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從言談訊息談漢語兒童「的」語句之使用

The Use of *DE*-marked Expressions in Child Mandarin

---A Study Based on Information Flow

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本論文係 程涂媛 君（學號 D91142002）在國立臺灣大學語言學研究所完成之博士學位論文，於民國 100 年 7 月 29 日承下列考試委員審查通過及口試及格，特此證明

口試委員：

張顯達 （簽名）

（指導教授）

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Abstract in Chinese

摘要

本研究探討漢語兒童在自發性表達情境中對於漢語「的」標記語句之使用。其中關係子句(relative clause)為本研究關切之重點。本研究採類實驗研究法，以三個不同言談作業(task):青蛙故事、梨子影片、樂高積木遊戲誘發兒童說出「的」標記語句。研究的立論基礎源於言談訊息(information flow)理論之主張：認為談話者於言談溝通過程中能持續對聽者談話當時之知識與認知狀態有一前提假設，談話者並根據此假設，適切選擇合於聽者認知狀態情境之語法結構。

為檢視言談訊息在溝通過程中之運作是否能適切解釋漢語兒童「的」標記語句之語法表現，本研究將三個對話作業依其訊息狀態分為(1)僅有語言訊息(2)語言訊息與視覺情境訊息並存。觀察在不同訊息狀態下之三項言談作業中，漢語兒童「的」標記語句之選用情況。

本研究探討文獻中提及的七個言談訊息層面如何在言談情境中運作。七個層面分別為:談話訊息焦點事物之訊息狀態、前後問答句其指涉事物之焦點結構、指涉事物有無人物特性、溝通行為、鋪墊機制、「的」標記語句之句法類型與功能。文獻研究顯示:語句之選用受溝通及語用因素激發影響。本研究亦顯示:「的」標記語句及關係子句得在多元功能及情境交互運作下使用。經分析語料，本研究歸納，足以影響漢語兒童與成人對話言談中使用「的」標記語句及關係子句之五項因素如下:(1)焦點事物之訊息狀態(2)溝通行為及成人與小孩間之互動(3)指涉事物之特性及與鋪墊機制之連結(4)指涉事物有無人物特性(5)成人誘發問題與兒童回答句之間的焦點結構。

言談溝通訊息分析有助於釐清為何文獻研究中自發性語料及實驗法所採集之語料，[的]標記語句之使用多呈偏態分佈。此外，以言談溝通訊息分析架構重新分析許等人(2009)誘發語句實驗之結果，亦佐證了本研究結果所觀察之現象:「成人誘發問題與兒童回答互動能激發兒童『的』標記語句及關係子句之使用」。依循 Diessel 及 Tomasello (2000) 之觀察，語言形式之可及、可用性，並非單獨由內在結構複雜度決定。應該也受言談中多重功能特性，以及言談情境中，溝通與互動因素影響。這些因素之探究可以從兒童與成人言談互動之過程一窺其貌。

關鍵字: 言談訊息、關係子句、漢語關係子句、言談中關係子句、兒童漢語

Abstract

This dissertation investigates the use of *DE*-marked expressions in Mandarin-speaking children's spontaneous production, with relative clauses (RC) of particular concern. A quasi-experimental design is adopted to elicit children's *DE*-marked constructions in three task-oriented discourses: story telling on Frog Story, recounting the Pear Film, and conversation in Lego construction. The assumption underlying the current study is that grammatical choices are made in the process of communicating by interlocutors on the basis of their presupposition regarding addressee's state of knowledge and the information flow in the context.

By setting the general discourse situations in the three tasks as being of the information status either with only linguistic information (**ET**: evoked textually) or plus situational/perceptual information (**ES**: evoked situationally), we show that the grammatical use and choice of *DE*-marked expressions (in particular, RC) in these differing discourse situations can be appropriately explained with the information-flow factors.

Seven aspects of information flow were examined in these observational settings. They are information status of the referent in focus, focus structure of the referent in the adjacent pair of utterances, humanness of the referent, communicative acts, grounding device, syntactic types and function of *DE*-marked expressions/RC. As previous studies have shown that grammatical options can be motivated by communicative and pragmatic factors, the current quasi-experimental design shows that the elicitation of the target *DE*-marked expressions/RC can be achieved if the communicative condition fits the *plurifunctional* properties of *DE*-marked

expressions/RC. Five major factors are considered that might contribute to children's use of *DE*-marked expressions/RC in their discourses with adults: (1) the information status of the referents in focus (2) the communicative acts associated with the interactive behaviors between child and adult (3) the entity property associated with the grounding device (4) humanness of the entity, and (5) the focus structure in the prompting question-answer pairs between adult and child.

This communicative-discourse account also helps elucidate the skewed distribution of *DE*-marked expressions/RC in discourse and previous experimental tasks. The discourse analyses based on children's production from Hsu et al.'s (2009) elicitation study are used as a subsidiary support to our argumentation that children's use of *DE*-marked expressions/RC might be motivated by the lead-in and interaction from adults. Following Diessel and Tomasello's (2000) observation, we suggest that the accessibility of a linguistic form is not solely determined by the internal structural complexity as proposed by previous structure-based account. Rather, it might associate with the multifunctional features in discourse and be affected by the communicative and interactional factors in discourse situations. All this can be evidenced by production data collected in child's discourse in the process of communicating with adults.

Keywords: information flow, relative clause, Mandarin relative clause, relative clause in discourse, child Mandarin

List of Abbreviations

The abbreviations used in the interlinear glosses are:

BA	the morpheme ba
BEI	the morpheme bei
CL	Classifier
DE	the morpheme de
DUR	Durative aspect
FP	Final Particle
PROG	Progressive aspect
Q	Question marker
SHI	the morpheme shi

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Chapter 1

Introduction

This dissertation deals with the uses in three task-oriented narratives and conversations of a particular grammatical construction in Mandarin, the *DE*-marked expressions, in particular the *DE*-marked relative clauses (RC), by Mandarin-speaking children. The narrow focus of the current study is motivated by the fact that Mandarin *DE*-marked expressions/RC is one linguistic structure which exhibits disparate ranges of pragmatic functions. Moreover, rather than only viewing this particular *DE*-marked expression/RC as a language-specific grammatical construction in its own right, this paper wished to investigate its role in Mandarin and how it is used in different task-oriented narratives and conversations produced by adult-child pairs. The cross-study comparative method afforded by different task-oriented productions provided us with an unusual opportunity to pursue the goal of this paper, since the productions of *DE*-marked expressions/RC in each of the tasks we analyzed has collected the target *DE*-marked expressions/RC under their own task demands, thus with different pragmatic purposes. The differences as well as similarities between these different tasks can help elucidate the interactive dynamics that occur and affect the uses of *DE*-marked expressions/RC in different discourse situations. In doing so, it is expected that the extent to which the pragmatic principles motivating/underlying

the use of *DE*-marked linguistic structure can be addressed.

1.1 Background

A discourse-level approach was adopted in the current study. The basic stance is that communication is a process of coordination. Interlocutors cannot begin to coordinate on content or process without assuming a vast amount of shared information or common ground. Namely, communication requires mutual knowledge, mutual beliefs, and mutual assumptions (Clark & Carlson, 1982; Clark & Marshall, 1981; Lewis, 1969; Schelling, 1960). To update common ground in the process of communicating, interlocutors will have to constantly determine about their addressee's state of knowledge, and on the basis of which they make intonational, grammatical, and lexical choices. This process is referred to as *information flow* (Chafe, 1976, 1980, 1987; Du Bois, 1987, Givón, 1979, 1983, 1984; Prince, 1981).

It is assumed that speakers have to go through several stages of decision-making in the process of composing and delivering an utterance during interaction. In the first phase, called the *conceptualization* phase, speakers will choose a message which they want to communicate (Holmes, 1995). A process of *message packaging* (termed by Chafe 1974, 1976) to choose the information structure of message is involved: Speakers are assumed to make a choice regarding how to organize and convey the content of their thoughts, and make adjustments in accordance to the message, by

depending upon the shared knowledge of the listener and speaker at any particular time in a given discourse context.

In determining the information structure of a message, some types of the decisions are presumed to be made like these. For one thing, speakers have to decide how much information should be provided to the listener at the particular moment of utterance. For another, speakers have to assume listener's knowledge and cognitive status regarding the information. They have to keep track of the *given* information, that which has been expressed in the discourse or is inferable from the shared knowledge or situation of the speaker and listener. They also have to link the *new* or as yet expressed information to the *given* information for the listener to access. Moreover, they have to decide which concept in the information should be the most salient entity of the utterance, acting as *topic*, as opposed to the less salient one, acting as *comment*. In this regard, the information structure decided in speaker's mind is connected to the syntactic device speakers choose to produce eventually in communicating.

Language provides a wide range of grammatical/syntactic devices available for speakers to implement and manage the 'flow' of information. For example, regarding *new* information, existential *there* expressions, *it*-clefts, and left dislocations out of subject position are very common forms for introducing *new* referents in many

languages. Several discourse-based analyses also reported that relative clauses can constitute another device to fulfill the function of introducing new and important referents into discourse (Bates and Devescovi, 1989; Lambrecht, 1987; Prince, 1981). This indicates that different linguistic forms can be used to refer to the same thing and that the structural choice can be seen as a process of decision-making varying with interlocutors' assumption and attention to information in the course of communication.

For the past decade, an increasing number of analyses have shown the discourse-level explanations based on *information flow* can adequately explain many grammatical facts observed in adult language. Chief among them is the bulk of studies relating to the cognitive status and the form of referring expressions in adult discourse (Ariel, 1990, 1996; Chafe, 1994; Du Bois, 1985, 1987; Givón, 1983; Gundel, Hedberg, and Zacharski, 1993). These studies have consistently documented that adult referential choice is featured by its responsiveness to the current discourse context. Chafe (1976, 1987) has proposed that information that the speaker assumes to be activated in the hearer's consciousness at the moment of utterance (i.e., *given* information) tends to be mentioned in a weaker, more attenuated form than information that the speaker assumes is not currently in the hearer's focus of attention. Previous research on reference in adult discourse also provides insights into the

motivations for relating the selection of referential forms in children's productions to those pragmatic principles governing in children's discourse. These discourse-pragmatic accounts on children's reference assume that children, at the early stages of language learning, are highly sensitive to the dynamics of *information flow* in discourse. In doing so, they will learn to take the perspective of the audience, and will structure or adjust their message accordingly (Allen, 2000; Campbell, Brooks, & Tomasello, 2000; Wittek & Tomasello, 2005).

However, most of what we know about the decision-making process underlying *information flow* coming from these previous studies of referential forms generally addresses the choice of *simple nominal forms* in discourse, including definite noun phrases, full names, bare nouns, pronouns, and zero forms. What is less investigated but deserves much interest is the *complex referring expressions* like relative clauses. While there is increasing interest and effort in accounting for the distribution of syntactic types and structural choices of relative clauses in adult English conversation as symptoms of interlocutors' attention to *information flow* (e.g., Fox and Thompson, 1990a, b), studies with such a discourse-level perspective, which expand the research focus on complex referring expressions to other languages or to the area of language acquisition do bear particular implications but have been rare. A recent exception is to be found in the work of Cheng et al. (2011), who addressed the use of Mandarin

headed and headless *DE*-marked expressions, which include relative clauses, in natural conversations by a mother-child dyad, and showed that the *DE*-marked referential forms are associated with the information status assumed by the interlocutors in the process of communicating. A study of this vein is critical for implying that language originates and develops in the dynamics of language use. Many traditionally unexplained grammatical facts or those which have been considered as structural phenomena may be reexamined from the discourse pragmatic view.

To provide more evidence on this issue, the present study examines the extent to which Mandarin children's use/choice of a particular construction in response to the knowledge shared by the speaker and the listener in the discourse situation. The target construction we are concerned about is Mandarin *DE*-marked expressions, which are characterized by many language-specific features. Mandarin *DE*-marked expressions are represented in a unitary *X-DE-(Y)* schema, but display variable functions. We focus on how this one linguistic structure is determined and used in children and the adult's interaction in different discourse situations. Will the choice respond to the *information flow*, and how? By using a quasi-experimental design, several aspects of *information flow*, including interlocutors' *assumption* of information status concerning the referent in question, *grounding device*, *communicative acts*, *syntactic types and*

functions of the *DE*-marked expressions are examined with scrutiny. The extent of influence these factors might exert in Mandarin-speaking children's acquisition in the *DE*-marked expressions is expected to be observed.

1.2 Questions and Purpose

This dissertation focuses on *information flow* in the course of communication between child and adult, and investigates how it can influence Mandarin-speaking children's choice of the *DE*-marked expressions. Past research regarding *information flow* has generally focused on cognitive and interactional factors with respect to both the speaker's assumption model of the hearer and the interaction between the speaker and the hearer (e.g., Fox and Thompson, 1990a, b). Following this line of research, the purpose of this dissertation is to investigate these potential factors in detail, and intends to pull together these factors into one general framework to explain Mandarin children's use of *DE*-marked expressions. To achieve the purpose, a quasi-experiment is conducted to compare the interactionally determined choices made by children across different task-oriented discourses. By reviewing the observations obtained in different tasks, we will describe some remarkable skewings occurred in the distribution of syntactic types and functions of *DE*-marked expressions that Mandarin children use in experimental discourse or conversation, and we will propose

explanations for these skewings in terms of *information flow* concepts. These information flow concepts which we will refer to in the explanations for children's choice of *DE*-marked expressions are (a) **information status** of the referent in focus, (b) the **grounding device** used to be relevant to the referent in focus, (c) **communicative acts** displayed by interlocutors to associate the utterance with the flow of information, and (d) the **syntactic types and functions** of the *DE*-marked expressions. A full description of each factor and the relevant past studies will be provided and reviewed later.

The research questions of the dissertation in relation to these factors are as follows:

(i) What are the distributional patterns of Mandarin-speaking children's production of *DE*-marked expressions in various task-oriented discourses, i.e., the current quasi-experimental discourses? What affects the distributional patterns?

(ii) Do Mandarin-speaking children's use of *DE*-marked expressions in these different discourse situations show influence from the discourse-level factors, such as *information flow* and communicative principles?

(iii) If Mandarin-speaking children's use of *DE*-marked expressions do show influence from these information-flow factors, to what extent do these

information-flow patterns characteristic of child-adult discourse explain the grammatical facts in differing discourse situations?

To address these questions, a quasi-experiment will be conducted to observe Mandarin-speaking children's use of *DE*-marked expressions in three different tasks. They are (a) Pear film storytelling, (b) Frog story picture-book-based storytelling, and (c) Lego construction free talk. The significance of using these three tasks is to demonstrate and compare children's decision on the *DE*-marked expressions in relation to the **information status**/ the assumption of the referent in focus in the three conditions. By setting the **information status** as a constant across different situations, the potential variant discourse-pragmatic factors in different discourse contexts can be filtered out.

In what follows, we will briefly describe the assumption model we hypothesize in these three tasks, compared to the elicitation task and natural conversation. Then the outline of each chapter will be provided.

1.3 Overview of the Dissertation

In the beginning of the dissertation, we will discuss the background relating to the reason and motivation for the quasi-experimental design in the current study.

Three task-oriented discourses were collected to observe Mandarin-speaking

children's use of *DE*-marked expressions addressed to the adult. Mandarin-speaking children's use of *DE*-marked expressions has long been observed with skewed distribution in some specific types based on observational data. Namely, not all the possible *DE*-marked expressions/RC occurred equivalently in children's spontaneous production (see Literature Review below). Many studies have argued that the unequal treatment/usage of *DE*-marked expressions by users indicates and implies that semantic or pragmatic properties must be involved in explaining patterns of language use (e.g., Tao 2002; Cheung 1997). Discourse function could be an approach in unraveling the mapping between the grammatical structure and the semantic or discourse properties in children's spontaneous production. Nevertheless, few studies provide systematic analyses of the use of *DE*-marked expressions/RC from the discourse-based perspective. Previous work concerned with Mandarin-speaking children's use of *DE*-marked expression/RC mostly collects children's elicitation data from experiments (e.g., Hsu et al. 2009) and few of them obtains naturalistic speech from children's daily conversations (e.g., Cheng et al. 2011). The elicitation task, being experimental in essence by manipulating the level of some independent variables, frequently succeeded in triggering a greater number of *DE*-marked expressions than naturally occurring speech and therefore was able to measure the outcome against the hypothesis to be tested. More often, the production data of

Mandarin *DE*-marked expressions/RC gathered in true experiments are used to examine the structural metrics in determining the internal complexity of the structure, which is then related to the acquisition issue. In contrast, the naturally occurring child speech, being non-experimental and not conforming to experimental concerns, provides observational data for describing what is found. Data collected in such a non-controlled manner are frequently the source for discourse-based approach. Nevertheless, due to the possible skewing in the distribution of target grammatical structure, a large-scale data collection over a long span of time is frequently needed.

Our concern is: Will there be a road which can be undertaken between the true experiment and non-experiment in collecting the data of *DE*-marked expressions by Mandarin-speaking children? A method similar to experiments but is viable for discourse-level observation. A quasi-experiment is our solution.

Our reasoning underlying the current design of the quasi-experiment is also based on children's cognitive development in the understanding of others' mind. Children are reported to develop a "theory of mind," the understanding of others as psychological beings having mental states such as beliefs, desires, emotions, and intentions (Astington and Gopnik, 1991; Flavell, 1988; Harris, 1989; Leslie, 1987; Perner, 1991; Wellman, 1990) and their knowledge about the mind emerges early in the development. Children come to understand how desires affect emotions and

actions around 2 or 3 years of age, and how beliefs do so at about 4 years of age (See Perner, 1991; Wellman, 1990). Such understanding can be attested by the fact that mother's language relates to children's subsequent performance on tasks that tap children's understanding of desires, emotions, and beliefs (Ruffman, Slade, and Crowe, 2002).

That children have knowledge of other's intentions enables us to design the current quasi-experiment by considering interlocutor's assumption toward the referent as the independent variable in each task/condition. Interlocutor's assumption toward the referent refers to his/her presupposition regarding the location of the referent in addressee's memory and attention state, leading different cognitive status. Different referential forms conventionally signal different cognitive statuses, thereby enabling the addressee to restrict the set of possible referents and respond in appropriate forms to make the discourse coherent (Gundel, Hedberg, and Zacharski, 1993). Interlocutor's cognitive status also bears on information availability which concerns whether the referent in focus is perceptually and/or linguistically available. Overall, interlocutors in our three different tasks have different cognitive status toward the referents in focus due to the characteristics of each task. Pear film story telling generally presumes the information status of "knowing child but blind adult", as the child has to watch the film alone and is required to recount the film to the adult, who

is presumably unfamiliar to the film. Frog story telling generally presumes “earlier knowing child but later knowing adult”, as the child has to listen to the Frog story alone and is required to recount the story based on the pictures displayed on the computer screen to the adult, who is looking at the picture simultaneously with the child. Lego construction talk generally presumes “synchronically knowing child and adult”, as the child and adult are co-working the Lego construction and the Lego pieces are in front of them (For the details of procedures in the three tasks, see Methodology below).

In presenting the observations we obtained from the three task-oriented discourses, a comparison between the current quasi-experiment and previous experimental elicitation task (i.e., Hsu et al. 2009) will be made. In comparison, the interlocutor’s cognitive status in the experimental picture-identifying elicitation task, like the Lego Construction, primarily presumes the information status of “synchronically knowing child and adult” due to the fact that both child and adult are simultaneously keeping track of the referents at the moment of utterance

We have to note that the referents in these different types of ongoing natural interactions, regardless of being experimental or quasi-experimental, show sensitivity to the perceptual and/or linguistic availability of the referent in the prior discourse. Thus, the *DE*-marked expressions used by children to respond to the referent in these

conditions will be examined from this interactive dimension.

Our comparison plan is finally to present an overall picture revealing the differences and similarities among these tasks. For the elicitation task, children's *DE*-marked expressions are expected to show a collective pattern, as the child-adult dyads primarily use communicative act of identifying referents as required by the task itself. For the three task-oriented discourses, children's *DE*-marked expressions are expected to demonstrate various patterns due to the major concern in the study: the potential *plurifunctionality* of Mandarin *DE*-marked expressions in fulfilling its distinctive purposes in discourse, which will be shown in our results and analyses.

The organization of remaining parts in this dissertation follows as such. Chapter 2 reviews the literature relating to the background in motivating and designing the study. Mandarin *DE*-marked expressions will be defined in the first place, and previous studies examining children's acquisition of *DE*-marked expressions will be reviewed. Then potential factors reported to affect interlocutor's choice of expressions in response to the dynamic *information flow* will be elucidated, and their relevance to the current study will be pointed out for using them as the (in-)dependent variables in this study.

Chapter 3 demonstrates the methodology in designing the current study. It includes subjects, materials, data-collecting procedures, transcribing, and coding

convention. Chapter 4 reports the results and analyses. We will compare the convergent and divergent patterns we found between this study and previous elicitation work by Hsu et al. (2009). Chapter 5 offers discussions. Research questions will be revisited to check whether and how our research addresses the posited questions. Finally, contributions and implications for this dissertation and future research will be presented.

Chapter 2

Literature review

2.1 Mandarin *DE*-marked expressions

Mandarin *DE*-marked expression is a grammatical construction showing language-specific features. It is represented by a uniform *X-DE-Y* schema, with various modification functions serving by modifier *X*. The head NP *Y* of this schema sometimes can be left empty, resulting in headless *X-DE* form. According to Li and Thompson (1981), there are at least seven modification functions manifested in the *X-DE-Y* schema to represent the associative, modifying, possessive, and coordinating relation between the modifier *X* and the modified noun *Y*[1] (See note afterwards).

The *DE*-marked expressions of our concern in this study, which are chosen by children to respond to the referent/entity in focus, are exemplified as follows, with parentheses indicating abbreviations used in the coding for our data, which appears later in Chapter 3. We will focus on the constituent preceding *DE*, and leaving the (c)-overt head NP un-addressed. The use of headed and headless NP in Mandarin *DE*-marked forms can be referred to Cheng et al. (2011). In general, the construction we are concerned about is a ***verbal predicate*** encapsulated in the *X-DE-(Y)* form.

(A) Restrictive relative clause (RC):

The referent of the head NP co-indexes with the referent of the relativized NP, and there are two types of relative clauses.

(1) To further specify/characterize/describe the category designated by the ***new*** head referent which is not previously known to the hearer, and so "provide essential information in the identification of the object being referred to" (Fillmore, 1987:2)

A: ni shuo you sheme guolai
you say have what come
"Did you talk about what comes?"

→B: you yi ge [qi jiaotache] *de* **<u>ren</u>** guolai
have one CL ride bicycle *DE* person come
"A person who rides a bicycle comes over here."

In (1), the head NP referred to by child speaker B is newly introduced to the adult hearer A. By using the restrictive relative clause, the child speaker B is able to characterize this new referent so that it will come into the focal attention of adult hearer A and be easy for adult A to process it.

(2) To identify a ***given*** Head NP that has been mentioned previously and is now in the hearer's focal consciousness.

A: na pen bale shi shei…shei *de* bale a
that tub guava SHI who...who *DE* guava FP
"Whose guava is that tub of guava?"

→B: jiu shi [zai zhai] *de* na ge **<u>ren</u>** de
just SHI PROG pack *DE* that CL person DE

"That belongs to the person who packs the bale."

In (2), the adult speaker A has had the referent in his/her mind, and the child addressee B responds to A's question regarding the referent that is presumed to be known, by identifying it with *DE*-marked relative clause.

(B) Pseudo relative clauses (PRC):

We define ***pseudo relative clauses*** as those *X-DE-(Y)* constructions that contain verbal predicates in the modifying *X* phrase, but the referent of the head *Y* NP does not co-index with the referent in the predicate X structure. Nevertheless some associative relation can still be implicated between the *X* and *Y* constituents. There are at least four types of pseudo-relatives with associative relation, as exemplified from (3) to (6).

(3) Associative sentence: To associate the head *Y* NP, the referent in focus, with a concomitant event encoded in sentential construction in the modifying *X* phrase

A: ta shi zai kan na yi liang kache
he SHI PROG watch which one CL truck
"Which truck is he watching?"

→B: na liang [nusheng meiyou tiao qilai] *de* kache
that CL girl no jump up *DE* truck
"The truck by which the girl did not jump up."

In (3), the adult speaker A asks which truck the boy in the picture is looking at. The child speaker B answers and identifies the referent 'truck' by linking it with a sentential construction including a given human referent, girl, engaged in her own activity.

(4) Associative Predicate: To associate the referent of the head NP with a predicate, with other participant than the head referent engaged in the predication

A: ni yao rang ta zhang limian
you want make he stand insides
"You have to make him stand insides."
B: zheli shi [ting che] *de* difang
here SHI park car *DE* place
"Here is the place for (people) to park cars."

In (4), the adult speaker A requires the child speaker B to make some space for the known referent 'he', and the child speaker B talks about the place for parking cars—implying this is a good place for the referent 'he' to stay.

(5) Associative predicate with epistemic value[2]: To show the speaker's affective stance toward the claims regarding the referent in focus

A: hao, zeme ge bu yiyang fa
Good, how CL not same way
"Ok. What's the difference?"
→B: men shi dakai *de*
door SHI open *DE*
"The door is open."
gang-gang shi [guan zhe] *de*
just SHI close DUR *DE*
"It was close just now."

[2]The notion of 'Epistemic' here is adopted from Huang's (1999) observation on the function of *SHI…DE* construction. Huang proposed that *SHI…DE* construction (and its variant forms) conveys the affective and epistemic meaning.

In (5), the adult speaker A requires the child speaker B to compare the difference between two doors in the picture. Child B reports his/her assertion about this entity (epistemic meaning), and his/her feeling about the assertion (affective meaning) as well. *DE* in this utterance is categorized as ***evidential marker***, known to convey both affective and epistemic meaning (Chafe and Nichols, 1986). The *DE*-marked expression with evidential marker *DE* is therefore characterized as having epistemic value.

(6) Associative predicate with *DE* as a nominalizer: To nominalize the verb/verb phrase as a noun phrase, and the modifying predicate together with the head/headless NP (frequently the abstract noun) constitutes a complement .

A: zhuang dao yihou ne
bump to after Q
"What happened after bumping?"

→B: ta jiu yong [qian] *de*
he then use pull along *DE*
"Then he pulled it (the bike) along."

In (6), the adult speaker A asks the child speaker B what happened to the given referent, he, 'ta', after bumping into something. The child speaker B predicates the known referent, he, by describing the way he pulls along the bike, meaning '*he gets the way of pulling along the bike*'. The V-DE nominalized construction (pull along-de, '*qian-DE'*) acts as the object complement of the verb 'use', *yong*,

(C) Temporal coordination (**TEM**)

The third specific type of *DE*-marked expressions, sometimes termed as *relativazation of time*, is the temporal coordination (TEM). In TEM, the known referent is forward/backward linked to the event with a temporal phrase involving verbal predicate.

(7) TEM as a forward linking to the referent

A: ta jiu ba ta yang zai pingzi li
he then BA it keep in bottle inner
"He then kept it in the bottle."

ranhou di er tian
then the second day
"Then, the next day…"

→B: di er tian [ta xing lai] *de* shihou
the second day he wake up *DE* time
"The next day, when he woke up,"

xiao qingwa jiu bu jian le
little frog then no see FP
"The little frog disappeared."

