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以中文為母語的兒童詮釋稱代詞「人家」之實證研究

Chinese Children's Interpretations of the Pronominal *Renjia*

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摘要

本研究旨在探討以中文為母語的兒童對稱代詞「人家」之第一語言習得。相較於中文的其它代名詞，「人家」的語意相對複雜，兒童在習得過程可能較為困難。本研究主要探討指涉歧義、指涉方向、指涉對象、題型及年齡是否會影響兒童對稱代詞「人家」的語意詮釋及表達。針對指涉歧義，本研究將句型分成兩大類：單指句與複指句。在這兩大類句型下，分別加入前指/後指，定指/非定指兩控制變因。為了避免潛在的實驗效應，本研究採用兩種測驗題型：圖片選擇測驗題與模仿測驗題。研究對象包含實驗組的八十位兒童，依平均年齡四歲到八歲分成五組，每組十六人，以及對照組的十六位成人。

實驗結果顯示，指涉歧異、指涉對象、指涉方向、題型、年齡皆會影響兒童對稱代詞「人家」之詮釋及表達。首先，受試者對於單指句表現優於複指句，印證了歧義句的困難度較高之假設。在指涉方向方面，研究對象皆能接受後指句，雖然兒童在前指句的表現仍優於後指句，但他們對後指句的理解與表達，隨著年齡而增長。在指涉對象方面，受試者在定指句表現得比非定指句好，呼應文獻中兒童對於名詞的認知發展為具體先於非具體。題型效應顯示，兒童在圖片選擇測驗的表現較模仿測驗佳，說明此稱代詞的習得是理解先於表達。此外，在模仿測驗的句型分析中，錯誤句型大多反映受試者對於複指、後指以及非定指句之理解度較低，因而使用省略或代替策略來完成表達。最後，在年齡效應方面發現，七歲兒童之整體表現優於四～五歲受試者，因此六至七歲期間應是兒童習得中文稱代詞「人家」的關鍵期。

關鍵詞：第一語言習得、稱代詞「人家」、語意詮釋、指涉歧義、指涉方向、 指涉對象、題型效應、年齡效應

ABSTRCT

In Mandarin Chinese, *renjia* is frequently used as a pronominal. The pronominal *renjia* is more semantically complex compared with other pronominals since it exhibits many interpretations in different contexts. Although the referentiality of the pronominal *renjia* has been widely discussed in the literature, little research to date can be found to examine it from the aspect of first language acquisition. Thus, the present research attempts to provide a pioneering L1 study on Chinese children's interpretations of this semantically complex pronominal by probing into different interpretation patterns, referential directions, and referent types. A comprehension task (i.e., a picture selection task) and a production task (i.e., an imitation task) were assigned to 80 Chinese children (aged 4-8) and 16 native controls. The children were further divided into five groups, each of which consisted of 16 subjects.

The overall results showed that different interpretation patterns, referential directions, and referent types were all determining factors affecting children's acquisition of the pronominal *renjia*. With regard to different interpretation patterns, the single-interpretation patterns were relatively easier than the multiple-interpretation patterns, due to a higher degree of learnability in the ambiguous sentences. Concerning the direction of the reference, the subjects were able to accept both forward and backward coreference. Although the younger children had more difficulty dealing with backward coreference, their performance increased with age. As for referent types, it was found that specificity of the referent in context played a predominant role in the children's interpretations of this pronominal. The results revealed that the subjects performed better on those with specific interpretations, while the non-specific interpretations were more challenging for the children. Additionally, task effects were also found obvious in the present study. Our children significantly performed better on the picture selection task (the PS task) than the imitation task (the IM task), which supported the claim that children's comprehension exceeds production in language acquisition.

With respect to the production analysis, it was found that the children's non-target

productions were mostly derived from backward coreference and non-specific referents in the multiple-interpretation patterns. In addition, the younger children tended to omit the referent(s) with or without *renjia*, while the elder ones would keep the referent(s) without *renjia* or replace it with other pronominals. Finally, the age effects indicated that ages 6-7 were the critical period for the acquisition of the pronominal *renjia*, because in general the 7-year-olds performed better than the children aged 4-5.

Keywords: first language acquisition, pronominal *renjia*, interpretations, referential ambiguity, referential directions, referent types, task effects, age effects

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ASP	aspect marker
CL	classifier
NP	noun phrase
Par	particle

Chapter One

Introduction

1.1 Motivation

Referring expressions are commonly used in everyday conversations and always play important roles in achieving coherence in discourse. As discussed in Quirk (1985), the function of pronouns is to substitute for nouns or noun phrases and their interpretations depend crucially on the linguistic and non-linguistic contexts of the speaker's utterances. The referentiality of pronouns has been widely discussed in the field of language acquisition (Crain & McKee, 1985; Solan, 1983). It has been reported that the antecedent-pronoun relation, the distance between the antecedent and the pronoun, the clausal type, the referential direction, and the sentence boundary are all possible factors influencing the pronominal interpretations by native speakers (e.g., Chou, 2007; Crawley, 1985; Kennison, 2003; Song & Fisher, 2007).

In Mandarin Chinese, *renjia* is frequently used as a pronominal in different contexts. It has been pointed out in Wei (2001) that *renjia* is ambiguous in the following context.

(1) Chenxiansheng$_i$ lai jiali chifan, ni you yizhi ma
Mr. Chen come home eat_meal you again all_the_time scold
renjia$_{i/j}$, wo$_j$ zhenshi juede mei mianzi.
RENJIA I really feel no face
'Mr. Chen$_i$ comes over to have dinner with us, but you keep scolding (him$_i$/me$_j$), I$_j$ feel I am losing my face.' (Wei, 2001: 19)

In (1), the interpretation of the pronominal *renjia* is ambiguous since it can either refer to Mr. Chen, who is coming to have dinner with the family, or the speaker 'I.'

There seems to be a tendency that structural ambiguities influence children's acquisition of different constructions such as tough constructions (Anderson, 2002), relative clauses

(Felser et al., 2003) and kindergarten-path sentences (Trueswell et al.,1999) in English. Furthermore, several studies on children's responses to referential ambiguities conclude that children up to seven or eight still fail to detect ambiguous messages (Asher, 1979; Patterson & Kister, 1981). Preschoolers' ability to explicitly detect referential ambiguities is even poorer (Beal & Belgrad, 1990; Beal & Flavell, 1984). In addition, Huang's (2011) study on Chinese children's pronoun interpretations supports that ambiguous interpretations of pronouns are harder to acquire. Thus, the main purpose of the present study is to see if the referential complexity of the pronominal *renjia* in Mandarin Chinese will be difficult for children to acquire.

Although *renjia* in Mandarin Chinese has been discussed from the perspective of syntax (Liu, 2001), semantics (Chiu, 2000; Wang 2006) and pragmatics (Chiu, 2000; Huang, 2004; Liu, 2001; Wang, 2006), little research to date can be found to examine this pronominal from the aspect of language acquisition, except Wei (2001), who conducted an L2 study on the interpretations of *renjia* by English-speaking and Japanese-speaking Chinese learners. Therefore, in the present study, with a new classification of *renjia*, different interpretation patterns, referent types, and referential directions are discussed. It is hoped that this study can provide a better picture of children's acquisition of this referentially complex pronominal in Mandarin Chinese.

1.2 Theoretical Framework

1.2.1 Single vs. Multiple interpretations

When a sentence has only one reading, it is likely every element (such as the lexical nouns, pronominals, verbs and adjectives) in it only has single interpretation. For instance, the pronoun *ta* in (2) can only be interpreted as a discourse-bound, third-person pronoun whose identity is determined in the context. It can never refer to the matrix subject *Zhangsan,* according to Principle B of the Binding Theory (cf. Chomsky, 1981).

(2) Zhangsan$_i$ piping ta$_{*i/k}$.
Zhangsan criticize he
'Zhangsan$_i$ criticized him.$_{*i/k}$'

When a sentence has more than one reading, it is likely that an element (such as the lexical nouns, pronominals, verbs and adjectives) has multiple interpretations[1]. For example, the pronoun *ta* 'he' as in (3) is ambiguous.

(3) Wo kanjian Zhangsan$_i$ de shihau, ta$_{i/j}$ zai dazi.
I see Zhangsan DE time he at type
'When I saw Zhangsan$_i$, he$_{i/j}$ was typing.' (Huang, 1982: 275)

In (3), the pronoun *ta* 'he' can refer to either *Zhangsan* or a discourse-bound, third-person pronoun not specified in the clause, without violating Principle B of the Binding Theory.

1.2.2 Specificity of NP

Generally speaking, a noun phrase (NP) can be specific and non-specific according to the notion of specificity. Based on von Heusinger (2002), specificity is defined as a NP which is 'referentially anchored' to another expression in the discourse. A specific NP is 'functionally linked to the speaker of the sentence or to another referential expression in the sentence such as the subject or object' (von Heusinger, 2002: 35).

(4) Lisi shi wo-de laoshi.
Lisi be my teacher
'Lisi is my teacher.'

[1] The main focus of the present study is on pronominal interpretations, so the ambiguous sentences caused by polysemies including lexical nouns, verbs, adjectives will not be discussed here.

As can be seen in (4), the NP *wo-de laoshi* 'my teacher' is specific since it is linked to the subject *Lisi* in the sentence. The use of proper name *Lisi* also indicates that the NP *wo-de laoshi* is definite because the speaker assumes that the referent is known to the hearer (Givón, 1978).

However, a non-specific NP can be indefinite or generic (cf. Liu, 2001) since it is not functionally linked to another expression in the discourse, as in (5) and (6).

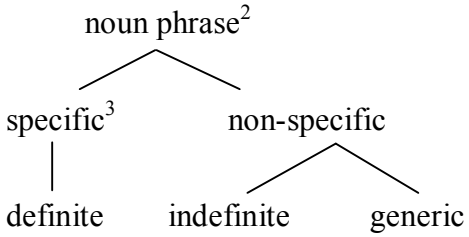
(5) You xie ren xihuan youyong, you xie ren xihuan paobu.
some_people like swim some_people like jog
'Some like swimming and others like jogging.'

(6) Dajia juede shengbing yao duo xiuxi.
everybody feel sick want more rest
'Everybody believes that a sick person should have a good rest.'

In (5), the indefinite NP *you-xie-ren* 'some people' is non-specific because the intended referents of the speaker are not specified in the context. In (6), the generic NP *dajia* 'everybody' is also non-specific on account that it just denotes a generic group of people in the world.

Therefore, a diagram regarding the classification of noun phrases can be represented in (7).

(7)



A specific NP is definite since it is 'referentially anchored' to a particular referent. On the contrary, a non-specific NP can be indefinite or generic because it is not referentially specified in the discourse.

1.2.3 Directionality of pronominal coreference

There are two types of pronominal coreference, namely forward and backward, according to the referential direction involved in anaphoric interpretations. Forward coreference, as in (8a), refers to a sentence in which the pronominal follows the antecedent, while backward coreference, as shown in (8b), refers to a sentence in which the pronominal precedes the antecedent.

(8) a. When Sarah_i listens to music, she_i reads poetry.
b. When she_i listens to music, Sarah_i reads poetry. (Lust, 2006: 214)

As indicated by Lust (2006), in an English adverbial sentence, although both forward coreference and backward coreference are grammatical in adult grammar, children showed a stronger preference for forward than for backward coreference, indicating that children are sensitive to the head direction of their L1s in the acquisition of grammatical anaphora. Some

[2] There is also another classification of NPs. Givón (1978) classified NPs into definite and indefinite according to the notion of definiteness. A definite noun refers to a referent that is 'assumed by the speaker to be uniquely identifiable to the hearer,' while an indefinite noun is used when the speaker is 'not so assumed that the referent is uniquely identifiable to the hearer.' However, according to von Heusinger (2002), it is quite hard to understand the speaker's attitudes toward the hearer's the mental representation, so from the acquisitional perspective, this classification seems to be difficult to work with.

[3] A specific NP can also be indefinite. A specific indefinite NP generally refers to a referent which is known to the speaker but unknown to the hearer. However, it is uncommon for a pronominal to be specific indefinite because the use of a pronominal often indicates that the speaker believes the referent is already known to the hearer.

researchers have also found that children whose L1 is head-initial productively choose forward over backward coreference (e.g., C.S Chomsky, 1969; Goodluck, 1981; Lust et al., 1986; Solan, 1983). However, children whose L1 is head-final significantly perform better on sentences with backward coreference (e.g., Lust & Chien, 1984; Lust et al., 1982).

As for Chinese, both forward coreference as in (9) and backward coreference as in (10) are acceptable.

(9) Wo ma Lisi$_i$, yinwei ta$_i$ zuo cuo shi le.
I scold Lisi because he do wrong thing Par
'I scolded Lisi$_i$ because he$_i$ did something wrong.'

(10) Wo ma ta$_i$, yinwei Lisi$_i$ zuo cuo shi le.
I scold him because Lisi do wrong thing Par
'I scolded him$_i$ because Lisi$_i$ did something wrong.' (Kao, 1993: 157)

As pointed out by Kao (1993), although some languages display precedence constraints on the direction of referential pronouns, there is no such general constraint against backward coreference in Mandarin Chinese.

1.3 Research Questions

Based on the theoretical background sketched in Section 1.2, the present study is designed to address the following research questions:

1) Do Chinese children show similar responses to different interpretation patterns (single vs. multiple) when they acquire the pronominal *renjia*?
2) How do referential directions influence children's interpretations of *renjia* in Mandarin Chinese?
3) How do referent types affect children's interpretations of the pronominal *renjia?*
4) Do different task formats elicit different experimental results?

5) Is age a factor influencing children's acquisition of the pronominal *renjia* in Mandarin Chinese?

1.4 Significance of the Study

The issue on the pronominal interpretation has aroused much interest in the field of children's first language acquisition (Crain & Mckee, 1985; Goodluck, 1987; Solan, 1981; Tavakolian, 1977). However, the empirical studies on Chinese pronominal acquisition are limited to personal pronouns (Chen, 1997; Chien, 1993; Lust et al., 1996; Wilcoxon, 1991). Compared with personal pronouns, the pronominal *renjia* in Mandarin Chinese carries more semantic complexity since it exhibits many interpretations in different contexts. Although the referentiality of the pronominal *renjia* has been widely discussed in the literature (e.g., Chiu, 2000; Huang, 2004; Liu, 2001; Wang, 2006), little research to date can be found to examine it from the aspect of first language acquisition. This study attempts to provide a pioneering L1 study to investigate Chinese children's interpretations of this semantically complex pronominal. In addition, unlike different classifications discussed in the previous theoretical studies, the present study aims to shed new light on the different interpretations of *renjia* from the perspective of acquisition by probing into referential directions, referent types, and the differences between single and multiple interpretations. With both the comprehension and production data, it is hoped that we can provide a complete picture of children's acquisition of this semantically complex pronominal in Mandarin Chinese.

1.5 Organization of the Thesis

This proposal is organized as follows. In Chapter Two, some theoretical studies on the pronominal *renjia* along with several empirical studies on the pronominal acquisition are reviewed. The findings and the limitations of previous studies are also discussed. Then, according to the properties of the pronominal *renjia* discussed in the previous studies, a new

classification is presented regarding different interpretation patterns, referential directions, and referent types. In Chapter Three, the research design is reported. Chapter Four presents the results and discussion of the experiments. Finally, Chapter Five summarizes the major findings of the present study.

Chapter Two

Literature Review and a New Classification of the Pronominal *Renjia* in Chinese

In this chapter, several theoretical studies of the pronominal *renjia* in Mandarin Chinese are reviewed in Section 2.1. In Section 2.2, some empirical studies on the acquisition of referential expressions are discussed, and a new classification of the pronominal *renjia* is presented in Section 2.3. Finally, Section 2.4 is a summary of this chapter.

2.1 The Theoretical Studies of the pronominal *renjia* in Chinese

This section recapitulates four theoretical studies of the pronominal *renjia* in Chinese. Chiu (2000) and Wang (2006) make a general description of different functions and interpretations of *renjia* and analyze it from the perspectives of semantics and pragmatics; however Liu (2001) analyzes the interpretations of *renjia* from the syntactic perspective. Huang's (2004) research is more related to the pragmatic functions of the pronominal *renjia* in the face-to-face conversations.

2.1.1 Chiu (2000)

Chiu (2000) suggests that *renjia* should be a unique term in Chinese. The data she collected are mainly written texts like *The Smiling, Proud Wanderer* (Xiao-Ao-Jiang-Hu). From the semantic perspective, *renjia* is a polysemy, which has at least ten interpretations such as a house, the family status, an identity, a husband, an indefinite person, a third-person singular pronoun 's/he,' a third-person plural pronoun 'they,' a first-person pronoun 'I,' a first-person plural pronoun 'we,', and a discourse marker. The 'linguistic context' can only help to disambiguate five interpretations including a house, the family status, an identity, a husband and a discourse marker. When *renjia* serves as a pronominal in the isolated sentence,

its interpretation is unclear, resulting in referential ambiguity. Therefore, Chiu argues that the referential ambiguity of *renjia* can be attributed to its unspecific property in isolated sentences, which is called 'syntactic vagueness,' as in (1).

(1) Shi yingxiong hao-han, jiu yinggai zhen-dao-zhen-qiang,
be hero good_man just should real_knife_real_gun
zai renjia bei-hou tou-xi, suan sheme renwu?
at RENJIA back_behind sneak_attack count what figure
'If you are a man, you should confront people hand-on. Sneaking behind RENJIA's back is not what a decent man would do.' (Chiu, 2000: 67)

In (1), the pronominal *renjia* can refer to the speaker himself, a third-person pronouns or an indefinite person if the contextual information is not sufficient. In order to reduce the referential ambiguity of *renjia*, not only the contextual cues but also the 'pragmatic context' should be taken into consideration. For instance, if the addressee has already known who suffered a sneak attack in the discourse context, the intended referent in (1) would be clear to him.

As pointed out by Chiu (2000), the unspecific property of *renjia* might make the proposition less assertive, as in (2).

(2) Ni guolai, wo dei zhufu ni ji ju, ke
you come I must urge you some sentence can
bie shang-le renjia-de dang.
not up-Asp RENJIA's trick
'Come here! I must tell you that you should not be fooled by others.' (Chiu, 2000: 77)

In (2), the speaker actually does not have a particular referent in mind and s/he just makes a conjecture that the addressee may be fooled. Thus, in the situation without clear evidence, the use of *renjia* instead of a specific pronoun can avoid possible offences.

In addition, Chiu (2000) discusses the interpretations of the pronominal *renjia* from the

pragmatic perspective. Following Leech's (1983) 'politeness principle,' she suggests that when *renjia* is used to refer to a third-person pronoun, it should satisfy the 'approbation' and 'tact' maxims, which can prevent from dispraising others, as in (3).

(3) Ni shi dushu ren, dangran zhidao da zhangfu
you be study person of_course know big husband
you-suo-bu-wei, renjia bi wo shahai Qu-Yang,
have_location_not_do RENJIA force I kill Qu-Yang
ci shi wan- wan- bu- neng.
this thing ten thousand- ten thousand-not-can
'You are an educated man, so you should be able to judge what an educated man should do. If **s/he (or they)** forces me to kill Qu-Yang, I will never do it.' (Chiu, 2000: 92)

In (3), the speaker in fact can identify the referent, namely the person who forces him to kill Qu-Yang. However, in order to obey the 'pointiness principles,' the speaker uses *renjia* to escape from degrading the referent in his mind.

When *renjia* is used to refer to the first person 'I,' it can follow the 'tact', 'generosity' and 'sympathy' maxims, labeling the speaker as inferior to the addressee in order to get sympathy or comfort from him, as in (4).

(4) Die-die, ni hai zai quxiao renjia.
dadddy you still at laugh RENJIA
'Daddy, how could you keep laughing at **me**?' (Chiu, 2000: 103)

Furthermore, when *renjia* is used to refer to the second-person pronoun 'you,' the 'agreement' and 'sympathy' maxim can be satisfied. In this way, the speaker shows agreement and sympathy to the address about the situation, as in (5).

(5) Ni_i you-le hen hao de tai-tai, hai you-le keai
you have-Asp very good DE wife and have-Asp cute
de haizi, xiang wo zhe yang yi-ge yousi si de
DE child like I this kind one-CL hairspring like DE
xi zai renjian de ren, hebi zai lai pohuai $renjia_i$-de
link at world DE man why again come sabotage RENJIA's
xingfu ne?
happiness Par
'You've already had a good wife and cute children. As a mere existence threaded in the world like me, why do I need to sabotage **your** happiness?' (Chiu, 2000: 104)

In conclusion, Chiu (2000) points out different interpretations of *renjia*. However, her study is insufficient to provide a clear categorization from the acquisitional perspective. Although she puts great emphasis on the importance of the 'pragmatic context' that influences the interpretations of the pronominal *renjia*, the 'linguistic context' such as analyzing it from the syntactic perspective receives less attention. In addition, some politeness principles that account for the use of *renjia* seem far-fetched such as the 'approbation' maxim as in (3) and the 'generosity' maxims as in (4). Moreover, the semantic and pragmatic analyses of the use of *renjia* seem to overlap with each other. Finally, most of the data in her study are taken from written texts, which may not represent all the interpretations of *renjia*.

2.1.2 Liu (2001)

Liu (2001) proposes that the pronominal *renjia* with a specific interpretation should be differentiated from that with a non-specific interpretation in sentences. When the pronominal *renjia* has a specific interpretation, it may take some identifiable individual(s) as a referent. He compares the pronominal *renjia* with a specific interpretation, the bare reflexive *ziji* as well as the third-person pronoun *ta* 's/he,' and argues for the following syntactic constraints on *renjia*.

