grade students developed a sufficient referential ability for reference introduction and fifth-grade students developed more sufficient ability than first-grade students to introduce and maintain a referent. Further research is needed to examine their referential appropriateness and exposure at home and in a classroom environment.

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