In (7), the adult speaker A recounts the event concerning the frog, and the child speaker B proceeds to the plot by using the temporal phrase to set the temporal boundary wherein the background information relevant to the referent 'frog' can be provided.

As can be seen, all these expressions are represented in *X-DE-Y* form, with modifying phrase X preceding *DE* demonstrating versatile functions but all having verbal predicate involved (as indicated with the bracket [ ] symbol). In the next section, we will present previous studies on the acquisition of Mandarin *DE*-marked expressions, where we can see that discourse-pragmatic perspectives have been rarely taken. This essentially motivates the current study.

2.2 The acquisition of Mandarin *DE*-marked expressions

The acquisition of Mandarin *DE*-marked expressions has been examined in many studies. Some aimed at profiling Mandarin-speaking children's *grammatical development* (Erbaugh, 1982; Chang and Huang 1986; Huang, 1987; Hsu, 1987; Tse et al. 1991). Some focused on the acquisition of one type of *DE*-marked expressions, *relative clauses* (Chang 1984; Lee 1992; Su 2006). A few studies paid attention to *the occurrence of head NP in the DE-marked forms* (Packard, 1988; Wang, 1996). The common interest in the developmental approach is raised by the fact that *DE*-marked expressions, represented with a uniform *X-DE-Y* schema, demonstrate various modification functions. Therefore, their major concern is how Mandarin-speaking children may progress from one pattern of one function to another and what may hinder the progress. In contrast, studies in relative clause acquisition concern the

structural complexity of relative clauses. By examining the comprehension and production of complex constructions like relative clauses, these studies intend to clarify the extent of (universal) grammar inherent to children's acquisition. Finally, studies in the headed and headless NPs of *DE*-marked expressions evaluated the earlier emergence of headless forms than headed ones, and assessed the potential explanations for the production and omission of head NP in the *DE*-marked expressions. As most of these studies mentioned above viewed the acquisition of *DE*-marked expressions from the perspective of structural complexity of *DE*-marked expressions, little is undertaken with the discourse-pragmatic approach. This study is therefore a preliminary inquiry of the area which is rarely explored.

As the current study will focus on the *DE*-marked expressions with *verbal predicate* and adopt the concepts of *information flow*, previous studies relevant to the constructions we concern and bearing on the approach we take will be reviewed. First, the acquisition literature on the *DE*-marked relative clauses will be described and follows the review on *DE*-marked headed and headless expressions. Then we will switch to the literature of *information flow* and the factors we concern in the current study. Finally, the few studies conducted with the concepts of *information flow* will be introduced (i.e., Cheung, 1997; Cheng et al. 2011), which will lead to the core and methodology of this dissertation.

2.2.1 *DE*-marked Relative clause

2.2.1.1 Sketch

The child's development of an ability to produce and understand relative clauses is considered to be an interesting and important aspect of language acquisition. Studies on early syntactic development regard that children learn to construct complex sentences out of simpler components. Relative clauses, as one type of complex sentences, are syntactically formed by the rules of conjoining and embedding simple sentences (Bowerman 1979; Clark and Clark 1977). Children need to discover how recursive structures are formed in acquiring complex sentences. Therefore, the acquisition of relative clauses is thus considered to signal the child's progress in conceptual and linguistic competence and has been extensively studied for the past decades.

The acquisition of Mandarin relative clauses, like many other cross-linguistic acquisition studies, has raised great interests because Mandarin shows some language-specific properties. For one thing, Mandarin relative clauses are represented within a uniform *X-DE-Y* schema, with morpheme *DE* located between the modifier *X* and the head noun *Y*. Apart from the attributing/modifying function of relative clauses, many other grammatical functions correspond to the *X-DE-Y* schema. In this case, to acquire these *DE*-marked constructions, including relative clauses,

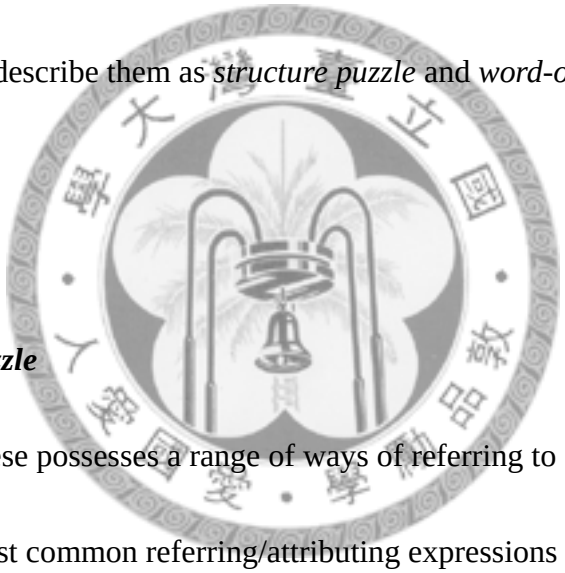
Mandarin-speaking children must learn the one-to-many, form-to-function mapping process. For another, as Mandarin essentially lacks morphological inflection to signal grammatical functions of the word in the sentences, the grammatical relations between constituents are generally believed to be expressed by means of word order. It seems that lacking inflections leads to the phenomenon that Mandarin relies on word order in assigning syntactic functions.

Nevertheless, Mandarin is not an easy language to classify in terms of word order in many respects (Li and Thompson 1981:19-26). For example, Mandarin shows similarities to and differences from SVO languages (e.g. English) and SOV languages (e.g. Japanese). The fact that Mandarin is inconsistent with either SVO or SOV order raised comparative interests in the acquisition of Mandarin relative clauses. One particular thing adds to the complication of relative clause acquisition in Mandarin is: although the basic word order of Mandarin is SVO, that the relative clause precedes the head noun it modifies, forming a head-final construction, is one of the SOV language features.

In this respect, most of the acquisition studies on Mandarin *DE*-marked relative clauses show more structure-based concerns. These structure-based studies consider the grammatical relations or the configurational properties of the surface structure to be an essential parameter in determining the nature of children's preparedness with

which they begin the task of language acquisition. The accessibility of Mandarin *DE*-marked relative clauses for children is therefore primarily considered from the perspective of structural complexity, and many syntactic factors have been suggested, such as the syntactic role of the head noun, the gapped referent, and the embeddedness degree in the relative clause.

Mandarin relative clauses, if considered from structural perspective, show some language-specific features which might add inherent complication to language acquisition. We will describe them as *structure puzzle* and *word-order puzzle* respectively.



2.2.1.2 Structure puzzle

Mandarin Chinese possesses a range of ways of referring to or attributing entities in discourse. The most common referring/attributing expressions are marked by *DE*, with the range of structures displayed in an *X-DE-Y* schema along with their versatile corresponding grammatical functions. Specifically, *DE*-marked relative clauses account for one of the *X-DE-Y* schemata, wherein verbal phrases act as modifier *X* and *Y* as the modified head noun. Since the head nouns of most of the *X-DE-Y* schema can be left empty, resulting headless *X-DE* forms, the *DE*-marked relative clauses can have alternate headed and headless forms as illustrated in (8).

(8) zhong shuiguo de (nongfu)
grow fruit *DE* farmer/Ø
'the farmer who grows fruit'

Due to the concatenation in Mandarin *DE*-marked relative clauses that the modified head follows the modifier, Mandarin relative clauses are characterized as head-final, in contrast to languages with head-initial, whose head precedes the modifying relative clause.

A relative clause construction is an embedded clause that modifies a noun or noun phrase in an associated main clause. Fox (1994:14) pointed out that any description of relative clause structure has to specify the main clause and the modifying clause. Two features characterize the structure of a relative clause: (i) the syntactic role of the main clause element functioning as the *head* of relative clause, i.e., the element modified by the relative clause; and (ii) the syntactic role of the relativized element functioning as the *gap* inside the relative clause. Functionally speaking, the main clause and relative clause have to 'share' a common argument, or the referent of the head NP in the sentence must be the referent of the relativized NP. The acquisition literature on Mandarin-speaking children's comprehension/production of relative clauses has concentrated on relative clause constructions in which head and gap function as core arguments. Specifically, four types of relative clause constructions have been examined: SS, SO, OS, and OO. The term '*S*S' represents 'a

relative clause in which the head NP has the role of subject (*S*) within the main clause , and the co-referent NP has the role of subject (S) within the relative clause'; the rest types may be deduced by analogy. *S*S and *O*S are traditionally combined as Subject-relatives, or referred to as subject-gapped RC, or abbreviated as SRC in many studies; *S*O and *O*O are combined as Object-relatives, or referred to as object-gapped RC, or abbreviated as ORC. The following examples in (9), transformed from Sheldon's (1974:275) English relative clauses, exemplify the four constructions corresponding to Mandarin RC concatenations

(9) *S*S: [___ jumps over the pig *DE*] *the dog* bumps into the lion.
*S*O: [the horse bumps into____*DE*] *the lion* jumps over the giraffe.
*O*S: The pig bumps into [____ jumps over the giraffe *DE*] *the horse*.
*O*O: The dog stands on [the giraffe jumps over ___ *DE*] *the horse*.

Following this characterization, the RC type to which example (8) belongs also has to be decided on the syntactic role that the constituent head functions in the main clause. Namely, example (8) could be either *S*S or *O*S type, as in (10) and (11) respectively.

(10) *S*S: [*e*$_S$ zhong shuiguo de] nongfu$_S$ zhidao gai zhong sheme shuiguo
e grow fruit *DE* farmer know should grow what fruit
'The farmer who grows fruit knows what kind of fruit he should grow.'
[種水果的農夫]知道該種什麼水果

(11) *O*S: tuixiaoyuan ba pingguo mai gei [*e*$_S$ zhong shuiguo de] nongfu$_O$
salesperson BA apple sell to *e* grow fruit *DE* farmer
'The salesperson sold apples to the farmer who grows fruit.'
推銷員把蘋果賣給[種水果的農夫]

Mandarin can have a wide variety of relative clauses. If we consider the full range of combination patterns from (i) the grammatical roles of the main clause, (ii) the grammatical roles that can be relativized in the relative clause and (iii) the headed/headless status of the modified head noun, as many as near 36 types of relative clauses can be generated. These possible combinations, as listed below, far outnumber what has been traditionally examined in the experimental literatures on Mandarin-speaking children's RC acquisition. Table 2.1 shows classification as well as coding scheme of Mandarin *DE*-marked relative clauses used in the current study. As can be seen, we distinguish six head/headless nouns and three nominal types in RC, yielding a total number of 36 types of relative clauses in Mandarin. All the *DE*-marked relative clauses included in our data have been coded for the two features that characterize the syntactic structure of a relative clause: (i) the first code stands for the syntactic role of the head noun and its headed/headless status; (ii) the second code for the syntactic role of the relativized NP. An example of each type and code is given in (12) to (47).

Table 2.1: Classification of Mandarin relative clause constructions (revised based on Diessel and Tomasello 2000)

Y constituent in X-DE-*Y*	*X* constituent in *X*-DE-Y
Head of relative clause[a]	Relativized NP
IN=isolated noun phrase	A=subject of transitive REL clause
[b]PN=Predicate noun	S=subject of intransitive REL clause
SUBJ=subject	O=object
OBJ=object	
OBL=Oblique[c]	
EX=Existential (‘***you***’ there is)	

[a] Parenthesis in the head of RC indicating that the head *Y* NP in the X-DE-*Y* scheme is headless

[b] PN=Predicate nominals in sentences containing ‘*shi*’ (is), ‘*biancheng*’, (become), and ‘*jiaozuo*’ (call) or ‘*jiao*’ (name)

[c]Oblique includes those arguments that are preceded by prepositions such as ‘*dui*’ (to), ‘*dao*’ (to), ‘*wei*’ (for), ‘*zai*’ (in), ‘*bei*’ (by)

(12) IN-A (Self-constructed)

[xihua milaoshu] de xiao pengyou

like Mickey Mouse DE little friend

‘the child who likes Mickey Mouse’

[喜歡米老鼠] 的小朋友

(13) IN-S (MOT, 3;0)

[po diao] de pingzi

break down DE bottle

‘the bottle that is broken’

［破掉］的瓶子

(14) IN-O (CHI, 2;6)

[ama qu zuo] de guozhi

grandma go make DE juice

‘the juice that grandma makes’

［阿媽去<XYZ>做］的果汁

(15) (IN)-A (Self-constructed)

[ai kan katong] de Ø

love watch cartoon DE Ø

‘the one who loves to watch cartoon’

[愛看卡通]的

(16) (IN)-S (MOT, 2;6)

bu hao chi de Ø

no good eat DE Ø

‘something that does not taste delicious’

不好吃的?

(17) (IN)-O (CHI, 2;5)

[mama zhu] de Ø

mother cook DE Ø

‘those that mother cooks’

[媽媽煮]的

(18) SUBJ-A (Self-constructed)

[taoyan ta] de ren ye bu xihuan wo

dislike he DE person also no like I

‘Those who dislike him do not like me, either.’

[討厭他]的人也不喜歡我

(19) SUBJ-S (Self-constructed)

[tao zou] de yongren mei dai qian

run away DE servant no take money

‘The servant who ran away did not take money.’

[逃走]的傭人沒帶錢

(20) SUBJ-O (CHI, 2;5)

[mama zhu] de dan ye hao chi

mother cook DE egg also good eat

‘The eggs that mother cooks are delicious, too.’

[媽媽煮]的蛋也好吃

(21) (SUBJ)-A (Self-constructed)

[zuo binggan] de Ø zheng zai rou miantuan

make cookie DE Ø being PROG rub dough

‘The person who makes the cookie is rubbing the dough.’

[做餅乾]的正在揉麵團

(22) (SUBJ)-S (Self-constructed)

na pian ku diao de Ø piao zou le

that CL wither down DE Ø flow away FP

That piece of something flew away.

那片[枯掉]的漂走了

(23) (SUBJ)-O (Self-constructed)

[wo zuo] de Ø pao hen kuai

I make DE Ø run very fast

‘The one that I make runs very fast.’

[我做]的跑很快

(24) OBJ-A (Self-constructed)

xiao nusheng xihuan chuan piaoliang yifu de babi wawa

little girl like wear beautiful dress DE Barbie Doll

‘Little girls like Barbie Dolls who wear beautiful dresses.’

小女生喜歡[穿漂亮衣服]的芭比娃娃

(25) OBJ-S (CHI, 2;5)

wo qu na [hao ting] de gushi

I go take good listen DE story

‘I go to take the story that is good for listening.’

我去拿[好聽]的故事

(26) OBJ-O (CHI, 2;6)

ni gen wo qu na [ni xihuan] de gushishu

you with I go take you like DE storybook

‘You come with me to take the storybook that you like.’

你跟我去拿[你喜歡]的故事書

(27) (OBJ)-A (Self-constructed)

laoshi xihuan renzhen [zuo gongke] de Ø

teacher like seriously do homework DE Ø

'The teacher likes the one who does homework seriously.'

老師喜歡認真[做功課]的

(28) (OBJ)-S (CHI, 3;1)

ma, ni ke bu keyi gei wo yi ge [chao cai] de Ø

mom, you can no can give I one CL cook vegetable DE Ø

'Mom, would you give me something that can cook vegetable?'

媽，你可不可以給我一個[炒菜]的

(29) (OBJ)-O (MOT, 2;5)

ni kan [wo jian] de Ø

you see I cut DE Ø

'You see what I cut.'

你看[我剪]的

(30) OBL-A (Self-constructed)

wo xiang [mai hua] de laoban mai le yi pen xiangrenzhang

I to sell flower DE boss buy FP one CL cactus

'I bought a cactus from the boss who sold flowers.'

我向[賣花]的老闆買了一盆仙人掌

(31) OBL-S (Self-constructed)

yi qun nanhai dui zhe [kuang fei] de ye gou diu shitou

one group boy to DUR fiercely bark DE wild dog throw stone

'A crowd of boys threw stones at the dog that is barking.'

一群男孩對著[狂吠]的野狗丟石頭

(32) OBL-O (Self-constructed)

wo gen [wo zui ai] de pengyou shuo zaijian

I with I best love DE friend say goodbye

'I say goodbye to the friend that I love most.'

我跟[我最愛]的朋友說再見

(33) (OBL)-A (Self-constructed)

lao taitai dui [mai shuiguo] de Ø fa piqi

old woman to sell fruit DE Ø have temper

'The old woman had a bad temper toward the person who sold fruit.'

老太太對[賣水果]的發脾氣

(34) (OBL)-S (Self-constructed)

laoshi wen you mei you ren ti [shengbing] de Ø qingjia

teacher ask have no have person for [sick] DE Ø ask for leave

'The teacher asked if anyone asked for leave for those who were sick.'

老師問有沒有人替[生病]的請假

(35) (OBL)-O (Self-constructed)

wo xiwang dajia yi [wo jihua] de Ø qu zuo

I hope everyone as I plan DE Ø go do

'I hope everyone can do as what I plan.'

我希望大家依[我計畫]的去做

(36) PN-A (Self-constructed)

ta jiu shi na ge [tou diannao] de zei

he just SHI that CL steal computer DE thief

'He is the thief that stole the computer.'

他就是那個[偷電腦]的賊

(37) PN-S (MOT, 2;9)

tongshi jiu shi gen ta yiqi shang ban de ren a

co-worker just SHI with he together go up work DE person FP

'Co-workers are those who go to work with him.'

同事就是跟他一起[上班]的人啊!

(38) PN-O (MOT, 2;5)

zhe shi shei hua de yi ge shoushou a

this SHI who draw DE one CL hand Q

'Whose hand is that someone draws?'

這是[誰畫]的一個手手啊?

(39) (PN)-A (Self-constructed)

zhe jiaozuo [xiuli shuiguan] de Ø

this call fix water pipe DE Ø

This is called the one who fixes water pipe.

這叫做[修理水管]的

(40) (PN)-S (MOT, 3;1)

o shi gei ta [feng duzi] de Ø (zhen)

oh SHI gei he sew belly DE Ø (needle)

'This is (the needle) for him that can sew the belly.'

喔，是給他[縫肚子]的

(41) (PN)-O (MOT, 2;9)

ta shuo zhe ge shi wo zuo de Ø (binggan) o

it say this CL SHI I make DE Ø (cookie) FP

'It said this is (the cookie) that is made by me.'

它說:「這個是我做的喔！」

(42) EX-A (Self-constructed)

zheli you [kai kache] de ren

Here have drive truck DE person

'Here is a person that drives a truck.'

這裡有[開卡車]的人

(43) EX-S (Self-constructed)

malu you [pao] de che

road have run DE car

'There are cars that run on the road.'

馬路有[跑]的車

(44) EX-O (Self-constructed)

zhe ben shu you [ni xiang ting] de gushi

this CL book have you want listen DE story

"There are stories that you would like to listen to in this book."

這本書有[你想聽]的故事

(45) (EX)-A (MOT, 2;8)

zhuo shang bu shi you [fang bi] de Ø ma

desk on no SHI have put pen DE Ø Q

'Isn't there is something that holds the pen?'

桌上不是有[放筆]的嗎?

(46) (EX)-S (Self-constructed)

tian shang you [fei] de Ø, di shang you [pa] de Ø

sky on have fly DE Ø, earth on have climb DE Ø

There are some things that fly in the sky, and there are some things that climb on the earth.

天上有[飛]的, 地上有[爬]的

(47) (EX)-O (Self-constructed)

you ni xihuan de Ø zai tai shang ma

have you like DE Ø on stage on Q

'Is there anyone that you like on the stage?'

有[你喜歡]的在台上嗎?

The list above displays the complete combination of 6*2*3, resulting in 36, possible types of Mandarin RC. It demonstrates that relative clauses in Mandarin are flexible in form. However, based on the observations from naturally occurring conversations we colleced[3], there exist some RC types which are seldom or hardly produced by speakers in Mandarin discourse context. We highlight them with self-constructed examples, which account for nearly half of the Mandarin RC occurrences in a conversational sample. We further transform the list of RC occurrences into Table 2.2, showing that 22 types of RC are absent in our

[3]The data we present here is based on the naturalistic conversational data from a Mandarin-speaking child with her mother between 2;5 and 3;4 years of age.

conversational data, as indicated with the dark cells. In specific, relative clause constructions involving oblique relation between the head of main clause and the gapped element in the relative clause (i.e. the OBL-/(OBL)-types) and those involving transitive relative clause (i.e. the –A types) are systematically absent in our conversational data. This poses a structural puzzle in Mandarin relative clauses: the distribution of differnt types of relative clauses seems not to be equal across all types in the discourse context.

Table 2.2: Distribution of Mandarin RC types in one mother-child conversational sample

MC		RC		
		A	S	O
Head	IN	(12)	(13)	(14)
Headless	(IN)	(15)	(16)	(17)
Head	SUBJ	(18)	(19)	(20)
Headless	(SUBJ)	(21)	(22)	(23)
Head	OBJ	(24)	(25)	(26)
Headless	(OBJ)	(27)	(28)	(29)
Head	OBL	(30)	(31)	(32)
Headless	(OBL)	(33)	(34)	(35)
Head	PN	(36)	(37)	(38)
Headless	(PN)	(39)	(40)	(41)
Head	EX	(42)	(43)	(44)
Headless	(EX)	(45)	(46)	(47)

2.2.1.3 Word order puzzle

A second lingusitic feature pertaining to Madarin and related to relative clause construction is the word-order typology of Madarin. It is not easy to classify Mandarin into any word-order type for three major reasons (Li and Thompson 1981: 19-26). First, the notion of subject is not struturally well-defined in Mandarin. Second, the word order is not determined primarily on strictly grammatical gorunds. Rather, it is largely governed by principles of meaning. Third, Mandarin is inconsistent with repect to the features that correlate with SVO or SOV order. In this aspect, although Mandarin can be seen to have some of the features of an SVO langauge, it has more of features of an SOV langauge. For example, that the modifier must precede their heads, such as the case of relative clause, is an SOV feature.

2.2.2 Structural approach to the acquisition of *DE*-marked relative clause

2.2.2.1 Structural approach

Structural appraoch is the major type of appraoch taken to investigate Mandarin-speaking children's acquiation of *DE*-marked relative clauses. With the structural and word order characteristics in Mandarin, the structural approach to Mandarin RC acquisition inevitably faces a dilemma as to how children can acquire such a particular language with a finite system of components and rules defined by the

innate lingusitic competence.

The structure-based approach toward the acquisition of Mandarin relative clauses frequently focuses on the structural metrics in determining the complexity of different relative clause types and how Mandarin-speaking children progress from the structurally easier relative clause type to the structurally more difficult relative clause type. One group of structural accounts assumes that the child starts out with a grammar that permits children's use of certain processing heuristics/strategies (cf. parallel function strategy by Sheldon 1974; N-V-N word order strategy by Bever 1970, Townsend and Bever 2001) and later changes this grammar to one more appropriate to the adult language. Studies approximating to this type of explanation for Mandarin RC acquisition are represented by the comprehension experiments in Chang (1984) and Su (2006).

2.2.2.2 Comprehension studies

Chang (1984) employed an act out task to test 48 Mandarin-speaking children aged between 6 and 11 in Taiwan on the comprehension of the four types (*S*S/*S*O/*O*S/*O*O) of Mandarin RCs. He also included animate/inanimate arguments in these four types of sentences. The results of Chang's study showed that the ranking of comprehension difficulty for Mandarin-speaking children was *S*S = *S*O < *O*O = *O*S, regardless of the animacy of arguments, indicating that the grammatical role of *head*

affects Mandarin-speaking children's performance of relative clauses. SS and SO sentences (i.e. Subject-Head relatives or SUBJ-RC in our classification) were generally easier than OS and OO sentences (i.e. Object-Head relatives or OBJ-RC in our classification). Chang argued that their data support the interruption hypothesis originating from the cognitive principles of Slobin (1970, 1973), and proposed that the main factor influencing the comprehension of relative clauses in Mandarin is whether the processing of relative clauses will interrupt the interpretation of main sentences or not. SS and SO sentences tended to be easier because the relative clauses, appearing before the modified head noun as exemplified in (9), which we repeat here for convenience as (48), were not centered-embedded; OS and OO sentences were more difficult because the relative clauses interrupted the order of elements in the main clause, as shown here in (48).

(48) *S*S: [___ jumps over the pig *DE*] *the dog* bumps into the lion.
*S*O: [the horse bumps into____*DE*] *the lion* jumps over the giraffe.
*O*S: The pig bumps into [____ jumps over the giraffe *DE*] *the horse*.
*O*O: The dog stands on [the giraffe jumps over ___ *DE*] *the horse*.

The processing-based explanations made from the findings by Chang's study have been revisited and modified in Su (2006). Su (2006) further examined Mandarin-speaking children's comprehension of OO relative sentences using a truth value judgment task. Her results showed that while older children (mean age 5;11)

can pattern like adults to interpret the test sentences correctly most of the time, younger children (mean age 4;9) are found to use an NVN word order strategy, leading an erroneous interpretation of the test OO relative sentences. Su argued that younger children's non-adult comprehension of OO relative sentences is taken to reflect the difficulty of reanalyzing the OO relative sentences when children might be led into a garden path in considering the subject NP of the OO relative clauses as the object of the main verb (e.g., in example (48) '*giraffe*' as the object of main verb '*stands on*'), which is similar to the patterns found from adults in on-line sentence processing experiments.

Apart from attributing children's inability to handle the more complex RC to the use of certain processing-based heuristics, another school of thought, represented by Goodluck and Tavakolian (1982), Hamburger and Crain (1982), argue that children did not perform poorly in these comprehension experiments because their grammars are not adult-like or do not permit relative clauses, but because some pragmatic factors and the complexity of the sentence containing the complex noun phrases hinder children from behaving appropriately (Lee, 1996).

Researchers of this vein of thought have tried to show that once these distracting factors are removed, children's ability to handle relative clause structures improved significantly. For example, Lee (1992) examined the RC comprehension by Beijing

children of a younger age range from 4 to 8 year-old. The order of ranking found in this study was S<u>S</u> < O<u>S</u> < S<u>O</u> < O<u>O</u>, which is consistent with the prediction of the accessibility hierarchy strategy by Keenan and Comrie (1977) that S<u>S</u>/O<u>S</u> (i.e. subject-extraction, subject-gapped, or Subject-RC) is less difficult than S<u>O</u>/O<u>O</u> (i.e. object-extraction, object-gapped, or Object-RC) but is contrary to the prediction of the anti-interruption strategy in Chang (1984) (i.e. *S*S and *S*O will be easier than *O*S and *O*O by Slobin (1970, 1973). Lee further argued that processing heuristics is inadequate in explaining the findings now that even 4-year-old children in his study were able to comprehend correctly 75% more of the time on *S*S and *S*O sentences (i.e. Subject-Head relatives; SUBJ-RC) once they were required to comprehend these SUBJ-relatives containing intransitive main clause. Lee pointed out that this indicates that child grammar does not differ from adult grammar and that RC structure emerges and acquires early in children, but it is the structure of main clause that impairs children's performance on RC comprehension.

As can be seen, previous comprehension studies on Mandarin *DE*-marked RCs generally consider that children's non-adult interpretation does not result from non-adultlike grammatical representations or competence of the sentences. Rather, it could be due to the restricted computational resources of children in processing the structures. Therefore, the misinterpretation of RC comprehension results from the

intrinsic difficulty in the RC sentences, and thus children may use different strategies to accommodate their difficulty in processing the sentences.