First, a specific referential *renjia* cannot refer to a clausemate subject as an antecedent.

(6) Lisi$_i$ juedui bu hui piping renjia$_{*i}$.
Lisi absolutely not will criticize RENJIA
'Absolutely, Lisi will not criticize my humble self (i.e., the external speaker) or some identifiable or unidentifiable individual(s) other than the speaker, the addressee or Lisi.' (Liu, 2001: 311)

In (6), the pronominal *renjia* can refer to the external speaker of the proposition, some identifiable or unidentifiable individual(s) other than the speaker and addressee. It is impossible for *renjia* to refer to *Lisi* in the subject position.

Second, when *renjia* is embedded in an attitudinal predicate as in (7), it cannot refer to the matrix subject.

(7) Zhangsan$_i$ shuo [Lisi$_j$ juedui bu hui piping renjia$_{*i/*j}$].
Zhangsan say Lisi absolutely not will criticize RENJIA
'Zhangsan said that Lisi absolutely would not criticize me (i.e., the external speaker) or some identifiable or unidentifiable individual(s) other than the external speaker, the addressee, Zhangsan or Lisi.' (Liu, 2001: 312)

Moreover, a specific referential *renjia* disallows a matrix subject as a referent when it is embedded in the subject position, as in (8):

(8) Zhangsan$_i$ shuo renjia$_{*i}$ zui congming.
Zhangsan say RENJIA most smart
'Zhangsan says that I (the external speaker)/some identifiable or unidentifiable individual(s) other than the external speaker, Zhangsan or the addressee is the smartest.' (Liu, 2001: 313)

In (8), the coreference between the matrix subject *Zhangsan* and the embedded subject *renjia* is restricted.

Finally, a specific referential *renjia* cannot refer to an object antecedent *Laowang,* as in (9):

(9) Zhangsan$_i$ cong Laowang$_j$ nar tingshuo renjia$_{*i/*j}$ jintian
Zhangsan from Laowang there hear RENJIA today
bu shang xüe.
not up school
'Zhangsan heard from Laowang that I/some identifiable or unidentifiable individual(s) other than the speaker, the addressee, Zhangsan or Laowang will not go to school today.' (Liu, 2001: 313)

The pronominal *renjia* with a non-specific reference, on the contrary, neither takes the speaker and the addressee, nor some identifiable individuals other than the speaker or the addressee as a referent, as in (10):

(10) Renjia shuo qing guan nan duan jia wu shi.
RENJIA say clear official hard judge home business affair
'People other than the speaker or the addressee say that even an upright official finds it hard to settle a family quarrel.' (Liu, 2001: 317)

In (10), the interpretation of the pronominal *renjia* is non-specific. It refers to unidentifiable individuals other than the speaker or the addressee(s).

Liu (2001) further argues that the specific referential *renjia* is indeed a sympathetic antilogophor, which is used to get the addressee's sympathy. By using *renjia* to refer to the first-person 'I,' the speaker can avoid embarrassment when failing to appeal to the addressee's sympathy. In addition, as noted by Liu (2001), it is easy for the speaker to get sympathy from the addressee by using *renjia* to refer to some external protagonists other than the speaker or the addressee.

To conclude, Liu (2001) discusses several syntactic constraints on the interpretations of the pronominal *renjia*, and he proposes that the interpretations of it can be classified into two types, specific and non-specific. However, he only focuses on the major categories of *renjia*, rather than the subtypes of it.

In addition, aside from the purpose of getting sympathy from the addressee(s), the

specific referential *renjia* can also be used to sneer at someone, as in (11). The speaker carries a sarcastic tone to comment on the external protagonist.

(11) Renjia name shou, renjia ai chi sheme shi renjia-de
RENJIA so thin RENJIA love eat what be RENJIA's
shi, bu guan women-de shi.
thing not about our thing
'She is very thin, so eating whatever she likes is her business. It's none of our business.'

Finally, although Liu (2001) points out the ambiguous interpretations of *renjia* in sentences, a clear classification of sentences with a single reading and a multiple reading may be better from the acquisitional perspective. In this way, developmental progress from single to multiple interpretations of the pronominal *renjia* in sentences can be obtained (cf. Huang, 2011; Wei 2001).

2.1.3 Huang (2004)

Different from Chiu (2000), who mainly collects data from written texts, Huang (2004) employs face-to-face conversations to explicate the pronominal *renjia* in Mandarin Chinese. According to her, the 54 tokens of *renjia* in their corpus can be classified into four types based on Kitagawa and Lehrer's (1990) and Bredel's (2002) referencing functions of personal pronouns: referential, vague, impersonal, and self-positioning.

Referential *renjia* generally refers back to a person or some people who are specific and definite in the previous discourse, as in (12)[1].

[1] All the examples in Huang (2004) were transcribed into intonation units (IU), but the present study removes this part in order to reach the consistency of the examples. In addition, only parts of the dialogues in Huang's data are presented in this study.

(12) B: Dou shi Jiang Yi-cheng.
all be Jiang Yi-cheng
'B: It's all for Jiang-Yi-cheng.'
A: Renjia keneng you huodong ba.
RENJIA probably have appointments Par
'A: She might have an appointment.' (Huang, 2004: 78-79)

In (12), Speaker A uses *renjia* to refer to a particular person, Jiang Yi-cheng, mentioned in the discourse.

As remarked by Huang (2004), although the third-person pronoun *ta* 's/he' or *tamen* 'they' has the same function as the referential *renjia*, the meaning of the referential *renjia* is not equal to *ta/tamen*, since the former further reveals the speaker's 'remote social distance' with the intended referent. By using the referential *renjia*, the speaker can create two social groups in the discourse interactions: WE (the speaker and addressee) and THE OTHER (*renjia*).

Vague *renjia* refers to an individual or a group which is only specific in the speaker's mind but is not identified to the addressee(s), as in (13).

(13) B: Eh women daodi yao-bu-yao jiao nage…
Par we in_fact want_not_want pay that
shuqi zhusufei a.
summer stay_fee Par
'B: Eh, do we eventually have to pay the summer accommodation fee?'
A: Ta you kou a.
s/he have deduct Par
'A: S/he deducted that (from our account).'
B: Daoshihou mei jiao bei renjia gan chuqu.
till_then no pay BEI RENJIA chase out
'B: I may be kicked out if I did not pay.' (Huang, 2004: 78)

In (13), the pronominal *renjia* may refer to a group of people who are in charge of the accommodation fee in the school. Even though the speaker does not specify the referents, he

expects the addressees to know whom s/he is talking about in the given context.

Impersonal *renjia* refers to a generic group of people outside the discourse. This is similar to the interpretation of *bieren* 'others' or existential *you-ren* 'have-people, as in (14). The speaker used the impersonal *renjia* to refer to anyone who is asking for help.

(14) Youdeshihou renjia lai wen wo, bifangshuo
sometimes RENJIA come ask I for_example
ta gen wo shuo, eh wo…
s/he to I say Par I
nage men da bu kai.
that door open not open
'Sometimes people come to me. For instance s/he says to me, 'I cannot open the door." (Huang, 2004: 77)

Self-positioning *renjia* refers to the speaker himself, that is, the first person 'I' in the conversation. Huang (2004) claims that when the speaker wants to make a request, a complaint or an apology to the addressee, the use of self-positioning *renjia* can avoid threatening the addressee's face. The speaker also can mitigate face-to-face confrontation, making his request more indirect and less assertive, as in (15).

(15) A: Ni huibuhui pa laibuji?
You will_not_will be_afraid late
'A: Are you afraid that you will be late?'
B: keshi zhege yin haishi yao lu a. Ni yijing
but this voice still want record Par you already
daying renjia.
promise RENJIA
'B: But we still have to record the voice (conversation). You have promised me.' (Huang, 2004: 84)

Huang (2004) also demonstrates the idea of perspectivization of *renjia* with Langacker's (1990) and Traugott's (1999) theories of subjectification and intersubjectivication. Based on

these theories, the use of impersonal *renjia* can be seen as a strategy to express the speaker's personal, subjective belief.

(16) Wo shi juede ta you yi-xie jingli, yinggai hui
I be feel s/he have some experience suppose will
rang renjia you yi-xie xiaxiang ba.
let RENJIA have some fancy Par
'I think she has some experience, which makes others (implying me) draw some negative impression.' (Huang, 2004: 83)

In (16), although the antecedent of *renjia* is ostensibly a generic group of people, the context in fact reveals a self-centered evaluation by the speaker.

To conclude, Huang (2004) uses face-to-face conversations to discuss different referencing functions of the pronominal *renjia*. She also focuses on pragmatic factors influencing its interpretations and perspective shifts in different contexts. However, with regard to the referential *renjia* in her classification adopted from Kitagawa and Lehrer (1990), it seems confusing in terms of her definition. A referential noun phrase in fact can be definite or indefinite (Li & Thompson, 1981). In addition, the vague *renjia* and the impersonal *renjia* only show subtle differences since both of them are non-specific. Therefore, from the acquisitional perspective, conflating them into one type will be more desirable.

2.1.4 Wang (2006)

Wang (2006) investigates the semantic, discourse and socio-pragmatic functions of personal pronouns in Mandarin Chinese. She starts with identifying the members of Mandarin personal pronouns and proposes that the so-called 'indefinite pronouns' such as *dajia* 'everybody,' *renjia* 'others,' *bieren* 'others,' *ren* 'people,' as well as the zero pronoun should be regarded as parts of the system of personal pronouns.

Based on Wang, the indefinite pronouns do not have definite referents because they are

quantitative, bearing universal or partitive properties. In addition, the referents of indefinite pronouns can be singular or plural, as in (17).

(17) Yong zhihui lai bang ren, na shi wuxian-de.
use wisdom come help people that be unlimited
'It is unlimited to help people by using the wisdom.'(Wang, 2006: 39)

In (17), the indefinite pronoun *ren* 'people' in Wang's classification can denote its partitive or universal meaning.

Wang (2006) further distinguishes the canonical uses and non-canonical uses of indefinite pronouns. The canonical uses are typically indefinite, while the non-canonical uses are definite in the immediate deictic domain. Take the pronominal *renjia* as an example, its canonical use is when it refers to indefinite individual(s) or a collective of people, as in (18). In (18), the pronominal *renjia* is canonical since its referent(s) is indefinite.

(18) Renjia xuyao ni ti de zhengjian zai nail?
RENJIA need you propose DE political_view at where
'Where are the politics people want you to propose?' (Wang, 2006: 42)

The non-canonical use of the pronominal *renjia*, on the contrary, is generally definite and deictic, referring to a particular person, as in (19).

(19) Ni weisheme ba renjia$_i$ nong ku? Ta$_i$ dou ku-le,
you why BA RENJIA make cry She all cry-Asp
ni hai bu chengren.
you still not commit
'Why did you make her cry; She has already been crying, but you still have not committed it.' (Wang, 2006: 41)

In (19), the pronominal *renjia* refers to the third-person pronoun *ta* 'she' in deictic

domain.

In addition, Wang mentions *renjia* can have a 'specific' interpretation, as in (20), when the referent is known to the speaker but unknown to the addressee.

(20) A: Wo jintian bei renjia beipan.
I today BEI RENJIA betray
'A: I was betrayed today.'
B: Weisheme bei beipan?
Why BEI betray
'B: why were you betrayed?'
A: Yinwei you ren bu shou xinyong.
Because have person not keep promise
'A: It is because someone did not keep his words.' (Wang, 2006: 41)

In general, Wang (2006) makes distinctions between the canonical and non-canonical uses of the pronominal *renjia* and especially discusses the 'specific' interpretation of it. Nevertheless, a more detailed categorization is still needed.

2.1.5 Summary

In this section, four studies on the interpretations of the pronominal *renjia* have been reviewed. First, the pronominal *renjia* can be definite (Wang, 2006) and specific (Liu, 2001), referring to a first-person pronoun, a second-person singular pronoun[2], or a third-person pronoun (Chiu, 2000; Huang, 2004; Liu, 2001; Wang, 2006). On the contrary, it also can have indefinite (Wang, 2006) and non-specific (Liu, 2001) interpretations. The vague and impersonal *renjia* discussed in Huang (2004) also presents indefinite or generic interpretations of it. However, it is challenging to adopt the above-mentioned classification to examine children's comprehension and production of this pronominal, since their grammar is

[2] Liu (2000) points out that the pronominal *renjia* seldom can be a second person pronoun. Although Chiu (2001) provides examples that *renjia* can refer to the addressee, the situations are rare in modern Chinese. Therefore, the present study excludes the second person pronoun in the interpretations of the pronominal *renjia*.

generally simple. Thus, in order to reduce the acquisition burden, a general explanatory categorization is necessary.

2.2 Previous Studies of Referential Expressions in Acquisition

How children acquire the intricate referential system has been the interest of linguists studying child language acquisition. In this section, two studies on the L1 acquisition of personal pronouns in English and French (Millogo, 2005; Schneider & Dubé, 1997) are reviewed; the study of the L1 acquisition on pronominal interpretations in Mandarin Chinese (Huang, 2011) and the research on the L2 acquisition of the pronominal *renjia* in Mandarin Chinese (Wei, 2001) are discussed as well.

2.2.1 Schneider & Dubé (1997)

Schneider & Dubé (1997) attempted to investigate the effects of pictorial versus oral story presentation of children's referential adequacy. It has been generally reported that older children used a higher percentage of adequate referring expressions than younger children in terms of reference introduction and reference maintenance when they retell the stories.

They began with presenting three factors which were claimed to have influence on children's mastery of referential expressions. Firstly, story complexity was a factor affecting children's production of adequate reference. Simple stories were found easier than complex ones for children at a young age (Hickmann & Schneider, 1993). Even 7-8 aged children (Hickmann, 1982) or adolescents would find it difficult with complex stories (Schneider, 1984). The second factor was said to be mutual knowledge between the one telling the story and the one listening to it. Children performed better and used more correct references if they knew that the listener did not have any ideas about the story before story retelling. The third factor was the way that stories were presented.

In this experiment, three conditions: the pictures-only condition, oral-with-pictures

condition, and oral-only condition were compared. The subjects were 44 children whose first language was English. Twenty-two children (9 boys, 13 girls) were from kindergarten and 22 children were from grade two in the Edmonton Public School District. The mean age of the younger group was 5.58 years and that of the older group was 7.81 years. Three stories were designed for the three presentation conditions, but they were randomly presented to each subject. In the pictorial conditions, five pictures were made up for a story from the book *Oops* by Mercer Mayer (1977). Each story consisted of the same main character (female), and the secondary character (male) was different in three stories. The oral condition of the stories contained each story grammar (SG) unit as presented in Stein & Glenn (1979). The length and difficulty of the stories were controlled. During the story-telling section, the listener sat behind a screen so that she could not see the pictures presented on the screen in the pictures-only and oral-with-pictures conditions.

A two-way ANOVA with repeated measures revealed a significant interaction between the number of referring expressions for the three conditions and two grade levels (F [2, 42] = 3.58, p = 0.032). *Post hoc* LSD tests with Bonferroni correction further indicated that children from grade two used more referential expressions in the oral-only and the oral-with-pictures conditions than in the picture-only condition (p = 0.001 and p = 0.009, respectively). The performances of the kindergarten children were similar in the three presentation types. With regard to the overall adequacy, the results presented a main effect for the presentation type (F [2.84] = 6.81, p < 0.002) and for the grade level (F [1, 42] = 14.35, p < 0.001). A significant interaction was also obtained (F [2, 42] = 3.14, p = 0.048). Moreover, there was no significant difference between the oral-only and oral-with-pictures condition for both groups, implying that regardless of the presence of pictures, the children used referential expressions more adequately when the stories were orally presented.

One of the most frequent inadequate expressions was the wrong use of pronouns for subsequent mentions. Both groups used pronouns for the main character more often than the

secondary character, consistent with the assumption of the thematic subject strategy adopted by the children during the story retelling in the orally-presented conditions.

2.2.2 Wei (2001)

Wei (2001) conducted an empirical study of the acquisition of the pronominal *renjia* in Mandarin by Japanese and English students who were learning Chinese as the second language in Taiwan. The purpose was to investigate whether different referential interpretations, referential directions and referential constraints on the pronominal *renjia* would cause learning difficulties for L2 learners.

First, Wei (2001) classified the referential interpretations of the pronominal *renjia* into two types: the pronominal *renjia* with a single interpretation and that with multiple interpretations in sentences. The referential directions (forward and backward), referential constraints in terms of the distribution (i.e., subject or object), referring saliency, and the blocking effects by verbs were all examined.

Two groups of subjects were included in this study: a group of English-speaking learners and a group of Japanese-speaking learners of Chinese in Mandarin Training Center (MTC) of National Taiwan Normal University (NTNU). A total of 40 subjects were taken into data analysis: 20 Japanese-speaking and 20 English-speaking learners. Most of them were intermediate learners. Only one learner of the Japanese group and two learners of the English group were at the advance level.

Two tasks were designed to investigate the subjects' comprehension of the pronominal *renjia* in Mandarin. In a grammaticality judgment task, the subjects were asked to select one or more than one appropriate referent for *renjia* in each question. A picture identification task was designed to further explore the subjects' interpretations of *renjia* in contexts. A conversation with pictures was provided, and the subjects had to record their answers regarding the referent of *renjia* in the given contexts. In addition to answering the questions

from a third person's point of view, the subjects were asked to play the role of the character in the conversation and select the answer again to see if the change of the subjects' viewpoints would influence their interpretations of *renjia.*

The results showed that both the English and Japanese groups performed better on the patterns with single interpretation for *renjia.* With respect to the distribution effect, when *renjia* occurred in the subject position, both groups found it easier to take an object than a subject as its referent. When it appeared in the object position, the English-speaking learners had difficulty referring *renjia* forward to an object as its referent, while the Japanese learners found it more difficult to refer *renjia* backward to an object as its referent. Overall, the subjects performed badly on the patterns with multiple interpretations for *renjia*. In addition, one-way ANOVA further showed that the change of verbs indeed significantly affected the subjects' choice of appropriate referents for *renjia* in patterns with multiple readings. (F (1, 6) = 63.75 > $F_{0.05}$ (1, 6), p = 0.04). What's more, the results were consistent with the prediction that there was a hierarchy of referring saliency: $1^{st} > 3^{rd} > 2^{nd}$.

With regard to the referential direction of *renjia*, the results of one-way ANOVA showed that there were no significant differences between forward and backward coreference in the sentences with a single reading in two experimental groups (F (1, 2) = 4.9680, p =1.556). As for the sentences in which the pronominal *renjia* can take either a forward or backward referent, both groups tended to select a forward rather than a backward referent. For the English-speaking learners of Chinese, L1 transfer seemed to be influential because those whose native language is right-branching tend to choose a forward referent. The results of the Japanese group, however, challenged the assumption of L1 transfer. A high percentage of forward than backward coreference was found in the Japanese group, contradicting with the directionality constraint. Finally, it was found that there was no significant difference between the subjects' performances on the grammaticality judgment task and on the picture identification task.

2.2.3 Millogo (2005)

Millogo (2005) aimed to examine the combined effects of distance, thematization, and discourse focus by focusing on the 3rd person pronoun 'il/elle' (he, she, and it) of French in written production. The subjects were fifty-eight French children and they were classified into three groups according to their age: G1 (18 children aged from 7; 0 to 8; 0), G2 (20 children aged from 9; 0 to 10; 0), G3 (20 children aged from 11; 0 to 12; 0). A set of small texts were designed. Two protagonists with different syntactic functions (agent vs. patient) were introduced in the first sentence and the agent role was the only candidate to conduct the action in the test sentences. Each test sentence consisted of a blank for a missing anaphoric expression. The subjects needed to fill in the banks according to the texts provided.

With regard to the first factor 'Distance,' the D1 level involved only one intermediate sentence between the introductory and test sentence, while D2 level contained four intermediate sentences. As for the second factor 'Thematization,' the T1 level was for 'Thematized Agent role' and T2 represented 'Non-thematized Agent role.' The third factor 'Discourse focus' was classified into Broken Focus (BF) and Maintained Focus (MF). In the BF, the focus was switched in the second sentence for the D1 level and the fourth sentence for the D2 level.

Overall, with respect of the use of personal pronouns, a significant difference was found among the three age groups (F (2, 52) = 3.35, $p < 0.04$). The younger children scored lower than the older ones. Furthermore, the significant difference was found only between seven-year-olds and eleven-year-olds (F (1, 52) = 6.67, $p < 0.02$). No significances were found between the seven-year-olds and nine-year-olds (F (1, 52) =2.38, $p > 0.12$), and between nine-year-olds and eleven-year-olds (F (1.52)1.14, $p < 0.28$). Concerning the focus effect, the result showed no difference in the subjects' use of personal pronouns. However, there was a significant difference between the long-distance condition and the short-distance condition. The children used more personal pronouns when the referential distance decreased.

With respect to the thematization of the grammatical subject effect, the use of personal pronouns decreased when the grammatical subject is not thematized.

A significant difference was also found in the interaction Age × Focus (F (2, 52), $p <$ 0.001). Further analyses showed that the effect of focus was only observed in G1 and G3. The children in G3 used more personal pronouns when the discourse focus was maintained, while those in G1 used more personal pronouns in the broken-focus texts. The interaction effect between age and the thematization factor was significant (F (2, 52) =3.37, p < 0.05), but it was found that only the children in G2 were influenced by the change of thematization (F (1, 52) = 16.45, $p < 0.01$). A triple interaction was found when three factors 'Age,' 'Focus,' and 'Thematization' interacted, but only the seven-year-olds showed a significance (F (1, 52) = 3.44, $p < 0.07$).

As a whole, the children as young as the seven-year-olds have detected changes in the referential distance in written forms. The nine-year-old children behaved differently from the other age groups with respect to the effect of the thematization, since they put more emphasis on the thematization factor during their development of referential system in written production. Their use of personal pronouns increased when the agent role was thematized. On the contrary, the seven-year-olds and the eleven-year-olds both gave more weight to the situation with focalization in the intermediate sentence, but their performances were totally different. The seven-year-old children used more pronouns when the discourse focus was broken, while the nine-year-old children used more pronouns when the focalization remained. Millogo (2005) explained that the seven-year-old children seemed not to see personal pronouns as textual anaphors and that they just used them in an over-generalized manner. Unlike the seven-year-olds, the eleven-year-old children were able to make use of the gender information and decide an appropriate pronoun to achieve textual coherence. However, they did not pay much attention to the changes of thematization of the agent role.

2.2.4 Huang (2011)

Huang (2011) aimed to investigate Chinese children's acquisition of pronominal interpretations from the perspective of antecedent-pronoun relation. Her subjects were 80 children, aged from 3; 1 to 7; 10 and 16 Chinese adults. Concerning the tasks, two comprehension tasks (picture-identification task with/without a rich context, PIC task; PI task) and one production task (imitation task, IM task) were employed.

Five patterns were examined including (1) antecedent in S position & pronominal in S position (SS), (2) antecedent in S position & pronominal in O position (SO), (3) antecedent in O position & pronominal in S position (OS), (4) antecedent in O position & pronominal in O position (OO), and (5) antecedent in possessor position (Poss). These five types were further divided into twelve subpatterns with regard to the possible antecedent–pronoun coreference. For instance, ACs2-PC1 stands for the subpattern in which the antecedent is in the subordinate clause and the pronoun is in the main clause. The test sentence is like (21).

(21) Ruguo laoshu dapo chuanhu, ta hui shoushang.
if mouse break window he will hurt
'If the mouse breaks the window, he will get hurt.' (Huang, 2011: 129)

The results are as follows: First, a significant difference was found among the six age groups in three types (the S type, F (5, 90) = 23.528, $p < .001$; the O type, F (5, 90) = 24.295, $p < .001$; the Poss type, F (5, 90) = 18.203, $p < .001$). There was a tendency of S > O > Poss according to the position of the antecedent. With regard to the differences in the main pattern, all the groups performed better on SO than SS (G1, M = 0.36 > 0.34; G2, M = 0.40 > 0.34; G3, M = 0.50 > 0.38; G4, M = 0.47 > 0.44, G5, M = 0.60 > 0.51; G6, M = 0.77 > 0.67 in the S type) and OS than OO (G1, M = 0.38 > 0.33; G2, M = 0.40 > 0.29; G3, M = 0.39 > 0.34; G4, M = 0.47 > 0.39, G5, M = 0.56 > 0.45; G6, M = 0.71 > 0.62 in the O type). With respect to the clausal effects, the children performed better on the complement clause than the

adjunct clause (G1, M = 0.40 > 0.34; G2, M = 0.42 > 0.32; G3, M = 0.45 > 0.39; G4, M = 0.50 > 0.41, G5, M = 0.55 > 0.52). The children aged 7 to 8 had acquired adult-like interpretations in the complement clauses.

With regard to the minimal-distance principle influencing the subjects' pronominal interpretations, the results showed that there was no significant difference in the subjects' performances on the short-distance and long-distance types for all age groups (G1, F (1, 30) =0.003, p >.05; G2, F (1,30) =1.092, p > .05; G3, F (1,30) =0.185, p > .05: G4, F (1,30) = 0.003, p > .05; G5, F (1,30) =1.565, p > .05; G6, F (1,30) =0.459, p > .05).

Considering the differences between backward and forward coreference, it was found that backward coreference was accepted by both the children and the adults, though the children performed better on forward than backward coreference, and the adult showed an opposite tendency (G1, M = 0.36 > 0.30; G2, M = 0.35 > 0.32; G3, M = 0.42 > 0.38; G4, M = 0.46 > 0.39, G5, M = 0.53 > 0.51; G6, M = 0.76 < 0.68). This supports the proposal that backward coreference is exhibited in Chinese (Huang, 1982; Kao, 1993).

Moreover, the results showed that all the age groups did better in the PIC task than the PI task because the children had difficulty understanding the ambiguous reading in the PI task (G1, M = 0.54 > 0.26; G2, M = 0.62 > 0.16; G3, M = 0.75 > 0.13; G4, M = 0.76 > 0.17, G5, M = 0.86 > 0.11; G6, M = 0.94 > 0.22.) Compared the results in the comprehension and production tasks, it was found that the latter posed more problem for the younger children (G1, M = 0.40 > 0.34; G2, M = 0.39 > 0.32; G3, M = 0.44 > 0.38; G4, M = 0.46 > 0.45). The older children and adults performed significantly better on the production task than on the two comprehension tasks (G5, F (1, 30) =18.743, p <.001; G6, F (1, 30) =135.548, p < .001).

In general, age influenced the interpretations of pronominal coreference. According to Huang, the children aged three to five had not yet been able to interpret pronouns well. Age five to seven seemed to be a transitional stage of the acquisition of pronouns since the children aged seven to eight significantly outperformed the younger children. Therefore,

Huang's findings showed that age six might be critical for children to acquire pronominal coreference in Chinese.

2.2.5 Summary

Although so far there have not been any studies on the L1 acquisition of the pronominal *renjia* in Mandarin Chinese, the similarities observed among these studies still serve as the basis of the present study. Generally speaking, most results of the previous studies have showed that children's comprehension and production of referential expressions improved with ages (Huang, 2011; Millogo, 2005; Schneider & Dubé, 1997). It has also been claimed by Huang (2011) that the age of six is a critical stage for the children's acquisition of pronominal coreference, while Millogo (2005) has found that children's referential adequacy in written texts is a late development, and that would continue to the age of eleven. In addition, factors influencing the subjects' responses to pronominal expressions were story complexity, mutual knowledge, and the presentation way in the oral production task (Schneider & Dubé, 1997), effects of distance, thematization of subjects, and discourse focus in the written production task (Millogo, 2005), and ambiguous interpretations in contexts, antecedent-pronoun relation, clausal type, referential direction and antecedent types in the comprehension tasks as well as the oral production task (Huang, 2011). Although Millogo (2005) argued that effects of distance played an important role in influencing children's pronominal acquisition, Huang (2011) argued for little influence of the distance effects. The L2 study on the pronominal *renjia* by Wei (2001) has been a big step toward the acquisition of indefinite pronouns in Mandarin Chinese. Factors affecting L2 learners' interpretations of *renjia* involve the differences between single and multiple interpretations, referential direction, referent types, the antecedent-pronoun relation, referring saliency, and blocking effects by verbs.

As for limitations of these studies, first, only one production task was employed in most

studies, so the task design was imbalanced (i.e., Millogo, 2005; Schneider & Dubé, 1997). Moreover, the purposes of the two studies were different; one was to examine children's referencing ability in story retelling, and the other was to investigate children's referential adequacy in written texts. Thus, it is hard to make a generalization of children's acquisition of referential expressions. Although Wei (2001) employed two tasks to test L2 learners' acquisition of the pronominal *renjia* in Mandarin Chinese, both of which were comprehension tasks. With only one type of task, it is unlikely for Wei to gain further understanding of learners' performance on the production of the pronominal *renjia*. In addition, there are some inadequacies about grouping of subjects in these studies. The range of the subjects' age in Schneider & Dubé's (1997) study is too big (G1: 5.02 ~ 6.10, G2: 7.08 ~ 8.61), with an interval of almost two years. In Wei (2001), most of her subjects were at the intermediate level, which is hard to see the L2 learners' developmental progress, not to mention that she did not recruit a group of native controls. Table 2-1 summarizes the major findings and limitations of the four empirical studies reviewed in this section:

Table 2-1 Major Findings and Limitations of the Previous Studies

	Major Findings	Limitations
Schneider & Dubé (1997)	1. Performance: (1) Grade 2 (7.08-8.61) > kindergarten children (5.02-6.10). (2) better in oral-only and oral-with-pictures 2. Factors: the presentation way	1. employed a production task 2. a big interval of groupings
Wei (2001)	1. Performance: (1) better in single interpretations; more forward > backward coreference (2) no task effects 2. Factors: ambiguous interpretations, the antecedent-pronoun relation, referent types, referential directions, referring saliency, and blocking effects by verbs	1. employed two comprehension tasks 2. mostly intermediate-level subjects involved
Millogo (2005)	1. Performance: (1) 11-year-olds > 9-year-olds > 7-year-olds (2) more personal pronouns when the referential distance is short 2. Factors: effects of distance, thematization, and discourse focus	1. employed a written production 2. only 3rd-person pronouns examined
Huang (2011)	1. Performance: (1) 7-year-olds > 3-, 4-, 5-, 6- year-olds; critical points: age 6 (2) harder in ambiguous readings; more forward > backward coreference by children 2. Factors: ambiguous interpretations, the antecedent-pronoun relation, clausal types, referential directions, and antecedent types	1. recruited children aged up to 7 years old 2. only 3rd-person pronouns examined

2.3 A New Classification of the Pronominal *Renjia* in Chinese

Based on the previous studies, a revised classification will be proposed in this section. To begin with, interpretations of the pronominal *renjia* can be classified into two types: a single interpretation and multiple interpretations (cf. Wei, 2001). Each type can be further divided into two subtypes: forward and backward coreference with regard to its referential direction (cf. Huang, 2011; Wei, 2001). In addition, the referent types can affect the possible coreference (cf. Chiu, 2000; Huang, 2004; Liu, 2001; Wang, 2006; Wei 2001).

Type 1: A Single Interpretation

In this type, the pronominal *renjia* only refers to one interpretable referent. The interpretation can be a first-person, a second-person, a third-person pronouns or an indefinite individual (Chiu, 2000; Huang, 2004; Liu, 2001; Wang, 2006). It can also refer to a generic group of people in the universe (Huang, 2004; Liu, 2001).

(22) Ni_i zhe yang xiao wo_j, $renjia_{*i/j}$ hui bu-hao-yi-si de.
you this kind laugh I RENJIA will embarrassed Par
'Do not laugh at me this way; I will feel embarrassed.' (Wei, 2001: 49)

In (22), the pronominal *renjia* has only one interpretation, referring back to the first-person pronoun *wo* 'I' in the previous sentence. This example is also used by Wei (2001) in her study of L2 learners' interpretations of the pronominal *renjia* in Chinese.

According to the relative position and the anaphoric relation of the antecedent and pronominal, the referential directions, namely forward and backward, are also taken into account in the present of the pronominal *renjia*.

Type 1-1 Forward Coreference

Sentence (23) is an example of forward coreference.

(23) Tamen$_i$ liangdian-ban dao, ni$_j$ sidian lai, liu chu
they two_ thirty arrive you four_o'clock come leave out
shi-jian lai xian rang renjia$_i$ hao hao xu xu.
time come first let RENJIA good good talk talk
'They will arrive at 2:30, and you come at 4. Leave them some time to get together and chat.' (Chiu, 2000: 66)

The only interpretable referent in (23) is *taman* 'they,' which appears in sentence initial position. The pronominal *renjia* refers back to the third-person pronoun in the previous sentence.

Under the category of forward coreference with a single interpretation for *renjia*, there are two subtypes according to the referent of it: one is with a specific referent, and the other is with a non-specific referent.

Type 1-1-1 RENJIA referring to a specific antecedent

When the pronominal *renjia* is specific, it refers to an antecedent which is clearly specified in the context. Huang (2004) use the term 'referential *renjia*' to label this type, which generally refers back to a person or some people who are specific in the previous discourse. Liu (2001) also classifies the pronominal *renjia* based on whether it refers to a specific or a non-specific antecedent.

(24) Ni$_i$ qiao bu guan women$_j$ zhe de ren, ye
You see not accustomed we here DE person also
yong-bu-zhao zheme yunong renjia$_{*i/j}$
does_not_need this_way cheat RENJIA
'Although you feel disgusted about us, you still should not cheat us.' (Chiu 2000: 67).

In (24), the pronominal *renjia* refers to the first-person pronoun *women* 'we,' which is a specific antecedent preceding it.

In addition, the pronominal *renjia* can refer to a specific third-person R-expression in the

previous sentence.

(25) Ni_i he $Zhangsan_j$ bu shi yao yiqi kan dianying ma?
You and Zhangsan not be want together see movie Par
Zen-me ba $renjia_{*i/j}$ liu zai na?
why BA RENJIA leave at there
'Didn't you make an appointment to see the movies together with Zhangsan? Why did you leave him there?'

For (25), *renjia* refers to *Zhangsan* in the preceding sentence, which has already specified in the given context.

Type 1-1-2 RENJIA referring to a non-specific antecedent

When the pronominal *renjia* is non-specific, it is indefinite or generic. Liu (2001) suggests that the non-specific interpretations of the pronominal *renjia* should neither take the speaker and the addressee, nor some identifiable individuals as the referent. It refers to some unidentifiable individuals and it is pragmatically neutral. Chiu (2000) and Wang (2006) use Contrary/Residual analysis (*bieren* 'other people') to label this type of *renjia* with the non-specific interpretations. Huang's (2004) impersonal and vague *renjia* both belong to this category. In this type, the referent of the pronominal *renjia* can be an indefinite group of people or a generic group of people in the world.

(26) You yi-xie ren_i bu shouxin, suoyi wo_j bei
have some person not keep_promise so I BEI
$renjia_{i/*j}$ pian le.
RENJIA cheat Par
'Some people did not keep their words, so I was cheated by them.'

In (26), the pronominal *renjia* refers to *yi-xie ren* 'some people,' who are an indefinite group unspecified in the discourse.

(27) Dajia$_i$ hen xinku gongzuo, women yao
everybody very painstaking work we want
han renjia$_i$ yiyang.
and RENJIA same
'Everybody works very hard, so we should be like them.'

For (27), *renjia* refers to a generic group of people *dajia* 'everybody' in the beginning of the sentence.

Type 1-2 Backward Coreference

In the sentences with backward coreference, the interpretable referent follows the pronominal *renjia*. With regard to the direction of referential pronouns in Mandarin, Kao (1993) suggests that backward coreference should be acceptable in adult grammar. Wei's (2001) also includes this type in her study, as in (28).

(28) Renjia$_{*i/j}$ mingtian shengri, ni$_i$ bie wang-le song wo$_j$
RENJIA tomorrow birthday you not forget-Asp give I
liwu.
present
'Tomorrow is my birthday. Do not forget to give me a birthday present.' (Wei, 2001: 49)

In (28), the pronominal *renjia* occurs sentence-initially and it refers to the first person pronoun *wo* 'I' in the following sentence.

Type 1-2-1 RENJIA referring to a specific antecedent

Like the sentences with forward coreference, the pronominal *renjia* in the sentences with backward coreference can also have specific interpretations.

(29) Ni_i bu chang bang $renjia_{*i/j}$ mei-guan-xi, jintian keyi bang
you not often help RENJIA doesn't_matter today can help
wo_j dao lese ma?
I pull trash Par
'It doesn't matter that you seldom help, but could you help me to take out the trash today?'

In (29), the pronominal *renjia* has a backward referent, the first-person pronoun *wo* 'I' in the following sentence. Example (30) shows that *renjia* refers to the specific third-person pronoun *taman* 'they' following it.

(30) $Renjia_i$ zao jiu xiewan zuoye, ni jiu bie
RENJIA early just finish homework you just not
zai xianmu $tamen_i$ le.
again envy they Par
'They have already finished their homework, and you should stop envying them.'

Type 1-2-2 RENJIA referring to a non-specific antecedent

The pronominal *renjia* in the sentences with backward-coreference can also have non-specific interpretations.

(31) Weile rang $renjia_{*i/j}$ xihuan wo_j, wo_j chang bangzhu yi-xie
for let RENJIA like I I often help some
$tongxue_j$.
classmates
'In order to make some classmates like me, I often give them a hand.'

In (31), the referent of the pronominal *renjia* is *yi-xie tongxue* 'some classmates' following it, which is an indefinite group of people unspecified in the context. For (32) below, the *renjia* refers to a generic group of people *meigeren* 'everybody' in the following sentence. Both (31) and (32) demonstrate the non-specific interpretations of the pronominal *renjia* in

the sentences with backward coreference.

(32) Renjia$_i$ renwei shangxue bu keyi chidao, suoyi
RENJIA think go_to_school not can late so
meigeren$_i$ dou hen zhunshi.
everyone all very punctual.
'People think that one cannot be late for school, so everyone is very punctual.'

Type 2: Multiple Interpretations

On account of the ambiguous nature of the pronominal *renjia* in Mandarin Chinese, it is likely to have multiple interpretations (cf. Chiu, 2000; Liu, 2001; Wang, 2006). Following Wei (2001), we also classify the interpretations of the pronominal *renjia* into single and multiple interpretations. In this type, there is more than one potential referent in the given context, as in (33).

(33) Zhi-you Zhangsan$_i$ xiaode Lisi$_j$ ruhe zhua-dao Wangwu
only Zhangsan know Lisi how catch Wangwu
zhe-ge xiaotou, zhiyu renjia$_{i/j/*k}$ shi zen-me ban-dao de,
this thief as_for RENJIA be how make_it DE
wo$_k$ ye bu qing-chu.
I also not know
'Only Zhangsan know how Lisi caught Wangwu, the thief, but as for how did (Zhangsan / Lisi) make it, I have no idea.' (Wei, 2001: 13)

According to Wei (2001), sentence (32) can have two readings. One is that the speaker has no idea about how *Zhangsan* knew that *Lisi* caught the thief, and the other is that the speaker has no idea about how *Lisi* caught the thief.' Therefore, the pronominal *renjia* in this context may take either the third-person R-expression *Zhangsan* or *Lisi* as its referent.

Type 2-1 Forward Coreference

According to Wei (2001), a major percentage of the pronominal *renjia* has multiple

interpretations when it can refer to more than one antecedent in the preceding sentence.

(34) Ni_i hai shi shidian da ge dianhua gei wo_j he
you still be ten_o'clock call CL phone to I and
$Xiaowang_k$ hao le, $renjia_{*i/j/k}$ bu xiguan tai wan shui.
Xiaowang good Par RENJIA not be_used_to too late sleep
'You had better call me and Xiaowang at ten, since (I/ Xiaowang) am/is not used to going to bed late.' (Wei, 2001: 23)

Sentence (34) is an example of forward coreference in the multiple-reading patterns. The pronominal *renjia* can take the first-person pronoun *wo* 'I' or the R-expression *Xiaowang* as its referent in the preceding sentence.

Type 2-1-1 RENJIA referring to two specific antecedents

In the patterns where *renjia* can have multiple interpretations with forward coreference, it is likely that it can take two specific referents.

(35) Ni_i gankuai jiao $Xiaoming_j$ ba dongxi song gei Li $tai\text{-}tai_j$,
you hurry_up ask Xiaoming BA thing give to Ms. Li
$renjia_{*i/j/k}$ shidian jiu xiuxi le.
RENJIA ten_o'clock just rest Par
'Hurry up! You ask Xiaoming to give Ms. Li the thing, or (Xiaoming/ Ms. Li) always goes to bed at ten.' (Wei, 2001: 49)

According to Wei (2001), the pronominal *renjia* in (35) can either be Xiaoming, who is asked to send things to Ms. Li, or Ms. Li, who is waiting for things from Xiaoming. Both are specific in the given context.

Type 2-1-2 RENJIA referring to a specific or non-specific antecedent

In the sentences with multiple interpretations for *renjia* with forward coreference, it is

also likely that the potential referents preceding it can be specific or non-specific, as in (36).

(36) You yi-xie ren$_i$ xihuan paubu, Lisi$_j$ xihuan ting yinyue,
have some person like jog Lisi like listen music
wo he renjia$_{i/j}$ bu yiyang.
I and RENJIA not same
'Some people$_i$ like jogging and Lisi$_j$ likes listening to music. I am not like them$_{i/j}$.'

In (36), the pronominal *renjia* can either refer to people who like to jog or the R-expression *Lisi*, who likes to listen to music in the preceding sentence. The former is non-specific and the latter is specific in the discourse.

Type 2-2 Backward Coreference

Like sentences with forward coreference, the pronominal *renjia* can also refer to multiple antecedents backwards.

(37) Renjia$_{*i/j/k}$ shidian jiu xiuxi le, ni$_i$ gankuai jiao
RENJIA ten-o'clock already rest Par you hurry_up ask
Xiaoming$_j$ ba dongxi song gei Li-taitai$_k$
Xiaoming BA thing give to Ms.Li
'(Xiaoming/ Ms.Li) is used to going to bed at ten. Hurry up, and ask Xiaoming to give the thing to Mr. Li.' (Wei, 2000: 18)

In (37), the pronominal *renjia* occurs in the beginning of the sentence, and its potential referent can be Xiaoming or Ms. Li in the following sentence.

Type 2-2-1 RENJIA referring to two specific antecedents

In the sentences with multiple interpretations for *renjia* with backward coreference, the pronominal *renjia* is also likely to take two specific referents to be its antecedent.

(38) Ren-jia$_{i/j}$ hen ren-zhen le, wo$_i$ he Lisi$_j$
RENJIA very conscientious Par I and Lisi
xia-ci hui geng yong-gong.
next_time will more study_hard
'(Lisi/ I) have already studied hard. (Lisi/ I) will be more diligent in studying next time.'

We can get two readings from (38). One is that *renjia* refers to the first-person pronoun *wo* 'I,' and the other is to the R-expression. Both are specific in the discourse.