To obtain more substantial evidence in terms of children's innate competence in acquiring the complex relative clauses, latest research on Mandarin RC acquisition has also extended its concerns toward investigations of RC acquisition based on observational production data.

2.2.2.3 Production studies

The production studies on the acquisition of Mandarin *DE*-marked relative clauses focused mainly on the extensively addressed issue of structural complexity in relative clauses (e.g. the SRC/ORC difficulty asymmetry and the distribution of resumptive pronouns in RC) and sought explanations for children's difficulty in producing them (cf. Cheng 1995; Chiu 1996; Su 2004; Hsu et al. 2009). Different accounts have been proposed for these production data obtained in experiments. Among them, structure is emphasized as a major factor affecting the children's performance with different RCs.

Previous studies on Mandarin-speaking children's production of relative clauses frequently used an elicitation task in which children were facilitated to produce target relative clauses in the experimentally designed context. The major concern of these studies on children's production of relative clauses is: (i) whether children form

relative clauses through their linguistic knowledge of *wh*-movement, which generative linguists believe to underlie the formation of questions and other constructions such as relative clauses, and (ii) whether the use of gap and resumptives in relative clauses follow some general structural constraints. Cheng (1995) tested 27 Mandarin-speaking children aged between 3;6 to 6;3 by presenting for each trial with two pictures that depicted identical figures differing minimally only in one aspect and asking the child *who*-questions about the identity of the figures in the picture. The results showed that among the six types of relative clauses elicited (Subject/Direct Object/Indirect Object/Preposition Object/Genitive NP/Locative), gaps appear about 75% of the time, resumptive pronoun and NPs account for only 5% and 6% respectively. Cheng proposed a non-movement analysis to account for the infrequent use of resumptive elements. Comparatively, among the relative clauses elicited in Chiu (1996), which tested 65 Mandarin-speaking children aged between 3;2 to 6;1, 73% contained gaps, and higher percentages for resumptive elements (16% resumptive pronouns and 11% resumptive NPs). A structural account is raised, as Chiu noticed that children generally follow the limitations on the distribution of gaps and resumptives in different types of RC. For example, Subject relatives only allow gaps, while only resumptives can beused in Preposition Object relatives.

Another study that reported the elicited production of relative clauses by

Mandarin-speaking children was made by Su (2004). Su investigated the headedness of children's relative clauses and focused on the distribution of gaps and resumptives in different types of relative clauses. She tested 31 adults as the control and 40 Mandarin-speaking children (aged between 5;0 to 6;5) who were divided into two age groups (the older group between 5;7 to 6;5 and the younger group between 5;0 to 5;6) on the production of relative clauses. Five types of RC were examined, including Subject, Object, Preposition-Of-Object, Clausal complement, and Unextractable Subject relative clauses wherein the head noun in the main clause correspond to these relativized elements respectively and either a gap or resumptive pronoun is likely to appear in these relativized positions. To fulfill the identifying function of relative clauses and elicit subjects to produce appropriate relative clauses as the context requires, Su included in each trial two types of entities, with two identical characters for each type of entity which differed in only one aspect. After the story-telling period, the subject child was required to make a request to the puppet in terms of the entity to be attributed to (e.g., require the child to ask the puppet to find out the character that was pointed by the experimenter previously and thus the child had to describe and identify the character between the two). The elicitation results showed that there exist complementary distribution between the use of gaps and resumptives in different types of RC. A gap is predominantly used by all three subject groups in

Subject/Object relatives, while a resumptive pronoun is preferred in the other three types of RC. Based on these results, Su argued that the distribution of gaps and resumptives from both children and adults is governed by the same constraint on the use of resumptives in relative clause constructions, i.e., resumptives are limited to extractions from inaccessible positions like post-preposition, clausal complement or subject in subordinate clause. Therefore, a movement analysis was proposed to account for relatives involving extraction from Subject or Object position.

A recent study on Mandarin-speaking children's production of RCs, whose data will be reanalyzed in the discourse-pragmatics approach in this dissertation, is made by Hsu et al. (2009). The study by Hsu et al. is concerned with the relation between sentence structure and the process of sentence production. It examines the Subject-Object RC asymmetrical processing pattern and intends to test three different hypotheses proposed to explain the subject-object asymmetry found in children's performance with head-initial RC language like English. Pictures were presented to Mandarin-speaking children mean-aged 4;8 and questions were made to elicit Subject/Object RC in three types of RC conditions (free-standing DP, left-branching RC, and center-embedded RC). Rates of target RC production, rates of production of alternative structures, rates of errors in Subject/Object RC conditions, and the types of errors were analyzed. The overall results show that children produce substantially

fewer Object-RC than Subject-RC in the target responses; they make more grammatical errors in producing Object-RC than Subject-RC; they are more likely in the Object-RC condition to choose an alternative response, while these alternative structures could have been otherwise used in Subject-RC condition but did not. These findings are similar to those which have been observed in child speakers of other languages (e.g., English and Indonesian). Based on these results, Hsu et al. proposed that Mandarin Object-RC is an intrinsically more difficult and unnatural structure, so it is harder to produce than Subject RC, and that the Object-RC processing difficulty pertains to a cross-linguistic phenomenon.

It can be seen that previous acquisition studies in Mandarin-speaking children's comprehension/production on relative clauses pay more attention to the structural properties of RC and aim to account for children's linguistic behavior of RC in light of an intrinsic and self-sufficient innate knowledge. Of particular concern in this study, we note that although these acquisition studies in Mandarin-speaking children's production on RC have tried to elicit relative clauses in the context presumably designed to meet the identifying function of relative clauses, relative clauses are not the only constructions produced by children to identify the entity. In Cheng (1995), among all the responses children produced, only about 57% contained relative clauses; in Chiu (1996), 75% contained relative clauses; and in Su (2004), even adding

restrictive function of RC by using two identical characters for each type of entity, children's production of RC, ranging from 65% to 95%, varies along with different types of RC. In terms of the Object-RC, the major concern in Hsu et al. (2009), the percentages of other different types of responses for the Object-RC are as high as 61.1% in child group. This other-type effect still remains 20.5 % with adult group in the Object-gap condition, where other types of structures are used instead of the target Object-RC. All this shows that the use of relative clause may be affected by the factor that speakers may always have multiple options for how to express their intended messages even in an elicited and manipulated experimental setting. Moreover, if we consider from the discourse-based perspective, the experimental setting in previous production experimental studies can be also viewed as a type of discourse, bearing certain relations to the contexts in which they are conducted. Given that grammar can be seen as the outcome of the entire interactional and communicative situation constituted by interlocutors, we may conjecture that it could be the *information flow* between the child and the researcher in the elicitation task, e.g. frequently with a brief background scenario presented to children and followed by a series of questions and answers made by the researcher, which motivates the intended relative clauses. If we switch our concern of the role of abstract structure in human cognition to the focus on cognitive processes in relation to the context in which they occur, and on the language

use in communication, we might be able to see other factors involved in the structural options for these *DE*-marked relative clauses.

All this motivates the current project, and in the following section we will depict the discourse-based approach which will form the foundation of our methodology. A brief description on another *DE*-marked expression: the headed and headless *DE*-marked forms will be presented, and then proceed to the discourse-level approach: the *information flow*.

2.2.3 *DE*-marked headed and headless expressions

Another potential complication in the acquisition of Mandarin *DE*-marked expressions is the phenomenon that the head *Y* in the *X-DE-Y* schema may be absent, resulting in alternating headed and headless *DE*-marked forms.

Previous studies of Mandarin acquisition have used different approaches to the 'head ellipsis' phenomenon in *DE*-marked expressions observed in spoken data. These studies suggested that the following may be relevant factors, as listed in Table 2.3 below.

Table 2.3: Previous studies on the acquisition of Mandarin *DE*-marked expressions (Adopted from Cheng et al. 2011)

Study	Factor	Observations
Chang and Huang (1986); Huang (1987)	Semantic and syntactic complexities of *DE*-marked structures	Headless forms are acquired earlier because of their simpler semantic and syntactic structures
Packard (1988)	Ability to establish the abstract binding relationship between the modifier *X* and head *Y* in the *X DE Y* schema	Headless forms are acquired earlier because of children's inability to command the internal binding relation
Wang (1996)	The (in)-compatibility of [± verbal] features between the modifier *X* and the head *Y* in the *X DE Y* schema	Forms with compatible *X* and *Y* are produced more easily for children
Cheung (1997)	Discourse functions of *DE*-marked referential expressions	Children are sensitive to the information status of headless *DE*-marked forms. Their use of headed and headless *DE*-marked forms may be related to the information status of these expressions in discourse

As can be seen from Table 2.3, previous studies suggest that semantic, syntactic, and discourse factors are relevant. Among them, the structure-oriented perspective is accounted for to be the most relevant. A more in-depth description of these studies follows below.

Chang and Huang (1986) found that most young children started with headless *DE*-marked phrases ('incomplete,' using Chang and Huang's term) and gradually mastered the headed *DE*-marked forms. They categorized *DE*-marked constructions into ten patterns, based on Li and Thompson's (1981) classification. Then they applied

Brown's (1973) Five Stages of Language Development to the ten various *DE* patterns and generated a predicted growth order, which was in turn contrasted with children's productions observed in three tasks: sentence elicitation, picture comprehension, and imitation. Statistical results show that the predicted order is significantly correlated with the observed order ($r = 0.54$). Based on these results, Chang and Huang established a three-stage-order in the acquisition of *DE*-marked forms. Although Chang and Huang observed that incomplete *DE*-marked forms appear earlier than their complete counterparts do, no statistical significance was found between them, so in their three-stage model, they made no distinction between headed and headless *DE*-marked forms and thereby categorized them in the same stage.

Chang and Huang proposed that Mandarin-speaking children's developmental order of *DE*-marked forms generally coincide with Brown's Model and that the observed order is largely determined by the semantic and syntactic complexities of *DE* related structures. Thus, the incomplete *DE*-marked forms (i.e., headless *DE*-marked forms), such as the possessive headless *DE* phrase 'I *DE* Ø' (*my* Ø), the adjective headless *DE* phrase 'red *DE* Ø' (*the red one*), and the nominalized headless *DE* phrase 'eat *DE* Ø' (*something for eating*), are predicted to emerge earlier because of their semantic and syntactic simplicities.

Different from Chang and Huang's approach, Packard (1988) took a

structure-oriented perspective and investigated the internal relationship between the modifier *X* and the modified head *Y* in the pre-nominal *X-DE-Y* schema and explained that children's use of headless *DE*-marked forms is structurally determined. He analyzed spontaneous language samples from 27 children and found that children used headless *DE*-marked phrases more often at an early age (2;0 to 2;5) and later (2;6 to 2;11) used headed and headless *DE*-marked phrases in equal amounts. Packard tried to explain the early predominant use of headless *DE*-marked phrases with pragmatic and semantic accounts but these two accounts were not supported by his data. Finally, he attributed children's prior use of headless *DE*-marked phrases to their inability to establish the abstract binding relationship between the head and the modifier. He concluded that when the modifier *X* was verbal, children had difficulty in co-indexing the head with one of the arguments in the predicate argument structure of the verbal modifier[4]. Consequently, in children's spontaneous production, verbal modifiers tended to occur in lexically headless *DE*-marked structures (i.e., V-*DE*-Ø), whereas nonverbal modifiers tended to occur in headed *DE*-marked structures (i.e., N-*DE*-Head). This tendency is also reported in Wang's (1996) developmental study of *DE*-marked structures in Mandarin-speaking children.

[4]According to Packard (1988, p. 38), the modifier was classified as "verbal" if it had a predicate argument structure (e.g., wo3 kan4 *de,* 'I see *DE*') and "nonverbal" if it did not (e.g., yu3fa3 *de,* 'grammar *DE*').

Following Packard's proposal, Wang (1996) examined the interactional effect of the head and the modifier in the acquisition of *DE*-marked constructions. Data from children's spontaneous samplings and an imitation task showed that headless *DE*-marked forms were easier for children to produce and that the compatibility of [± verbal] features existent in the head and the modifier played a crucial role in determining children's use of *DE*-marked constructions. Wang's results show that, irrespective of the occurrence of the head, *N DE (N)* (*I DE doll*, 'my doll') emerged earliest in children's spontaneous production and *V DE N* (*eat DE candy*, 'the candy that is for eating') was the most difficult structure for children to imitate. Wang pointed out that an incompatibility of [± verbal] features between the modifier and the head in the *V DE N* structure exists, which is difficult for children because the modifier contains a transitive verb requiring an unspecified participant that further depends on what the head noun is.

In general, these studies (Chang and Huang, 1986; Packard, 1988; Wang, 1996) are structure-based: They focus on the syntactic structure and highlight how structural complexity may affect children's learning process. In contrast to these studies, Cheung (1997) is the only study we know of that takes the discourse approach to the acquisition of *DE*-marked expressions. Before we present these scant studies that took the discourse-level account in exploring Mandarin *DE*-marked expressions, the

concepts of *information flow* underlying these few studies and the current project are provided as follows.

2.3 Information flow

2.3.1 Brief description of information flow

Instead of focusing on the role of structural determinants in acquisition, discourse-pragmatic approach conceives of language as a tool for communication and views it possible to learn grammar based on linguistic experiences. In this vein, the linguistic structure children acquire is tied to the semantics and pragmatics it encodes (e.g., Langacker 1987, 1988, 2000; cf. Kemmer and Barlow 2000 for a summary). Language acquisition and development can be viewed as a process regulated by the flow of information across utterances and determined as a function of presupposition and focus in discourse. Recently, an increasing number of analyses have shown that such a discourse-level perspective can adequately account for a number of previously (un-)explained grammatical phenomena. Chief among these discourse-based explanations is that of *information flow* (discussed by Chafe 1976, 1987, 1994; Du Bois 1987; Givón 1979, 1983, 1984 and Prince 1981). Information flow refers to the interactionally determined choices that speakers make for deciding intonational, grammatical, and lexical choices (Fox and Thompson 1990b:297). Language is characterized by the fact that different forms can refer to the same thing, and the same

form can be used to refer to many different things. Yet under such a condition, people somehow manage to communicate and understand one another. Thus, language use can be seen as a process of decision-making, and in the process of communicating, people exchange information. The information has to be common-grounded so that speakers are able to choose an appropriate form/expression to refer to the entity and the hearers can identify correctly the intended entity of a particular form/expression.

Previous studies that consider the *information flow* or discourse properties at work in language use frequently examine the production data of relative clauses. Some studies have examined various aspects relating *information flow* among adult/child speakers' discourse, which are presented in Table 2.4 and 2.5.

Table 2.4: Studies on factors inherent in the conversational context for the grammatical choices for relative clauses

Study	Subject	Factor	Observations
Fox and Thompson (1990b)	English adults	1. Information status of NP 2. Grounding 3. Humanness 4. Definiteness 5. Function of the relative clause 6. Grammatical role of the head NP in the main clause and of the NP in the relative clause	The distribution of relative-clause grammatical types can be explained with a communicative account that resorts to interactions among these factors. 1. Nonhuman Subject-heads tend to occur with Object-relatives (Object-gapped relatives/ORC), while nonhuman Object-heads tend not to occur with Object-relatives (ORC). 2. The preponderance of human Existential-heads with Subject-relatives (Subject-gapped relatives/SRC) over Object-relatives (ORC) represents speakers' multiple strategies for achieving grounding. 3. The construction choice is also based on the association between grammatical role and definiteness of the referent in fulfilling the information status and discourse deployment in communicating situation.
Diessel and Tomasello (2000); Diessel (2004)	English Mother-Child	1. the ambient language 2. the formulaic character of the main clause 3. the information structure of the whole utterances 4. the communicative function of presentational relatives 5. the limited processing capacity of young children	1. The whole development of relative clause can be seen as a process of clause expansion, starting from simple presentational (Existential) relatives to the clauses containing more than one proposition.
Cheng et al. (2011)	Mandarin Mother-Child	1. Information status of NP 2. Communicative acts 3. Interactive status	The choice of referential expression for headed/headless *X-DE-Y* form, including *DE*-marked relative clauses is motivated by discourse factors. 1. When a new and unfamiliar referent is introduced into discourse for the first time, the head in the DE-marked forms is used. 2. Once a referent has been treated as given information, the headed and headless DE-marked referential forms are frequently linked with communicative acts and interactive roles undertaken and played by the interlocutors.

Table 2.5: Studies on factors inherent in narrative text for the grammatical choices for relative clauses

Study	Subject	Factor	Observations
Dasinger and Toupin (1994)	Children (across five languages)	Alternative forms with the same function	The use of relative clauses is not only affected by the relative structural ease with which it can be produced, but is also affected by the number and type of alternative forms available in the language which can perform the same function.
Jisa and Kern (1998)	French children	Narrative function	Children initially use Subject-RC with intransitive predicate to introduce new referents into the story and then they gradually proceed to the use of Subject-RC with transitive predicate to advance the plot in narrative.
Tao (2002)	Mandarin adults	Narrative function	1. Semantic categories in the head nouns in the RC constructions are used in conjunction with narrative functions. 2. The grammatical options for relative clauses in narratives are the decision-making process constrained by multiple factors including the discourse functions and discourse devices available.
Cheung (1997)	Mandarin children	Narrative function	1. Structural complexity do not suffice to determine children's use of relative clauses 2. The use of headed and headless *DE*-marked expressions is functionally determined: headless *DE*-marked expressions are used for situating an old referent, providing more information on the entity that has been specified before.

The first series of comprehensive studies focusing on relative clauses by adults in English conversation were made by Fox and Thompson (1990a, 1990b, 2007). They described some remarkable skewings in the distribution of syntactic types of relative clauses that English speakers use in conversation and interpreted the choices of these different relative clauses in relation to several aspects of information flow, including information status, grounding, humanness, definiteness, and function of the relative clause. Then Diessel and Tomasello (2000) and Diessel (2004) conducted the first comprehensive investigation of relative clauses based on natural speech from children. Five factors, including information structure, are considered to affect the development of relative clauses in spontaneous child speech. The only work that focuses on the *information flow* relating to the use of Mandarin *DE*-marked expressions including relative clauses in conversation is made by Cheng et al. (2011).

That the use of relative clauses can be explained with the grammatical choice in conjunction with pragmatic factors operating in the discourse context has also been demonstrated in the studies of narrative, a different genre of discourse from conversation. Regarding adult narratives, Tao (2002) investigated Mandarin-speaking adult's use of RC in Pear Story. It is found that the semantic categories in the head nouns of Mandarin RC constructions showed skewed distribution, which is associated with discourse properties. RCs in Mandarin narrative discourse are argued to function

as a grounding device for salient referents in discourse.

As for children's narratives, Dasinger and Toupin (1994) have made a cross-linguistic study on the developing functions of relative clauses and showed that children's productive accessibility of relative clauses is the interaction among a variety of factors, including both structural and functional. Jisa and Kern (1998) analyzed French-speaking children's narrative monologues and found that children and adult differed in the use of preferred structures within the relative clauses, which co-occur with the specific narrative functions of RCs.

Cheung (1997) examined Mandarin-speaking children's narrative samples and found that their use of headed and headless *DE*-marked expressions could be functionally determined, rather than being determined solely by structural properties. This is evidenced by the fact that, of the three sub-types of relative clauses, children did not treat and use them equal in different conditions. The uneven distribution of syntactic types indicated that functions of relative clauses are at work.

In the followings, we will present more detailed description of these studies. Then we will single out each concept of *information flow* which we will refer to in the explanations for the *DE*-marked expressions observed in the data. The communicative principles posited by these previous studies will form the base of the current project. We intend to address to what extent the *information flow* might affect

Mandarin-speaking children's use of DE-marked expressions in different task-oriented discourse. Note that the current dissertation is not confined to restrictive relative clauses, which mainly function to identify or characterize a specific element in a set of potential referents. Following Lambrecht (1988), Fox (1987), Fox and Thompson (1990b) and others, we assume that Mandarin *DE*-marked expressions, including relative clauses, may serve a variety of semantic and pragmatic functions, and this can be represented by the multifunctional use of Mandarin *DE*-marked expressions we will present later in this study.

2.3.2 Previous studies bearing on information flow

2.3.2.1 Conversation data by adult and children

Fox and Thompson (1990b) conducted the first large-scale investigation of relative clauses based on observational data from natural adult conversation. In this study, they show that several aspects of information flow in the process of communicating can affect the grammar of relative clauses. Six factors were identified, including the information status of the NP contained in the relative clauses, grounding, humanness, definiteness, function of the relative clause, and grammatical role of the head NP in the main clause and of the NP in the relative clause. The 414 relative clauses examined in this study are headed, full-fledged relatives. Headless or

free-standing DP relatives were not considered since the heads in the free-standing DP do not have grammatical role in the main clause. Relative clauses were categorized according to the grammatical role of the head NP within the main clause and of the co-referent (gap, or missing element) in the relative clause. Fifteen types of RC were classified: 5 head roles (Subject, Object, Prepositional phrase object, Predicate nominal, and Existential) and 3 gap NP roles (Subject, Object, and Prepositional phrase object) result in 15 combinations. Fox and Thompson proposed that many distributional facts concerning relative clauses can be explained with discourse-level explanations. They are summarized as follows. The term 'X-relative' is taken to represent the gap/role of the NP in the relative clause; thus Subject-relative refers to a relative clause wherein the gap is the subject of the relative clause.

(a) When the referent is nonhuman, Subject-heads strongly tend to occur with Object-relatives. This interaction among humanness and grammatical roles of the head NP and gap NP is attributed to the factor of *grounding*. The Object-relative is used to anchor the head noun and make it easy for the hearer to identify the referent. Three central facts about human discourse converge on the use of Object-relatives in the Subject-head condition: (i)anchoring is frequently done with a pronoun in discourse, (ii)pronouns generally have human references, and (iii)pronominal references often appear as grammatical subjects in conversation, causing the

co-referential NP in the relative clause to be an object, i.e. an Object-relative. Here the Object-relative serves the function of grounding. Example (49) illustrates the Subject-head with Object-relative (i.e. SUBJ-O in our classification).

(49) Well see what *the problem* [I have] is my skin is oily and that lint just flies into my face (Fox and Thompson, 1990b:303)

(b) When the referent is nonhuman, Object-heads do not tend to occur with Object-relatives. For nonhuman Object-heads, there is nearly equal percentage of Subject-relatives and Object-relatives. Since Object-relatives get more occurrences in other nonhuman heads of relatives, it is obvious that for the nonhuman Object-heads, the tendency of Object-heads with Object-relatives decreases, while the Object-heads with Subject-relatives (i.e. OBJ-S in our term) increases. The factor of ***in-definiteness*** and ***(new) information status*** play certain role in this distribution pattern. Here the Subject-relatives for the nonhuman referent of Object-head serve the function of characterizing assertions, i.e. adding new information to the preceding grounding main clause. Characterizations typically convey with intransitive predicates to name habitual attributes of the subjects, causing the co-referential NP in the relative clause to be a subject, i.e. a Subject-relative. Consider example (50).

(50) he's got ---*a spring* [that comes, way up]

(c) When it comes to Existential-Head utterances, more Subject-relatives are used than Object-relatives. Since Existential Heads tend to be grounded by locative expressions or by proposition-linking, they would not resort to Object-relatives for anchoring. The reason is that these Existential-Head NPs are indefinite and human, and they tend to be grounded by being related to their own activities, rather than being related to (other) humans. Relating to their own activities, i.e. earlier predicate, will lead to more Subject-relatives than Object-relatives.

(d) Existential-Head relatives seem to provide speakers with a mechanism for introducing New, non-identifiable human referents in the subject slot. They are functionally different from another mechanism for introducing New referent, i.e. the Object-Head slot in that these non-identifiable human Head NPs in the Existential-Head construction are more subject-like, namely, specific and discourse-deployable to be introduced for further discussion, while whose non-identifiable human Heads in the Object-Head slot are more object-like, that is, non-specific and non-discourse-deployable which is usually grounded on proposition-linking. The Subject-Head in Existential-Head construction and the Object-Head in SVO construction is illustrated in (51) and (52) respectively.

(51) but there's a *woman* in my class [who's a nurse] (Fox and Thompson, 1990b:311)
(woman: specific and discourse-deployable to be introduced for further discussion)

(52) and she hates *anyone* [who isn't a Catholic] (Fox and Thompson, 1990b:311)
(*anyone*: nonspecific and non-discourse-deployable, which is grounded by proposition-linking)

In summary, Fox and Thompson (1990b) were concerned with the pragmatics of relative clauses, and they showed Subject-relatives and Object-relatives serve different functions in discourse, which motivates different distributional patterns in different relative types.

As for discourse-level research for language acquisition, Diessel and Tomasello (2000) and Diessel (2004) are the first large-scale studies of relative clauses based on observational data from ***natural mother-child conversation***. Overall, these studies reported that relative clauses are infrequent in early child speech. Among the total 297 finite and headed relative clauses examined, it was found that regarding the syntactic role of the head noun, the vast majority of the children's early relative constructions contain a single proposition, including a relative clause that is either attached to the predicate nominal of a copular clause (PN-relatives in Diessel and Tomasello's term), or to an isolated head noun. PN-relatives account for almost half of children's relative clauses in which a demonstrative (this/that) or third person pronoun functions as subject. Apart from PN-relatives, N-relatives and OBJ-relatives are quite common in

children's data, followed by OBL-relatives and SUBJ-relatives being the least[5]. Following Lambrecht (1988) and Fox and Thompson (1990b), Diessel and Tomasello assumed that the propositional content of PN- and N-relatives is not always pragmatically presupposed; namely, they are not back-grounded to act a restrictive function but only provide assertion toward the new and unfamiliar information concerning the referent. The information structure of PN- and N-relatives is very different from that of other relatives containing subordinate clauses, e.g., OBJ-, OBL-, SUBJ-relatives; rather, it is similar to the information structure of simple sentences. Pragmatically, PN- and N-relatives express new and unfamiliar information in the position after the initial noun. As for mother's relatives, it is observed that mothers used the same types of relatives as their children: almost half of their relatives are PN-relatives, and then follow OBJ- and N-relatives, but OBL- and especially SUBJ-relatives are rare.

Five factors were considered to explain the frequent and early use of presentational relative constructions (PN-relatives) in English. They are (i) the ambient language, (ii) the formulaic character of the main clauses, (iii) the

[5]The coding scheme 'X-relatives' here represent the external syntactic feature of relatives viewed in a larger syntactic context wherein SUBJ- codes for the head noun of the relatives acting as the subject in the main clause, OBJ- as the object, OBL- as the oblique, PN- as the predicate nominal in the copular construction, and N- as an isolated noun (phrase).

information structure of the whole utterance, (iv) the communicative function of presentational relatives, and (v) the limited processing capacity of young children. Among them, factors (iii) and (iv) will underlie our current project in explaining children's use of *DE*-marked expressions.