Type 2-2-2 RENJIA referring to a specific or non-specific antecedent

In the sentences where *renjia* has multiple interpretations with backward coreference, the pronominal *renjia* can take either a specific or a non-specific antecedent following it, as in (39).

(39) Renjia$_{i/j}$ xiang you jiankang-de shenti, you ren$_i$
RENJIA feel have healthy body have person
chisu, Zhangsan$_j$ meitian yundong.
eat_vegetable Zhansan everyday exercise
'People$_{i/j}$ wants to be healthy. Some people$_i$ become vegetarians and Zhangsan$_j$ exercises everyday.'

In (39), the pronominal *renjia* can be those who become vegetarians or *Zhangsan*, who exercises every day.

2.4 Summary of Chapter Two

In this chapter, a new classification of the pronominal *renjia* in Chinese has been provided, along with the reviews of four theoretical studies of *renjia*, and four empirical studies of the acquisition of referential expressions. As discussed in Section 2.1, a number of referential interpretations and the pragmatic implications of the pronominal *renjia* have been

summarized. In Section 2.2, a new classification of the interpretation of the pronominal *renjia* has been discussed by taking into consideration the syntactic vagueness of *renjia*, the referential direction, and types of referent. Finally, the four studies reviewed in Section 2.3 have demonstrated some factors influencing the acquisition of referential expressions and some methods suitable for examining children's referential adequacy. The present study thus attempts to conduct an L1 study to see how children comprehend and produce the pronominal *renjia* in Mandarin Chinese. The research design will be introduced in Chapter Three.

Chapter Three
Research Design

In this chapter, the research design is introduced. Section 3.1 describes the background of the subjects participating in this study. In Section 3.2, the methods and materials are illustrated. Section 3.3 delineates the experimental procedures. Finally, a summary of this chapter is given in Section 3.4.

3.1 Subjects

The subjects of the present study were eighty children aged from four[1] to eight and sixteen native Chinese controls. The children were further divided into five age groups (G1-G5). Each age group consisted of sixteen children (8 males, 8 females). The children of G1-G3 were preschoolers, and the children of G4-G5 were first and second graders. Table 3-1 summarizes the grouping of the subjects.

[1] The range of children's age in the previous studies on the acquisition of pronominal coreference in Chinese was generally from 3 to 8 years old (e.g., Chen, 1997; Huang, 2011; Lust et al., 1996). However, a pretest was done to two 3-year-olds before the pilot study and the results showed that it seemed difficult for them to understand what they should do in the experiment. One of them even failed to complete the experiment. Therefore, we decided to start with 4-year-olds in the present study.

Table 3-1 The Background of the Subjects

Group	Number	Age range	Mean age
G1(4-year-olds)	16	3.8~4.7	4.2
G2(5-year-olds)	16	4.8~5.8	5.1
G3(6-year-olds)	16	5.9~6.6	6.3
G4(7-year-olds)	16	6.10~7.9	7.3
G5(8-year-olds)	16	7.10~8.8	8.2
Controls	16	19-25	23
Total	96		

All the children were recruited from a day-care center, a kindergarten and an elementary school in Kinmen County. The control group was adults aged from 19 to 25 in northern Taiwan.

The preschoolers in Kinmen day-care centers and kindergartens go to school at about 8:00 a.m. and leave school at 4:00 p.m. from Monday to Friday. They speak Mandarin Chinese with their teachers and peers at school. Indoor curricula such as singing, drawing, and dancing are offered in the morning and outdoor curricula such as playing in the playground or in the field are scheduled in the afternoon.

The first and second graders in Kinmen elementary school go to school at 7:30 a.m. and leave school at 12:30 p.m. every weekday, except for Thursday on which the students dismiss from the school at 4:00. They communicate in Mandarin Chinese and have one Southern Min class per week. They also take various courses such as mathematics, health and physical education and Mandarin Chinese.

3.2 Methods and Materials

In order to evaluate L1 learners' competence of and performance on the target language, qualitative and quantitative methods can be used. With regard to qualitative methods, researchers often spend a long period of time observing subjects' language growth. On the

contrary, the data can be collected within a short period of time by adopting quantitative methods to examine subjects' language development (Miller, 1981). In the present study, the data were collected by adopting a quantitative experimental approach. Among different eliciting tasks used in quantitative methods to examine L1 acquisition, picture-cued tasks have been commonly used (Beyer & Hudson Kam, 2008; Salehuddin & Winskel, 2009) since pictures can motivate subjects and get them involved in the context. With the aid of pictures, the task will become stimulating and the subjects will be more willing to participate in the experiment.

With regard to the acquisition of referring expressions, some of the researchers (cf. Wei, 2001) used only comprehension tasks, and some of the researchers employed only production tasks (cf. Millogo, 2005; Schneider & Dubé, 1997). However, with only one type of task, it would be hard to compare the subjects' competence and performance during the process of their language development. Therefore, to get a better picture of children's acquisition of the Chinese pronominal *renjia* in the present study, both comprehension and production tasks were employed. An imitation task (IM task) was designed as a production task to examine our subjects' use of the pronominal *renjia*. According to Lust et al. (1999), children will not passively copy what they hear in the IM task; instead, they will analyze the stimuli and reconstruct them after consulting their own grammar. In other words, in order for children to imitate a linguistic form, the form must be part of their grammatical knowledge. Therefore, with a imitation task, we can examine children's representation of adult sentences and reflect children's language development on certain aspects of grammar. A picture selection task (PS task) was used as a comprehension task since it has been widely used to assess children's linguistic comprehension ability (cf. Gardner, 1985; Gelman & Taylor, 1984; Kay & Anglin, 1982). As noted in Lust et al. (1999), the advantage of using a PS task is that it enables researchers to test children's sensitivity to particular targeted aspects of grammar which they do not produce. Many experiments in numerous languages have found that children's

omission of a particular linguistic element does not imply the absence of it in their grammar. Furthermore, it is a general assumption that comprehension is easier than production (cf. Bates et al., 1988; Benedict, 1979; Gerken & Shady, 1996; Oviatt, 1980). In the present study, by adopting an IM task and a PS task, it is expected that our subjects' comprehension is indeed prior to their production in the course of language development.

With respect to the materials used in the present experiment, the IM task and the PS task were built on one story created by the researcher. The storyline consisted of a series of scenarios which depicted the life of three main characters, Little Rabbit, Little Bear and Little Monkey. Little Chicken and Little Sheep were their friends. And Mr. Owl was the homeroom teacher of all the characters previously mentioned. The test sentences were presented in different scenarios such as the school and the homes of Little Rabbit and Little Bear. Pictures below are the main characters in the story (for all the scenarios, please see Appendix A).

Figure 3-1 Main Characters Used in the Story

As in Section 2.2, two types of referential interpretations (single and multiple) of the pronominal *renjia* are specified and classified into eight subtypes based on the referential

directions and the referent types. To avoid the experimental bias, each subtype consisted of two test items; four fillers were also included. Each test item included two questions: a comprehension question (the PS task) and a production question (the IM task). In the IM task, the subjects had to repeat the target sentence said by one of the main characters in the story. In the PS task, the subjects had to choose which character the pronominal *renjia* in the target sentence refers to. Table 3-2 summarizes the task design:

Table 3-2 Distributions of the Test Items Used in Both Tasks

Type			No. of Items	Items
Type 1 A single interpretation	Type 1-1 Forward coreference	Type 1-1-1 RENJIA referring to a specific antecedent	2	Q5, Q16
		Type 1-1-2 RENJIA referring to a non-specific antecedent	2	Q3, Q19
	Type 1-2 Backward coreference	Type 1-2-1 RENJIA referring to a specific antecedent	2	Q10, Q11
		Type 1-2-2 RENJIA referring to a non-specific antecedent	2	Q1, Q2
Type 2 A multiple interpretation	Type 2-1 Forward coreference	Type 2-1-1 RENJIA referring to two specific antecedents	2	Q9, Q15
		Type 2-1-2 RENJIA referring to a specific or non-specific antecedent	2	Q6, Q8
	Type 2-2 Backward coreference	Type 2-2-1 RENJIA referring to two specific antecedents	2	Q12, Q17
		Type 2-2-2 RENJIA referring to a specific or non-specific antecedent	2	Q13, Q18
Fillers			4	Q4, Q7, Q14, Q20
Total			20	

First of all, as discussed in Chapter Two, there can be one or more than one possible interpretation of the pronominal *renjia* according to different contexts. Therefore, it is necessary to see if *renjia* with a single interpretation in sentences is easier for children to acquire than that with multiple interpretations. It is also important to see whether the

referential direction is a factor influencing children's acquisition of the pronominal *renjia*. What's more, it is essential to see whether the intended referent's specificity may have an effect on Chinese children's interpretations of *renjia*. Table 3-3 presents the example sentences with a single interpretation.

Table 3-3 Example Sentences with a Single Interpretation

Directions	Referent Types	Examples
Forward coreference	RENJIA referring to a specific antecedent	Jintian Xiaoxiong$_i$ qing women$_j$ chi tangguo, women bu yao taoyan renjia$_i$. 'Little Bear treated us candies today, so we should not hate him.'
	RENJIA referring to a non-specific antecedent	Banshang you yi-xie ren$_i$ taoyan wo, renjia$_i$ yiding bu xiang xuan wo dang banzhang. 'Some of my classmates hate me very much, so they definitely do not want to elect me class leader.'
Backward coreference	RENJIA referring to a specific antecedent	Ni yiqian changchang qifu renjia$_i$, Xiaohou$_i$ yiding buhui jie qian gei ni. 'You used to play tricks on him, so Little Monkey definitely would not lend you money.'
	RENJIA referring to a non-specific antecedent	Renjia$_i$ shuo bu keyi chidao, suoyi dajia$_i$ dou tizao chumen. 'People say that being late is not right, so everyone leaves home early.'

The example sentences with a multiple interpretation are illustrated in Table 3-4.

Table 3-4 Example Sentences with a Multiple Interpretation

Directions	Referent Types	Examples
Forward coreference	RENJIA referring to two specific antecedents	Wo_i he $Xiaoxiong_j$ yijing lai bangmang saodi le, ni hai yizhi ma $renjia_{i/j}$. 'Little Bear and I have already come and help clean, but you still kept scolding (me/ Little Bear).'
	RENJIA referring to two specific antecedents	You xie ren_i zai kan shu, $Xiaotu_j$ zai shuijiao, wo he $renjia_{i/j}$ buyiyang. 'Some $people_i$ are reading books and Little $Rabbit_j$ is sleeping. I am not like $them_{i/j}$.'
Backward coreference	RENJIA referring to two specific antecedents	$Renjia_{i/j}$ mingtian jiu yao jiao gongke, kuaidian jiao $Xiaotu_i$ qu zhao $Xiaoxiong_j$ xie gongke! '$He_{i/j}$ has to hand in the homework tomorrow; make Little $Rabbit_i$ go to Little $Bear_j$ for the homework quickly.'
	RENJIA referring to two specific antecedents	$Renjia_{i/j}$ xihuan yundong, you xie ren_i changchang youyong, $Xiaoxiong_j$ hen ai paobu. '$People_{i/j}$ like to do exercise. $Some_i$ choose to swim, and Little $Bear_j$ chooses to jog.'

3.2.1 The PS Task

In the PS task, each subject saw some pictures on slides made with PowerPoint 2007 and simultaneously heard the recorded story which consisted of the test items. Before each test item, the storyteller provided the subjects with abundant verbal information to manipulate topic continuity and discourse focus in the story. In this way, the subjects had a better understanding of the storyline, which helped them make a correct judgment of the pronominal interpretation of *renjia*. An example of the PS task is shown in Table 3-5.

Table 3-5 A Test Scenario Used in the PS Task

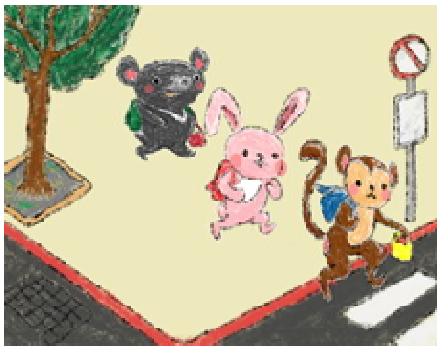
Scene 1: 	The subject will hear: *Diyijieke, laoshi yao tongxuemen xuan xinde banzhang,* 'In the first class, the homeroom teacher asks the classmates to choose a new class leader.'
Scene 2: 	*Xiaohou henxiang dang banzhang.* 'Little Monkey wants to be the class leader.'
Scene 3: 	*Ta dui Xiaotu shuo, "Renjia yinggai hui xuan wo, yinwei wo changchang jiao yi-xie tongxue xie gongke."* 'He talks to Little Rabbit, "They definitely will elect me, because I often help some classmates with the homework."'
Scene 4: 	*Xiaopengyou, Xiaohou shuo shei yinggai hui xuan ta?* *(1) yi-xie tongxue* *(2) dajia* *(3) laoshi* 'My Little friend, Xiaohou said who definitely will elect him? (1) some classmates (2) everybody (3) the teacher'

After the questions, the subjects had to select one out of the three pictures of the characters. The process of the whole experiment was audio-recorded for data analysis.

3.2.2 The IM Task

In the IM task, each subject also saw some pictures on slides made by PowerPoint 2007 and simultaneously heard the recorded story. Table 3-6 shows one example of the scenario.

Table 3-6 A Test Scenario Used in the IM Task

Scene 1 	The subject will hear: *Fangxuehou, Xiaotu, Xiaoxiong, he Xiaohou yiqi huijia,* 'After school, Little Rabbit, Little Bear, and Little Monkey go home together.'
Scene 2 	*Xiaotu dui Xiaohou shuo, "Mingtian shi renjia de shengri, nimen bu yao wang-le song wo caomeidangao o !"* 'Little Rabbit talks to Little Monkey, "Tomorrow will be my birthday; don't forget to give me a strawberry cake."'
Scene 3: 	*Xiaopengyou, qing ni ba Xiaotu ganggang shuo de hua zai shuo yi bian?* 'My Little friend, please repeat the sentence which Xiaotu just said?'

All the responses of the subjects were audio-recorded. The coding procedures are introduced in Section 3.3.3.

3.3 Procedures

This experimental procedures employed in the present study are elucidated in this section. Section 3.3.1 summarizes the major findings and inadequacies of the pilot study and procedures of the formal study are demonstrated in Section 3.3.2. In Section 3.3.3, the scoring criteria are presented.

3.3.1 Pilot Study

A pilot study was conducted to fifteen children aged from 4; 1 to 8; 3 and there were three subjects in each age group. A group of native controls also participated in the experiment. The IM task was done before the PS task. Different interpretations, referential directions, and types of referent of the pronominal *renjia* were all examined.

The results are as follows: First, the correct responses to the coreference of the pronominal *renjia* increased with age (For more details, please see Appendix B). The children aged four and five scored below the average. The performances of the six-, seven-, and eight-year-olds improved a lot in response to the coreference of the pronominal *renjia*. Second, the results of the comprehension task showed that all the subjects performed better on the patterns with a single interpretation than those with multiple interpretations, while the results were reversed in the production task by the older children (6-, 7-, 8- year olds) and adults. With regard to the referential directions, all the subjects accepted both forward and backward coreference, but most of them performed better on forward than backward coreference. This is consistent with Huang's (2011) findings on children's interpretations of personal pronouns in Mandarin Chinese. With respect to the referent types, all the subjects did better on specific than non-specific referents in the single-interpretation patterns in both tasks; however, the results were different in the multiple-interpretation patterns in the PS task. The eight-year-olds and adults scored lower than the six- and seven-year olds on the multiple-interpretation patterns in which the pronominal *renjia* was expected to be coreferential with two specific referents in the context. Our subjects tended to select only one

referent to be coreferential with the pronominal *renjia* even when the context was ambiguous. Finally, all the subjects performed better on the PS task than the IM task. The younger children tended to passively copy parts of the sentences without fully understanding the meaning of the sentences and the older children produced more personal pronouns in the IM task.

Some inadequacies were found in this pilot study. First, in the IM task, although the younger children seemed to be able to get the gist of a scenario, they often replaced *renjia* with the pronouns (first-person, second-person, or second person) or R-expressions. One possible explanation for this replacement might be that they have not reached the level of maturity in acquiring Mandarin referential expressions. Another possibility might be the instructions were not clear to them. Second, the results of the multiple-interpretation patterns in the PS task were not expected, which might be due to the insufficient contextual cues. In order to examine referential ambiguity, some plots of the story and the test sentences need to be revised. Finally, the pool of subjects in the pilot study was too small, which might be one of the reasons why significant results were not found.

3.3.2 Formal Study

In light of the inadequacies in the pilot study, some plots of the story along with the test sentences were revised in the formal study. In addition, before the first scenario of the experiment, a training section was provided to the subjects to help them understand the instructions. Moreover, the number of subjects was expanded.

The formal study was processed under the permission of children's parents. Before the data collection, we gave the consent forms (see Appendix C) to the teachers and asked them to distribute to the subjects' parents. The purposes and procedures of the experiment were stated on the consent forms, and the experiment was conducted individually in Mandarin Chinese in a quiet place.

During the experiment, the subjects were told a story presented on the screen and asked to pay attention to what the characters said in the story. When each scenario ended, they had to answer two questions (an IM question and a PS question) based on what they saw and heard in the story. After the experimenter assured that the subjects had already understood what they should do in the experiment, the experiment started.

The story was recorded by a storyteller and several native speakers imitating different child-like tones of the different characters. In the beginning of the story, the story teller introduced the characters and their relationships. The production question (i.e., the PS task) were given to the subjects before the comprehension question (i.e., the IM task), so as to prevent them from getting hints from the comprehension task. After the subject finished one scenario, s/he were first asked a production question (e.g., Q10-p: *Xiaopengyou, qing ni ba Xiaotu ganggang shuo de hua zai shuo yi bian?* 'My little friend, please repeat the sentence which Xiaotu just said'). After s/he imitated what the character said, a comprehension question will then be presented (e.g., Q10-c: *Xiaopengyou, Xiaotu shuo mingtian shi* ***shei*** *de shengri*? 'My little friend, Little Rabbit said tomorrow would be whose birthday?'). All responses of the subjects to the production questions were recorded and answers to the comprehension questions were written down on an answer sheet by the experimenter during the experiment.

3.3.3 Scoring

As illustrated in Section 3.2, two tasks were employed to examine children's interpretations of the pronominal *renjia*. In the PS task, the subjects were given one point if they selected the correct referent in the context, and no point for the other two choices. In the IM task, the subjects' responses were analyzed according to the antecedent-pronoun relation. One point was given if the subject correctly imitated the target sentences. To be more specific, the subjects got one point if their utterances consisted of both the pronominal *renjia* and its

intended antecedent in the correct position. Nonetheless, the subjects only got 0.5 point if their production data consisted of either the pronominal *renjia* or its intended antecedent. Moreover, if the subjects' word choices were different from those in the target sentence but still maintained the main meaning, their points were not deducted. Finally, 0 point was given if the subjects did not response to the questions or they produced irrelevant sentences which contained neither the pronominal *renjia* nor its intended antecedent. Table 3-7 shows the criteria for scoring the IM task.

Table 3-7 The Criteria for Scoring the IM Task

Point	Sentence	Example
1	Target sentence	Mingtian shi renjia-de shengri, nimen bu yao wang-le song wo caomei dangao o. tomorrow be RENJIA's birthday you not want forget-Asp give me strawberry cake Par 'Tomorrow is my birthday; do not forget to give me a strawberry cake.'
	Corresponding imitation (1)	Mingtian shi **renjia-**de shengri, ni yao song **wo** caomei dangao. tomorrow be RENJIA's birthday you want give me strawberry cake (G4S10)
	Corresponding imitation (2)	Mingtian shi **renjia-**de shengri, yao mai dngao gei **wo**. tomorrow be RENJIA's birthday want buy cake to me (G5S2)
0.5	Partial imitation (1)	Mingtian shi **renjia-**de shengri, … tomorrow be RENJIA D's birthday (G1S8)
	Partial imitation (2)	…, yao song **wo** caomei dangao. want give me strawberry cake (G2S8)
0	Error imitation (3)	bu yao song dangao not want give cake (G2S9)
	Error imitation (4)	Mingtian you ren shengri, yao song ta caomei dangao o. tomorrow have person birthday want give her strawberry cake Par (G2S11)

For instance, for the target sentence, either the corresponding imitation (1) or (2) was given 1 point because the anaphoric dependency between the pronominal *renjia* and the antecedent *wo* 'I' remained the same. However, both partial imitation (1) and (2), which involved only the pronominal or the antecedent, were given 0.5 point. At last, when the subjects failed to maintain the main meaning of the target sentences like the error imitation (1) and (2), 0 point was given.

3.4 Summary of Chapter Three

In this chapter, the background information of the subjects, tasks, procedures, and the criteria for scoring are presented. A comprehension task (i.e., the PS task) and a production task (i.e., the IM task) were devised in order to collect data from the preschoolers, first and second graders. The two tasks were jointed and shared the same storyline. All the responses were processed by SPSS (21^{th} edition) system for the purpose of exploring the subjects' acquisition of the pronominal *renjia* in Mandarin Chinese.