For the first *Input* factor, parents were found to make frequent use of presentational relative constructions. For the second *Item-based formulation* factor, it was found that children's earliest relative clauses are built on some item-specific constructions that have been deeply entrenched. They would combine a prefabricated construction in the main clause, *That's, There's, It's,* with the following component X, just like forming a amalgam construction. For the third *Information structure* factor, as the propositional content of PN-RC is mainly asserted rather than pragmatically presupposed toward the referent in focus, the information structure of PN-RC is considered to be similar to that of simple clause. Such a structure would be easier for children to learn at an early age. Concerning the fourth *Communicative* factor, both mother and child were found to use presentational relatives for specific communicative functions: children tend to use PN-RC to talk about element in their environment, and mothers tend to do the same thing particularly when they talk to younger children. With regard to the last *Processing capacity* factor, it is hypothesized that children tend to use relative clauses containing single proposition as in PN-RC

rather than relative clauses including two propositions may be partially attributed to their limited processing capacity at an early age.

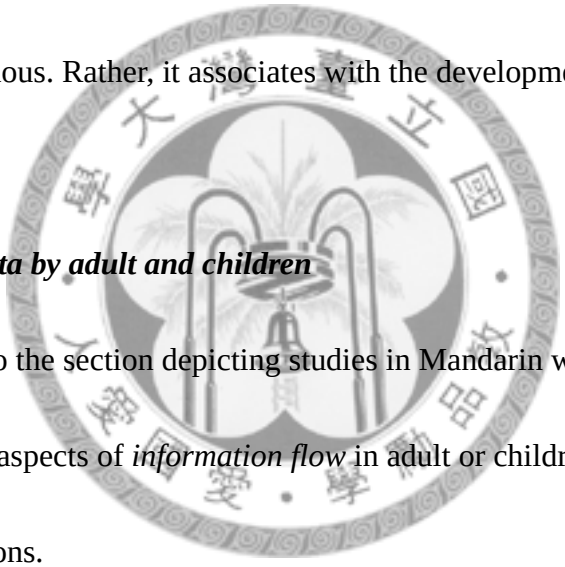
With respect to the use of internal syntactic features of the relative clauses, i.e. the syntactic role of the gap, mothers and children show different patterns in Diessel and Tomasello's observational data. Mothers' relative clauses include higher percentages of object gap than subject gap (57.9% vs. 34.3%), while children's proportions of relative clauses are reversed: higher percentages of subject gap than object gap (57.3% vs. 37%). Diessel and Tomasello attributed the dominance of Subject-relatives in early child speech to the complexity of the emerging constructions. They suggest that the Subject-relatives are similar to simple sentences when they are attached to the predicate nominal of a copular clause or to an isolated noun phrase. They proposed that the composite structure of Subject-relatives occurring in the presentational relatives or the isolated noun phrase involves the same sequence of nouns and verbs in the simple sentences. Thus Subject-relatives in the presentational construction or with an isolated noun phrase might instantiate the N-V-(N) schema of simple sentences. They concluded that children's development of relative clauses undergo a process of clause-expansion. They start learning to express with relatives in a single proposition, as do simple sentences, and later proceed to SUBJ-, OBJ-, and OBL-relatives that hold two propositions in working memory.

2.3.3.2 Narrative data by children

Compared to the scarce investigation of relative clauses in ordinary conversation, more studies pay attention to the use of relative clauses in narrative texts. A prominent study dealing with the uses in narrative of the relative clause is made by Dasinger and Toupin (1994), which uses a cross-linguistic comparative method to examine the uses of relative clauses in the Frog story (Mayer, 1969) narrative by children of three age groups (3, 5, and 9 years) across five different languages (English, German, Spanish, Hebrew, and Turkish). In this comprehensive study, Dasinger and Toupin categorized relative clauses into two main functional classes in the story narrative: four general discourse functions (Naming referent, Situating new referent, Situating old referent, and Re-identifying old referent) and five narrative functions (Presenting main characters, Motivating narrative actions, Continuing the narrative, Setting up expectations, and summing over past events). They pointed out their innovative observation that the productive accessibility of relative clauses is not only affected by the relative structural ease with which it can be produced, as discussed by the bulk of structure-based studies, but is also affected by the number and type of alternative forms available in the language which can perform the same function.

Following the analytic categories defined by Dasinger and Toupin (1994), Jisa and Kern (1998) collected narrative data from French-speaking children telling the

Frog story. Their analyses show that although the use of subject-relative clauses is acquired early by French-speaking children, the use of subject-RC in French children's narrative text is different from adults. In fact, children's use of form is tied with the narrative function. French-speaking children initially use Subject-RC with intransitive predicate to introduce new referents into the story and then they gradually proceed to the use of Subject-RC with transitive predicate to advance the plot in narrative. This observation indicates that the acquisition and development of linguistic forms is not autonomous. Rather, it associates with the development of function.



2.3.2.3 Mandarin data by adult and children

We now come to the section depicting studies in Mandarin which observe the discourse-pragmatic aspects of *information flow* in adult or children's use of *DE*-marked expressions.

Tao (2002) examined relative clause constructions in 10 Chinese **adults'** Pear Stories. In these narrative texts, five semantic categories in the head nouns in the relative clause constructions were identified: human, object, temporal, spatial, and manner, and it was found that their distributions are skewed. Tao argued that the distributional pattern of semantic categories in the head nouns of RC can not be explained by semantic properties only. Rather, it must be interpreted in conjunction

with discourse properties and functions when making narrations. Temporal noun headed RCs, which account for the highest percentage (43%), are characterized as a grammatical device indicating episode boundaries instead of expressing temporality. Human noun headed RCs, ranked second in the percentage (35%), are mostly used for referent tracking and seldom for referent introducing. Object, spatial, and manner noun headed RCs (accounting for 22% in total) are found to function as a grounding device for back-grounding those referents of plot saliency in discourse. Tao further pointed out that the primary functions of relative clauses for making referent tracking in narratives are to resolve ambiguity or reduce opacity that might otherwise be made by other referential expressions, and to bring the *Given* referent in the long distance back to listener's focal attention at the moment of utterance. Based on Tao's observations, the grammatical options for relative clauses in narratives are the decision-making process constrained by multiple factors including the discourse function and discourse devices available. For example, in Mandarin, there are three structural options for narrators to introduce a new referent: simple nominal, existential construction, and relative clause. The occurrence of relative clauses is thus constrained by the frequency for introducing new referents in plotting the narrative and the frequency for making referents to be clarified or recovered as long distance anaphora.

Recent work addressing *information flow* and concerned with Mandarin-speaking **children**'s use of *DE*-marked expressions in narratives or conversation, which include relative clauses, can be found in Cheung (1997) and Cheng et al. (2011).

Cheung (1997) takes the discourse approach to the acquisition of *DE*-marked expressions. He analyzed discourse functions of *DE*-marked forms in children's narrative data. Contrary to Packard's (1988) observation, where headless *DE*-marked expressions emerged early and were the predominant form, Cheung's results showed that both younger (four-year-olds) and older (six-year-olds) groups of children used few headless *DE*-marked phrases in the narrative samples. Nevertheless, children's use of headless *DE*-marked forms was mostly to situate an old referent and to provide more information on the entity, which had been specified in the previous context. This finding indicates that children are sensitive to the function of headless *DE*-marked forms and points to the possibility that the use between headed and headless *DE*-marked expressions may be related to the information status in discourse.

Moreover, of the three subtypes of relative clauses analyzed in Cheung's data, (i) relativization of time (ii) noun complement, and (iii) relativization of subject/object, relativization of time is used most frequently, but noun complement is only used by adults, not found in children's data. Relativization of time is half appropriately used

by older children (age 6) to act as background predicate and half erroneously employed to act as completed action or planned action. This shows that Mandarin–speaking children do not treat different types of RC in a similar way. Function could be the major source of consideration in their use.

Cheung' s findings show that (i) children's sensitivity on the use of headless *DE*-marked expressions and half properly use of relativation of time reveal general discourse functions such as *information flow* are first observed by children, (ii) half erroneously use of relativization of time demonstrates that finer narrative function may not be mastered by children until later, and (iii) the null use of noun complement by children (age 4 to 6) indicates that while children have already controlled the relative clause structures, they may not yet develop the cognitive ability to command the use of an abstract head in the noun complement.

Cheng et al.'s (2011) study is the only work that considers *information flow* related to the use of *DE*-marked forms. They detailed one longitudinal case of the use of Mandarin headed and headless *DE*-marked referential expressions by a mother–child dyad in their natural conversation. In their study, the 'head *Y* ellipsis phenomenon' in the *X-DE-Y* schema was adequately linked with some discourse-pragmatic factors, such as *information status, communicative acts* and *interactive roles* undertaken and played by the interlocutors in conversation.

Findings indicate that the use of headed/headless *DE*-marked referential forms is associated with the information status assumed by the interlocutors during the process of communicating. When a new and unfamiliar referent is introduced into discourse for the first time, the head in the *DE*-marked forms is used. However, once a referent has been treated as given information, the givenness of the referent alone cannot explain the occurrence and non-occurrence of the head in the *DE*-marked referential forms. In this case, it is found that the *interactive roles* pair nicely with the *communicative acts* in the use of headed/headless *DE*-marked forms. Four interactive roles in the discourse organization were identified based on Huang (2000, 2003): (i) Spontaneous, (ii) Elicited, (iii) Expanding, and (iv) Maintaining; Six communicative acts were indentified in the data: (i) Directives (ii) Commitments (iii) Statements (iv) Questions and responses (v) Evaluations, and (vi) Agreement. The study has shown that in the *Given* status of information, although the referent has been familiar to the interlocutor, the speaker chose to use the overt headed form because of the requirement that the speaker intends to be as informative as possible during the questioning and answering acts, or motivated by the specific communicative acts such as making requests, statements, or agreements.

As reviewed above, Cheung's narrative study has presented evidence concerning children's sensitivity of *information flow* and their understanding on the function of

DE-marked expressions (headless forms and three subtypes of relative clauses). Cheng et al.'s conversation study has adequately exposed the limitations of structural approach and demonstrated that discourse-level explanation can appropriately account for the structural options as symptoms of interlocutors' attention to the communicative situation.

Based on these previous studies, a discourse-pragmatic approach can be reasonably upheld. Since children show sensitivity of *information flow* in the discourse context, and the use of head in the *X-DE-Y* construction can be seen as a function of choice-making regarding the interlocutors' state of knowledge and communicative acts at the moment of communication, it is reasonable to further infer and inquire whether the use of *DE*-marked expressions can be considered from the view of making grammatical choices on the basis of *information flow* and communicative acts. This motivates the current study and underlies our analytical framework.

2.4 Factors affecting grammatical choice

Before proceeding to the methodology of the present study, we will introduce the information-flow factors that play a role in explaining the distribution and use of *DE*-marked expressions in the task-oriented discourses produced by

Mandarin-speaking children. These factors are derived from the above-mentioned studies, which are concerned with several aspects of *information flow* and have shown adequacy in explaining the grammatical facts they observed. They are both cognitive and interactional, being considered from the perspective of both the speaker's model of the hearer and the interaction between the speaker and the hearer. In this section, we will introduce, define, and exemplify these information-flow concepts which we will adopt in accounting for the *DE*-marked expressions we have observed in children.

2.4.1 Information status

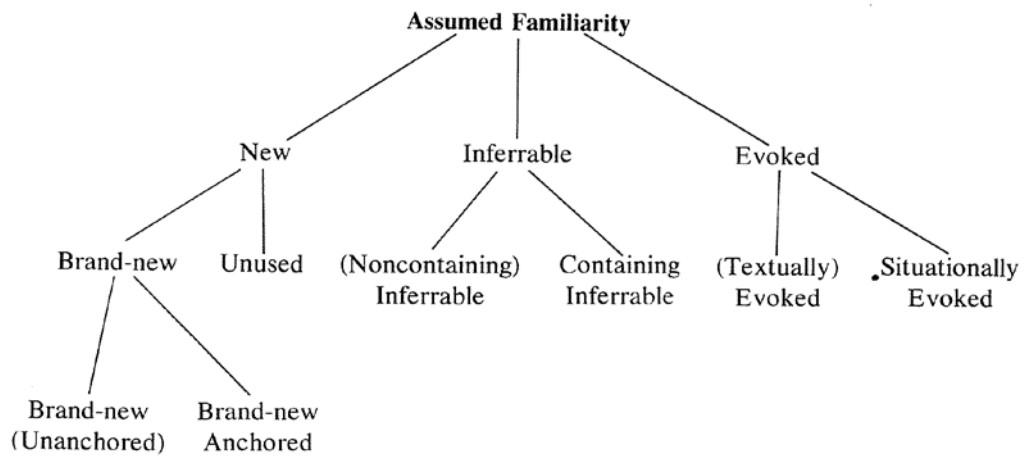
2.4.1.1 Assumed familiarity

The first factor that helps to explain the way the *DE*-marked expressions are used by Mandarin-speaking children is the *information status* of NP that is in the mutual knowledge of the speaker and the hearer.

When people use language naturally and interactively, they are usually attempting to convey and exchange information. It is a distinctive linguistic feature that the information-sender will tailor an utterance to meet the particular assumed needs of the intended information-receiver. Namely, the information-sender has to do information-packaging, which can be seen as the information-sender's hypothesis about the receiver's assumptions and beliefs and strategies (Prince, 1981:224).

The intersection or overlapping phase that a speaker treats something is *given or known* in the hearer's mind, or assumed what the hearer assumed is often termed 'shared knowledge'. Prince proposed a revised term 'Assumed familiarity' and developed taxonomy toward the *given-new* information. We will adopt the taxonomy in classifying the *information status* of the referent in the focal consciousness between the adult and child in the discourse data we collected. The Assumed Familiarity Taxonomy is presented in Figure 2.1.

Figure 2.1 Taxonomy of Assumed Familiarity (Prince, 1981:237)



According to this taxonomy, an entity in the discourse can be characterized into three types, *New*, *Inferrable*, and *Evoked*, with seven subtypes subcategorized. The seven subtypes are defined and illustrated below, with parentheses indicating the abbreviations used later in our data coding.

(i) ***New***: The entity which is first introduced into the discourse, telling the hearer to put it 'on the counter'.

There are three types of *NEW* discourse entities:

(a) Brand-New Unanchored (**BN-U**): a *NEW* discourse entity is not anchored, or not linked to another NP, and simply brand-new by itself. Thus, *a bus* in (53) is Brand-New unanchored.

(53) I got on *a bus* yesterday.

(b) Brand-New Anchored (**BN-A**): a NEW discourse entity is anchored if the NP representing it is linked, by means of another NP, or 'Anchor', properly contained in it, to some other discourse entity (Prince, 1981:236). *A guy I work with* in (54), containing NP 'I', is Brand-New anchored. The hearer can create the discourse entity for this particular *guy* by immediately linking to his/her discourse entity for the speaker 'I'.

(54) *A guy I work with* knows your sister.

(c) Un-used (**UN-USE**): a NEW discourse entity which is discourse-initial, but already has a corresponding entity in the hearer's model and only has to place/copy it in/into the discourse-model. *Noam Chomsky* in (55), having assumed to be in the hearer's model, is Unused.

(55) *Noam Chomsky* went to New York.

(ii) Evoked: a discourse entity that is already in the discourse-model, or 'on the counter'.

(d) Textually-evoked (**ET**): the entity has been evoked on textual grounds. For example, *he* in (56) is textually-evoked, as it can be traced back to the preceding text.

(56) A guy I work with says *he* knows your sister.

(e) Situationally-evoked (**ES**): the entity has been evoked by the discourse participants themselves and the salient features of the extra-textual context. For example, '*you*' in (57) is situationally-evoked, as '*you*' is the discourse participant.

(57) Pardon, would *you* have change of a quarter?

(iii) Inferrable: a discourse entity that the speaker assumes the hearer can infer it, via logical or plausible reasoning from discourse entity already *Envoked* or from other *Inferrables*. In (58), the *driver* is inferable from a *bus*, as the assumed knowledge about buses, *Buses have driver*, can be inferred.

(58) I got on a bus yesterday and *the driver* was drunk.

There are two subtypes of ***Inferrables***. Consider below:

(f) Non-containing inferrable (**INF-N**): The inferrable entity which is inferrable via logical reasoning (see example in (58)).

(g) Containing inferrable (**INF-C**): The inferrable entity which can be inferred by a set-member inference. *One of these eggs* in (59) is 'Containing inferrable', which is inferrable from *these eggs.*

(59) *One of these eggs* is broken.

2.4.1.2 Information availability

Another aspect of information status of literature's concern is the availability of information. It has been noted that if the referent is mentioned immediately prior, then it will affect the status of the referent in the listener's focus of attention (i.e., the information status of the referent is *Given*). A referent mentioned immediately prior is most familiar and accessible to the listener, and thus implicit forms are most likely used in referring to the referent in focus (e.g., Bates 1976; Chafe 1994; Clancy 1992). This information availability hypothesis has been tested in several studies.

Some evidence has pointed out children as young as 2.5 years old can make choices between referring expressions, following adult-like pragmatic conventions to some extent. Campbell, Brooks, & Tomasello (2000) reported that children chose different linguistic means in different communicative situations. It is interesting that

children, being asked about an event that had just happened, paid no attention to whether the adult had witnessed the event with them or not. The only factor affecting the children's choice was the question immediately preceding it. Younger children (e.g., 2.5-year-olds) used more implicit forms to answer a specific question, whereas they answered the more general question with a more specific form, as illustrated in (60a, b) (Campbell et al. 2000: 1345):

(60a) Specific question: What did the truck do?
Implicit answer: Fell over. / It fell over.

(60b) General question: What happened?
Explicit answer: The truck fell over.

A subsequent study conducted by Wittek & Tomasello (2005) improved on the methods of Campbell et al. (2000) by removing the perceptual availability of the target referent. Thus, children could rely only on the adult's discourse *prompting* to perform their use of linguistic referent. Three conditions were tested concerning the missing object: (a) specific question ("What happened to the X?"); (b) general question ("What do we need to get?"); and (c) contrast ("Did he have a Y?"). These questions correspondingly imply the adult's differing state of knowledge concerning the missing referent. Question (a) shows that the adult speaker knows what object is needed, (b) indicates that the adult does not know what object is needed, and (c) demonstrates that the adult has a wrong idea about the object in need. The findings in

this study replicate earlier results observed by Campbell et al. (2000) in that the child prototypically answers specific questions by placing the entity being talked about as the subject of the sentence and more often uses either a null reference or a pronoun as the subject. These findings were interpreted to mean “that discourse context is a more powerful influence on children’s choice of referring expressions than is perceptual context” (Wittek & Tomasello 2005:556).

As can be seen from these previous studies, the discourse factors in the immediately preceding question presented to the child will affect how the child responds to the question. In general, the more specific query will lead to a more implicit referent in the answer, since the information regarding the referent has been assumed as available to the listener, and there is no need to use an explicit form.

Based on the conceptions of *assumed familiarity* and *information availability*, in our task-oriented discourse, the adult researcher will make ‘prompting’ questions, and the child will response with a reply in such a ‘conditioning’ situation with differing information status. The prompting-conditioning pair will be examined to see how the factor of focus structure regarding the referent in focus will be involved in the use of children’s *DE*-marked expressions.

2.4.2 Focus structure

The concept of ***focus*** is traditionally defined as the element of information in a sentence whereby the speaker marks out a part of message block as that which is not-yet-shared knowledge and the speaker wishes to be interpreted as informative (Halliday, 1967). Our current approach to focus adopted here is based on the idea that the focus articulations of sentence can be parallel to the category of ***topic***, which is defined as the 'presupposition of the sentence' wherein 'the information is assumed by the speaker as shared by him and the hearer.' Thus, for Jackendoff (1972), the focus is as the COMPLEMENT of the presupposition (topic) in the sentence.

Question-answer pairs frequently represent different discourse contexts for discourse referents. Three pragmatic categories indicating three types of communicative situations are established. They are 'topic-comment' in (61), the 'identificational' in (62), and the 'event-reporting' in (63) (Lambrecht, 1994:222).

(61) Topic-Comment pair

What did the children do next? The children went to SCHOOL.

(62) Identificational pair

Who went to school? The CHILDREN went to school.

(63) Event-reporting pair

What happened? The CHILDREN went to SCHOOL.

One important aspect raised by information-structure analysis which is different from the traditional grammatical analysis is that in the former analysis "the 'subject' relation and the 'predicate' relation are not seen as logical properties of the proposition in the sentence but as pragmatic properties of the sentence used in discourse" (Lambrecht, 1994:121). This distinction is crucial in explaining the reason why the reply in (61) to (63), ***the children went to school***, having the same syntactic structure and expressing the same logical proposition, can have different information-structures. In (61), we can say that the referent of the subject NP *the children* is properly what the sentence is about, hence *the children* represents the topic of the sentence, and the answer to the question is to be construed as a statement about the referent, *children*, i.e., ***commenting*** on *the children*. In contrast, the answer in (62) is not to make a statement about *the children*. Rather, its communicative function is to provide the referent solicited by the word *who* in the preceding question. Lambrecht called replying sentences like (62) as ***identificational*** sentences, since they serve to identify a referent as the missing argument in an open proposition of the preceding question. Concerning example (63), the answer is not to convey information about the referent, *children*. Rather, its function is to inform the hearer of an event involving *the children* as participants. Therefore, the pragmatic function of sentence (63) is termed as ***event-reporting***, and the assertion of the reply covers the entire proposition.

Based on the three pragmatic categories, Lambrecht re-formulates them as three types of **focus structure,** which represent the association of a focus meaning with the sentence form. The three focus-structure categories correlated with the three types of pragmatic categories of question-answer pair are listed below in (64) to (66).

(64) Predicate-focus structure: Corresponding to *Topic-comment*

What happened to your car? My car broke DOWN.

(65) Argument-focus structure: Corresponding to *Identificational*

I heard your motorcycle broke down? My CAR broke down.

(66) Sentence-focus structure: Corresponding to *Event-reporting*

What happened? My CAR broke down.

Lambrecht combined the semantico-syntactic terms ‘predicate’, ‘argument’, and ‘sentence’ with the pragmatic term ‘focus’ in order to capture the correlation between certain formal/semantic categories and certain types of communicative functions. And such correlation links the information status of the referent. For example, predicate-focus in (64) demonstrates the function of commenting on a ***given*** topic of conversation, i.e., car. Argument-focus in (65) displays the function of identifying a referent in a ***given*** list of hearer’s mental model, i.e., my car. Sentence-focus in (66) shows the function of reporting an event or presenting a ***new*** discourse referent not yet evoked in the hearer’s mental model, i.e., my car.

In our task-oriented discourses, the adult has made many attempts in positing questions to elicit children's reply, with a view to obtaining Mandarin *DE*-marked expressions in children's replies. We will show that the focus structure in the adult's prompting question and the child's conditioning reply is one of the factors that affect the option and use of grammatical types of Mandarin *DE*-marked RC.

2.4.3 Entity property (humanness)

The third factor we will address is the *humanness* characteristic of the referent in the focal attention. That the humanness property of entities interacts with the distribution of the relative clauses has been demonstrated by Fox and Thompson's (1990b) conversational studies and Tao's (2002) narrative studies. In Fox and Thompson's study, *nonhuman* head NPs and *human* head NPs displayed distinctive differences in co-occurring with different relative clauses. *Nonhuman subject heads* tend to occur with Object RC (ORC), while for *human subject heads*, they preponderantly co-occurred with Subject RC (SRC). In Tao's study, five semantic categories in the head nouns of the RC constructions display skewing distribution in the narrative data. This is interpreted in conjunction with the discourse properties pertaining to these five different semantic categories.

We will characterize the referents in the speaker-hearer's focal consciousness

into five different types: they are *Event*, *Locative*, *(abstract) Entity, Object*, *Animal*, and *Person*.

2.4.4 Grounding

The fourth factor that influences the particular distribution of types of *DE*-marked expressions in our data is the grounding mechanism: the way the referent NP is made relevant by relating it to a noun, a predicate, or a proposition, so that it is clear for the hearer to access or activate the referent in the discourse.

There are different kinds of grounding which we would single them out and match them with the constituent concatenations the referent may co-occur with.

(i) NP Anchoring: This is what Prince has called ANCHORING (1981:236). A discourse entity is Anchored if the NP representing it is LINKED, by means of another NP, or "Anchor", properly contained in it, to some other discourse entity. That an NP which is anchored by an NP properly contained in it sometimes can be construed as an NP in its relative clause. The NPs that are used to be anchors include personal pronoun, proper name, and personal name. Note that the 'anchor' NP has to be a *Given* discourse referent, not Brand-new itself, or it will not be easily accessible for the hearer. Consider we might find NP like (67) but not like (68) (e.g., Prince, 1981:236). '*I*' in (67) is the discourse participant,

situationally-evoked, and therefore is familiar to the hearer and can serve as the device to anchor the entity '*a guy*'.

(67) <u>*A guy I work with*</u> knows your sister.

?(68) <u>*A guy a woman works with*</u> knows your sister.

(ii) Predicate grounding: The discourse entity is grounded on the verbal predicate linked to it. This grounding device shows that the referent is to be related to its own or some activity.

(iii) Main-clause grounding: The discourse entity is grounded by means of being associated with a *Given* referent together with a neutral main verb, such as *have* or *has got* in English (Givón, 1979). Example (69) illustrates this grounding (Fox and Thompson, 1999:301), wherein '*a spring*' is grounded by the main clause '*he's got* ', which contains the Given referent '*he*'.

(69) *he's got*---a spring [that comes, way up]

(iv) Subordinate clause grounding: The discourse entity is grounded by virtue of linking with a *Given* referent occurring in the subordinate clause. As in (70), the referent 'frog' gets associated with the subordinate clause, which indicates the boundary of the temporal event and helps to move forward the pbt.

(70) di er tian ta xing lai DE shihou,
the second day he wake up DE time
第 二 天 他 醒 來 的 時候,
The next day when he woke up,
xiao qingwa jiu bu jian le
little frog then no see FP
小 青蛙 就 不 見 了
the little frog disappeared.

(v) Proposition/Frame linking: The discourse entity is linked to *Given* referents by means of frames evoked in earlier discourse.

In example (71) (Prince, 1981:301), the entire NP *anyone who isn't a Catholic* is grounded by its link (through the frame invoked by bigot) to the preceding proposition characterizing the mother's sister as a bigot.

(71) The mother's sister is a real bigot. Y'know and she hates *anyone* [who isn't a Catholic].

In general, the grounding device aims to make the NP relevant at the point when it is introduced into the conversation. We will examine these grounding devices used for the *DE*-marked expressions in terms of different information status of referents.

2.4.5 Communicative acts

Another major factor involved in children's use of *DE*-marked expressions in our data is the *communicative acts* (or *speech act*s in traditional term). In Cheng et al.'s (2011) study, communicative acts have been found to align with Mandarin-speaking

children's use of headed and headless *DE*-marked referential forms. For example, the possessive headless *DE*-marked phrases are frequently used by children in making a request or showing the child's intent to designate the ownership of the object. This indicates when interacting and exchanging information with others, children have to learn to use linguistic structures appropriately to express their intentions in one way, and adapt to the linguistic convention in another. In our data analyses, we intend to access to what extent the factor 'communicative acts' can serve as fulfilling the pragmatic function of relating to different information status (*given* or *new*) of the referents in question. Table 2.6 presents the list of communicative acts performed by the child and adult of the current concern.