Chapter Four

Results and Discussion

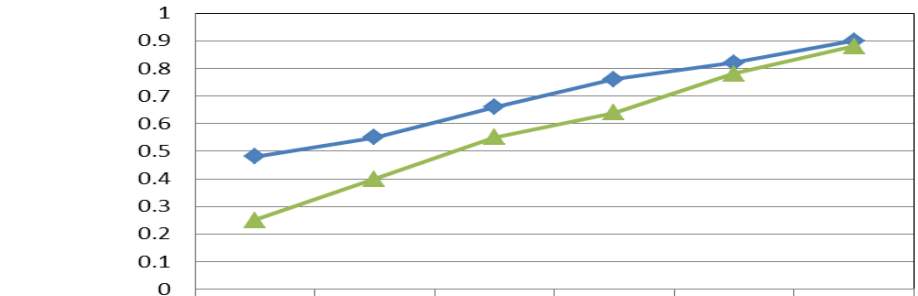
The results of the present study are reported and discussed in this chapter with regard to the five research questions about the interpretations of the pronominal *renjia* stated in Chapter One. Section 4.1 reports the differences between single- and multiple-interpretation patterns in our subjects' responses to the two tasks. In Section 4.2, the effects of referential direction on *renjia* are examined. Section 4.3 focuses on how referent types influence the subjects' responses to *renjia* in the single- and multiple- interpretation patterns. Section 4.4 is the discussion about task effects, illustrating the distinctions between the comprehension and production tasks. In Section 4.5, the subjects' error responses are analyzed, and the age effects are summarized in Section 4.6. Finally, Section 4.7 is a summary of this chapter.

4.1 Pattern Effects

As stated in the literature, referential complexity of *renjia* in Chinese may cause difficulties for children in their acquisition of this pronominal. Researchers have pointed out patterns according to the number of interpretations in the target sentences (cf. Wei, 2001). One is with only one interpretation and the other is with ambiguous interpretations. Therefore, this section mainly addresses the first research question: Do Chinese children show similar responses to different interpretation patterns in their acquisition of the pronominal *renjia*? Two interpretation patterns (single and multiple) were designed to explore whether our children felt easier to comprehend and produce the single-interpretation patterns.

4.1.1 Overall Findings

The mean scores of our subjects' responses to the single- and multiple- interpretation patterns are shown in Figure 4-1.



	G1	G2	G3	G4	G5	Control
Single	0.48	0.55	0.66	0.76	0.82	0.9
Single SD	0.09	0.13	0.07	0.07	0.1	0.05
Multiple	0.25	0.4	0.55	0.64	0.78	0.88
Multiple SD	0.16	0.18	0.17	0.14	0.11	0.06

Figure 4-1 Subjects' Responses to Different Interpretation Patterns

As can be seen in Figure 4-1, one-way ANOVA indicates that there was a significant difference among six age groups in the two interpretation patterns (single: F (5, 90) = 51.316, p < .001; multiple: F (5, 90) = 32.705, p < .001). All the groups performed better on the single- than the multiple- interpretation patterns (G1: M = 0.48 > 0.25, G2: M = 0.55 > 0.40, G3: M = 0.66 > 0.55, G4: M = 0.76 > 0.64, G5: M = 0.82 > 0.78, Control: M = 0.90 > 0.88). Table 4-1 further presents the within-group differences between the two interpretation patterns for each group.

Table 4-1 The *p*-values between Different Interpretation Patterns

	G1	G2	G3	G4	G5	Control
F	11.178	19.944	7.252	7.986	1.431	2.141
P	.004*	.000*	.017*	.013*	.250	.164

As can be seen in Table 4-1, a significant difference between the single- and the multiple- interpretation patterns was found in G1 (F (1, 30) = 11.178, p < .01), G2 (F (1, 30) = 19.944, p < .001), G3 (F (1, 30) = 7.252, p < .001) and G4 (F (1, 30) = 7.986, p < .001), while G5 (F (1, 30) = 1.431, p > .05) and the control group (F (1, 30) = 2.141, p > .05) did not respond significantly differently to the two interpretation patterns. Thus, the within-group comparisons indicated that the single-interpretation patterns were significantly easier than the

multiple-interpretation patterns for the children (G1-G4), indicating that referential ambiguity indeed influenced children's comprehension and production of the pronominal *renjia*.

As for a between-group comparison, in the single-interpretation patterns, G3 performed significantly better than G1 ($p < .01$) and G2 ($p < .05$), and G1-G2 performed statistically similarly ($p > .05$). G5 significantly outperformed G1-G3 ($p < .001$), but they did not yield a significant difference compared with the control group ($p > .05$). In the multiple-interpretation patterns, G4 significantly outperformed G1-G2 ($p < .01$), and G5 did significantly better than the other experimental groups, except for G4 ($p > .05$) and showed no significant difference with the control group, showing that they had acquired the adult-like grammar of this pronominal.

4.1.2 General Discussion

The major finding concerning the pattern effects are addressed as follows. Firstly, our subjects demonstrated a similar tendency that the single-interpretation patterns were easier than the multiple-interpretation patterns, which is consistent with Wei's (2001) L2 study. Although no within-group comparison was made between the two interpretations patterns in her study, both English and Japanese groups had more difficulties responding to the multiple- than single-interpretations.

As stated in Goodluck (1991), learnability deals with how grammatical principles, input in rule formation and errors that have been made contribute successful learning of a linguistic system in a limited time span. Based on the terminology deriving from Wexler & Culicover (1980), syntactic complexity will influence the degree of difficulty in acquiring grammatical constructions. In their terminology, different constructions are degree-*n* learnable. For example, if one construction is degree-0 learnable and the other is degree-1 learnable, the later will be more difficult for learners to acquire. The learnability theory is also proposed with an attempt to explain the speed with which language is acquired and to prevent the

learners from making errors (Goodluck, 1991). For instance, with regard to the Subjacency principles, the number of embedded sentences is taken as the measure of syntactic complexity in particular constructions. The ability to deduce whether a grammatical structure is derived by movement will be degree-1 learnable (Wexler & Culicover, 1980). By analogy, if we take the number of interpretations of the pronominal to be the measure of semantic complexity of the target sentences, the single-interpretation patterns would carry a lower degree of learnability than the multiple-interpretation patterns. In the single-interpretation patterns, there was only one intended referent fitting the semantic features of the pronominal in the target sentences, while the two potential referents in the multiple-interpretation patterns increased semantic complexity of the sentences. Therefore, more errors may occur in the multiple-interpretation patterns, since they involve in a higher degree of learnability.

Generally speaking, the correct responses to the pronominal *renjia* in both interpretation patterns increased with age. There were no significant differences between the 4-year-olds (G1) and the 5-year-olds (G2) in response to both patterns. The 6-year-olds (G3) significantly outperformed the 4-year-olds (G1) and the 5-year-olds (G2) on the single-interpretation patterns, implying that our children's acquisition of the pronominal *renjia* with a single interpretation in sentences abruptly rose at age 6 (G3). However, not until age 7 (G4) did the children significantly outperform the 4- and 5-year-olds on the multiple-interpretation patterns, indicating that *renjia* with a multiple interpretation in sentences was acquired at the period of ages 6-7.

Our younger children's lower rate of correct responses to the multiple-interpretation patterns might be due to their inability to recognize referential ambiguity. As claimed by Asher (1976), children would settle on the first possible referent they see without comparing messages with all the possible referents in the referential field. Their referential choices reflect cognitive inabilities (Asher, 1976, 1979; Bearison & Levey, 1977), or immature meta-communicative abilities (Robinson, 1981; Singer & Flavell, 1981) in the

comprehension of referential communication. Echoing to Jackson & Jacobs (1980), the way children chose a referent for the pronominal was more arbitrary, idiosyncratic and fortuitous. Moreover, our findings were also similar to Markman's (1977) results that the children of his study tended to employ passive processing and seldom checked the adequacy of their judgment. In sum, the results of our younger children[1] (4- and 5-year-olds) were in accordance with the previous results that the younger children had more difficulty dealing with referential ambiguity.

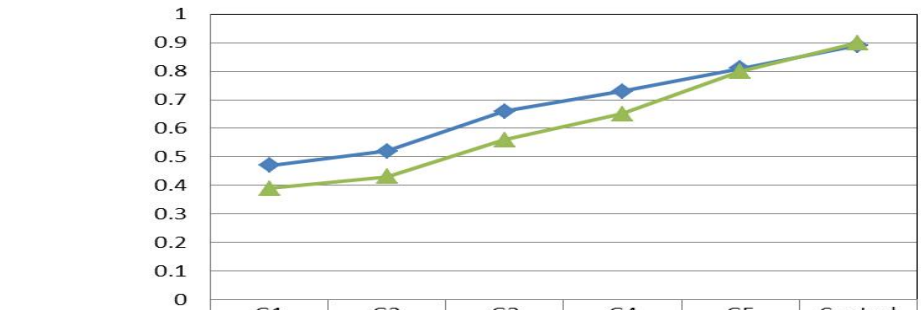
4.2 Directionality Effects

As discussed in Section 1.2, children may be sensitive to the referential direction in their pronominal acquisition. Previous literature has found that children would use direction to restrict anaphora (Tavalolian, 1977). And Chinese children did not reject backward coreference as much as the English children did (Lust et al., 1996; Wilcoxon, 1991) Thus, the difference between forward and backward coreference is also one of the major concerns in the present study (cf. Huang, 2011; Wei, 2001).

4.2.1 Overall Findings

The mean scores of the subjects' responses to forward coreference and backward coreference are presented in Figure 4-2.

[1] The mean scores of G1 and G2 for the multiple-interpretation patterns were below average (G1: M = 0.25, G2: M = 0.40).



	G1	G2	G3	G4	G5	Control
Forward	0.47	0.52	0.66	0.73	0.81	0.89
Forward SD	0.14	0.15	0.09	0.13	0.09	0.07
Backward	0.39	0.43	0.56	0.65	0.8	0.9
Backward SD	0.12	0.15	0.15	0.1	0.1	0.06

Figure 4-2 Subjects' Responses to Different Referential Directions

As shown in Figure 4-2, one-way ANOVA indicates a significant difference among the six age groups in the two referential directions (forward: F (5, 90) = 31.773, p < .001; backward: F (5, 90) = 48.321, p < .001). Table 4-2 further shows the within-group differences between the two referential directions.

Table 4-2 The *p* values of Subjects' Responses to Different Referential Directions

	G1	G2	G3	G4	G5	Control
F	23.430	9.679	9.587	5.484	0.147	.523
P	.000*	.007*	.007*	.033*	.707	.481

A significantly better performance on forward coreference than backward coreference was found in G1 (F (1, 30) = 23.430, p < .001), G2 (F (1, 30) = 9.679, p < .01), G3 (F (1, 30) = 9.587, p < .01), and G4 (F (1, 30) = 5.484, p < .05). Although there was no significant difference in G5 (F (1, 30) = 0.147, p > .05), they still performed better on forward than backward coreference (M = 0.81 > 0.80). The mean score of the control group for forward coreference was lower than that for backward coreference (M = 0.89 < M =0.90), which did not yield a significant difference (F (1, 30) = 0.005, p > .01).

The post hoc analysis shows that in response to forward coreference, G3 was significantly better than G1-G2 (p > .001), G5 performed significantly better than G1-G3 (p

< .05), and the control group did significantly better than all the experimental groups except for G5 (p > .05). As for backward coreference, G4 significantly outperformed G1-G2 (p < .001), G5 significantly outperformed G1-G4 (p < .05), and there was no significant difference between G5 and the control group (p < .05). Based on this finding, we can conclude that G5 had acquired an adult-like grammar with regard to forward and backward coreference of the pronominal *renjia*.

Table 4-3 further illustrates the differences between forward and backward coreference in the single- and the multiple- interpretation patterns.

Table 4-3 The Comparisons of Subjects' Responses to Different Referential Directions in Single- and Multiple-Interpretation Patterns

Type / Group	Single				Multiple			
	Forward		Backward		Forward		Backward	
	M	SD	M	SD	M	SD	M	SD
G1	0.50	0.14	0.46	0.08	0.43	0.18	0.31	0.19
G2	0.58	0.16	0.46	0.14	0.45	0.20	0.35	0.18
G3	0.68	0.12	0.64	0.15	0.64	0.15	0.49	0.23
G4	0.77	0.09	0.69	0.11	0.68	0.19	0.61	0.13
G5	0.83	0.12	0.81	0.13	0.80	0.14	0.77	0.12
Control	0.94	0.08	0.92	0.12	0.86	0.07	0.85	0.10

As can be seen in Table 4-3, in response to the singe-interpretation patterns, from G1 to G4 the correct responses to forward coreference increased regularly (0.50 > 0.58 > 0.68 > 0.77), whereas the regular increases on backward coreference were just obtained from G2 to G3, and G4 to G5 (G1 = 0.46, G2 = 0.46, G3 = 0.64, G4 = 0.69, G5 = 0.81). This is the main reason why the significant differences between the two directions in the single-interpretation patterns were only found in G2 (p < .01) and G4 (p < .05). In response to the multiple-interpretation patterns, G1-G2 scored below average on the two referential directions (forward: G1 = 0.43, G2 = 0.45; backward: G1 = 0.31, G2 = 0.35). The mean

scores for both coreference increased in G3, and G4 significantly performed better than G3 on backward coreference. Finally, concerning the different referential directions in different interpretation patterns, G5 did not show a significant difference with the control group, implying that they had acquired the adult grammar.

4.2.2 General Discussions

As pointed out by Kao (1993), there are no precedence constraints on the direction of referential pronouns in Mandarin Chinese, and backward coreference is considered acceptable in the adult grammar. Huang (1982) and Teng (1985) also provide evidence that backward coreference for pronouns is possible in Chinese.

It has been reported that English children tend to show a stronger preference for forward than for backward coreference (Lust, 2006). As stated in Section 1.2.3, children may be sensitive to the head-direction of their L1s in the acquisition of grammatical anaphora. Some researchers have found that children whose L1 is head-initial prefer forward over backward coreference (e.g., C.S Chomsky, 1969; Goodluck, 1981; Lust et al., 1986; Solan, 1983), and the others have reported that children whose L1 is head-final did a better job on backward coreference (e.g., Lust & Chien, 1984; Lust et al., 1982). In the present study, our Chinese children did not reject backward coreference as much as English children did. This finding is consistent with Huang's (2011) result that the Chinese children were able to obtain both forward and backward coreference. However, our children aged 4-7 performed significantly better on forward than backward coreference of the pronominal *renjia*, which seems to contradict to the Principal Branching Direction[2] (PBD) in Chinese (Lust & Chien, 1984: 51). According to Lust & Chien (1984), Chinese is principally left-branching (PLB) similar to Japanese and different from English (Lust & Chien, 1984: 53). On the contrary, Chinese

[2] 'If the PBD of the language is 'right', children establish anaphora in a mainly *forward* direction. If the PBD is 'left,' they establish a *backward* direction of anaphora as unmarked (Lust & Chien, 1984: 51).'

shares the same word order (i.e., SVO) as English (e.g., Chao, 1968, 1973; Huang, 1982; Smith, 1981). As claimed in Slobin & Bever (1982), word order plays an essential role for linguistic constraints on the surface structures of sentences in children's early syntax. Therefore, it is likely that our children's higher mean scores for forward coreference reflected the superiority of word-order strategy used in the acquisition of pronominal coreference. Moreover, Chinese is distinct from both English and Japanese in that it has been categorized as a topic-comment language (Huang, 1982; Li & Thompson, 1976, 1981). A discourse topic is "semantically relevant to the following comment but syntactically independent of the rest of the sentence (Li & Thompson, 1976: 446)." According to Lust & Chien (1984), the grammatical concept of the PBD is not subject to a discourse anaphora (e.g., a discourse-bound pronominal), which is generally relevant to a discourse topic and expected to work forward in direction. Therefore, having regarded *renjia* as a discourse-bound pronominal, the children of our study were found to reject more backward than forward coreference in the target sentences.

Another possible account for the better performance on forward than backward coreference in the children's acquisition of this pronominal might be due to the processing complexity or attentional demand of forward and backward serial recall from cognitive perspective (Case, 1972; Case & Globerson, 1974). Case (1972) argues that the performance on forward serial recall is superior to backward serial recall because the former uses little attentional resources and only requires passive storage. The attentional resources mean the executive process span, or the so-called working memory. In contrast, backward serial recall involves an attentional demanding transformation, which means more attentional resources will be used (Case, 1972). Therefore, a better control of forward than backward serial recall might cause more correct responses to forward coreference in pronominal acquisition.

The following issue concerns with the comparisons of our subjects' responses to different referential directions in the single- and the multiple-interpretation patterns.

Generally speaking, all the subjects performed better on forward than on backward coreference in the single-interpretation patterns. Moreover, with regard to forward coreference in the single-interpretation patterns, the performance of all the experimental groups made regular progress. To contrast, regarding the backward coreference in the single-interpretation patterns, the correct responses of the 6-year-olds increased sharply compared with the 4- and 5-year-olds.

Like the single-interpretation patterns, all the subjects did better on forward than backward coreference in the multiple-interpretation patterns. The 6-year-olds performed well on forward coreference in the multiple-interpretation patterns. It was not until age 7 (G4) did the children significantly performed better on backward coreference in the multiple-interpretation patterns. Therefore, we conclude that there is a pivotal phenomenon that ages 6-7 are transitional stages that the children have become sensitive to different referential directions in different interpretation patterns of the pronominal *renjia*.

4.3 Referent Effects

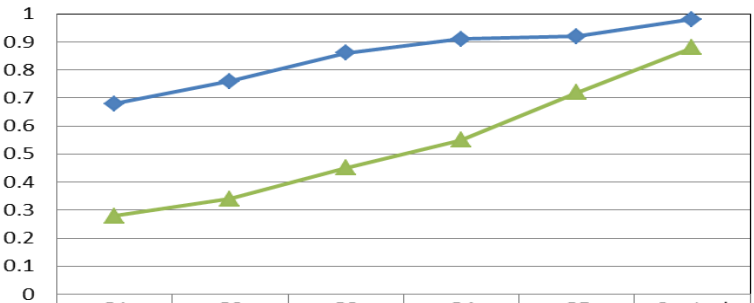
In the present study, if the pronominal *renjia* in a sentence refers to an antecedent which is specified in the context (e.g., definite), it corefers with a specific referent, while if the pronominal *renjia* in a sentence refers to an antecedent which is not specified in the context (e.g., indefinite or generic), it corefers with a non-specific referent. In Section 4.3, our focus is on whether or not different referent types will influence our subjects' interpretations of *renjia* in Chinese

In the single-interpretation patterns, each target sentence includes only one referent: specific or non-specific, whereas in the multiple-interpretation patterns, every target sentence consists of two referents. One referent combination type (RCT) consisted of two specific antecedents, and the other referent combination type involved one specific and one non-specific antecedent. Whether different RCTs would affect the subjects' interpretations of

the pronominal *renjia* is also concerned in this section.

4.3.1 Overall Finding 1: Specific vs. Non-specific Referent

Figure 4-3 shows the mean scores of the subjects' performances on the two referent types in the single-interpretation patterns.



	G1	G2	G3	G4	G5	Control
Specific	0.68	0.76	0.86	0.91	0.92	0.98
Specific SD	0.16	0.1	0.08	0.08	0.08	0.04
Non-specific	0.28	0.34	0.45	0.55	0.72	0.88
Non-specific SD	0.11	0.17	0.15	0.14	0.18	0.1

Figure 4-3 Subjects' Responses to Different Referent Types

In Figure 4-3, one-way ANOVA indicates a significant difference among the six age groups in the two referent types (specific: F (5, 90) = 18.304, p < .001, non-specific: F (5, 90) = 32.195, p < .001). All the subjects had more correct responses to the specific referents than the non-specific referents (G1: M = 0.68 > 0.28, G2: M = 0.76 > 0.34, G3: M = 0.86 > 0.45, G4: M = 0.91 > 0.55, G5: M = 0.92 > 0.72, Control: M = 0.98 > 0.88), indicating that the non-specific interpretations of the pronominal *renjia* were much more difficult for the subjects than the specific ones. Furthermore, a significant difference between the two types of referents was found in all the groups (G1: F (1, 30) = 64.644, p < .001, G2: F (1, 30) = 169.692, p < .001, G3: F (1, 30) = 67.653, p < .001, G4: F (1, 30) = 68.086, p < .001, G5: F (1, 30) = 18.775, p < .001, Control: F (1, 30) = 20.716, p < .01), as presented in Table 4-4.

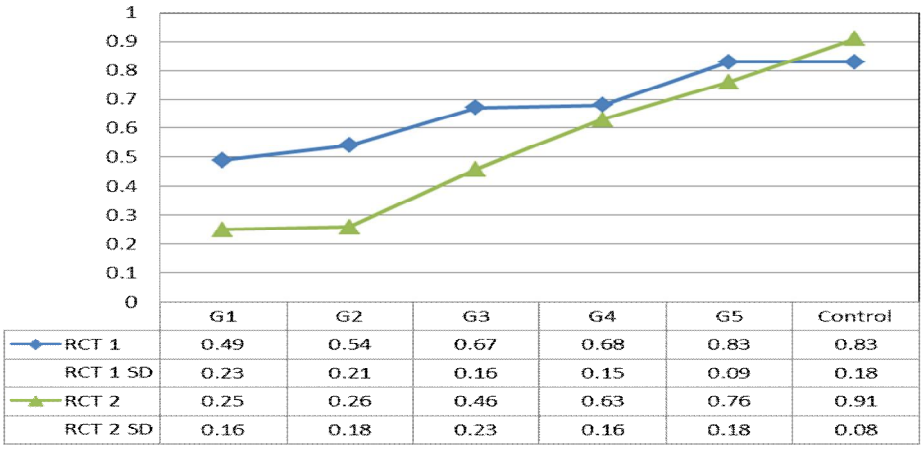
Table 4-4 The *p* values of Subjects' Responses to Different Referent Types: Single Interpretation

	G1	G2	G3	G4	G5	Control
F	64.644	169.692	67.653	68.086	18.775	20.716
P	.000*	.000*	.000*	.000*	.000*	.002*

With regard to the between-group analysis, in the specific interpretations, G3 significantly performed better than G1-G2 ($p < .05$), and they showed no significant difference with G4-G5. The control group only significantly outperformed G1-G3 ($p < .01$). There were no significant differences among G4, G5 and the control group. As for the non-specific interpretations, G5 significantly outperformed G1-G3 ($p < .01$) and showed no significant difference with the control group ($p > .05$). Therefore, G4 had acquired the adult-like interpretations of the specific referent, while the adult-like interpretations of the non-specific referent were acquired by G5.

4.3.2 Overall Finding 2: RCT1 vs. RCT2

The statistical results of the subjects' scores for the two referent combination types (RCTs) are shown in Figure 4-4.



	G1	G2	G3	G4	G5	Control
RCT 1	0.49	0.54	0.67	0.68	0.83	0.83
RCT 1 SD	0.23	0.21	0.16	0.15	0.09	0.18
RCT 2	0.25	0.26	0.46	0.63	0.76	0.91
RCT 2 SD	0.16	0.18	0.23	0.16	0.18	0.08

Figure 4-4 Subjects' Responses to Different Referent Combination Types

As presented in Figure 4-4, except for the control group, G1-G5 all showed a better

performance on RCT1 than on RCT2 (G1: M = 0.49 > 0.25, G2: M = 0.54 > 0.26, G3: M = 0.67 > 0.46, G4: M = 0.68 > 0.63, G5: M = 0.83 > 0.76, Control: M = 0.83 < 0.76). Table 4-5 further shows that there was a significant difference between the two types of referent combinations in most of the groups (G1: F (1, 30) = 22.387, p < .001, G2: F (1, 30) = 44.375, p < .001, G3: F (1, 30) = 15.403, p = .001, G4: F (1, 30) = 0.882, p = .362, G5: F (1, 30) = 4.868, p < .05, Control: F (1, 30) = 6.568, p < .05).

Table 4-5 The *p* values of Subjects' Responses to Different Referent Combination Types: Multiple Interpretations

	G1	G2	G3	G4	G5	Control
F	22.387	44.375	15.403	0.882	4.868	6.568
P	.000*	.000*	.001*	.362	.043*	.022*

The post hoc analysis shows that the control group significantly outperformed G1-G2 (p = .001), and they did not show significant differences with G4-G5 in response to RCT1. Regarding RCT2, it was found that G4 performed significantly better than G1-G2 (p < .001), and G5 significant performed better than G1-G3 (p < .01). The control group significantly outperformed every experimental group except for G5 (p > .05). Based on the finding, we can conclude that G4 had acquired an adult-like grammar of RCT1 in ambiguous interpretations, while not until G5 did the children demonstrate the adult-like interpretations of RCT2.

4.3.3 General Discussion

From the results presented above, our children aged 7 (G4) had already acquired adult grammar of the specific interpretations of *renjia* and not until age 8 (G5) did the children gradually develop the non-specific interpretations of this pronominal.

The reason why the specific interpretations were developed prior to the non-specific interpretations might be accounted for the concreteness effect in semantic processing. The

concreteness effect have been widely discussed in terms of Paivo's (1986) dual-coding theory, which argues for the processing advantage of concrete over abstract verbal stimuli. According to Paivo, concrete words are represented verbally in addition to imaginal elaboration, while abstract words are operated only with verbal representation. Several studies have proved that people find concrete verbal stimuli easier to process than abstract verbal ones in a variety of experimental tasks like a lexical decision, sentence comprehension, and sentence verification (Paivio, 1991; Schwanenflugel, 1991). In the present study, the specific interpretations of the pronominal *renjia* always had one specific referent in the single-interpretation patterns, and two specific referents in the multiple-interpretation patterns. A specific antecedent is 'referentially anchored' to a particular referent in context, which is more concrete in terms of the concreteness effect, whereas a non-specific antecedent can be indefinite or generic, so it is more abstract in nature (cf. von Heusinger, 2002).

The concreteness effect may be related to a general principle of salience and the subjects' better performances on specific referents than non-specific in the present study also demonstrated the saliency of specific interpretations of *renjia* in context. In other words, the specific referents were more salient than the non-specific referents for the subjects to perceive in terms of the principle of salience. Moreover, the age-of-acquisition hypothesis (Gilhooly & Gilhooly, 1979) has analyzed the concreteness effect from a developmental perspective. They accounted for their children's earlier acquisition of concrete words for the cumulative word-frequency effect. The greater exposure to concrete than abstract words makes the former easier to process (e.g., Brown & Watson, 1987; Coltheart et al., 1988).

However, as claimed by Williams (1981), a marked form is more difficult for children to acquire and usually emerges later in children's grammar. As suggested by Wang (2006) in Section 2.1.4, a non-specific interpretation (i.e., indefinite) of the pronominal *renjia* is unmarked, whereas a specific interpretation (i.e., definite) is marked. Accordingly, the developmental sequence predicted by the Markedness Theory was not found in the present

study. However, although a specific interpretation of *renjia* is marked, as suggested by Wang (2006), it seems to be the initial interpretation of this pronominal for the children in the present study. As for this unexpected finding, we would like to argue for Eckman et al. (1986) that input frequency plays an essential role in categorizing marked and unmarked types. At the present day, the specific interpretations are indeed used much more often than the non-specific ones in adult speech. For instance, it is frequently used to corefer with a specific referent in many contexts to prevent from dispraising others (Chiu, 2000) or avoid embarrassment with the addressee (Liu, 2001). Marinellie & Chan (2006) also argued that word frequency had significant impact on word definition. When people of different ages were asked to write definitions of words, word frequency showed a strong influence on their definitions (Marinellie & Chan, 2006). On account of the greater cumulative exposure of these specific interpretations in children's language environment, it is likely that the specific interpretations are considered more unmarked for them.

With regard to the referent combination types (RCTs) in the multiple- interpretation patterns, all the experimental groups performed better on RCT1, in which the pronominal *renjia* could refer to the two specific antecedents in target sentences. As for RCT 2, in which the pronominal could refer to the specific and the non-specific antecedents in target sentences, all the experimental groups showed stronger preference for the specific than the non-specific antecedents. Specifically, the children preferred a specific over a non-specific interpretation for *renjia*, even though both were potential interpretations in the given context.

This finding is also in consistent with Wei (2001). In her study, the results demonstrated an accessibility hierarchy in ambiguous patterns: first person > third person > second person > indefinite, indicating that the specific interpretations of the pronominal *renjia* were more accessible for her subjects than the non-specific ones.

On the contrary, the adults did better performance on RCT2 than on RCT1 in the multiple-interpretation patterns. The relatively lower scores of RCT1 might result from the

adults' 'preference' for pronominal interpretations, not their 'ability.' In RCT1, except for Q12, the two potential referents in the target sentences were 'the speaker' (1st person pronoun) and a 'R-expression,' as shown in (1), while the potential referents in RCT2 included a R-expression and an indefinite group, as shown in (2).

(1) **Wo$_i$** he **Xiaoxiong$_j$** yijing lai bangmang saodi le,
I and Little Bear already come help clean Par
ni hai yizhi ma renjia$_{i/j}$.
You still all_the_time scold RENJIA
'**Little Bear** and **I** already came to help you clean, but you still kept scolding (me / Little Bear).'

(2) **You-xie-ren$_i$** zai kan shu, **Xiaotu$_j$** zai shuijiao,
some_ people at watch book Little Rabbit at sleep
wo he renjia$_{i/j}$ buyiyang.
I and RENJIA different
'**Some people** are reading comic books and **Little Rabbit** is sleeping. I am not like them.'

As reported by Cowles & Garnham (2011), the antecedent focus plays an essential role in anaphor resolution. According to them, it is much easier for a focused antecedent to be mapped onto an anaphor than a non-focused antecedent, because the focused antecedent, in the sense of psychology, is highly activated during sentence processing. In response to RCT1, the focus status of the speaker (1st person pronoun), one of the potential referents, is likely to be higher than the R-expression. On the other hand, the R-expression and the indefinite group in RCT2 seemed to be of similar focus status. So, we would argue that the relatively lower scores of the adults for RCT1 than RCT2 were because the adults gave equal status to the two potential referents in RCT2, but they preferred a more focused referent (the 1st person pronoun) in response to RCT1 even after detecting referential ambiguity. This stronger preference for the 1st person pronoun over the R-expression in response to RCT1 was also

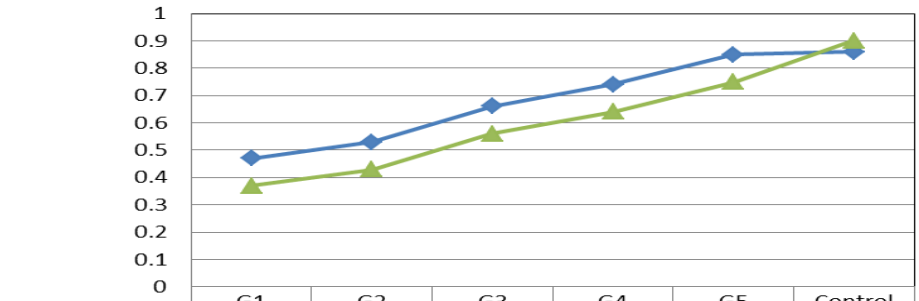
obtained in our children aged 6-8, but unlike the adults, they still strongly preferred the specific than non-specific referents in response to RCT2.

4.4 Task Effects

It has been reported that different task formats would elicit different experimental results. A comprehension task enables researchers to test children's sensitivity to different aspects of language and an elicited production task helps to evoke the target sentences which might occur rarely in children's spontaneous speech (McDaniel et al., 1996). Therefore, the fourth research question aims to discuss the task effects on children's acquisition of the pronominal *renjia*. Section 4.4.1 shows an overall comparison between the PS and the IM tasks. A general discussion about the task effects on our children's acquisition of the pronominal *renjia* is presented in Section 4.4.2.

4.4.1 Overall Findings

In order to distinguish between the subjects' comprehension and production of the pronominal *renjia*, two tasks were employed in the present study. The PS task is designed as a comprehension task and the IM task is designed as an elicited production task to explore Chinese children's competence in and performance on this pronominal. Figure 4-5 presents an overall comparison of the subjects' responses to the PS and the IM tasks.



	G1	G2	G3	G4	G5	Control
PS Task	0.47	0.53	0.66	0.74	0.85	0.86
PS Task SD	0.13	0.18	0.18	0.1	0.1	0.07
IM Task	0.37	0.43	0.56	0.64	0.75	0.9
IM Task SD	0.12	0.14	0.1	0.11	0.12	0.06

Figure 4-5 Subjects' Performances on the PS Task and the IM Task

As can be seen in Figure 4-5, our children did a better job on the PS task than on the IM task. Table 4-6 further shows the within-group differences between the two tasks in each group.

Table 4-6 The *p* values of Subjects' Responses to the PS Task and the IM Task

	G1	G2	G3	G4	G5	Control
F	22.512	5.352	4.318	12.116	11.213	4.711
P	.000*	.035*	0.47*	.003*	.004*	.053

In Table 4-6, we can see all the experimental groups performed significantly better on the PS task than on the IM task (G1: F (1, 30) = 22.512, $p < .001$, G2: F (1, 30) = 5.352, $p < .05$, G3: F (1, 30) = 4.318, $p < .05$, G4: F (1, 30) = 12.116, $p < .01$, G5: F (1,30) = 11.213, $p < .01$), indicating that our children's production was later than their comprehension in the acquisition of the pronominal *renjia*. To contrast, the control group did a slightly better job on the IM task than on the PS task, though no significant difference was found (G1: F (1, 30) = 4.771, $p > .05$).

With regard to the between-group comparison, G4 performed significantly better than G1-G2 ($p < .01$), and G4-G5 showed no significant difference with the control group ($p > .05$) on the PS task. As for the IM task, G4 also significantly performed better than G1-G2 (p

< .001), but the control group still significantly outperformed all the experimental groups (p < .05).

4.4.2 General Discussion

In the previous literature, different task formats have been employed in the study of L1 acquisition (Brown, 1987; Ingram, 1989; Lust et al., 1987). To understand the subjects' competence in and performance on the interpretation of the pronominal *renjia*, a comprehension task (the PS task) and a production task (the IM task) were employed in the present study. The major findings about the task effects are discussed as follows. First of all, it was found that all our children performed better on the PS task than on the IM task, regardless of different interpretation patterns, referential directions, and referent types. This finding supported the generally-accepted claim that children's comprehension exceeds their production and their pronominal competence was prior to their performance (Huang, 2011; Lust et al., 1986). In Lust et al. (1986), it was found that the children performed better on the comprehension task than on the elicited production task regarding the pronominal anaphora in L1 acquisition. Aside from pronominal acquisition, the results of the present study were in accord with the other documented findings of L1 acquisition in other linguistic aspects. Benedict (1979) argued for the priority of comprehension to production in lexical development. Similar task effects were found in Brown (1987) that the subjects showed a better performance on the comprehension of relative clauses. Lin (2008) also stated that her children's comprehension on double object construction was better than their production. The findings of Reilly (1982) that the subjects could produce sentences they did not fully understand were not found in our study. However, the adults of the present study performed better on the IM task, a result in accordance with Huang's (2011). Huang attributed her result to the nature of the elicited imitation task. After the subjects achieved their mature control of producing certain structures, they seldom made mistakes in imitation (Huang, 2011).

Furthermore, the correlation between the results of an elicited imitation task and that of a natural speech study has been found in children's production in early syntax (Lust & Mervis, 1980; Lust et al., 1980). As discussed in Section 3.2, children do not passively copy the stimuli in the elicited imitation task (Lust et al., 1999). Children's performance on the elicited imitation task requires their reconstruction of stimuli and comprehensively targets their knowledge of grammatical structures (Lust & Chien, 1984). In line with the evidence, our children's substitution of the pronominal *renjia* with its corresponding personal pronouns in production validated the elicited imitation task in the present study.

To sum up, an overall comparison between the PS and the IM tasks showed that our children aged 7 (G4) have acquired adult-like comprehension of the pronominal *renjia*. This age was relatively later than the age found in the previous studies about pronoun acquisition in Chinese (e.g., Huang, 2011). The result might be due the fact that the pronominal *renjia* is more semantically complex than other pronominals, which contributes to a higher degree of learnability for the children. Finally, a completely mature level of pronominal production might occur after the age of 8, since all the experimental groups (4~8-year-olds) still significantly performed worse than the control groups on the production task.

4.5 Production Analysis

In this section, the subjects' production errors are further analyzed to see if there was any intriguing characteristic about their utterances of the pronominal *renjia*. Section 4.5.1 reports the production types which scored 0 and 0.5 in the IM task and a general discussion is given in Section 4.5.2.

4.5.1 Overall Finding

Four non-target patterns were found in response to the IM task, including Referent Omission, Pronominal Omission, Pronominal Substitution and Other Patterns. Referent

Omission refers to the patterns where the referent(s) was absent, as in (3), and Pronominal Omission means that the subjects did not copy the pronominal in their production, as in (4). By using Pronominal Substitution, the subjects used other corresponding pronominals to substitute for the pronominal *renjia*, as in (5). Finally, Other Patterns refer to silent responses and irrelevant sentences.

(3) …, Ni hai ma **renjia** (Q9)
…, you still scold RENJIA
'You still scold RENJIA.' (taken from G1S2)

(4) Mingtian …, bu yao wangji song **Xiaotu**
tomorrow bu want forget give little_rabbit
dangao. (Q10)
cake
'Don't forget to give little rabbit a cake tomorrow.' (taken from G2S2)

(5) **Xiaoxiong** song women tangguo, women bu yao taoyan **ta**.
little_bear give us candy we not want hate him
(Q5)
'Little Bear gave us candies, so we should not hate him.'(taken from G1S6)

Table 4-7 reports the frequency counts and the percentages of the wrong production types in the IM task.

Table 4-7 Proportion of the Subjects' Wrong Productions in the IM Task

Type / Group	Referent Omission		Pronominal Omission		Pronominal Substitution		Other Patterns	
	N	%	N	%	N	%	N	%
Group 1	142	45.1	114	36.2	14	4.4	45	14.3
Group 2	119	41	103	35.5	26	9	42	14.5
Group 3	50	31.3	73	38	40	20.8	19	9.9
Group 4	43	27.9	60	39	41	26.6	10	6.5
Group 5	24	27.3	37	42	26	29.5	1	1.1
Control	7	20	10	28.6	16	45.7	2	5.7

As can be seen in Table 4-7, the non-target responses found in G1-G2 were relatively more than those found in G3-G5, but the error types of these groups showed different developmental patterns. The production errors made by the control group were significantly fewer than all the experimental groups.

In addition, it was found that the subjects' non-target production echoed with their comprehension errors. Generally speaking, most of the subjects made the errors which were mostly derived from sentences with backward coreference and non-specific interpretations. There are two main characteristics of the first stage of the children's production of the pronominal *renjia*. One is that they would omit both the referent(s) and the pronominal, so their utterances consisted of the least units. The other is that the children would maintain the pronominal and ignore the referent(s) in their responses. Although those partial imitations consisted of the pronominal *renjia*, their scores for the comprehension task did not show a corresponding understanding of it. At the second stage, the children often employed Pronominal Omission and Pronominal Substitution. This phenomenon demonstrated that they had not fully comprehended the sentences yet, especially with respect to backward coreference and non-specific interpretations, and that they tended to reject or replace *renjia* in their production. At the third stage, most of the subjects followed the antecedent-pronoun relation, so their responses consisted of the pronominal *renjia* and its antecedent(s). However, some of the subjects might still replace the pronominal *renjia* with its corresponding personal pronouns.

4.5.2 General Discussion

With regard to the production errors, we would like to argue that the interpretations of the pronominal *renjia* were rather constrained for younger children. In the early acquisition of the pronominal *renjia*, our children's interpretations limited to specific referents, such as the 1st person pronoun and R-expressions. Therefore, they found it more difficult to produce

sentences with non-specific antecedents. The poor comprehension of backward coreference also resulted in more errors in production. In addition, the higher percentage of the employment of Referent Omission might be due to the children's misunderstanding of the pronominal *renjia* as a discourse-bound pronominal. As discussed in Section 4.2.2, a discourse-pronominal, from the cognitive perspective, generally work in the forward direction (Lust & Chien, 1984).

Moreover, it was found that the subjects had more chances to imitate the target sentences correctly when the sentences were less complicated (cf. Huang, 2011). Our younger children (G1-G2) tended to employ Referent Omission and had little knowledge about the antecedent-pronoun relation of the pronominal *renjia*. Although our elder children (G3-G5) still used Referent Omission, they employed more Pronominal Omission to avoid *renjia* in the sentences with backward coreference or non-specific interpretations, showing that our children tended to avoid certain forms which they were not familiar with (Lust et al., 1999). However, the ascendant percentage of Pronominal Substitution used by G3-G5 implied that they had gradually acquired the antecedent-pronoun relation of *renjia*, but would replace it with other pronominals. This may be because Mandarin exhibits various pronominals[3]. The subtle distinctions among them may be the main reason for the subjects' non-target patterns in the IM task.

Moreover, in the literature of pronominal acquisition (Cooley, 1908; Huxley, 1970; Oshima-Takane et al., 1999), two major difficulties have been proposed for children. One is the semantic concept of the pronouns, and the other is the shifting reference. Since younger children always think in an egocentric way, it is likely that they will preclude this shift (Loveland, 1984). Some children may even treat the personal pronouns as proper names in their early pronominal acquisition, known as name hypothesis (Clark, 1978). In the present

[3] As discussed in Section 2.1, the pronominal *renjia* in Mandarin Chinese has a variety of corresponding meanings, such as the 1st person pronouns *wo* 'I,' and *women* 'we,' the 3rd person pronoun *ta* 'he' and *taman* 'they,' as well as the pronominal *bieren* 'others.'

study, the lack of antecedent(s) in the subjects' productions might also support this hypothesis, from which our children tended to ignore the antecedent-pronoun relation, and use the pronominal *renjia* as a proper name in the context. That is to say, our children's early use of *renjia* might be a lexicon or a discourse-bound pronominal because they seldom recognized the antecedent-pronoun relation in their productions.

4.6 Age Effects

There seems to be a natural tendency that age plays an essential role in first language acquisition (Chen, 2006; Cheng, 1995; Huang, 2011; Millogo, 2005; Schneider & Dubé, 1997). The complexity of language would influence children's comprehension and production at different ages. Moreover, their language ability will become more and more adult-like as their age increases; therefore this section concerns with the investigation of age differences. We probe into whether age is a dominant factor affecting Chinese children's acquisition of the pronominal *renjia*.

G1-G2 (the four-year-olds and five-year-olds) performed relatively worse performance on the interpretations and coreference of the pronominal *renjia*. First of all, with regard to the pattern effects, both G1-G2 performed significantly worse than G3-G4 in the single-interpretation and multiple-interpretation patterns. This implies that the subjects' sensitivity to different interpretation patterns of *renjia* in Chinese had not yet developed at the early stages. With regard to the directionality effects, G1-G2 performed better on forward than backward coreference. Both groups performed significantly worse than G3 on forward coreference, and than G4 on backward coreference. With respect to different referent types, G1-G2 significantly performed better on patterns with a specific referent than a non-specific referent, indicating that specificity played a predominant role in our younger children's interpretations of this pronominal. Moreover, G1-G2 performed significantly worse than G3

on specific referents, and than G5 on non-specific referents, showing that the non-specific interpretation was acquired late in the children's acquisition of this pronominal. From the above-mentioned results, we may conclude that there was a discrepancy between our children aged four to five (G1-G2) and those aged six to eight (G3-G5) in response to the pronominal *renjia*. At last, regarding the age effects on the two tasks, G1-G2 performed better on the comprehension task than the production task, showing that they had a better command of comprehending than producing *renjia* in different contexts.