Table 2.6 A List of the Communicative Act Types Performed by Adult and Child

Communicative Act (ADU-CHI)	Description
Eliciting	
a. Start—Continue	The adult encourages the child to initiate a topic by using some fragmental utterances as initials, and the child copies the initials and continues the topic.
b. Proceed—Continue	The adult encourages the child to move forward the topic by using some connectors, and the child proceeds to continue the topic.
Requesting	
a. Ask for retrieval—Retrieve (First/Second…Attempt)	The adult requests the child to retrieve the event and the child does so. The request could be made for several times.
b. Ask for identification—Identify (First/Second…Attempt)	The adult requests the child to identify the referent from a set of entities. The request could be made for several times.
c. Ask for description—Describe (First/Second…Attempt)	The adult requests the child to describe the referent in focus. The adult may ask for more detailed description.
d. Ask for clarification—Clarify	The adult requests the child to clarify the description of the referent in focus.

e. Ask for confirmation—Confirm	The adult requests the child to confirm the description of the referent in focus.
f. Ask for definition—Define	The adult requests the child to define the generic property of the referent.
g. Ask for request—Request	The adult requests the child to request for what he/she wants and the child does so.
h. Ask for contrast—Contrast	The adult requests the child to make a contrast between the set of entities, and the child does so.

2.4.6 Syntactic Types of *DE*-marked expression

The sixth factor we will examine is the syntactic type of *DE*-marked expressions. There are three types of *DE*-marked expressions to be examined, which have been presented at the beginning of Chapter 2, and are repeated here.

(A) Restrictive relatives (**RC**):

DE-marked relative clauses are of particular concern in the current study. Relative clauses are defined with both the functional and semantic definition. For functional definition, we adopt Li and Thompson's (1981:579) definition that a relative clause is 'a clause that restricts the reference of the head noun.' But this definition would not work so well if we try to tell a Mandarin relative clause from a mass of data. Therefore, a definition based on semantic ground is additionally provided. We would define that a Mandarin relative clasuse is the clause encoded within the *X-DE-(Y)* construction wherein the modifying *X* is a verbal predicate whose referent in the predicate argument structure (i.e., the referent of the relativized NP) co-indexes with the head NP in the *Y* constituent. Let's consider example (72a, b).

(72a) [zongjingli xihuan de youhua] bei bieren mai zou le
general manager like DE oil painting BEI someone buy go FP
總經理 喜歡 的 油畫 被 別人 買 走 了
'The oil painting that the general manager likes has been bought by someone else.'

(72b) zongjingli cizhi de xiaoxi rang dajia hen jingya
general manager resign DE news make everyone very surprise
總經理 辭職 的 消息 讓 大家 很 驚訝
'The news that the general manager resigned surprised everyone'

In (72a), the referent of the relativized NP, i.e., what the general manager likes, co-indexes with the head *Y* referent, *youhua,* 'oil painting', so sentence (72a) is counted as a relative clause. However, in (72b), there is no referent specified in the modifying *X* phrase, as the predicate argument of the intransitive verb, *cizhi,* 'resign', does not need to assign a theta role to other argument than the subject, *zongjingli*, general manager, so there is no referent co-indexing with the head *Y* referent, *xiaoxi*, 'news'. Sentences like (72b) will be termed as pseudo relative clauses as stated below.

(B) Pseudo relative clauses (**PRC**):

Pseudo relative clauses are similar to relative clasues in that they have verbal predicates in the modifying *X* phrase of the *X-DE-(Y)* construction, but they are different from relative clauses as the referent of the head *Y* NP does not co-index with the referent in the predicate argument structure in the modifying X phrase. Nevertheless, some associative relation can still be implicated between the *X* and *Y* constituent. For example, in (72b), the modifying *X* phrase depicts the event that the manager resigns, with this event serving as a complement to the abstract NP, *xiaoxi,* news. Therefore, a relation exists between the *X* and *Y* constituent.

(C) Temporal coordination (**TEM**):

Temporal coordination refers to the relativization of time, mostly with the abstract NP, *shihou*, 'time', as the head referent.

2.4.7 Function of *DE*-marked expressions

The seventh and the final factor we will examine is the function of the three types of *DE*-marked expressions demonstrated in children's use or choice. For the restrictive relative clauses (RC), two functional types have been identified. For the temporal coordinator (TEM, *DE*-shihou), three functional types have been observed. As for the pseudo-relative clauses (PRC), there is no comprehensive study on the function of these *DE*-marked phrases, and we will leave this part unaddressed. Namely, we will examine how the function of RC and TEM will influence the use of different types of RC and TEM in the information flow.

The two functions of RC have been mentioned in the beginning of the literature review. We repeat here as in (73) and (74).

The first type of RC provides the function of characterizing or describing a ***New*** Head NP referent, which is not previously known to the hearer. Consider (73).

(73) you yi ge [qi jiaotache] *de* **ren** guolai
have one CL ride bicycle *DE* person come
"A person who rides a bicycle comes over here."

In (73), the relative clause occurs with an indefinite marker, '*yi ge*', one, in a presentational construction and the speaker introduces a new referent into the discourse.

The second type of RC functions to identify a *Given* Head NP referent, which is previously known to the hearer. Consider (74).

(74) jiu shi [zai zhai] *de* na ge **ren** de
just SHI PROG pack *DE* that CL person DE
"That belongs to the person who packs the bale."

In (74), the relative clause is used to refer to the entity which is presumed to be known to the hearer and intended for the hearer's indentification.

The function of temporal connector, *DE-shihou*, or termed by Cheung (1997) as *Relativazation of time*, is to provide a local, temporal, or event background (**TEM-B**) (Chen, 1986). Nevertheless, it was found that some children will use a completed action to be the background (**TEM-C**), and some children will choose a planned action as the background in the *DE-shihou* expression (**TEM-P**). The three functions are illustrated below, with examples (76) and (77) adopted from Cheung (1997)

(75) Background predicate (**TEM-B**)

ta shuizhao **de** shihou xiao qingwa pao diao le
he sleep *DE* time little frog run away FP
他 睡著 的 時候 小 青蛙 跑 掉 了
'When he fell into sleep, the little frog ran away.'

(76) Completed action (**TEM-C**)

jieguo dafang le lydoutang
and spill up FP mung-bean-soup
結果 打翻 了 綠豆湯
'And the mung-bean-soup was spilt up.'

dafang **de** shihou ta jiu hen shengqi
spill up *DE* time he then very angry
打翻 的 時候 他 就 很 生氣
When it was spilt up, he was very angry.

(77) Planned action (**TEM-P**)

yao qu zuo wawache **de** shihou
want go take school bus *DE* time
要 去 坐 娃娃車 的 時候
ta jiu zai che shang chi tangguo
he then in bus up eat candy
他 就 在 車 上 吃 糖果
'When he is going to take the school bus, he eats candy on the bus.'

Table 2.7 shows the mapping between functions and the three syntactic types we will examine in this study.

Table 2.7 Syntactic types and the functions of *DE*-marked expressions

Syntactic types	**Code**	**Function**
a. Restrictive relative clause	RC-1	Characterizing
	RC-2	Identifying
b. Pseudo relative clause	N.A.*	N.A.
c. Temporal coordination	TEM-B	Background predicate
	TEM-C	Completed action
	TEM-P	Planned action

*N.A.=Not applicable

Notes

[1] Mandarin *DE*-marked expressions are noted for their versatile functions with a globally homogenous *X-DE-Y* schema. At least seven types of functional patterns have been identified (based on Chang & Huang 1986; Li & Thompson 1981), of which most of the head nouns can be omitted, as signaled with Ø.

(1) Genitive phrase

a. Possessive phrase

xiao3 xiong2 *de* feng1-mi4/Ø

little bear DE honey/Ø

'little bear's honey'

b. Part-whole relationship between physical objects

xiao3 gou3 *de* wei3-ba1/Ø

little dog DE tail

'little dog's tail'

(2) Associative phrase

a. Associative relation

tang2tang2 *de* wei4dao4/ Ø

sugar DE flavor

'flavor of sugar'

b. Locative phrase

tian1 shang4 *de* yun2/Ø

sky up DE cloud

'cloud in the sky'

c. Temporal phrase

yi3qian2 *de* xiao3jie3/Ø

former DE lady

'lady in past days'

(3) Modifying phrase

hong2 se4 *de* qi4-che1/Ø

red color DE car

'red car'

(4) Nominalization

a. As a noun phrase

wo3 xi3huan1 *de* Ø

I like DE

'what I like'

b. Characterizing a situation: Shi...DE

ba1la4 *shi4* chi1 *de* Ø

guava be eat DE

'Guavas are for eating.'

c. Modifying a head noun: Relative clause

zhong4 shui3guo3 *de* nong2ren2/ Ø

grow fruit DE farmer

'the farmers who grow fruit'

d. Complement to an abstract head noun

wo3men he2zuo4 *de* wen4ti2/ Ø

we cooperate DE problem

'the problem concerning our cooperation'

(5) Sentence linking

a. Conditional sentence

ni3 xi3huan1 *de* hua4

you like DE word

'If you like it,...'

b. Coordinating sentence (temporal boundary)

wo3 xiao3 *de* shi2hou4

I little DE time

'When I was little,...'

(6) Manner adverb

pao3 *de* kuai4

run DE fast

(7) Complex stative/ resultative verb compound

ku *de* yianjing hong

cry DE eyes red

.

Chapter 3

Methodology

3.1 Quasi-experiment

3.1.1 Quasi-experimental elicitation

To address our research questions concerning what the distributional patterns of Mandarin *DE*-marked expressions are in the adult-child's discourse and what motivates the distribution, a quasi-experimental design is conducted to elicit children's production on Mandarin *DE*-marked expressions. Different from previous studies which collected production data from pure experiments, the current study will investigate the acquisition of *DE*-marked expressions based on naturally occurring child speech in task-oriented conversation and narrative, with adult's (researcher's) questions as prompting utterances. The reasons why we use the quasi-experimental design are due to the fact that *DE*-marked expressions, in particular RC, are not productive in naturally occurring conversations, and not in equal occurrences for each subtypes of RC. Relatively, RCs are more easily to be observed in experimental design, e.g., elicitation task, under strict control over the potential factors. Therefore, we expect that conversations elicited in the experimental conditions might help trigger children's productions on relative clauses. However, it is not possible to control all the key factors in naturally occurring conversations, so it becomes practical to implement

a quasi-experimental design in the current study.

Table 3.1: Comparison among current quasi experimental design, true experimental design, and naturally occurring discourse in terms of the information model

Study / Aspects	Experiment	Current quasi experiment	Spontaneous discourse
The degree of control	Strict	Loose	None
Type	Conversation (Hsu et al. 2009)	Intruding conversation/ intruding narrative	Spontaneous conversation/narrative
Task	Picture-identifying setting (1 task)	Story-telling setting vs. Play-setting (3 tasks) (**Frog story**/**Pear story** vs. **Lego construction**)	Free conversation vs. Free monologue (no task)
Information availability (Quasi-***independent variable***)	Perceptually available and linguistically accessible	(i) Perceptually available ***and/or*** linguistically accessible (Lego construction/Frog story) (ii) Perceptually **unavailable** and linguistically accessible (Pear story)	Changeable
Interlocutor's cognitive status (Quasi-***independent variable***)	Synchronically knowing child/adult	(i) Synchronically knowing child/adult (Lego Construction) (ii) Earlier knowing child/later knowing adult (Frog Story) (iii) Knowing child/blind adult (Pear Story)	Changeable
Function of target *DE*-marked expressions under observation (***Variable***)	Identifying	(1) Naming/Defining (v) Others (ii) Referent-tracking (iii) Referent-describing (characterizing) (iv) Referent-identifying	Various (general/ narrative discourse functions of *DE*-marked expressions)
Prompting conditions	Which-Question	(i) What-Question (iii) Which-Question (ii) How-Question (iv) Others	Not applicable
Reacting condition (Grounding) (***Variable***)	(i)NP anchoring (ii)Predicate grounding (iii)Propositional frame	(i)NP anchoring (ii) Predicate grounding (iii) Propositional frame	(i) NP anchoring (ii) Predicate grounding (iii) Propositional frame
Communicative acts (***Variable***)	Ask for identification ---Identify	(i) Retrieve---Report (Pear/Frog) (ii) Ask for description---Describe (Pear/Frog) (iii) Ask for contrast---Contrast (Lego) (iv) Request---make a request (Lego) (v) Others	Various
Distribution of *DE*-marked expressions (***Variable***)	Collective use (in *DE*-marked expressions	**In question**	Dispersedly and scarce use

Table 3.1 shows the comparison of quasi-experimental design in the current study with the true experimental design in the elicitation task and no experimental design in naturally occurring conversations in terms of our information model. The factors which we will examine that might affect Mandarin-speaking children's use of *DE*-marked expressions in discourse are related to the information flow proposed by Fox and Thompson (1990b). In the conversation and narrative setting of our tasks, the adult (researcher) participated in the process of communicating with the child, by presenting prompting questions as required in the contextual situations. The *information status* of the referent, which is in the focal consciousness of the speaker and hearer, and the *information availability*, which refers to whether the information is linguistically and/or perceptually available in the previous utterances, will be considered as an independent variable in our three different tasks. Our manipulation is comparatively looser than the true experimental design in that the independent variables in our tasks cannot be well controlled, as the interaction (question and answer) between adult and child is expected to proceed in a natural and coherent manner and to serve the communicative purpose at the moment of utterance.

Under the different conditions of *information status* and *information availability*, we might be able to observe to what extent the factors of information flow, including syntactic types of RC, question-answer pair, grounding device, communicative acts,

and function of *DE*-marked expressions might affect children's use of *DE*-marked expressions. These factors are thus considered as dependent variables in the current study.

A more detailed description on the analytical framework and our comparison plan is presented in what follows.

3.1.2 Factors and analytical framework

We follow the communicative factors relevant to information flow which have been proposed by previous studies on relative clauses in conversational studies such as: Fox and Thompson (1990b), Diessel and Tomasello (2000), and Diessel (2004), narratives studies like: Dasinger and Toupin (1994), Jisa and Kern (1998), and Tao (2002), the study in *DE*-marked referential expressions by Cheng et al. (2011), and experimental studies on information availability by Campbell, Brooks, and Tomasello (2000), and Wittek and Tomasello (2005). We sort out six communicative-discourse factors as variables to be observed in the current study. They are (i) entity property (humanness): animate vs. inanimate referent, (ii) focus structure in prompting-conditioning (question-answer pair), (iii) grounding: NP anchoring vs. other grounding devices (iv) communicative acts, (v) syntactic types and (vi) functions of *DE*-marked expressions.

Qualitative and quantitative analyses of the production data on children's *DE*-marked expressions will be made, firstly on the information status, and then on the variable factors.

3.1.3 Comparison plan

The observational data will be collected from three task-oriented discourses: Pear story, Frog story, and Lego construction. These data will then be characterized in terms of the independent variable: information status. The general assumption of the information status across the different tasks is based on (1) Prince's (1981) *Assumed Familiarity Taxonomy* toward the given-new information in discourse and (2) the *information availability* in the preceding utterance provided by the speaker or context regarding the referent in focus. Two types of information are available for the interlocutors: linguistic (ET=evoked textually) and/or perceptual (ES=evoked situationally) information in the previous utterances. By setting the independent variable among the three tasks, children's production in relation to the seven dependent variables will be observed.

Our comparison plan is shown in Table 3.2. The reasoning concerning the general assumption toward the information status of the entity is stated in the procedure of the current study in the following section.

Table 3.2 Comparison plan of the current study

Variables		Elicitation task (Hsu. et al. 2009)	Pear Story	Frog Story	Lego construction
Independent	General assumption to the information status of the referent (characterized according to Prince's *Assumed Familiarity Taxonomy*)	ET+ ES (Perceptually available and linguistically accessible)	ET (linguistically accessible)	ET+ ES/(ES) (Perceptually available and/or linguistically accessible)	ET+ ES/(ES) (Perceptually available and/or linguistically accessible)
Dependent	1.Specific assumption to the information status of the referent	*(To be observed)*	*(To be observed)*	*(To be observed)*	*(To be observed)*
	2. Entity propoerty 3. Focus structure (Prompting/Conditioning) 4. Grounding 5. Communicative acts 6. Syntactic types 7. Functions	***To be observed***			

To preview the results, the differences across the three task-oriented situations are argued to result largely from the interactionally determined process in accordance with interlocutor's *information status* toward the referent in focus, aligning with the communicative factors such as focus structure, communicative acts, grounding device, syntactic types and function of the construction.

Based on our information model, a further comparison of the results in the three tasks will be made with the study which aims to elicit *DE*-marked relative clauses in Mandarin-speaking children (i.e., Hsu et al. 2009). This cross-study comparison intends to demonstrate that the focus structure and the repeated communicative act

(i.e., “Ask for identification---Identify”) in the adult-child’s question-answer pair in the elicitation task play important roles in children’s use of the grammatical types of *DE*-marked RC. This provides supporting evidence to our observation that information flow might exert in the grammatical use of *DE*-marked expressions.

3.2 Method

3.2.1 Participants

Eighteen Mandarin-speaking children participate in the current study. The children are divided into three groups, with six children in each group to participate in the three different tasks respectively. The three tasks are *Frog Story Retelling*, *Pear Story Retelling*, and *Lego Construction*. The age range for these children is 6;0 to 6;6. We recruited children of this age on considering that children aged 6 are well-developed in their grammatical competence and performance. Although the early uses of relative clauses in all of the general discourse function have been found to be potentially accessible as early as children of 3 years (Dasinger and Toupin 1994), a more full-fledged grammatical use is steadily observed at children of 6 years. In particular, from 3 to 5 years, children are reported to accomplish some crucial developmental changes in the argument structure of the relative clause (Diessel and Tomasello 2000). Since children are found to use proportionally more transitive relative clauses as they grow older, this phenomenon can also be examined in the

current study.

3.2.2 Procedure

Current study

Our data consist of task-oriented conversation and narrative collected with the researcher's interaction with the child in the communicating process, In the course of the researcher-child communication, the researcher, with the communicative intent to elicit *DE*-marked expressions, tries not to utter any *DE*-marked expressions when making the prompting questions. All the data were collected in the office of the kindergarten, the place which is familiar to the child but quiet without any interference. All the children were paid visits individually and each task was conducted separately. Every visit was recorded with TASCAM DR-100 portable digital recorder and video-taped with SONY HDR-HC5 recording camera. The procedures of the three tasks and its regulations are listed below.

Prior regulations for the researcher

For the interactions with the child in the three conditions, the researcher herself is regulated not to utter any *DE*-marked expressions when she makes the prompting questions.

A. Frog story telling procedure: Earlier knowing child/later knowing adult

General description

Our frog-story narrative data are collected by using a picture book task with questions intruded by the researcher as prompting for the target *DE*-marked expressions. In our frog-story elicited narratives, the child is familiarized with the framework of the story ahead of the addressee (i.e. the researcher). In such a condition, the child gets familiar with the plot earlier than the addressee, and presumably, the child will assume that the addressee is not aware of the events that follow the current event, so the addressee knows the plot later. The procedures are as follow.

(i) The researcher tells the child that she/he will have to recount a story based on a picture-book. The story based on the book, *Frog, where are you*? (Mayer, 1969), is recorded by a female adult in advance and then played to the child. The recorded story-telling depicts series of sequentially ordered events. Only simple sentences are used to describe the plot of the story, involving agent and patient of the predicate of the event and the location where the event occurs. This design intends to familiarize the child only with the framework of the story, but avoids giving hints for the use of any specific construction. The complete story script is presented in Appendix A.

(ii) The child stays alone in the room, reading the book, *Frog, where are you*?

(Mayer, 1969), and listening to the story-telling recording. The child is told that his/her reading period will be video-recorded to assure that he/she reads attentively each page and completes listening to the story.

(iii) Once the child has read thoroughly and finished listening to the entire story-book, the researcher will enter the room. The child is asked to tell the story to the researcher.

(iv) The pictures of the story are displayed one slide after another on the computer screen. The child retells the story to the researcher following the shift of the slide. The researcher acts as audience and asks different prompting questions about the story plot or the character to get as much information from the child as possible.

(v) The frog story consists of 24 pictures/slides depicting one setting and initiating event, and six episodes: searching, window, beehive and mole, beehive and owl, rock, and ending.

(vi) The prompts for the target *DE*-marked expressions will appear 10 times. They will appear at the blank frame after slide 4, 6, 9, 11, 13, 15, 17, 19, 21, and 24. There is no prompt in the setting and initiating event of the story. In each episode, at least one prompt will be made. (See appendix B)

(vii) At each blank frame, the slide turns into a blank with a monkey showing up

indicating that he does not understand the story clearly and then the researcher asks questions on behalf of the monkey. This design intends to motivate the child to produce utterances addressing the prompting questions posited bythe researcher.

(viii) The whole Frog-story telling period is estimated to cost 25 to 30 minutes.

B. Pear story telling procedure: Knowing child but blind adult

General description

Our Pear-story narratives are collected by using a retelling task with questions intruded by the researcher as prompting for the target *DE*-marked expressions. The child is asked to watch the Pear film (Chafe, 1980) alone. In such a condition, the child is presumably familiar with the characters and the events in the film, but the researcher is assumed by the child as knowing nothing about the film. Therefore, in the process of communicating, the child is assumed to be willing to provide sufficient information to meet the knowledge status of the speaker (i.e. the researcher), and feel like to answer questions regarding the referent in question. The procedures are as follow.

(i) The Pear film is played on the computer. The child watches the film alone. The child will be told that his/her watching period will be video-recorded to

assure that he/she has looked attentively at the film.

(ii) After watching the film, the child is asked to retell the plot of the film to the researcher, who is assumed to be novel to the film.

(iii) In the course of the child's retelling, the researcher asks questions concerning the plot and characters in the film. These questions intend to make the child track and retrieve the characters in the film in more details. They will require the child to (a) describe the farmer and the fruit, (b) describe the boy, (c) describe the scene when the boy falls off the bike, (d) describe the boys who help the boy falling from the bike, and (e) identify the boy who picks up the hat for the boy.

(iv) The whole Pear-Story retelling period is estimated to cost 15 to 20 minutes.

C. Lego construction procedure: Synchronically knowing child and adult

General description

Our Lego-construction data are collected from conversations made between the child and the researcher in the course of their co-working on the brick construction. A Lego Bricks Activity is undertaken in the conversation, with questions or requests made by the researcher as communicative prompts for the target *DE*-marked expressions. In such a co-working condition, the child and adult are assumed to be

synchronically familiar about the entities in question, which are also assumed to be perceptually accessible to both the child and adult. The researcher creates situations for the child to make utterances to require/search for the piece to construct the target object. The procedures are as follow.

(i) The researcher brings the LEGO bricks (House Series) and tells the child they are going to play the construction of bricks together.

(ii) The House Series contain four types of LEGO work including HOUSE, DOG, CAR, and GIRL/BOY. All the four types of LEGO pieces are allotted in three boxes containing three different types of pieces: Large with regular shape, Medium with irregular shape and Small with specific function. The researcher demonstrates the pictures of two models of brick construction to the child and asks the child to watch carefully and then requires the child to briefly describe the two pictures and compare their differences. (See Appendix C: The pictures of Lego bricks)

(iii) After the brief description, the researcher asks the child to have a target model in his/her mind about what he/she is going to construct. Then the model picture is put aside.

(iv) In the co-working period, the three boxes containing the different pieces are put far away from the child's reach. In this condition, the child has to make

utterances about the piece he/she needs to construct the target model.

(v) In the process of construction, the researcher is not allowed to give the child any piece if the child uses only simple sentence with demonstrative (i.e. this, *zhe ge*/that, *ne ge*) or pointing. The child is encouraged to make a detailed description as far as he/she can.

(vi) After the co-working and completing the construction, the child is asked to appreciate the completed constructions he/she made and is encouraged to make a brief description about what and how he/she did.

(vii) The whole Lego-construction period is estimated to cost 30 to 35 minutes.

Hsu et al. study (2009)

We intend to analyze Mandarin-speaking children's production on *DE*-marked RC in Hsu et al.'s study (2009) by adopting our discourse-pragmatic analyses. The purpose of Hsu et al.'s study is to test three different hypotheses regarding the Subject–Object RC asymmetry found in children's performance with head-initial RCs in English. Hsu et al. access the appropriateness of the three different accounts in explaining Mandarin children's production performance with subject-gapped and object-gapped RCs, by using Mandarin-speaking children's response (elicitation) of the *DE*-marked RC, which is of head-final RC. Although Hsu et al.'s purpose is quite

different from that in the current study, the recording data they collected are discourse-level to some extent, particularly in the communicating process, which is of interest to the current study. The procedures of Hsu et al.'s study are stated below (Hsu et al. 2009:336).

(i) In the experiment, each child and the experimenter sat on one side of the table looking at the computer screen. The uninformed listener, i.e., the assistant experimenter, to whom the child needed to describe the picture, sat on the other side of the table.

(ii) The child was first presented with the base picture that contained two identical objects or characters, and the experimenter gave the child a lead-in description of events or actions about the identical objects/characters in the picture.

(iii) The experimenter pushed the space bar to show the second picture.

(iv) The child was asked to describe the change in the second picture to the uninformed listener by answering questions like 'Please tell xxx (name of the listener) which girl turned red?' The question is always made about the intended referent (head of the target *DE*-marked RC).

(v) The uninformed listener would then select a picture according to the child's description, and the child would check whether the uninformed

listener had selected the correct picture.

(vi) The experimental session lasted about 20-30 minutes.

(vii) The whole experiment was recorded with a Dell PDA recorder, including the experimenter's questions and the child's response.

3.2.3 Coding, data analyses and reliability

The current study reports the distributional characteristics of Mandarin *DE*-marked expressions made by children. The tokens of *DE*-marked expressions regarding the six factors (i) focus structure, (ii) entity property, (iii) grounding (iv) communicative acts, (v) syntactic types, and (vi) functions of RC, under different information status will be collected and then transcribed following the CHAT conventions, and the quantitative analysis was conducted using the CLAN program in CHILDES (MacWhinney, 2000a,b).

The unit of analysis considered for this study is the children's *DE*-marked expressions with verbal predicate plus *DE* constituent, including head or null head forms related to the referent in focal consciousness. Three types of *DE*-marked expressions of our concern, which have been presented in the literature review, are repeated below.

Relative clause (RC)

(78a) Characterizing RC（OBH-10-Chen 6;2 in *Pear Story*)

you	yi	ge	[qi	jiaotache]	*de*	ren	guolai
have	one	CL	ride	bicycle	*DE*	person	come
有	一	個	［騎	腳踏車］	的	人	過來

"A person who rides a bicycle comes over here."

(78b) Identifying RC (OBH-10-Chen 6;2 in *Pear Story*)

jiu	shi	[zai	zhai]	*de*	na	ge	ren	de
just	SHI	ZAI	pack	*DE*	that	CL	person	DE
就	是	［在	摘］	的	那	個	人	的

"That belongs to the person who packs the bale."

Pseudo relative clause (PRC)

(79a) Pseudo RC (N01-Yang around 6;0 in Hsu et al.'s elicitation)

na	liang	[nusheng	meiyou	tiao	qilai]	*de*	kache
that	CL	girl	no	jump	up	*DE*	truck
那	輛	［女生	沒有	跳	起來］	的	卡車

"The truck by which the girl did not jump up."

(79b) Pseudo RC（OBH-10-Chen 6;2 in *Lego Construction*)

zheli	shi	[ting	che]	*de*	difang
here	SHI	park	car	*DE*	place
這裡	是	［停	車］	的	地方

"Here is the place for (people) to park cars."