As for G3-G4 (the six-year-olds and seven-year-olds), their performances improved. G3 significantly outperformed G1-G2 on single-interpretation patterns, and G4 significantly performed better than the younger groups on the multiple-interpretation patterns. Both groups were gradually able to detect ambiguity of the multiple-interpretation patterns. With respect to referential directions, both groups still did a better job on forward coreference, but G4 performed significantly better than G1 and G2 on backward coreference. In general, G3-G4 performed significantly better than G1-G2, but they still performed relatively worse than G5 and the control group.

G5 (the eight-year-olds) showed the best performance among the experimental groups regardless of different interpretation patterns, referential directions and referents types. They performed statistically alike with the control group on the comprehension task; however, the control group still performed significantly better than all the experimental groups on the production task. Therefore, we could conclude that G5 had reached the adult level in the comprehension of the pronominal *renjia*, but they had not acquired adult-like production of *renjia*.

In sum, the present study supported the developmental progress in children's acquisition of the pronominal *renjia* in Mandarin Chinese. Age was indeed influential for our subjects' success of comprehension and production of this pronominal. More importantly, it was found that ages 6-7 were a crucial period for our children's development of different interpretations,

coreference, and referent types of the pronominal *renjia*. From ages 6 to 7, our children have entered into elementary school and started to receive formal education. They learn how to express ideas or communicate with each other in class, so their verbal skills increase rapidly, compared with preschoolers. Therefore, they start to be aware of the concept of a society and gradually develop the ability of a deictic shift in communication. All these may contribute to our children's critical development in their acquisition of the pronominal *renjia* at ages 6-7.

Finally, a summary of the children's developmental stages in the acquisition of this pronominal is illustrated in Figure 4-6.

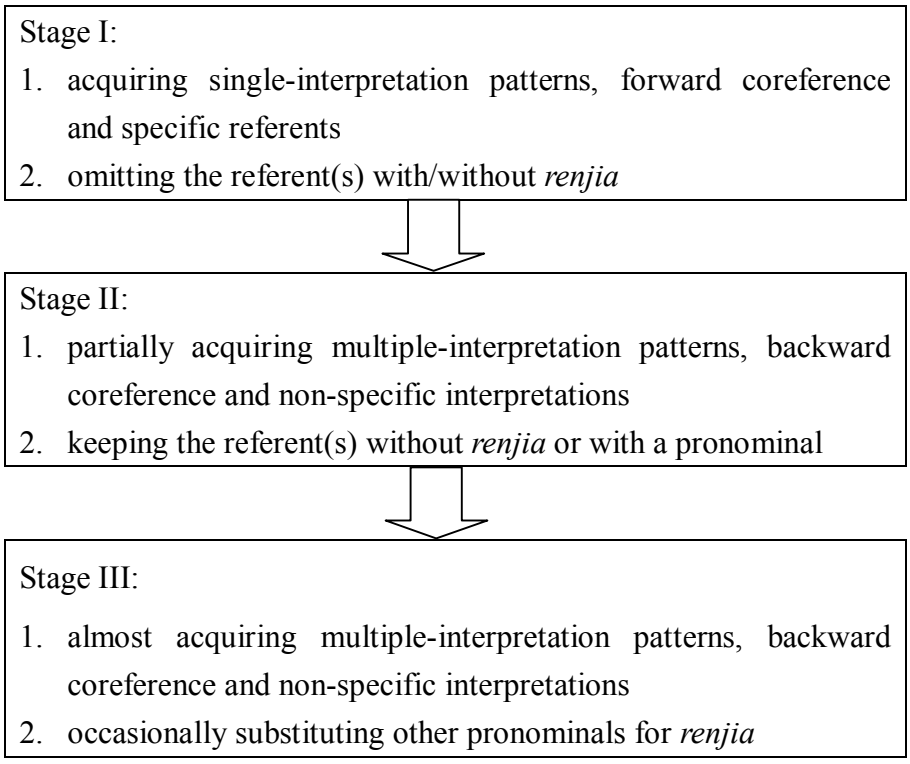


Figure 4-6 The Developmental Stages of the Pronominal *Renjia*

4.7 Summary of Chapter Four

In this chapter, the findings of the study have been presented and discussed. The overall results showed that different interpretation patterns, referential directions, referent types, task formats, and age were dominant factors influencing our children's L1 acquisition of the

pronominal *renjia* in Mandarin Chinese. In the following chapter, the major findings of the present study will be summarized and the limitations of the present study will be discussed.

Chapter Five

Conclusion

The conclusion of the present study is presented in this chapter. Section 5.1 summarizes the major findings of the present study. The limitations and suggestions for further research are discussed in Section 5.2.

5.1 Summary of the Major Findings

The present study investigated the acquisition of children's comprehension and production of the interpretation of the pronominal *renjia* in Mandarin Chinese. Two different interpretation patterns under the manipulation of the independent variables like referential directions, referent types and combinations, task formats and age were explored.

First of all, our children, at the early stage of pronominal acquisition were not capable of dealing with referential ambiguity. They performed significantly better on the single- than the multiple-interpretation patterns, indicating that the two interpretation patterns exhibited a different degree of learnability for them.

Second, with regard to the direction of reference, it was found that both our children and adults accepted backward coreference of *renjia*, which seemed to support the claim that Chinese displays backward coreference (Huang, 1982; Kao, 1993; Teng, 1985). However, there was a trend that forward coreference was more accessible than backward coreference of the pronominal *renjia*, implying that there might be certain precedence constraints different from the person pronouns on the pronominal *renjia*.

Third, the subjects' performances were found to be influenced by specificity of the referent in context. Our children performed significantly better on the patterns in which the pronominal referring to a specific antecedent. The specific referents were productively chosen as the only interpretation of the pronominal even though the other non-specific referent was the possible interpretation. The results could be attributed to the concreteness

and saliency of the specific referents in context. Moreover, when judging two specific referents for the pronominal in one sentence, our elder children and adults preferred a more focused one even when they had detected referential ambiguity.

Fourth, with respect to the task effects, the PS task was performed significantly better than the IM task by our children, showing that the task effects were obvious. This phenomenon also confirmed a generally-accepted assumption that children comprehend more than they actually use in production (Lust et al., 1986; Gerken & Shady, 1996).

Fifth, with regard to production analysis, four patterns different from the target sentences were discussed in the present study. Our younger children tended to employ Referent Omission because they might treat the pronominal *renjia* as a discourse-bound pronominal or a proper name. Pronominal Omission was also commonly used to shorten their utterances, indicating that our children at the initial stage of pronominal production would avoid certain forms which were not familiar to them. In addition, the increase of Pronominal Substitution by our elder children showed that they had gradually acquired the antecedent-pronoun relation of *renjia*.

Finally, age effects were found in the present study. Our elder children were more sensitive to the referential direction and were not affected by the referent effects as much as the younger ones, whose interpretations of *renjia* were predominately influenced by specificity of the referents. Moreover, it was found that ages 6-7 might be a critical period for children's development in the interpretations and coreference of the pronominal *renjia*, since they significantly performed better than the younger children.

5.2 Limitations of the Present Study and Suggestions for Future Research

The followings are some limitations of the present study and suggestions for future research.

First of all, our 4-year-olds had already acquired the preliminary knowledge about the

single-interpretation patterns, forward coreference and specific referents of the pronominal *renjia*, implying that the acquisition of this pronominal might be earlier than age 4. Therefore, children aged 3 can be included in future research.

Second, our eldest children (8-year-olds) performed significantly worse on the production task than the adults in the present study. In order to determine when children can fully develop adult-like production of the pronominal *renjia*, children over aged 8 can be recruited for further research.

Third, on account that the present study employed a picture selection task as the comprehension task in which the subjects were forced to select a referent for *renjia*, children's intended interpretations of it might not be well reflected. For future research, a comprehension task like a True Value Judgment task can be designed to further capture children's interpretations of the pronominal *renjia* (cf. Lust et al., 1996) and see if the findings are identical to the present results.

Finally, in the previous studies, the antecedent-pronoun relation has been examined by looking into how the Binding principles determine the grammaticality of pronominal coreference in different syntactic structures (Chen, 1997; Lust et al., 1996; Huang, 2011; Wilcoxon, 1991). Although the present study has classified the pronominal and the antecedent according to different referential directions, different syntactic constructions have not been integrated, which can be further examined in the future.

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Appendix A

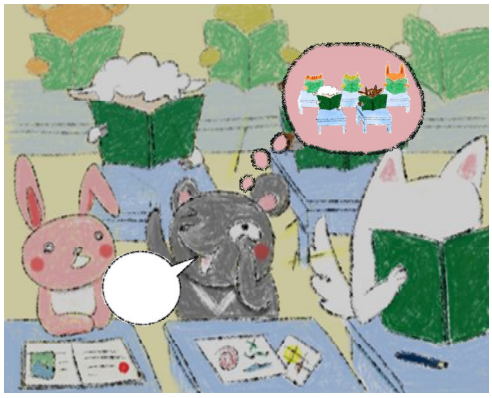
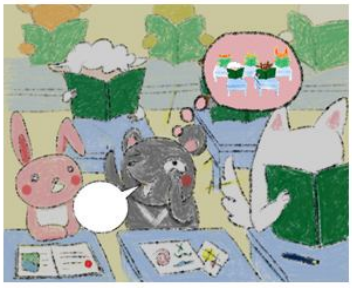
Scenarios Used in the PS Task and the IM Task[1]

(1)		今天是開學的第一天，
		小兔和小猴遲到了。
		老師很生氣的對同學們說：「人家ㄧ說不可以遲到，所以大家ㄧ都提早出門。」

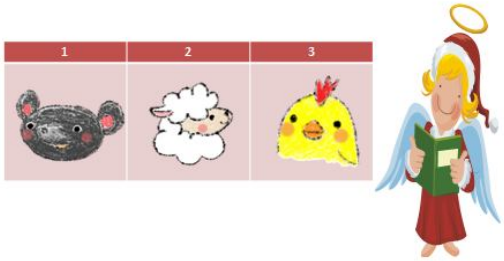
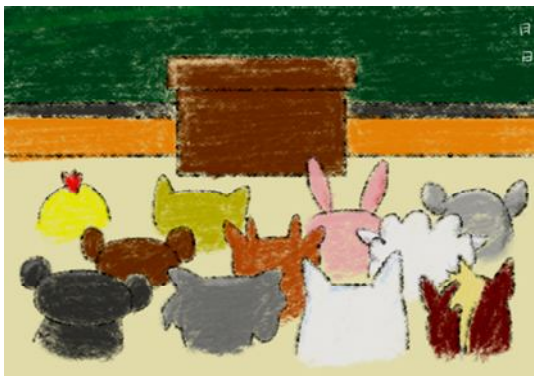
[1] The PS task and the IM task in the present study used the same scenarios.

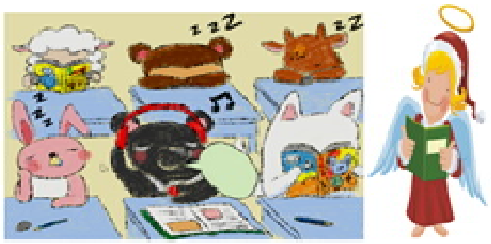
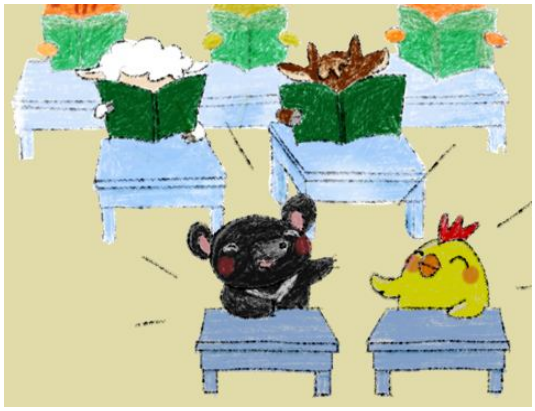
	Q1-IM 	Q1-IM：小朋友，請你把老師剛剛說的話再說一遍？
	Q1-PS  	Q1-PS：小朋友，老師說誰說不可以遲到? (1) 老師 (2) 大家 (3) 一些同學
(2)		第一節課，老師要同學們選新的班長。
		小猴很想當班長。

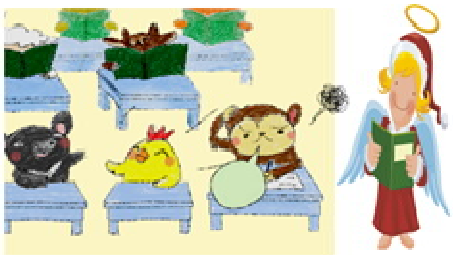
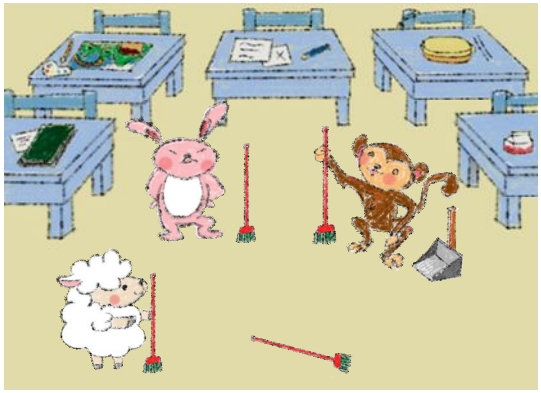
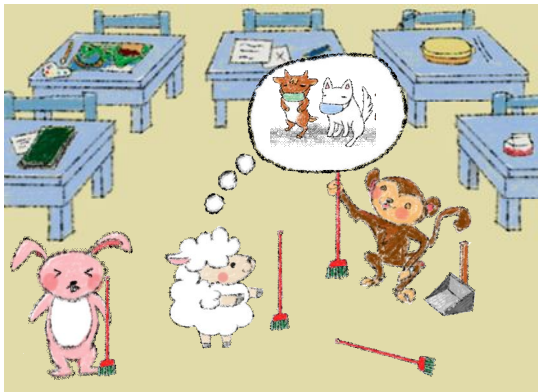
		他對小兔說:「人家ㄧ應該會選我當班長，因為我常教一些同學ㄧ寫功課。」
	Q2-IM 	Q2-IM：小朋友，請你把小猴剛剛說的話再說一遍？
	Q2-PS 	Q2-PS：小朋友，小猴說誰應該會選他當班長? (1) 小兔 (2) 老師 (3) 一些同學
(3)		小熊也想當班長，但是他很頑皮，班上有一些同學不喜歡他。

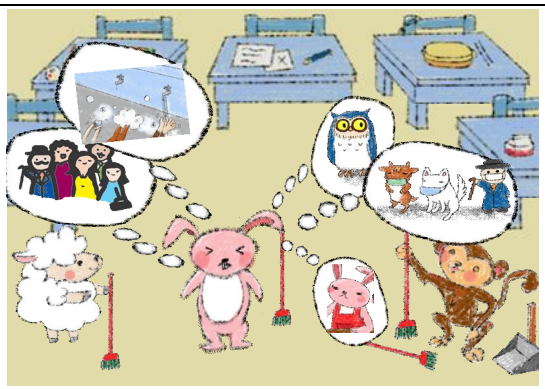
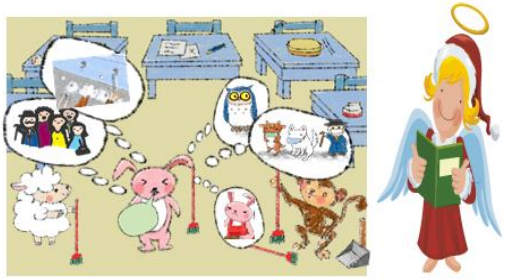
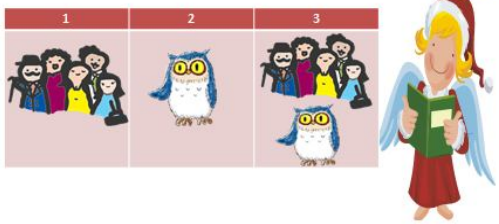
		小熊對小兔說：「班上有一些人ㄧ討厭我，人家ㄧ一定不想選我當班長。」
	Q3-IM  	Q3-IM：小朋友，請你把小熊剛剛說的話再說一遍？
	Q3-PS  	Q3-PS：小朋友，小熊說誰一定不想選他當班長? (1) 一些同學 (2) 小兔 (3) 大家
(4)		小羊說：「我不想選小熊ㄧ當班長，因為他ㄧ每次都欺負同學。」

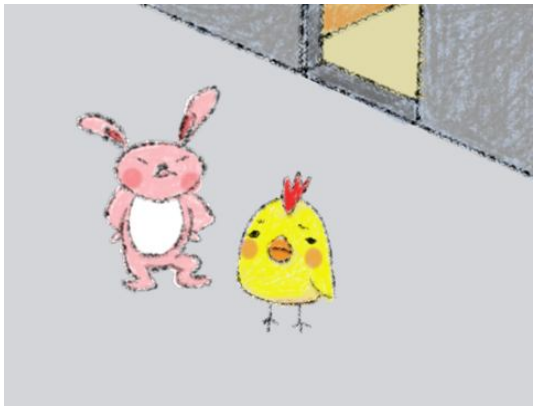
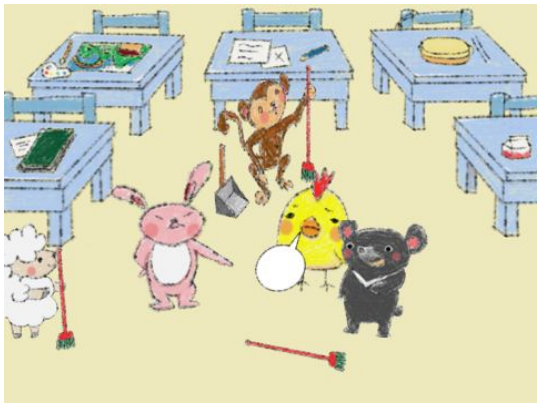
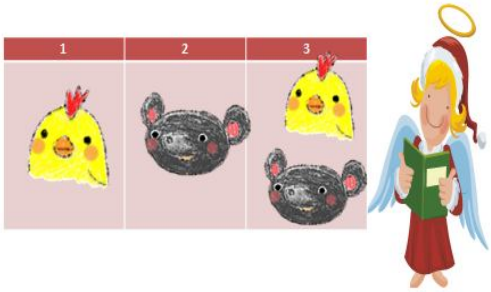
	Q4-IM 	Q4-IM：小朋友，請你把小羊剛剛說的話再說一遍？
	Q4-PS  	Q4-PS：小朋友，小羊說誰每次都欺負同學? （1）小羊 （2）小熊 （3）小猴
(5)		下課了，小熊帶了好多糖果請大家吃。
		小羊對小雞說:「今天小熊ⁱ請我們吃糖果，我們不要討厭人家ⁱ！」

	Q5-IM 	Q5-IM：小朋友，請你把小羊剛剛說的話再說一遍？
	Q5-PS  	Q5-PS：小朋友，小羊說不要討厭誰？ （1）小熊 （2）小羊 （3）小雞
(6)		第二節課，老師沒有來上課。
		小熊說：「有些人$_{i}$在看書，小兔$_{j}$在睡覺，我和人家$_{i/j}$不一樣。」

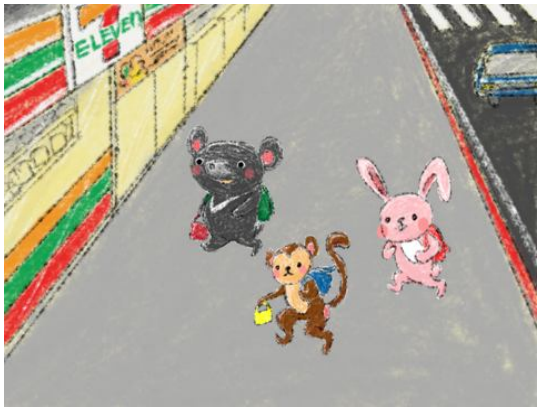
	Q6-IM 	Q6-IM：小朋友，請你把小熊剛剛說的話再說一遍？
	Q6-PS 	Q6-PS：小朋友，小熊說他和誰不一樣? (1) 有些人 (2) 小兔 (3) 有些人和小兔都可以
(7)		老師沒有來上課，小雞和小熊一直聊天。
		小猴生氣的說：「小雞$_i$和小熊$_j$好吵喔，他們$_{i/j}$不可以一直大聲講話。」

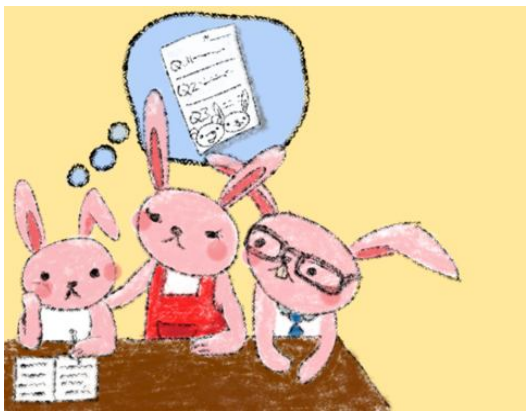
	Q7-IM 	Q7-IM：小朋友，請你把小猴剛剛說的話再說一遍？
	Q7-PS  	Q7-PS：小猴說誰不可以一直大聲講話? （1）小雞 （2）小熊 （3）小雞和小熊
(8)		放學了，小兔，小羊，和小猴一起掃地。
		小羊對小猴說，最近很多人都感冒了！

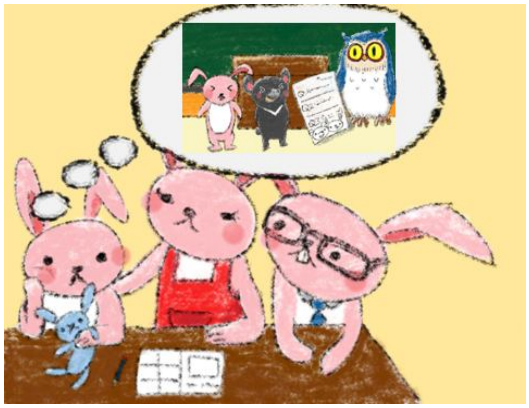
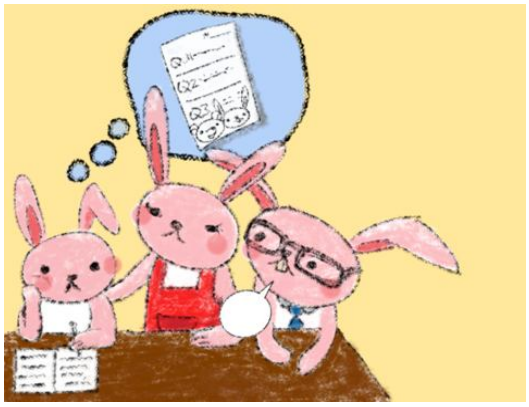
		小兔對他們說：「有些人 i 說要常洗手，老師 j 說要戴口罩，媽媽覺得人家 i/j 說得很好！
	Q8-IM 	Q8-IM：小朋友，請你把小兔剛剛說的話再說一遍？
	Q8-PS 	Q8-PS：小朋友，小兔說媽媽覺得誰說得很好? (1) 有些人 (2) (3) 老師 (3) 有些人和老師都可以
(9)		小熊不想掃地，他偷偷躲起來看漫畫，小兔很生氣地罵他!