(79c) Pseudo RC（OBH-10-Chen 6;2 in *Lego Construction*)

men	shi	[dakai]	*de*
door	SHI	open	*DE*
門	是	［打開］	的

"The door is open."

gang-gang	shi	[guan	zhe]	*de*
just	SHI	close	ZHE	*DE*

剛剛　　是　［關　著］　的

“It was close just now.”

(79d) Pseudo RC (YGH-06-Chen, 5;8 in *Pear Story*)

ta　jiu　yong　[qian]　*de*

he　then　use　pull along　*DE*

他　就　用　［牽］　的

“Then he pulled it along.”

Temporal coordination (TEM)

(80) Temporal coordination (OBH-01-Wang, 6;4 in *Frog Story*)

di　er　tian　[ta　xing　lai]　*de*　shihou

the　second　day　he　wake　up　*DE*　time

第　二　天　［他　醒　來］　的　時候

“The next day, when he woke up,”

xiao　qingwa　jiu　bu　jian　le

little　frog　then　no　see　FP

小　青蛙　就　不　見　了

“The little frog disappeared.”

The utterances containing V-*DE* phrases produced by children were filtered out, and coded with seven layers of codes, which represented seven factors (independent and dependent variables) we intend to examine. They include information status (%REF), entity property (%ENT), Conditioning utterances (%CON), communicative acts (%ACT), grounding device (%GND), syntactic types of the conditioning/replying utterance (%STP), and function of the replying utterance (%FUN).The utterance preceding the target *DE*-marked expressions made by the adult was then filtered out, and coded with five layers of codes, which represent the information status (%REF),

entity property (%ENT), prompting condition (%PMP), communicative acts (%ACT), and syntactic types of the prompting sentence (%STP) respectively. Examples of coding with adult's five layers and child's seven layers of coding in the three task-oriented productions of this study are illustrated in (A), (B), and (C). An example of the experimental elicitations of Hsu et al.'s study is also demonstrated below in (D). A complete list of the coding system is shown in Appendix D.

(A) Frog story (OGH-02-Liu, 6;0)

*RES: benlai shi zai shitou shang, ranhou ne
originally *e* SHI ZAI stone on then Q
本來 是 在 石頭 上, 然後 呢?
'In the beginning, (the boy) stays on the stone.'

%REF: ET
%ENT: Person
%PMP: Conj Prompt
%ACT: Start
%STP: Question

*CHI: benlai zai shitou shang
originally on stone up
本來 在 石頭 上
'In the beginning, (he) stays on the stone'
…

*CHI: jieguo ta jiu tiao dao... tiao dao
consequently he then jump onto… jump onto
結果 他 就 跳 到, 跳 到
'Consequently, he jumps onto…jumps onto…'

na yi ge ta faxiang de di er ge shitou shang mian
that one CL he found *DE* the second CL stone up side

那 一 個［他 發現］ 的 第 二 個 石頭 上 面

'the second stone that he found'

%REF: BN-A
%ENT: Object
%CON: Conj completing
%ACT: Continue
%STP: OBL-O-RC
%GND: NP anchoring
%FUN: characterizing

(B) Pear story (OBH-10-Chen, 6;2)

*RES: jiu shi na ge zai...
Just SHI that CL in
就 是 那 個 在
'That is the man who is in…'

ta zai nali a, ta na ge shihou
he in where Q he that CL time
他 在 哪裡 啊? 他 那 個 時候
'Where is he, at that time?'

%REF: DEM ET
%ENT: Person
%PMP: Structural Prompt / Where Prompt
%ACT: AID
%STP: WH-question

*CHI: zai shu shang de na ge ren
in tree on DE that CL person
在 樹 上 的 那 個 人
'the person who is in the tree'

%REF: ET
%ENT: Person
%CON: Structural copying / Predicate noun completing
%ACT: RID

%STP: IN-S-RC
%GND: Predicate grounding
%FUN: Identifying

(C) Lego construction (OBH-10-Chen 6;2)

*RES: ni dou wan sheme jimu
you all play what block
你 都 玩 什麼 積木?
'What kind of blocks do you usually play?'

%REF: BN-U
%ENT: Object
%PMP: Structural prompt / What prompt
%ACT: ADE (Ask for description)
%STP: WH-Question

*CHI: wan na yi zhong, na ge you hen duo xingzhuang de
play that one type that CL have very much shape *DE*
玩 那 一 種, 那 個 有 很 多 形狀 的
'I play the type that has many shapes.'

%REF: DEM ET
%ENT: Object
%CON: Structural copying (verb '*wan'*) / DO argument completing (DO=Direct object)
%ACT: First RDS (reply to describe)
%STP: (OBJ)-S-RC (Existential clause)
%GND: Predicate grounding
%FUN: Characterizing

*CHI: ranhou you yanse de na yi zhong jimu
then have color *DE* that one type block
然後 有 顏色 的 那 一 種 積木.
"And the type of blocks that has colors."

%REF: DEM ET
%ENT: Object
%CON: DO argument completing (DO=Direct object)

%ACT: Second RDS (reply to describe)

%STP: IN-S-RC (Existential clause)

%GND: Predicate grounding

%FUN: Characterizing

(D) *DE*-marked RC elicitation (Hsu et al.'s study)

*RES: wa, yi zhi xiao laoshu chuxian le

wou one CL little mouse show up FP

哇, 一 隻 小 老鼠 出現 了

'wou, a little mouse shows up'

*RES: ta zai kan na yi zhi kache a

he PROG watch which one CL truck Q

他 在 看 哪 一 隻 卡車 啊?

'Which truck is he watching?'

na yi ge kache

which one CL truck

哪 一 個 卡車?

'which truck?'

%REF: ET-ES

%ENT: Object

%PMP: Structural prompt / Which Prompt

%ACT: *First* AID (Ask for identification)

%STP: V WH-Question

*CHI: kan zuo zhe de na ge nusheng

watch sit PROG DE that CL girl

看… 坐 著 的 那 個 女生

'watch the girl who is sitting'

%REF: ET-ES

%ENT: person

%CON: Structural copying (Verb '*kang*') / DO argument completing

%ACT: First RID (reply to identify)

%STP: OBJ-S-RC

%GND: Predicate grounding

%FUN: Identifying

*RES: m, ta shi zai kan kache ma, dui bu dui?
m, he SHI PROG watch truck FP right no right
嗯, 他 是 在 看 卡車 嘛 對 不 對?
'He is watching the truck, isn't he?'
*CHI: m
yes
嗯.
*RES: ta shi zai kan na yi liang kache
he SHI PROG watch which one CL truck
他 是 在 看 哪 一 輛 卡車?
'Which truck is he watching?'

%REF: ET-ES
%ENT: Object
%PMP: Structural prompt / Which Prompt
%ACT: *Second* AID (ask for identification)
%STP: V WH-Question

*CHI: m, kan na liang nusheng de kache
m, watch that CL girl DE truck
嗯, 看 那 輛 女生 的 卡車
'Watch that girl's truck '

%REF: DEF ET-ES
%ENT: Object
%CON: Structural copying (verb) / DO argument completing
%ACT: Second RID (Reply to identify)
%STP: NP Associative *DE* phrase
%GND: NP anchoring
%FUN: Identifying

To avoid errors in transcription, the transcripts will be coded and double-checked by two trained coders, including the researcher and a native linguistic graduate student. The researcher and the assistant student will code individually, following a set of predetermined guidelines. The reliability of the coding scheme will be determined by

choosing half of the transcripts, and the proportion of agreement will be calculated regarding the seven/five levels of coding scheme. Mean percentages of agreement between the researcher and the assistant student will be calculated. The coders will make a list of the problematic transcripts and consult and discuss with a linguist until full agreement on all transcripts is reached.

Chapter 4

Results

In the preceding chapters, previous studies on relative clauses relevant to information flow are reviewed. We also described in detail the methodology we are going to apply in the current study, including the quasi-experiment which we will conduct to elicit the discourse containing *DE*-marked expressions, and the seven factors relating to the information management which we intend to examine.

In this chapter, we are going to present the results of our analyses in terms of some significant patterns in the distribution and use of *DE*-marked expressions demonstrated by children in these task-oriented discourses. By exploring the factors underlying the distribution, we hope to shed light on the general nature of Mandarin *DE*-marked expressions, the dynamic relationship between the information management and grammar, and in particular, the role of communicative behaviors between adult and child in the process of communicating. The analyses of the three task-oriented discourses will be presented individually, and follow the re-analyses on children's elicitation in Hsu et al. (2009) in terms of our discourse-level approach. Before we proceed to the specific results in each task, some general figures relating to the three tasks are presented. Table 4.1 shows the age range of children in these tasks, the total number of utterances produced by children in each task, the number of target

DE-marked expressions that occur in children's production, and the percentage of children's target construction to their total utterances.

Table 4.1: General figures in the three tasks

Task	Children Age range	Utterances	*DE*-marked expressions[a]	%
Frog	6;0-6;6	1020	78	7.6
Lego	6;0-6;6	1350	101	7.5
Pear	6;0-6;6	505[b]	88	17.4

[a]The number here in this table refers to the three types of *DE*-marked expressions of concern in this study: RC, PRC, and TEM.

[b]That the total utterances produced by children in Pear is comparatively fewer than those in Frog and Lego is because it takes less time in Pear task to collect the data.

As can be seen in Table 4.1, we collected higher ratio of the three types of *DE*-marked expressions: RC, PRC, and TEM in Pear task (17.4%) than in Frog (7.6%) and Lego (7.5%) tasks. Although some might attribute this phenomenon to the task effect, we would propose that the information flow factors are at work, which will be discussed in detail below.

Note that our data have been collected with a quasi-experimental design whereby the researcher makes questions in communicating with children in each task, and intends to prompt children's production of the target *DE*-marked expressions. Table 4.2 shows the total numbers of examiner's prompts, the three types of target *DE*-marked expressions and the other *DE*-marked expressions produced by children in the course of prompting. The examiner's questions which do not prompt children's utterances containing *DE*-marked expressions are not considered here.

Table 4.2: Distribution of *DE*-marked expressions and ratio of examiner's prompts to child speech in the three tasks

Task	Examiner's prompts (a)	RC (b)	% (b/a)	PRC (c)	% (c/a)	TEM (d)	% (d/a)	Other DE (e)	% (e/a)
Frog	125	43	34.4	28	22.4	7	5.6	47	37.6
Lego	215	76	35.3	25	11.6	0	0	114	53.0
Pear	104	73	70.2	7	6.7	8	7.7	16	15.4
Total	444	192	43.2	60	13.5	15	3.4	177	39.9

Table 4.2 shows that the three types of *DE*-marked expressions account for higher percentage of production (60.1%) than other *DE* constructions (39.9%) in our three tasks. Among the three types of DE-marked expressions, RC is of the highest percentage of use (43.2%). Factors of information flow will be used to account for the distribution of these *DE*-marked expressions, particularly of RC, in our data. Analyses are presented below.

4.1 Frog Story Retelling

4.1.1 Information status

Table 4.3 summarizes the distribution of entity information status (i.e. the entity familiarity) made by children in the *Frog Story Retelling* discourse (coded as **%REF** in the transcripts).

Table 4.3: Distribution of **entity information status*** in the *Frog Story Retelling* discourses of children

ET	ET + ES	BN-A	BN-A + ES	Total
37 (47.4%)	32 (41.0%)	7 (9.0%)	2 (2.6%)	78

*Entity information status:

ET: Evoked textually ET + ES: Evoked textually and situationally

BN-A: Brand new anchored BN-A + ES: Brand new anchored and evoked situationally

Table 4.3 shows the general picture of using *DE*-marked expressions in the *Frog Story Retelling* task in terms of the information status regarding the referent in the interactants' (i.e. the adult-child pair's) consciousness. According to the procedure of the task stated in the Methodology, the *Frog Story Retelling* task features with the child being familiarized with the framework of the story ahead of the addressee (i.e. the adult researcher) and thus the child is assumed to know the plot earlier than the adult. Then the child recounted the story to the adult by looking at the pictures sequentially. In this case, the information status of the referent in focus can be roughly

represented in two major ways as the distribution demonstrates in Table 4.3. One is that the referent is given or known to the hearer via previous utterances (i.e., ET=evoked textually), and the other is that the referent is accessible to the hearer via both linguistic and perceptual/situational availability (i.e., ET + ES= evoked textually and situationally), as the hearer can access the referent by seeing it in the picture. Table 4.3 shows that the linguistic information and linguistic plus perceptual information are equivalently used by children aged 6 in this Frog task, with ET information accounting for a slightly higher preponderance over ET + ES (n=37, 47.4% vs. n=32, 41.0%). Consider the following examples, which demonstrate the ET and ET + ES examples in the Frog task.

(81) ET status in Frog (Frog_OBH10_Chen.cha): line 369

1 *RES: o deng yi xia
oh wait one time
哦, 等 一 下
'Oh, just a minute '

2 *RES: women xian keneng kan-kan zhe ge zhe ge maotouying
we first maybe watch this CL this CL owl
我們 先 可能 看看 這 個… 這 個 貓頭鷹

3 *RES: hao lai lai lai
ok come
好, 來 來 來
'Ok. Let's do it.'

4 *RES: ta yao xiao houzi yao wen maotouying
it want little monkey want ask owl
它 要… 小 猴子 要 問 貓頭鷹
'The little monkey wants to ask something about the owl.'

5 *RES: zhe ge maotouying jiu shi… shi gangcai…gangcai na yi ge
this CL owl just SHI SHI just now which one CL
這 個 貓頭鷹 就 是 是 剛才 剛才 哪 一 個
'This owl is…Which one is the owl?'

6 *CHI: na yi zhi **fei** **chulai** de
that one CL fly out DE
那 一 隻 飛 出來 的
'The one which flew out just now.'

%REF: DEM ET
%ACT: Retrieve
%SYN: (IN)-S-RC

(82) ET+ES status in Frog (Frog_OGC01_Hsu.cha): line 475

1 *RES: zhe ge shi sheme shugen
this CL SHI what root
這 個 是 什麼 樹根?

2 *CHI: shugan
trunk
樹幹
'Trunk'

3 *RES: shugan
trunk
樹幹?
'Trunk?'

4 *RES: shi zemeyang hui zai zheli a
SHI how will in here Q
是 怎麼樣 會 在 這裡 啊?
'How come will it be here?'

5 *CHI: jiu shi **dao** **xiaqu** de la
just SHI fall down DE FP
就 是 倒 下去 的 啦
'It is the one that falls down.'

%REF: ET-ES
%ACT: Describe
%SYN: PRC

Utterance 6 in Example (81) is coded as ET information status because the adult speaker asks the child to retrieve and identify what the owl was in the previous context, and thus the referent, owl, has to be textually evoked from the preceding utterance. The lexicon, *gangcai*, 'just now' can be seen as the adult speaker's lead-in to evoke the description relevant to the referent, owl. As for utterance 5 in Example (82), it is coded as ET-ES information status because the referent, trunk, is present in the story book before the interlocutors' eyes, i.e., perceptually available, and it is also in the child's preceding reply in utterance 2.

In addition to the two major types of information statuses: ET and ET-ES, some specific information status can be observed in the Frog task. Here we have BN-A and BN-A + ES, as illustrated below.

(83) BN-A status in Frog (Frog_OGH02_Liu.cha): line 343

1 *CHI:	tamen	kan	tamen	na	yi	zhi	shi	tamen	jia	de	xiao	qingwa
	they	see	they	which	one	CL	SHI	they	home	DE	little	frog
	他們	看	他們	哪	一	隻	是	他們	家	的	小	青蛙
	'They want to see which one is the frog that belonged to them.'											
2 *RES:	oh	you	kan	chulai	ni	you	kan	chulai	ma			
	oh	have	see	out	you	have	see	out	Q			
	哦	有	看	出來	你	有	看	出來	嗎?			
	'Can you see that?'											
3 *RES:	shi	na	yi	zhi	a							
	SHI	which	one	CL	Q							
	是	哪	一	隻	啊?							
	'Which one?'											
4 *RES:	ni	juede	shi	na	yi	zhi						
	you	feel	SHI	which	one	CL						

你 覺得 是 哪 一 隻?

'Which one is in your mind?'

5 *CHI: <u>shi **jiehun** de nusheng na yi bian de</u>

SHI marry DE girl that one side DE

是 結婚 的 女生 那 一 邊 的

'It's the one who belongs to the female (frog) who got married.'

%REF: BN-A

%STP: IN-S-RC (SHI)

(84) BN-A + ES status in Frog (Frog_OBH01_Wang.cha): line 440

1 *RES: hao na jiexialai tamen yao zuo sheme shi ne

good then next they want do what matter Q

好 那 接下來 他們 要 做 什麼 事 呢?

'Ok. Then what are they going to do next?'

2 *CHI: qu zhao xiao qingwa

go look for little frog

去 找 小 青蛙

'Go for little frog.'

3 *RES: qu zhao xiao qingwa

go look for little frog

去 找 小 青蛙

'Go for little frog.'

4 *RES: a ni shuo xiao qinwa zai nail

a you say little frog in where

啊… 你 說 小 青蛙 在 哪裡?

'Where is little frog?'

5 *CHI: <u>zheli you yi ge **duan diao** de shuzhi hou mian</u>

here have one CL break down DE branch back side

這裡 有 一 個 斷 掉 的 樹枝 後 面

'It's over here where backwards there is a branch which is broken.'

%REF: INDEF BN-A+ES

%STP: EX-S-RC

Utterance 5 in Example (83) is coded as BN-A information status because the referent, *nusheng*, 'female' is firstly mentioned in the discourse and the referent is grounded on her own activity, the predicate 'marry'. As for utterance 5 in Example (84), it is coded with the information status of BN-A + ES is due to the grounding device of the predication, *duan diao*, 'break down' of the newly mentioned referent, 'branch', in the discourse (BN-A), and the entity is present in the picture of the story book for the interlucutors to access perceptually (ES).

As can be seen from the examples in (81) to (84), the coding for information status, ET, is decided by distinguishing the condition whether the referent in focus is perceptually available to the hearer. Since the Frog Story retelling is characteristic with the examiner asking the child to retrieve the plot either with or without the characters and event displayed in the picture in front of the adult and child, we can generally characterizie the major two types of information statuses, ET and ET + ES, in the Frog task. For our subsequent analyses and discussion, we will focus on these two types of information statuses, leaving the other few statuses unmentioned.

4.1.2 Entity property

Then we proceed to the second factor: the entity property. Table 4.4 presents the distribution of the entity property in children's *Frog Story Retelling* discourse (coded as **%ENT** in the transcripts).

Table 4.4: Distribution of the **entity property** in the *Frog Story Retelling* discourses of children

%ENT / %REF	Animate (Animal/Person)		Inanimate (Object/Locative)	
	Head	Headless	Head	Headless
ET (n=37, 47.4%)	20		17	
	11 (55%)	9 (45%)	11 (64.7%)	6 (35.3%)
ET + ES (n=32, 41.0%)	16		16	
	8 (50%)	8 (50%)	11 (68.8%)	5 (31.2%)
BN-A (n=7, 9.0%)	1		6	
	N.A.*		N.A.	
BN-A + ES (n=2, 2.6%)	1		1	
	N.A.		N.A.	

*N.A.= Not applicable, the notation indicates that the calculation is not of our concern in the current study.

As Table 4.4 shows, under the two major information statuses regarding the referents in focus, the distribution of **Entity properties** in the *Frog Story Retelling* task reveals that it is the characteristic of the story plot itself, rather than the information status, that affects the types of entities being used. In children's *Frog Story Retelling* task, the animate or inanimate characters appear nearly equally in ET and ET + ES conditions.

An intriguing phenomenon is that the occurrence of head in the inanimate referents across the two information conditions shows higher percentage of headed *DE*-marked forms than headless forms (64.7% > 35.3% in ET, 68.8% > 31.2% in ET + ES). The distribution indicates that inanimate referents tend to be overt-headed, regardless of their information status.

4.1.3 Syntactic type

We then analyze the distribution of three syntactic types (coded as **%STP** in the transcripts) relating to *DE*-marked expressions in the ET and ET + ES conditions, as illustrated in Table 4.5, which is further summarized as Table 4.6.

Table 4.5: Distribution of **syntactic type** in the *Frog Story Retelling* discourses of children under ET and ET+ES conditions

%STP / %REF	RC		PRC	TEM
	SRC (n=18)	ORC (n=18)		
ET (37, 47.4%)	Head 15 (62.5%)	7/24 (29.2%)	8/24 (33.3%)	4	3
	Headless 9 (37.5%)	5/24 (20.8%)	4/24 (16.7%)	6	N.A.
ET + ES (32, 41%)	Head 9 (75%)	3/12 (25%)	6/12 (50%)	7	4
	Headless 3 (25%)	3/12 (25%)	**0/12 (0%)**	9	N.A.

Table 4.6: Distribution of **syntactic type**: *RC* vs. *Miscellaneous* in the *Frog Story Retelling* discourses of children under ET and ET+ES conditions

%REF \ %STP		**RC**		**Miscellaneous** (PRC/TEM)	
ET	37 (47.4%)	24/37	(64.9%)	13/37	(35.1%)
ET + ES	32 (41%)	12/32	(37.5%)	20/32	(62.5%)

Table 4.5 shows that in both ET and ET + ES conditions, *DE*-marked RCs occur more with headed forms (62.5% in ET, 75% in ET + ES). For the two RC subtypes, SRC and ORC, SRC is used evenly in ET and ET + ES conditions, with approximately similar percentages in headed and headless forms, while ORC is never found in ET + ES condition as headless form. It seems that ORC in both ET and ET + ES conditions tend to appear with overt heads (in ET, n=8, 33.3%; in ET+ES, n=6, 50%), and this tendency is more obvious in ET + ES condition.

An interesting fact is observed as we transformed Table 4.5 into Table 4.6. There is a complementary distribution in terms of information status (%REF) and syntactic types (%STP). RCs occur significantly frequently in ET condition (64.9% vs. 37.5%), whereas the other two *DE*-marked expressions (PRC and TEM) are used more often in ET + ES condition (62.5% vs. 35.1%).

The observation of this preponderant occurrence of relative clauses in ET condition and higher percentage of miscellaneous *DE*-marked expressions in ET+ ES condition is significant in that it might relate to the general features of Mandarin

DE-marked expressions. Consider the RC and PRC examples in the following.

(85) PN-O-RC in ET condition (Frog_OBH04_Yao.cha: line 167)

*RES: houzi yao wen,
monkey will ask
猴子 要 問
'The monkey will ask,'

*RES: na ge mifeng de zhao weisheme hui diao xialai?
that CL honey-bee DE comb why will fall down
那 個 蜜蜂 的 巢 為什麼 會 掉 下來?
'Why did the honeycomb fall off?'

*CHI: yinwei xiao gou yizhi zai na bian tiao tiao tiao
because little dog keep in that side jump jump jump
因為 小 狗 一直 在 那 邊 跳 跳 跳
'Because the doggie keeps on jumping over there.'

*CHI: yizhi kan, yizhi kan, tiao tiao tiao
keep watch keep watch jump jump jump
一直 看 一直 看, 跳 跳 跳,
'He keeps on watching, and jump, jump, jump'

*CHI: ta yiwei na **shi** mian... gangcai **wo shuo de mianbao**
It think that SHI br… just now I say DE bread
牠 以為 那 是 麵… 剛才 我 說 的 麵包,
'He thinks that it was the br…, the bread that I mentioned just now.'

%REF: DEM ET
%ENT: Object
%CON: Proposition completing
%ACT: Retrieve (forward)
%STP: PN - O - RC (SHI)
%GND: (PRON) NP anchoring
%FUN: Characterizing

Excerpt (85) illustrates the typical function of relative clauses serving to situate or resituate a given referent in discourse. In excerpt (85), the PN-O-RC relative clause *wo shuo de mianbao* 'the bread that I mentioned' is used to resituate the previously mentioned referent, *the bread*, by the child, and to update the hearer/adult about the referent which is not perceptually available on the counter. A temporal phrase *gangcai* 'just now' is used to help the adult to keep track of the referent and re-identify it over time as the same referent which has been mentioned earlier. Pronoun I, *wo*, in this relative clause, acts as an anchor to link the referent *bread* to a person entity evoked situationally. This grounding device will be discussed in the later paragraph.

Excerpt (86) exemplifies the *DE*-marked expression characterized as epistemic phrase, which we coded as Pseudo RC (PRC).

(86) PRC in ET + ES condition (Frog_OBH10_Cheng.cha: line 527)

*CHI:	na…	jiu	shi	na	ge…	he…	bu	xiaoxin	you...
	that...	just	SHI	that	CL	river	not	careful	have
	那	就	是	那	個	河	不	小心	有

'That is because the river happened to have…'

(One line omitted)

*CHI:	ranhou	ba	xin	shugan…	bu	xiaoxin	diao	jin	he	li	de	yidiandian
	then	BA	new	trunk	not	careful	fall	into	river	inner	DE	somewhat
	然後	把	新	樹幹	不	小心	掉	進	河	裡	的	一點點

'Then the new trunk fell down into the river incidentally somehow.

*CHI:	ranhou	meiyou	piao	zou
	then	no	flow	away
	然後	沒有	飄	走

'Then it did not flow away.'

*RES: oh suoyi ni shuo **zhe ge** shugan shi sheme?
Oh so you say the CL trunk SHI what
哦 所以 你 說 這 個 樹幹 是 什麼
'So how did you say what the trunk is?'

(one line omitted)

*RES: zeme…keneng… zeme you **zhe ge** shugan?
how could how have the CL trunk
怎麼 可能 怎麼 有 這 個 樹幹?
'How did it happen to have this trunk?'

*CHI: jiu… jiu… **diao jin he limian de**, hai shi diao jin he li
that's that's fall into river inner DE also SHI fall into he inner
就 就 掉 進 河 裡面 的 還 是 掉 進 河 裡

%REF: ET-ES
%ENT: Object
%CON: Predicate completing / Proposition completing
%ACT: Retrieve (forward)
%STP: PRC with epistemic value
%GND: Predicate grounding
%FUN: Report

In excerpt (86), the referent *shugan*, 'trunk', is talked about based on the picture, and thus is assumed to be evoked both textually in previous utterances (ET) and situationally on the spot (ES). This ES information status can also be evidenced by the demonstrative *zhe ge,* 'this', in the adult's How-question. As the referent in the prompting question for child to retrieve is linguistically and perceptually available, it can be seen that in this case, the child retrieves the referent by using the predicate concatenation as the modifying phrase preceding *DE, 'diao jin he limian de', 'e* which falls into the river', lacking the grammatical realization of subject and the head

referent. The *DE*-marked phrase in (86), serving to report again the event which stated by the child previously, is characterized with epistemic value and coded as PRC in our notation. PRC with epistemic value conveys affective and epistemic meanings to indicate what the child speaker assumes to be true (i.e. epistemic meaning) and feels to be true (i.e. affective meaning) (Based on Huang, 1999 on Chafe and Nichols, 1986). Note that the *DE*-marked phrase with epistemic value in (86) can also be seen as the variant of a relative clause in one way, acting as a 'headless' or 'free' RC in Fillmore's term (1987), which can be roughly taken to mean the 'trunk' that falls into the river. In another way, some might deem it apparent that the focus of the child's answer in (86) is to emphasize and clarify what the situation of the trunk is, and thus this sentence can be viewed as the variant form of '*shi…de*' construction. With all these possible interpretations, we classify *DE*-marked utterances with epistemic values as pseudo relative clauses (PRC).

As relative clauses are of particular concern in literature for its potential linkage of grammatical use with information flow, we will further explore the interaction of RC subtypes with other factors and show its distribution in the later paragraph. Table 4.7 shows the distribution of grammatical roles for the Head NP and NP in the relative clause (NP_{RC}) under the ET and ET + ES conditions in our *Frog Story Retelling* task.

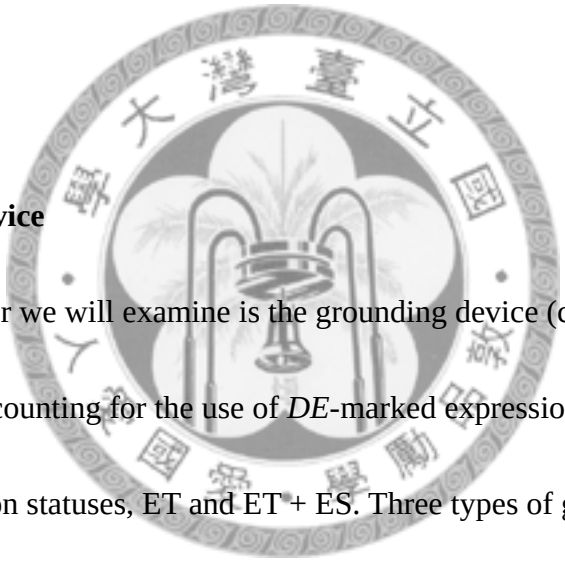
Table 4.7: Distribution of **syntactic subtypes of RC** in the *Frog Story Retelling* discourses of children under ET and ET+ES conditions

NP_{RC}	A		S		O		Total	
Head NP	ET	ET+ES	ET	ET+ES	ET	ET+ES	ET	ET+ES
OBJ					1	0	1 (4.2%)	0
OBL					3	0	3 (12.5%)	0
IN	2	2	6	2	6	5	14 (58.3%)	9 (75%)
PN	0	1	3	1	2	1	5 (20.8%)	3 (25%)
EX			1	0			1 (4.2%)	0
Total	2/24	3/12	10/24	3/12	12/24	6/12	24	12
	(8.3%)	(25%)	(41.7%)	(25%)	(50%)	(50%)		
	12/24 (50%)		6/12 (50%)					

As Table 4.7 shows, the use of RC subtypes in our children's *Frog Story Retelling* discourse demonstrates a preponderant percentages in the IN- (Isolated noun phrase) and PN- (Predicate nominal) types of RC. This suggests that RC expressions in our data are less complex and fewer constructions are produced than those that have been estimated by the structural possible combinations we presented in Table 2.2. It seems that the vast majority of RC expressions in our *Frog Story Retelling* task express only a single proposition. They are either attached to the predicate nominal of a copular clause (SHI-clause) (e.g., *shi qingwa zhu de*, 'This is the place in which the frog lives'), or, more frequently, to an isolated head noun (phrase) (e.g., *xiao nan hai kan de shudong*, 'The tree hole that the little boy watches').

One thing to be noted is although our children tend to use more S_{RC} (gap as the

subject of intransitive RC) in the ET condition than ET+ES (41.7% vs. 25%), the tendency that one-proposition RC is preferred by children can be observed across the two information statuses, ET and ET+ES. As can be seen, if we combine the occurrences of A_{RC} (gap as the subject of transitive RC) and S_{RC} (gap as the subject of intransitive RC) together (termed as SRC), the use of SRC is equivalent in both ET and ET + ES conditions (50% vs. 50%). This is the same with the use of ORC, which is also equivalent in both ET and ET + ES conditions.



4.1.4 Grounding device

The fourth factor we will examine is the grounding device (coded as **%GND** in the transcripts) in accounting for the use of *DE*-marked expressions in terms of the two major information statuses, ET and ET + ES. Three types of groundings are observed, irrespective of the absence or presence of the head referent. Namely, the headed/headless *DE*-marked expressions, given with verb preceding the *DE* morpheme, is assumed to bear association between *X* and (*Y*) in the X-*DE*-(Y) scheme. The head or null head, *Y*, is assumed to be grounded by the preceding *X* constituents. Based on our *Frog Story Retelling* data, the three types of grounding device are (a) NP anchoring, (b) predicate grounding, and (c) subordinate-clause grounding.

NP anchoring refers to the device that head/headless NP in the *DE*-marked

expressions becomes relevant to the hearer by explicitly relating it to a *Given* discourse referent, an anchor. Predicate grounding means that the X constituents are the predication of the referent but the gap do not act as the subject or object in the predication. Consider example (87), repeated from example (4).

(87) zheli shi ting che de difang
here SHI park car DE place
'This is the place for parking.'

The verbal predicate *ting che*, 'to park car', is the predication of the locative referent *difang*, place, but the referent can not act as the agent of 'to park car' and thus there is no subject gap co-referential with the locative referent in this *DE*-marked expression. Nevertheless, the head referent 'place' is considered to have association with the predicate and its identification can be achieved via the predication. Therefore, this is considered as 'predicate grounding'. Subordinate-clause grounding refers to a specific construction, *de-shihou* or termed as relativization of time, used to ground the referent in focus by providing a local, temporal, or event background (based on Chen, 1986) in discourse.

According to Fox and Thompson's (1990b) study on the relative clauses in English conversations, the distribution of syntactic types of relative clauses can be explained in terms of many factors related to information flow, including information status, humanness, and grounding, etc. Table 4.8 presents the distribution of three

types of grounding (coded as **%GND** in the transcripts) in children's *Frog Story Retelling* task as a function of two factors: syntactic types and entity property under ET and ET+ES conditions.

Table 4.8: Distribution of **grounding** in children's *Frog Story Retelling* discourses as a function of **syntactic types** and **entity** under ET condition and ET+ES conditions

%REF	%GND / %STP / %ENT	Predicate grounding			NP anchoring			Sub-clause grounding	
		SRC	ORC	Else	SRC	ORC	Else		Total
ET (37, 47.4%)	Animate	10	0	3	0	3	0	3	19 (51.4%)
	Inanimate	2	0	6	0	9	1	0	18 (48.6%)
ET + ES (32, 41%)	Animate	5	0	4	0	2	2	5	18 (56.2%)
	Inanimate	1	0	6	0	4	3	0	14 (43.8%)
Total		18	0	19	0	18	6	8	69

As can be seen from Table 4.8, the factor of information status shows no obvious differences regarding the use of entity property (in ET, 51.4% Animate vs. 48.6% Inanimate; in ET+ES, 56.2% Animate vs. 43.8% Inanimate). Therefore, we combine the two information statuses, focusing on the interaction of the three factors: entity property, syntactic types, and grounding. Table 4.9 shows the distribution of grounding in terms of entity and syntactic types in the *Frog Story Retelling* task.

Table 4.9: Distribution of **grounding** in the *Frog Story Retelling* discourses of children as a function of **syntactic type** and **entity**

%GND / %ENT / %STP	Predicate grounding			NP anchoring			Sub-clause grounding
	SRC	ORC	Else	SRC	ORC	Else	
Animate	15	0	7	0	5	2	8
Inanimate	3	0	12	0	13	4	0
Total=69	18	0	19	0	18	6	8

Table 4.9 shows that the sub-ordinate clause grounding in the relativization of time, *de-shihou,* is only used for animate referents. Of our particular concern is the complementary distribution regarding SRC and ORC. Subject-relatives (SRC) are the most common mechanism for predicate grounding, while Object-relatives (ORC) are for NP anchoring. When fulfilling the predicate grounding, SRC tends to occur with animate overt/covert head NP, whereas it is the inanimate overt/covert head NP in the anchoring being called for ORC.

4.1.5 Communicative acts

The fifth factor we will examine is the communicative acts. A prior analysis shows that there is no difference on the distribution of communicative acts between ET and ET + ES conditions. So we combine the data analyses together concerning the two conditions. Table 4.10 shows the distribution of five communicative acts (coded as %ACT in our transcripts) of *DE*-marked expressions which were used in our *Frog Story Retelling* task by children.

Table 4.10: Distribution of communicative acts of *DE*-marked expressions used by children in the *Frog Story Retelling* discourses

RID (Reply to identify)	**RDF** (Reply to define)	**RDS** (Reply to describe)	**RRT** (Reply to retrieve)	**Continue**	Total
		(First/Second… describe)	(First/Second… retrieve)		
10 (14.5%)	5 (7.2%)	23 (33.3%)	15 (21.7%)	6 (8.7%)	59/69
		2 (2.9%)	8 (11.6%)		10/69

As can be seen, the communicative acts can reflect the characteristics of the *Frog story retelling* discourse by showing RDS and RRT (children's reply to describe and retrieve) as the most commonly used communicative acts (RDS: 25 (36.2%), RRT: 23 (33.3%)) in the *DE*-marked expressions (totaled n=69) .

Then we proceed to the three more frequently used communicative acts: RID, RDS, and RRT, to examine their interactions with some factors related to information flow. An information flow factor, definiteness, which has not been mentioned above, will be presented here, as the data show some interesting facts regarding definiteness. Table 4.11 presents the interactional distribution among *DE*-marked RC, headedness, and definiteness in terms of the three communicative acts with ET and ET+ES information statuses merged together.

Table 4.11: Distribution among RC, headedness, and definiteness in terms of communicative acts: **RID**, **RDS**, and **RRT**

RID/RC				**RDS/RC**				**RRT/RC**			
Headed	2	DEM*	0	Headed	10	DEM	1	Headed	4	DEM	3
		NDEM*	2			NDEM	9			NDEM	1
Headless	5	DEM	5	Headless	5	DEM	1	Headless	1	DEM	0
		NDEM	0			NDEM	4			NDEM	1
Total	**7/69** (10.1%)			**15/69** (21.7%)				**5/69** (7.2%)			

*DEM= Demonstrative NDEM=No demonstrative

Table 4.11 shows some interesting phenomena. First, among the 69 *DE*-marked utterances, nearly half of the utterances contained RC (n=36, 52.2%), and RCs are found to be a highly preferred syntactic type called for by RDS communicative act than RRT. Namely, the children in our data tend to use RC to response to the adult's request for description of the referent, while they might tend to use other *DE*-marked expressions to response to the adult's request for retrieval of the relevant information regarding the referent. Second, in the communicative act RDS, headed RCs are used more than headless RCs and occur mostly without demonstrative (i.e., definite marker) (Table 4.11, Headed NDEM, n=9, in RDS). In contrast, in the communicative act RID, headless RCs are used more than headed RCs, and the headless RCs are always co-occurring with demonstrative (Table 4.11, Headless DEM, n=5, in RID). The distribution of definiteness marker DEM with the three communicative acts is further demonstrated in Table 4.12. As is shown, the use of DEM and NDEM is in

complementary distribution with regard to the communicative act RID and RDS. Example (88) illustrates the DEM in RID communicative act, and example (89), the NDEM in RDS communicative act.

Table 4.12: Distribution of definiteness and three communicative acts

	RID	RDS	RRT	RC
DEM*	5	2	3	10
NDEM*	2	13	2	17
Total	7	15	5	27

*DEM= Demonstrative NDEM=No demonstrative

(88) RC with DEM in RID (reply to identify) (Frog_OGC01_Hsu.cha: line 568.)

*CHI: ta jiu dai zhe xiao qingwa hui jia le
he just take ZHE little frog go home FP
他 就 帶 著 小 青蛙 回 家 了.
'Then he takes it back to home with him.'

*CHI: jiu zhe yang
just this way
就 這 樣.
'That' s all.'

*RES: oh, xiao nanhai jiu dai zhe xiao qingwa hui jia le
oh little boy just take ZHE little frog go home FP
哦, 小 男孩 就 帶 著 小 青蛙 回 家 了
'Oh, then the little boy takes the little frog back home.'

*RES: zhe yi zhi xiao qingwa jiu shi gangcai na yi ye nǎ yi zhi a
this one CL little frog just SHI just now that one page which one CL FP
這 一 隻 小 青蛙, 就 是 剛才 那 一 頁 哪 一 隻 啊?

*CHI: jiu shi gangcai **na** yi zhi tiao de a
just SHI just now **that** one CL jump DE FP
就 是 剛才 那 一 隻 跳 的 啊.

‘That is the one which jumps.’

%REF: DEM ET-ES
%ENT: Animal
…
%ACT: RID (reply to identify)
%STP: (PN) - S - RC (SHI)
%GND: Predicate grounding
…

(89) RC with NDEM (without DEM) in RDS (reply to describe)
(Frog_OGC04_Gu.cha: line 147)

*RES: wo juede zhe zhi gougou bian de bu yiyang le ne
I feel this CL doggie become DE no same FP FP
我 覺得 這 隻 狗狗 變 得 不 一樣 了 呢
‘I feel that this doggie is different now.’

*RES: ta gen yuanlai yi bu yiyang
it with original one no same
牠 跟 原來 一 不 一樣 ?
‘Is it same or not with the original one?’

*CHI: bu yiyang
no same
不 一樣.
‘Not the same.’

*RES: ta biancheng sheme gou a
it become what dog FP
牠 變成 什麼 狗 啊?
‘What kind of dog does it become of?’

*CHI: m, tou shang you yi ge guanzi de gou
m head on have one CL can DE dog
嗯, 頭 上 有 一 個 罐子 的 狗 .
‘A dog that has a can on its head.’

%REF: ET-ES
%ENT: Animal
...
%ACT: Describe
%STP: IN - A - RC

%GND: Predicate grounding

…

4.1.6 Focus structure

In this paragraph we examine the interaction between the adult's prompting and the child's response (*conditioning* in our term) associated with the *DE*-marked expressions and their context of use. The adult's question and child's answer pairs can be divided into three distinct types which correspond to three different kinds of pragmatically structured propositions. They are predicate-focus structure, argument-focus structure, and sentence-focus structure (Lambrecht 1994). Based on these focus structures, we suggest that children's answers corresponding to adult's prompting questions in our three task-oriented discourses can be characterized as three types: predicate noun completing, argument completing, and proposition completing. In the reverse direction, the adult's prompting questions corresponding to children's answers can have two types of prompting: Constituent-relevant, and WH-relevant, which lead to the three types of completing answers. The Constituent-relevant prompting indicates the types of constituent appearing in the adult's question, including morpheme SHI, phrase structure, temporal phrase and conjunction. The WH-relevant prompting refers to the WH-words used in the prompting questions, including who, what, how, where, and which. The dynamics of prompting-conditioning (question-answer) pair between adult and child is shown in

Table 4.13.

Table 4.13: The dynamics of adult's prompting-child's conditioning (question-answer) pair in our task-oriented discourses

	Constituent-relevant			
%PMP	Structural Prompt	SHI Prompt	Temporal Prompt	Conj Prompt
%CON	Structural copying	(1) SHI copying (2) SHI completing	(1) Temporal copying (2) Temporal completing	(1) Conj copying (2) Conj completing
	WH-relevant			
%PMP	What Prompt	Who Prompt	Which Prompt	How Prompt
%CON	(1) Predicate noun completing **(2)** Argument completing* (3) Proposition Completing	(1) Predicate noun completing (2) Argument completing (3) Proposition completing	(1) Predicate noun completing (2)Argument completing (3) Proposition Completing	(1) Predicate completing (2) Proposition completing

*Note: The argument in the completing may be further specified as Subject (SUBJ) argument, Direct/ Indirect Object (DO and IO) argument and Oblique (OBL) argument.

Our observation on this focus structure which is of particular interest is related to the RC expressions made by children in response to the adult's prompts. Table 4.14 illustrates the use of RC expressions in the Frog task made by children immediately following the prompting utterance by the adult.

Table 4.14: Distribution of RC by child's response to adult's prompting in the *Frog* task

Adult's Prompt	RC (N=36)	Child's expected utterances		Children's performed utterances RC subtypes	
SHI Prompt	26 (72.2%)	SHI Completing	(a) Predicate noun completing	IN/(IN)-S/A-RC	17/26 (65.4%)
			(b) DO argument completing	IN/(IN)-A-RC	2
			(c) SUBJ argument completing	(IN)-S-RC	1
			(d) Proposition completing	OBJ-O-RC	1
		SHI copying	Predicate noun completing	PN-S/A-RC	5/26 (19.2%)
What Prompt[*]	4 (11.1%)	(a) Predicate noun completing		IN-O-RC	2
		(b) SUBJ argument completing		PN-S-RC	1
		(c) DO argument completing		IN-A-RC	1
Which Prompt	1 (2.8%)	Predicate noun completing		(IN)-S-RC	1
Why Prompt	2 (5.6%)	Proposition completing		PN-O-RC	1
				OBL-O-RC	1
How Prompt	1 (2.8%)	Predicate noun completing		(IN)-S-RC	1
Conj Prompt	2 (5.6%)	Proposition completing		OBL-O-RC	2
Total	36				36

[*]Those categorized as 'What/Which/Why/How/Conj Prompt' refer to the prompting utterances contaning one of these words but without the copular word SHI.

It can be seen that among the 36 relative clauses collected from our children's *Frog Story Retelling* task (under ET and ET+ES conditions), adult's prompting questions with SHI (i.e., *SHI Prompt*) account for the highest ratio among the types of prompting questions (n=26, 72.2%). In children's response to the *SHI prompt*, (i.e., child's conditioning), SHI completing (SHI being not used in replying to the previous SHI expression), IN-types of RC are most frequently used (n=17, 65.4%). By contrast, PN-types of RC are always used in the SHI copying condition (n=5, 19.2%) (SHI

being used in replying to the previous SHI expression). Examples of the two situations are given in (90-91).

(90) IN-type RC in SHI completing (Frog_OGC01_Hsu.cha: line 101)

*CHI: ta, xiao qingwa shui zai na ge guanzi
it little frog sleep in that CL can
它 小 青蛙 睡 在 那 個 罐子
'The little frog sleeps in that can.'

*RES: oh, suoyi na ge guanzi jui shi **SHI** sheme **what** guanzi ne
oh so that CL can just **SHI** **what** can Q
哦, 所以 那 個 罐子 就 是 什麼 罐子 呢 ?

%REF: DEM ET
%ENT: Object
%PMP: SHI Prompt / What Prompt
%ACT: Ask for description
%STP: WH - SHI – Question

*CHI: xioa qingwa zhu de
little frog live DE
小 青蛙 住 的
'The one that the little frog lives in.'

%REF: ET
%ENT: Object
%CON: SHI completing / Predicate noun completing
%ACT: Describe
%STP: (IN) - O - RC
%GND: (Animal) NP Anchoring
%FUN: Characterizing

(91) PN-type RC in SHI copying (Frog_OGC04_Gu.cha: line 183)

*RES: oh, zhe yangzi ou
oh this way FP
哦, 這 樣子 哦
'Oh, so it's like this.'

*RES: hao ni hui zeme suo zhe zhi gou ne
ok you will how say this CL dog Q
好, 你 會 怎麼 說 這 隻 狗 呢?
'How would you describe this dog?'

*RES: xianzai zhe jiao sheme gou a
now this call what dog Q
現在 這 叫 什麼 狗 啊?
'What kind of dog would you call it?'

*CHI: guanzi gou
can dog
罐子 狗
'Canned dog.'

*RES: oh, ni hui jiao ta guanzi gou a
oh, you will call it can dog Q
哦, 你 會 叫 牠 罐子 狗 啊?
'Oh, you will name it canned dog.'

*RES: guanzi gou shi sheme yisi a
can dog **SHI** **what** meaning Q
'罐子 狗 是 什麼 意思 啊 ?
'What does it mean by 'canned dog?''

%REF: ET - ES
%ENT: Animal
%PMP: SHI Prompt / What Prompt
%ACT: Ask for description
%STP: WH - SHI – Question

*CHI: jiu shi zhe li...tou shang you yi CL guanzi de
Just **SHI** here head on **have** one CL can DE
就 是 這裡...頭 上 有 一 個 罐子 的
'Just like the dog here that has a can on the head.'

%REF: INDEF TSA
%ENT: Animal
%CON: SHI copying / Predicate noun completing
%ACT: Describe
%STP: (PN) - A - RC (Ex)
%GND: Predicate grounding
%FUN: Characterizing

4.1.7 Function

The last factor we will examine is the function of the *DE*-marked RC in relation to other factors. Table 4.15 shows the distribution of RC function (coded as **%FUN** in the transcripts) and type in our *Frog Story Retelling* task, without regard to the ET or ET+ES conditions.

Table 4.15: Distribution of RC function and type in the *Frog Story Retelling* discourse of children with regard to communicative acts

%STP / %ACT / %FUN	SRC=18					ORC=18					Total
	RID	RDF	RDS	RRT	CONTINUE	RID	RDF	RDS	RRT	CONTINUE	
Identifying	5	0	0	0	0	0	2	0	1	1	9
Characterizing	1	2	9	1	0	0	4	8	2	0	27
Total	6	2	9	1	0	0	6	8	3	1	36

An obvious difference between SRC and ORC with regard to communicative functions and communicative acts lies in the RID (reply to identify) act. Children in our task only use SRC to identify the referent in focus, and the act to identify generally correspond to the identifying function of SRC. That the SRC is substantially used for identifying referents might be related to the fact that in the *Frog Story Retelling* task, **animate** referents are in much more need to be identified. This is also related to the grounding mechanism available in language. To ground an animate referent, the interlocutor may locate the referent in the conversational space, and specify the activity relevant to the referent (i.e. making predication of the referent). In

this case, Subject-RC is preferred due to the processing of this *predicate concatenation*. Consider example (92), which illustrates an RC used to reply the request to identify (RID) and has the function of identifying.

(92) SRC with the function of identifying (Frog_OGC01_Hsu.cha: line 603)

*CHI: zai hu nali
at lake there
在 湖 那裡
'Over the lake there.'

*RES: zai hu nail sheme difang zhao dao xiao qingwa
at lake there what place find to little frog
在 湖 那裡 什麼 地方 找 到 小 青蛙 ?
'Where did he find the little frog over the lake there?'

*CHI: shugan houmian
trunk back
樹幹 後面
'Behind the trunk.'

*RES: oh, name duo zhi xiao qingwa na yi zhi cai shi ta de
oh so many CL little frog which one CL really SHI he DE
哦, 那麼 多 隻 小 青蛙, 哪一 隻 才 是 他 的?
'Among so many frogs, which one is his?'

*CHI: **na ge tiao de**
that CL jump DE
那 個 跳 的.
'The one that jumps.'

%REF: DEM ET
%ENT: Animal
%CON: SUBJ Argument completing / SHI completing
%ACT: Identify

%STP: (IN) - S -RC
%GND: Predicate grounding
%FUN: Identifying

4.2 Pear Story Retelling and Lego Construction Tasks

Having examined and demonstrated the *DE*-marked expressions used by children in the *Frog Story Retelling* task, we will investigate in this section how the distribution of *DE*-marked expressions interacts with these factors relating to information flow in the Pear Story Retelling and Lego Construction Tasks.

4.2.1 Information status

Table 4.16 presents the entity information status (coded as **%REF**) (i.e. the entity familiarity in Prince's Taxonomy) in our *Pear Story Retelling* and *Lego Construction* tasks produced by children (average aged 6).

Table 4.16: Distribution of entity information status of *DE*-marked expressions in the *Pear Story Retelling* and *Lego Construction* discourses of children

Task \ %REF	ET	ET + ES	BN	INC*	Total
Pear Story	71 (80.7%)	0	17 (19.3%)	0	88
Lego Construction	29 (28.7%)	57 (56.4%)	14 (13.9%)	1 (1%)	101

*INC: The speaker assumes that the entity is inferable by the hearer, via logical or reasoning, from discourse entities which already evoked. The INC is a subclass of ***inferrables***, which refers to the entity is contained within the inferable NP itself.

As expected, the information status displayed by the two tasks can generally represent the discourse features pertaining to the specific task. According to the procedures of the task stated in the Methodology, the *Pear Story Recounting* task requires the child to watch the *Pear* film alone, and then recounts the plot of the film to the adult (i.e., researcher). In the process of child's recounting, the adult may ask questions regarding the referent in the child's focal consciousness. Under this condition, the child is assumed to be in a familiar status, while the adult is assumed by the child to be unfamiliar to the plot, and this will impose an additional responsibility on the child in revealing appropriate information to the adult. As children's *Pear Story* recounting relies primarily on the linguistic communication with the adult, the distribution of the referent information status in terms of the *DE*-marked expressions in Table 4.16 shows a high skewing in ET (Evoked Textually referents) (n=71, 80.7%).

By contrast, in the *Lego construction* task, the child is required to compare two pictures containing different pieces of Lego constructions and then builds some Lego constructions in his/her own mind. In the building process, the child is required to ask for the piece he/she wants by making appropriate description. The discourse in the Lego Construction sometimes may experience both linguistic and perceptual information when the Lego blocks are present in front of the interlocutors. Sometimes

it may experience merely linguistic information when the adult requires the child to contrast the differences lying between the two Lego pictures, with the pictures put aside. With these conditions, the Lego Construction discourse shows a higher distribution of information status in ET + ES (n=57, 56.4%) than ET (n=29, 28.7%) in terms of the use of *DE*-marked expressions. In general, this distribution clearly corresponds to the characteristics of the tasks. A series of subsequent analyses will be conducted based on this distribution.

4.2.2 Entity property and syntactic type

In this section, we will present the distribution of *DE*-marked expressions as the function of factors of *entity property* (%ENT) and *syntactic types* (%STP) in the *Lego Construction* and *Pear Story Retelling* tasks.

Table 4.17: Distribution of *DE*-marked RC vs. other types in *Lego* and *Pear* tasks under different information status (%REF) (ET vs. ET+ES)

Task	**Lego**		**Pear**	
%STP / %REF	**RC**	**Miscellaneous (PRC/TEM)**	**RC**	**Miscellaneous (PRC/TEM)**
ET	15/29 (51.7%)	14/29 (48.3%)	56/71 (78.9%)	15/71 (21.1%)
ET + ES	47/57 (82.5%)	10/57 (17.5%)	N.A	N.A

Table 4.17 shows that RC is frequently used in both tasks and information conditions, and RC is particularly even more often used in ET+ES information condition than in ET condition when it comes to *Lego* task. The distribution of subtype RCs (SRC and ORC) is further analyzed in the following.

Table 4.18: Distribution of *DE*-marked subtype RC (SRC vs. ORC) as a function of entity property (%ENT) and information status (%REF) in *Lego* and *Pear* tasks

Task \ RC %ENT / %REF		Animate (Person/Animal)		Inanimate (Object/Locative)		Total
		SRC	ORC	SRC	ORC	
Lego	ET	8	0	4	3	15
	ET+ES	13	0	29	5	47
	Total	21	0	33	8	62
Pear	ET	48	0	8	0	56
	ET+ES	0	0	0	0	0

Table 4.18 demonstrates that regardless of the entity property (animate/inanimate), the distribution of RC subtypes shows higher percentages of SRC over ORC in both information conditions. Table 4.18 also shows that SRC is the more widely used type of RC by children in both tasks under different information status. A tendency can be observed that animate referents do not occur with Object relatives (ORC, n=0), and inanimate referents do not tend to occur with Object relatives (ORC, n=8), either.