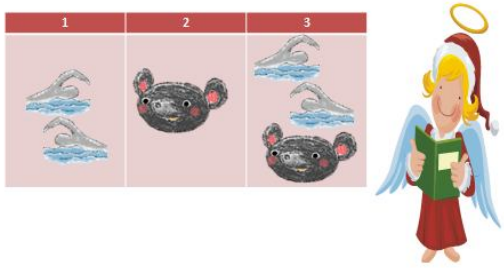
		小雞也不想掃地，小兔也很生氣的罵她！
		小熊和小雞來了，但是小兔還是很生氣，小雞對小兔說：「我 i 和小熊 j 已經來幫忙掃地了，你還一直罵人家 i/j！」
	Q9-IM 	Q9-IM：小朋友，請你把小雞剛剛說的話再說一遍？
	Q9-PS 	Q9-PS：小朋友，小雞說小兔還一直罵誰？ （1）小雞 （2）小熊 （3）小雞和小熊都可以

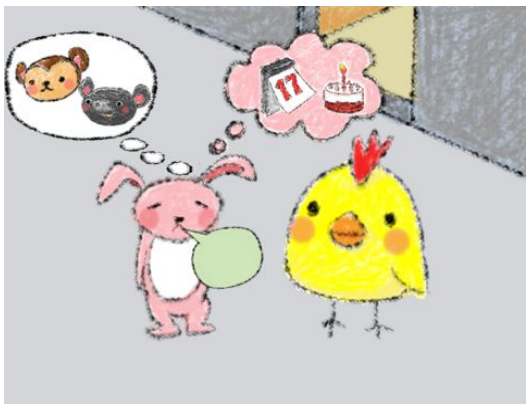
(10)		放學後，小兔，小熊，和小猴一起回家。
		小兔對小猴說：「明天是人家i的生日，你們不要忘了送我i草莓蛋糕喔！」
	Q10-IM 	Q10-IM：小朋友，請你把小兔剛剛說的話再說一遍？
	Q10-PS 	Q10-PS：小朋友，小兔說明天是誰的生日？ (1) 小熊 (2) 小兔 (3) 小猴

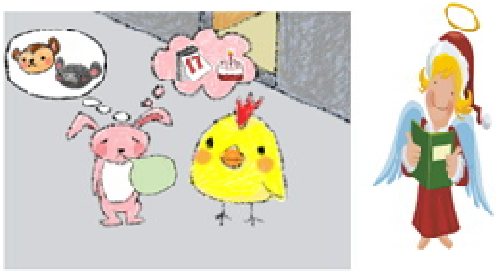
(11)		走著走著，他們看到一家 7-11。
		小熊想要喝飲料，但是他忘了帶錢。
		小熊想要跟小猴借錢買飲料。
		小兔對小熊說：「你以前常常欺負人家ㄧ，小猴ㄧ一定不會借錢給你。」

	Q11-IM 	Q11-IM：小朋友，請你把小兔剛剛說的話再說一遍？
	Q11-PS 	Q11-PS：小朋友，小兔說小熊以前常常欺負誰？ (1) 小兔 (2) 小猴 (3) 一些同學
(12)		小兔回到家很開心。
		吃完晚餐後，小兔突然想到，今天的功課要兩個人一組才可以寫。

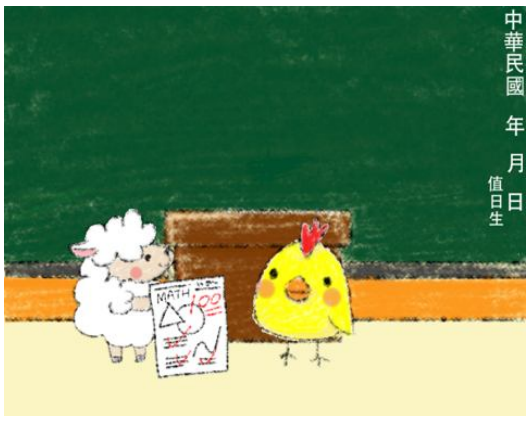
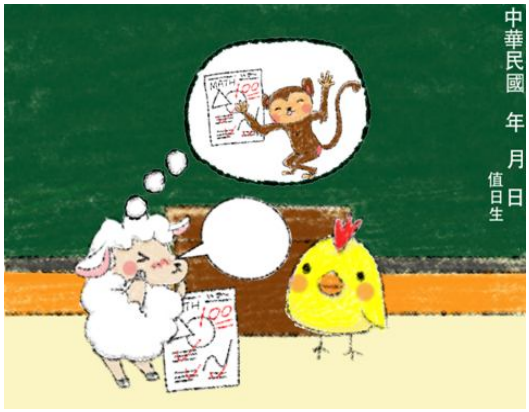
		小兔跟媽媽說他和小熊一組。
		於是，兔爸爸跟兔媽媽說：「人家 i/j 明天要交功課，快點叫小兔 i 去找小熊 j 寫功課。」
	Q12-IM 	Q12-IM：小朋友，請你把兔爸爸剛剛說的話再說一遍？
	Q12-PS  	Q12-PS：小朋友，兔爸爸說明天誰要交功課? (1) 小兔 (2) 小熊 (3) 小兔和小熊都可以

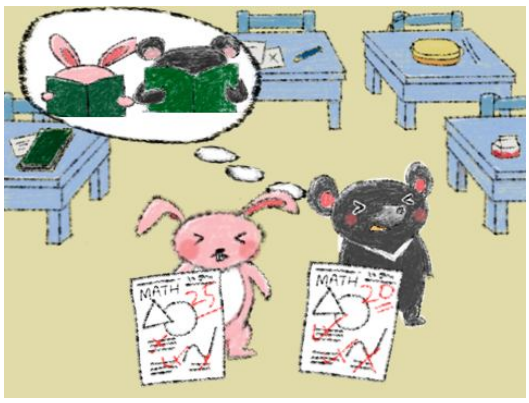
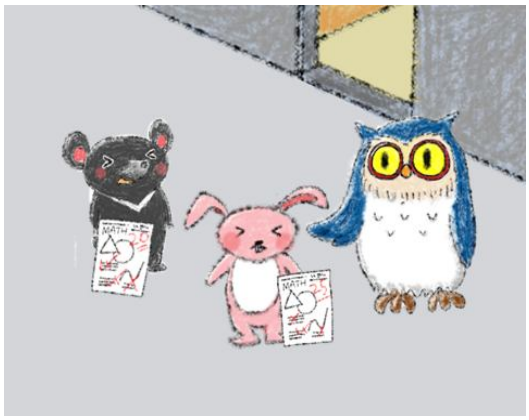
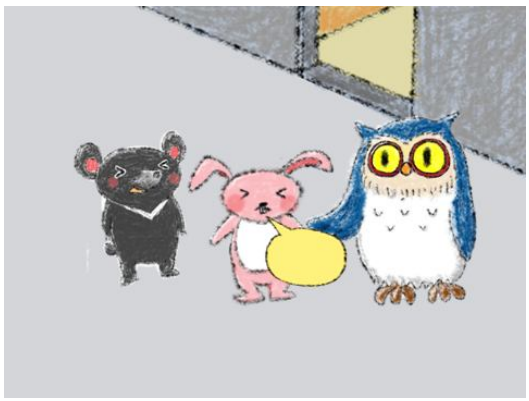
(13)		小兔到了小熊家，看到熊爸爸在做運動。
		熊爸爸對小兔說：「人家 i/j 喜歡運動，有些人 i 常常游泳，小熊 j 很愛跑步。」
	Q13-IM 	Q13-IM：小朋友，請你把熊爸爸剛剛說的話再說一遍？
	Q13-PS 	Q13-PS：小朋友，熊爸爸說誰喜歡運動？ (1) 有些人 (2) 小熊 (3) 有些人和小熊都可以

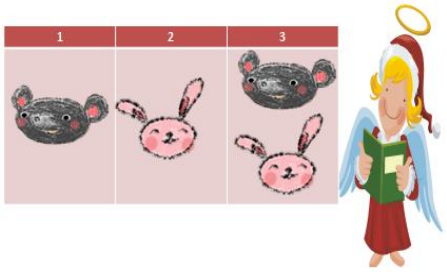
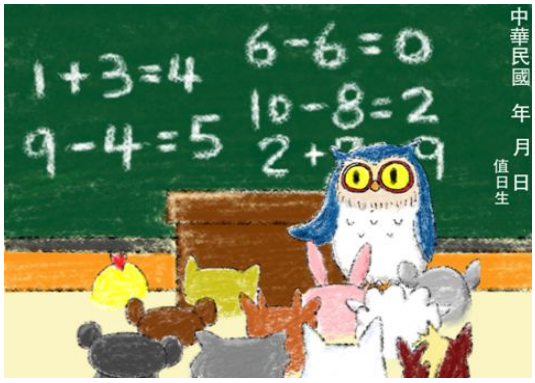
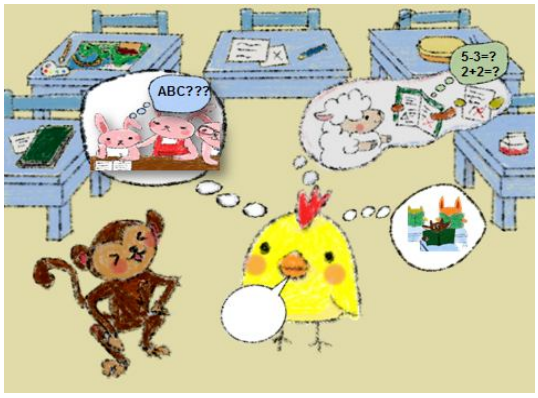
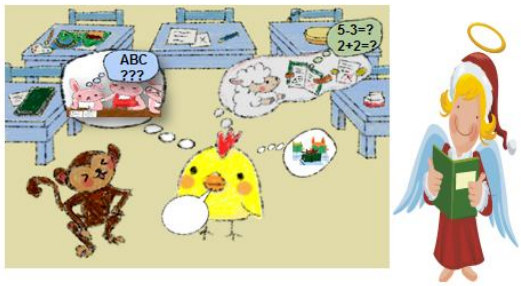
(14)		今天是小兔的生日。
		小兔的心情很好，所以她沒有遲到。
		下課的時候，小熊跟小兔說他們忘記買草莓蛋糕了。
		小兔跑去跟小雞說：「小猴$_i$和小熊$_j$是我的好朋友，他們$_{i/j}$沒買我的生日禮物！」

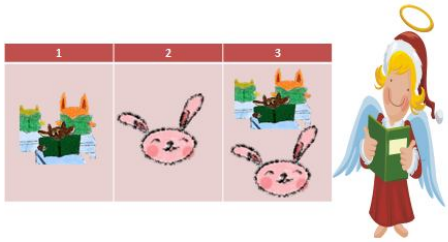
	Q14-IM 	Q14-IM：小朋友，請你把小兔剛剛說的話再說一遍？
	Q14-PS  	Q14-PS：小朋友，請你把小兔說誰沒買他的生日禮物？ (1) 小熊 (2) 小猴 (3) 小熊和小猴
(15)		小兔很難過，因為她很想吃草莓蛋糕。
		所以，小熊決定明天早上要和小猴去買草莓蛋糕。

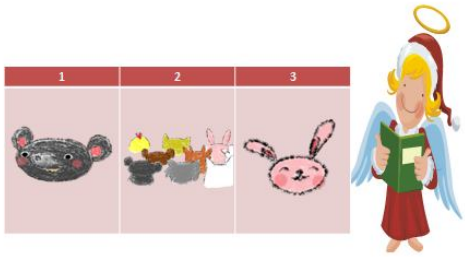
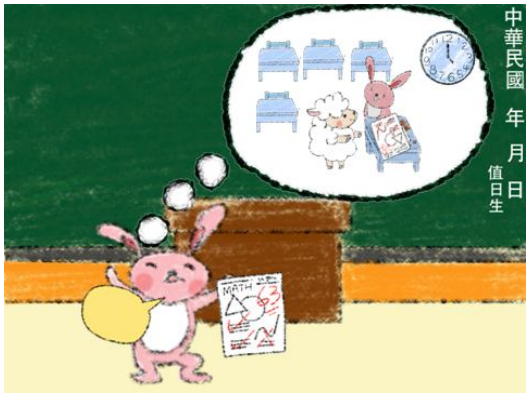
		小熊怕他們會忘記，他就對小兔說：「你晚上七點打電話給小猴$_i$和我$_j$吧，人家$_{i/j}$很早就睡覺了。」
	Q15-IM 	Q15-IM：小朋友，請你把小熊剛剛說的話再說一遍？
	Q15-PS 	Q15-PS：小朋友，小熊說誰很早就睡覺了？ (1) 小猴 (2) 小熊 (3) 小猴和小熊都可以
(16)		數學課的時候，老師正在發考卷。

		小羊考了一百分，小雞一直說他好棒！
		小羊對小雞說：「小猴也考一百分，你不要一直誇我ㄧ，人家ㄧ會害羞啦！」
	Q16-IM 	Q16-IM：小朋友，請你把小羊剛剛說的話再說一遍？
	Q16-PS 	Q16-PS：小朋友，小羊說誰會害羞？ （1）小羊 （2）小猴 （3）小雞

(17)		這次，小兔和小熊都很認真的唸書，但是他們考得不好。
		他們兩個人去找老師。
		小兔對老師說：「這次人家 i/j 很認真了，小熊 j 和我 i 下次一定會加油！」
	Q17-IM  	Q17-IM：小朋友，請你把小兔剛剛說的話再說一遍？

	Q17-PS  	Q17-PS：小朋友，小兔說這次誰很認真了？ （1）小熊 （2）小兔 （3）小熊和小兔都可以
(18)	 	明天要考數學和英文，老師希望同學們好好用功讀書。
	 	小雞對小猴說：「人家 i/j 好用功，有些人 i 找小羊教數學，小兔 j 找媽媽教英文。
	Q18-IM  	Q18-IM：小朋友，請你把小雞剛剛說的話再說一遍？

	Q18-PS  	Q18-PS：小朋友，小雞說誰好用功？ （1）有些人 （2）小兔 （3）有些人和小兔都可以
(19)	 	小熊不喜歡考試，他和小兔在聊天。
	 	小兔說：「大家 i 都好認真喔!我們要跟人家 i 一樣，好好用功讀書 ！」
	Q19-IM  	Q19-IM：小朋友，請你把小兔剛剛說的話再說一遍？

	Q19-PS  	Q19-PS：小朋友，小兔說他們要跟誰一樣？ （1）小熊 （2）大家 （3）小兔
(20)	 	後來，小兔和小熊的考試進步了！
	 	小兔說：「昨天下午放學後，小羊ⁱ留下來教我數學，他ⁱ真好！」
	Q20-IM  	Q20-IM：小朋友，請你把小兔剛剛說的話再說一遍？

	Q20-PS  	Q20-PS：小朋友，小兔說誰真好？ （1）大家 （2）小兔 （3）小羊

Appendix B

Results Obtained from the Pilot Study

Table (i) The Correct Responses to the Pronominal *RENJIA*: Overall

Group	Mean	SD
G1 (4-year-olds)	0.25	0.17
G2 (5-year-olds)	0.25	0.21
G3 (6-year-olds)	0.46	0.15
G4 (7-year-olds)	0.60	0.17
G5 (8-year-olds)	0.62	0.18
Control	0.70	0.21

Table (ii) A Comparison of Different Interpretation Patterns: Comprehension

Type / Group	Single interpretation		Multiple interpretations	
	Mean	SD	Mean	SD
G1 (4-year-olds)	0.45	0.22	0.31	0.33
G2 (5-year-olds)	0.52	0.28	0.25	0.29
G3 (6-year-olds)	0.73	0.08	0.70	0.22
G4 (7-year-olds)	0.84	0.23	0.72	0.15
G5 (8-year-olds)	1.00	0	0.38	0.29
Control	0.96	0.08	0.42	0.42

Table (iii) A Comparison of Different Interpretation Patterns: Production

Type / Group	Single interpretation		Multiple interpretations	
	Mean	SD	Mean	SD
G1 (4-year-olds)	0.17	0.22	0.05	0.08
G2 (5-year-olds)	0.17	0.15	0.05	0.08
G3 (6-year-olds)	0.13	0.15	0.23	0.15
G4 (7-year-olds)	0.26	0.15	0.56	0.15
G5 (8-year-olds)	0.50	0.29	0.59	0.20
Control	0.63	0.40	0.76	0.15

Table (iv) A Comparison of Different Referential Directions: Comprehension

Type / Group	Forward coreference		Backward coreference	
	Mean	SD	Mean	SD
G1 (4-year-olds)	0.43	0.17	0.32	0.21
G2 (5-year-olds)	0.47	0.25	0.40	0.22
G3 (6-year-olds)	0.63	0.08	0.54	0.15
G4 (7-year-olds)	0.69	0.08	0.61	0.15
G5 (8-year-olds)	0.75	0.15	0.70	0.25
Control	0.89	0.17	0.80	0.21

Table (v) A Comparison of Different Referential Directions: Production

Type / Group	Forward coreference		Backward coreference	
	Mean	SD	Mean	SD
G1 (4-year-olds)	0.23	0.11	0.29	0.16
G2 (5-year-olds)	0.30	0.18	0.20	0.21
G3 (6-year-olds)	0.47	0.10	0.37	0.14
G4 (7-year-olds)	0.58	0.12	0.47	0.19
G5 (8-year-olds)	0.69	0.08	0.56	0.17
Control	0.84	0.15	0.82	0.23

Table (vi) The Correct Responses to Different Referent Types: Comprehension

Type / Group	Single interpretation		Multiple interpretations	
	a specific referent	a non-specific referent	two specific referents	two non-specific referents
G1 (4-year-olds)	0.75	0.17	0.25	0.34
G2 (5-year-olds)	0.75	0.25	0.25	0.25
G3 (6-year-olds)	0.92	0.5	0.59	0.83
G4 (7-year-olds)	0.92	0.75	0.59	0.84
G5 (8-year-olds)	1	1	0.25	0.5
Control	1	0.92	0.17	0.67

Table (vii) The Correct Responses to Different Referent Types: Production

Type / Group	Single interpretation		Multiple interpretations	
	a specific referent	a specific referent	two specific referents	two non-specific referents
G1 (4-year-olds)	0.33	0	0.09	0
G2 (5-year-olds)	0.33	0	0.09	0
G3 (6-year-olds)	0.25	0	0.42	0
G4 (7-year-olds)	0.42	0.09	0.92	0.09
G5 (8-year-olds)	0.75	0.25	0.67	0.50
Control	0.67	0.59	1	0.50

Appendix C

Consent Form

親愛的家長：

您好，這是一份關於語言習得研究的同意書。本研究的目的在於瞭解小朋友學習母語的情況。在研究中，我會藉由說故事的方式，來了解小朋友對於中文代名詞“人家”的用法。

這個研究採用一對一的方式，在小朋友的教室進行。故事的內容將由電腦呈現，以圖片配合預錄好的故事一起進行。小朋友回答的答案有兩種方式，一種是請他複述他所聽到的話，另一種則是請他選出他認為正確的人物，所有的句子均無對或錯的預設答案，小朋友可以順自己的直覺回答。

本實驗僅供學術研究，任何關於小朋友的資訊均不會對外公開，小朋友的答案也會嚴加保密，如果有需提到小朋友的地方，也都會以假名的方式呈現，請您放心。本研究的進行，亟需家長您的支持，希望您能同意。在此致上最誠摯的謝意！

家長同意簽名：_____

小朋友姓名：_____

出生_____年_____月_____日

臺灣師範大學英語系研究所語言學組
研究生：許硯晴
指導教授：陳純音教授