To sort out the relationship between the information flow and the distribution of different syntactic types of RC and examine why SRC is preferred in the two tasks,

we will further analyze the distribution of *headedness* and *grammatical roles* of *DE*-marked RCs under different information status.

Table 4.19: Distribution of *DE*-marked subtype RC (SRC vs. ORC) as a function of entity property (%ENT), headedness, and information status (%REF) in *Lego* and *Pear* tasks

Task	%REF	%ENT / RC	Head		Headless		Total
			Animate	Inanimate	Animate	Inanimate	
Lego	ET	SRC	4	2	4	2	12
		ORC	0	2	0	1	3
	ET+ES	SRC	7	1	6	28	42
		ORC	0	2	0	3	5
		Total	11	7	10	34	62
Pear	ET	SRC	43	7	5	1	56
		ORC	0	0	0	0	0

An obvious contrast can be obtained if the factors of headedness and animacy are taken into consideration together. As Table 4.19 presents, animate referents are found to occur with SRC in headed forms (n=11 in *Lego*, n=43 in *Pear*), while inanimate referents tend to occur with SRC in headless forms (n=28 in ET+ES of *Lego*). Based on these observations, it is suggested that some discourse-level factors might create a situation which favors SRC over ORC for animate/inanimate referents. Let's consider two examples.

(93) Animate (human) referent with SRC in headed form: in *Pear Story* task under ET information (Pear_OBH10_Cheng.cha:line 227)

*CHI: maozi jiu fei dao na ge jaotache de houmian na bian le
hat then fly to that CL bicycle DE back that side FP
帽子 就 飛 到 那 個 腳踏車 的 後面 那 邊 了
'Then the hat flew to the back of the bicycle.'

*RES: hei ye shi zhe san ge ren bang ta jian ma
hei also SHI these three CL person help he pick Q
嘿 也 是 這 三 個 人 幫 他 撿 嗎？
'Hei, is it that the three persons help him pick up the hat?'

*CHI: duiya ranhou na ge ren ye diedao le
right then that CL person also fall off FP
對呀 然後 那 個 人 也 跌倒 了
'That's right. Then that person fell off, too.'

*RES: ang shei ye diedao
aN who also fall off
啊? 誰 也 跌倒?
'Who fell off?'

*CHI: na ge **qi jaotache** de na ge **ren** ye diedao le
that CL ride bicycle DE that CL person also fall off FP
那 個 騎 腳踏車 的 那 個 人 也 跌倒 了
'The person who rode the bicycle fell off, too.'

%REF: DEM ET
%ENT: Person
%CON: Structural copying / SUBJ Argument completing
%ACT: Identify
%STP: SUBJ - A - RC
%GND: Predicate grounding
%FUN: Identifying

Excerpt (93) illustrates the situation that animate (in many cases, the human) referents in *Pear Story Retelling* task occur overwhelmingly with subject-relatives (SRC). This distribution may have connections with humanness of the head NPs. As pointed by

Fox and Thompson (1990b), human referents are frequently made relevant to the hearer by being related to their own activities, i.e., to earlier predicates. This mechanism leads to the preponderant use of SRC with human heads, since SRC starts with the predicate in the concatenation. As for the headedness of SRC in Pear Story, it can be explained with the ET information status pertaining to the task. Since the ET information status in the Pear Story assumes that the hearer (adult) is not familiar with the plot or character while being told the story, the overt heads in the SRC under ET condition can be considered as the speaker's strategy to familiarize the hearer with the referent in focus.

(94) Inanimate (object) referent with SRC in headless form: in *Lego construction* task under ET+ES information condition (Lego_OBH10_Cheng.cha: line 480)

*RES:	**zhe**	you	liang	zhong	rang	ni	xuan	ye
	this	have	two	kind	make	you	choose	FP
	這	有	兩	種	讓	你	選	耶

'Here I have two kinds of (blocks) for you to choose.'

*RES:	**zhe**	liang	zhong	ni	yao	na	yi	zhong
	this	two	kind	you	want	which	one	kind
	這	兩	種	你	要	哪	一	種？

'Which kind of blocks do you want?'

*CHI:	zhe	yi	zhong
	this	one	kind
	這	一	種

'This one.'

*RES:	**zhe**	zhong	shi	sheme
	this	kind	SHI	what
	這	種	是	什麼?

'What is this one?'

*CHI: **chuan qunzi** de

wear skirt DE

穿 裙子 的

'The one that wears a skirt'

%REF: ET-ES

%ENT: Object

%CON: SHI completing / Predicate noun completing

%ACT: Describe

%STP: (IN) - A - RC

%GND: Predicate grounding

%FUN: Characterizing

Excerpt (94) shows the situation that inanimate (nonhuman) referents in the *Lego Construction* did not tend to occur with Object-relatives (ORC), but tend to occur with SRC. Intriguingly, unlike animate referents in *Pear Story*, inanimate object referents in *Lego Construction* tend to appear in headless form, particularly under ET+ES information status.

Example (94) shows that the referent object is on the counter with perceptual information available for the interlocutors. This can be seen from the definite demonstrative *zhe,* 'this' in the preceding utterances. Therefore, the referent object is already given or known to the hearer, and the relevance with the referent can be made merely by predicating the referent, i.e., linking the referent with the activity it is associated.

Since ET and ET+ES information status are characteristic of *Pear Story* task and

Lego Construction task respectively, we will show the distribution of RC subtypes in the following paragraph concerning these information conditions.

Table 4.20: Distribution of syntactic subtypes of RC in the Pear Story and Lego Construction under ET and ET+ES information conditions

NP_{RC}	A		S		O		Total	
Head NP	Pear (ET)	Lego (ET+ES)	Pear (ET)	Lego (ET+ES)	Pear (ET)	Lego (ET+ES)	Pear (ET)	Lego (ET+ES)
SUBJ	12	0	2	0	0	1	14 (25%)	1(2.1%)
OBJ	4	0	4	0	0	0	8 (14.3%)	0
IN	27	22	2	10	0	3	29(51.8%)	35(74.5%)
PN	5	5	0	5	0	1	5(8.9%)	11(23.4%)
	48	27	8	15	0	5	56	47

As can be seen in Table 4.20, the overall distribution of *DE*-marked RC subtypes in the Pear Story and Lego Construction tasks are very similar to those patterns observed in the Frog Story. Of all the utterances produced by children containing *DE*-marked expressions, IN- (Isolated noun phrases) and PN- (predicate nominal) types of RC make up most of them (In *Pear Story*, IN-RC, n=29, 51.8%; In *Lego Construction*, IN-RC, n=35, 74.5%, PN-RC, n=11, 23.4%).

An interesting phenomenon is that the SUBJ- and OBJ-RC (*DE*-marked expressions acting as the subject or object in the main clause), which is rarely used in the *Frog Story* and *Lego Construction* tasks, account for some amount of uses in the *Pear Story* task (SUBJ-RC, n=14, 25%; OBJ-RC, n=8, 14.3%). The explanation for the fact that SUBJ- and OBJ-RC are found in *Pear Story Retelling* task more than in

other tasks can be made from the central features about the discourse information relating to the specific task. Recall that the procedure of the *Pear Story Retelling* requires the child to watch the *Pear film* alone and retell the story to the adult (the researcher). This procedure will impose the child the obligation to recount the story plot as informative as possible, as the child is assumed to consider the adult to be unfamiliar to the film. So there is an interactional pressure at work to favor the full-fledged RC construction in which the head NP is overt (see Table 4.19, the animate head in Pear Story) and the main clause is completely stated. Consider excerpt (95).

(95) SUBJ-RC in Pear Story (Pear_OBH10_Cheng.cha: line 298)

*RES: dianying jiu meiyou le
movie then over FP
電影 就 沒有 了?
'Then the movie is over?'

*RES: suoyi shi na ge bangmang ta
so SHI that Cl help he
所以 是 那 個 幫忙 他…
'So, it is the person that helps him…'

*RES: bangmang jian bale na san ge ren houlai houlai shi zemeyang
help pick grava that three CL person then then SHI how
幫忙 撿 芭樂 那 三 個 人 後來 後來 是 怎麼樣?
'What happened to the three persons who help him pick up the grava?'

*CHI: houlai jiu zou le
then just walk FP
後來 就 走 了
'Then they walk away.'

*RES: jiu zhiyou zou lo
Just only walk FP
就 只有 走 囉?
'Only walk away?'

*CHI: **<u>na ge qi jiaotache de na ge ren zou</u>**,
that CL ride bicycle DE that CL person go
那 個 騎 腳踏車 的 那 個 人 走
'The person who rode the bicycle went away'

*CHI: tamen na san ge ren cai zou
they those three CL person then go
他們 那 三 個 人 才 走
'Then the three persons went away.'

%REF: DEM ET
%ENT: Person
%CON: Continue
%ACT: Describe (backward)
%STP: SUBJ - A - RC
%GND: Predicate grounding
%FUN: Identifying

In (95), the adult asks for more details about the ending episode, and the child clarifies the sequence by firstly evoking the one who rode the bicycle went away, and following the three persons. Thus, the full RC is used.

4.2.3 Grounding device

This section presents the results concerning the factor of grounding device with the use of *DE*-marked expressions. As the results shown in the *Frog Story Retelling*, the grounding device is tightly connected with the distribution of RC sub-types and entity property, and we will examine such an interaction in *Pear* and *Lego* tasks.

Table 4.21: Distribution of **grounding** (%GND) in the Pear Story and Lego Construction discourses of children as a function of **syntactic type** (%STP) and **entity property** (%ENT)

Task (%REF)	%GND / %STP / %ENT	Predicate grounding			NP anchoring			Sub-clause grounding	Total
		SRC	ORC	Else	SRC	ORC	Else	TEM	
Pear (ET)	Animate	48	0	0	0	0	0	8	56
	Inanimate	8	0	7	0	0	0	0	15
Lego (ET+ES)	Animate	13	0	2	0	0	1	0	16
	Inanimate	28	2	6	0	4	1	0	41

Table 4.21 presents interesting points relating to some of the observations displayed earlier in the *Frog Story Retelling* task and the current results from *Pear* and *Lego* task. According to Table 4.9, in *Frog Story Retelling* task, Subject-relatives (SRC) are the most common mechanism for predicate grounding, while Object-relatives (ORC) are for NP anchoring, and such a mechanism aligns with the entity property of the referents. SRC tends to occur with animate overt/covert head NPs, while ORC calls for inanimate overt/covet head NPs in anchoring. The findings in our *Frog Story* task are consistent with what Fox and Thompson (1990b) observed in their English-speaking adult's use of relative clauses in conversation. Fox and Thompson suggested that grounding device is the linguistic way in which speakers make an NP relevant to the hearer. In doing this, nonhuman referents that need to be grounded are typically grounded by relating them to the humans who own them, use them, and manipulate them, and these humans are typically *Given* entities or realized as pronouns for the hearer to access. Therefore, the favored grounding strategy for

nonhuman referents is an Object-relative (ORC), as the relevant human is typically represented by a subject pronoun initiating the object gap relative. On the contrary, human referents that need grounding tend to be grounded by being related to their own activities, namely, to the earlier predicates. In such a condition, Subject-relatives (SRC), with gapped subject and initiating with a predicate, are more likely to be produced, since no other NP is needed to be present in the clause to fulfill the grounding mechanism.

However, the distribution of *grounding* device in our *Pear* and *Lego* tasks demonstrates a quite different pattern and doesn't seem to follow the discourse-level principles observed by Fox and Thompson. Specifically, in our *Lego Construction* task, the inanimate (nonhuman) referents show preference for SRC (n=28) rather than ORC. Our explanation is straightforward: this is related to the information status and discourse demands characteristic of the task. Consider excerpt (96) and (97) for illustration. .

(96) Inanimate referent in SRC in *Lego* task (Lego_OBH10_Cheng.cha: line 319)

*RES:	huan	fangxiang	jiu	yao	ba	ta	chai	kai	lai
	change	direction	just	will	BA	it	take	apart	come
	換	方向	就	要	把	它	拆	開	來

'If you change the direction (of the block), you will have to take apart it.'

*RES:	jiu	yao	chong	zhuang	a
	just	will	anew	fabricate	FP
	就	要	重	裝	啊

'Then you will have to re-fabricate it.'

*CHI: na zhe yangzi jiu hao le
that this way just good FP
那 這 樣子 就 好 了
'Then just the way is fine.'

*RES: ni yao zhe yangzi jiu hao le
you want this way just good FP
你 要 這 樣子 就 好 了?
'Do you want it this way?'

*RES: na zhe zai xialai, **zhe shi sheme**
that this again come down this SHI what
那 這 再 下來, 這 是 什麼?
'Then what is this?'

*CHI: **na ge kan na ge dongxi de**
that CL watch that CL stuff DE
那 個 看 那 個 東西 的
'It's for watching something.'

%REF: ET+ES
%ENT: Object
%CON: SHI completing / Predicate noun completing
%ACT: Describe
%STP: (IN) - A - RC
%GND: Predicate grounding
%FUN: Characterizing

(97) Inanimate referent in SRC in *Lego* task (Lego_OGC04_Gu.cha: line 671)

*RES: hao, na ni yao rang ta jiao hua jiu rang ta zai pangbian ba
ok that you want let he water flower just let he at side FP
好, 那 你 要 讓 他 澆 花, 就 讓 他 在 旁邊 吧
'Ok. If you want him to water the flower, then you can make him stay by the side.'

*RES: a, wo zhidao zeme jiao hua le
ah I know how water flower FP
啊, 我 知道 怎麼 澆 花 了
'I know how to water the flower.'

*RES: keyi rang ta na yi ge sheme dongxi jiao a
can make he take one CL what stuff water FP
可以 讓 他 拿 一 個 什麼 東西 澆 啊?

‘You can make him have something to water the flower.’

*RES: zhe ge, zhe haobuhao

this CL this ok

這 個, 這 好不好?

‘This one. Is this ok?’

*RES: **zhe sheme**

this what

這 什麼?

‘What’s this?’

*CHI: **jiao-shui de**

water DE

澆水 的

‘It is for watering.’

%REF: ET+ES

%ENT: Object

%CON: Predicate noun completing

%ACT: Describe

%STP: (IN) - S - RC

%GND: Predicate grounding

%FUN: Characterizing

When we contemplate on the reason why inanimate referents used in *Lego Construction* task would tend to occur with Subject-relatives rather than Object-relatives, we observe that this distribution has a lot to do with the information condition and the entity function in the discourse. On one hand, the referents in the focus of *Lego Construction* are mostly linguistically and perceptually available to the interlocutors. In referring to the target entity, the speaker can use pronominal or demonstrative noun, which has been accessible in the hearer’s consciouness. Likewise, in making an interrogative about the target referent, the speaker would use

presentational SHI construction to evoke hearer's cognitive status regarding the referent, as can be seen, in (96) and (97), the adult's question '*zhe shi sheme*' (what is this?) and '*zhe sheme*' (What's this?). On the other hand, the target referents in the *Lego Construction* task frequently serve the function of being manipulated by the interlocutors to arrange and compose. They are in SRC form but implicate the semantic role of instrument, focusing on the predication that people can use the referent object to engage in some activities. Thus, in (96), the object that the child built is something (for people) to watch ('*kan…dongxi de*', [*e* that can be used to see something]), and in (97), the object that the adult wants the child to take is something (for people) to water the flower ('*jiao-shui de*' [*e* that can be used to water the flower]).

4.2.4 Communicative acts

In this section, we will examine the factor of communicative acts on the use of *DE*-marked expressions in our *Pear Retelling* and *Lego Construction* tasks. The first observation is straightforward in that the distribution of the communicative acts generally correspondes to the discourse feature of the specific tasks. Consider Table 4.22, a summary of the distribution of the communicative acts of *DE*-marked expressions in the two tasks.

Table 4.22: Distribution of communicative acts of *DE*-marked expressions used by children in the *Lego Construction* and *Pear Retelling* task

%ACT / Task	%STP	RCF (Confirm)	RCL (Clarify)	RCR (Contrast)	RID (Identify) / First/Second identify	RDF (Define)	RDS (Describe) / First/Second describe	RRE (Request)	RRT (Retrieve)	CON-TINUE	Total
Pear (ET)	RC	0	1	0	20 / 8	1	11 / 2	0	0	13	56
	Else	0	0	0	1	0	3	0	7	4	15
Lego (ET+ES)	RC	0	1	2	1	3	26 / 13	1	0	0	47
	Else	1	0	1	0	1	6	0	0	1	10

As can be seen in Table 4.22, with respect to the use of *DE*-marked RC, *Pear Story Retelling* task features communicative acts of RID and RDS, with RID slightly outnumbering RDS, whereas *Lego Construction* features RDS only. This is quite matching to the tasks themselves. In the course of *Pear Story Retelling*, the adult, assumed by the child to be unfamiliar to the plot, asks questions concerning the film, and the request for identifying the character is necessary and inevitable. As for the *Lego Construction*, the child is required to make a request or descrption concerning the lego piece he/she wants, resulting in the preponderant communicative acts of RDS (Reply to describe) and repeated descriptions.

An interesting finding we would present is that the headedness and definitenss of RC in these two communicative acts, RID and RDS, has something to do with the information status characteristic of the tasks.

Table 4.23: Distribution of communicative acts of *DE*-marked RC as a function of Headedness and Definiteness in *Pear* and *Lego* tasks

Task (%REF)	RID (Reply to describe)			RDS (Reply to describe)		
Pear (ET)	Headed RC	DEM	21/28 (75%)	Headed RC	DEM	6
		NDEM	3		NDEM	5
	Headless RC	DEM	2	Headless RC	DEM	2
		NDEM	2		NDEM	0
Lego (ET+ES)	Headed RC	DEM	n.a.	Headed RC	DEM	2
		NDEM	n.a.		NDEM	7
	Headless RC	DEM	n.a.	Headless RC	DEM	9
		NDEM	n.a.		NDEM	21/39 (53.8%)

As indicated by Table 4.23, in *Pear Story Retelling* task, the *DE*-marked RCs, in RID communicative act, occur in a high percentage (n=21, 75%) with Demonstrative in a headed form, while in the Lego Construction task, the *DE*-marked RC, in RDS communicative act, account for more than half occurrences without Demonstrative in a headless form (n=21, 53.8%). In other words, RCs in *Pear* task tend to be over-headed, whereas RCs in *Lego* task are more likely to be headless. Such a distribution coincides with what we expect regarding the relation between linguistic form and information status: the more accessible the information is, the less explicit the form might be. Given the *Lego Construction* involves both linguistic and perceptual information, the referent heads are thus expected to be covert.

4.2.5 Focus structure

The last factor we will examine is the interaction between adult's prompting and child's conditioning in terms of the *DE*-marked RC expressions in the *Lego* and *Pear* tasks. The current results from these two tasks will also be compared with those observed in the *Frog Story* task. Table 4.24 and Table 4.25 show the pairing distribution of prompting and conditioning in the *Pear* and *Lego* tasks respectively. As stated above in the Frog task, the adult-child's question-answer pair is considered as the focus structure which specifies the relationship between the focus and the activation states of referents and corresponds to different communicative situations.

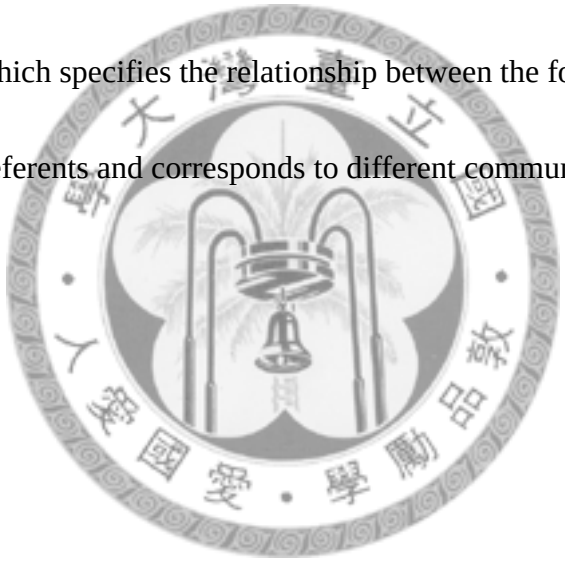


Table 4.24: Distribution of prompting-conditioning pair of *DE*-marked RC in *Pear Retelling task* (in ET condition)

Adult's Prompt	RC (N=56)	Child's expected utterances		Children's performed utterances: RC subtypes	
SHI Prompt	16 (28.6%)	SHI Completing	(a) Predicate noun completing	IN/(IN)-S/A-RC	6/16 (37.5%)
			(b) IO argument completing	IN-S-RC	1
			(c) DO argument completing	IN-A-RC	1
			(d) SUBJ argument completing	SUBJ-A-RC	1
				IN/(IN)-A-RC	2
		SHI copying	Predicate noun completing	PN-S/A-RC	5/16 (31.2%)
Who Prompt[*]	18 (32.1%)	(a) SUBJ argument completing		SUBJ-A-RC	1
				IN-A-RC	8/20 (40%)
				PN-A-RC	1
		(b) DO argument completing	15/18 (83.3%)	OBJ-A-RC	1
				SUBJ-A-RC	1
				IN-A-RC	1
		(c) IO argument completing		IN-A-RC	1
		(d) OBL argument completing		IN-A-RC	1
		(e) Predicate noun completing		IN/(IN)-A-RC	2
				PN-A-RC	1
Where Prompt	2	DO argument completing		OBJ-S-RC	2
Which Prompt	2	Predicate noun completing		(IN)-A-RC	2
How Prompt	3	Predicate completing		IN-A-RC	1
		Proposition completing		IN/(IN)-A-RC	2
No Prompt	15 (26.8%)	Proposition completing		SUBJ-S/A-RC	11
				OBJ-A-RC	4
Total	56				

[*]Those categorized as 'Who/Which/Where/How Prompt' refer to the prompting utterances containing one of these WH-words but without the copular word SHI.

Table 4.25: Distribution of prompting-conditioning pair of *DE*-marked RC in *Lego Construction* task (in ET+ES condition)

Adult's Prompt	RC (N=47)	Child's expected utterances		Children's performed utterances: RC subtypes	
SHI Prompt	N=43 (91.5%)	SHI Completing (n=39)	(a) Predicate noun completing 25	IN/(IN)-S/A-RC	21 (48.8%)
				IN-O-RC	2
				(PN)-S-RC	2
			(b) Predicate completing 10	IN/(IN)-A-RC	6 (14.0%)
				(IN)-O-RC	1
				(PN)-S/A-RC	3
			(c) DO argument completing 3	IN/(IN)-S/A-RC	3 (7.0%)
			(d) Proposition completing 1	OBJ-S-RC	1
		SHI copying (n=4)	Predicate noun completing	PN/(PN)-S-RC	3
			Predicate completing	(PN)-S-RC	1
What Prompt	N=4	(a) DO argument completing		IN/(IN)-A-RC	1
		(b) Predicate completing		(PN)-A-RC	1
				IN-S-RC	1
		(c) Predicate noun completing		(IN)-S-RC	1
Total	47				47

As we can see in Table 4.24 and Table 4.25, among the *DE*-make relative clauses collected in the *Pear Story Retelling* task (under ET information status) and the *Lego Construction* task (under ET+ES information status), adult's prompting questions containing *SHI* (i.e. *SHI Prompt*) play a central role in affecting children's use of RC. The *SHI*-Prompting effect is particularly obvious in *Lego Construction*, the context in which children are required to make descriptions about what he/she wants to build the Lego bricks. Almost all the RC utterances are made with the *SHI* Prompting (n=43, 91.5%). Similar to the RC patterns observed in the *Frog Story Retelling* task, the

IN-type RCs are the predominant one used by children, and PN-types can be obtained when the child copies the copular word *SHI* in the response. Following the *SHI* prompting question, the child frequently describes the object regarding its function and property, i.e., predication of the entity, thus resulting in the preponderance of Subject-RC, i.e., IN-S/A-RC (n=30, 69.8%; n=21+6+3, 48.8%+14.0%+7.0%) in the *SHI Prompting* condition. Excerpt (98) gives an example.

(98) (IN)-S-RC in *Lego* with *SHI Prompt* (Lego_OBH04_Yao.cha: line 356)

*RES: zhe shi sheme dongxi a
this SHI what stuff Q
這 是 什麼 東西 啊?
'what is this?'

*CHI: na ge, danshi jiu meiyou le
that CL but just no FP
'That. But we don't have any one like that.'
那 個, 但是 就 沒有 了.

*RES: dui na zhi you liang kuai
right that only have two piece
對 那 只 有 兩 塊
'Right. We have only two pieces of that.'

*RES: zhe shi zuo sheme a
what SHI do what Q
這 是 做 什麼 啊?
'What is this for?'

*RES: zhe ge hen you qu ye
this CL very have interest FP
這 個 很 有 趣 耶
'This is very interesting.'

*RES: zhe ge **shi** sheme a
this CL SHI what Q
這 個 是 什麼 啊?

‘What is this?’

%REF: DEM ET+ES
%ENT: Object
%PMP: **SHI Prompt** / what prompt
%ACT: Ask for description
%STP: WH - SHI - Question

*CHI: **zhe ge keyi na-ge weizhu de**
this CL can that CL enclose DE
這 個 可以 那個 圍住 的
‘This can be used for something that can enclose.’

%REF: DEM ET-ES
%ENT: Object
%CON: SHI Completing / **Predicate noun completing**
%ACT: First describe
%STP: (IN) - S - RC
%GND: Predicate grounding
%FUN: Characterizing

When it comes to the *Pear Story Retelling* task, RC patterns are somewhat different. *SHI* prompting effect is less obvious because ‘*Who prompt’* and ‘*No prompt’* account for over half of the RC occurrences. In ‘No prompt’, the adult did not make specific prompting utterances, and let the child proceed to his/her own descriptions on the plot of the film. This phase is quite narrative-like, so we may not have to include this part in our discourse-level consideration. The ‘*Who Prompt*’ was made by the adult to require the child to identify the referent he/she is talking about. This prompting is necessary in evoking the referent in the hearer’s focal consciousness and locating it in a more specific status for the hearer. Note that in child’s making

response to the adult's '*Who prompt*' and identifying the target referent with *DE*-marked RC, the child's utterances display connections with the preceding adult's prompting sentence, which we term as 'argument completing'. Namely, the adult's '*Who prompt*' and the child's following utterance can be viewed as an adjacent pair to fulfill the shared argument, or to make the focus structure as a complementing process[6]. Thus, the child's response and the use of the relevant expressions can be seen as an attempt to accomplish such an argument completion. The argument completion takes up a high percentage in the 'Who-Prompt' condition (n=15, 83.3%). Ex. (99) below gives an instance of the type of relative clause we are considering here, namely, one produced with the attempt to complete the adjacent pair in an identifying context.

[6]As defined by Jackendoff (1972), the focus is the ***complement*** of the presupposition in a sentence. Lambrecht (1994) depicts this by illustrating that there exists ***focus domain*** in a sentence which expresses the focus component of the pragmatically structured proposition. For example, in question-answer pairs like: (a) What was the relation between you and the pigs?—A talking relation; (b) What did you do to the pigs?—Talk to them. The NP *a talking relation* in (a) and VP *talk to them* in (b) correspond to the focus domain whose denotata are capable of supplying meaningful complements to the presuppositions created by their preceding questions. Namely, the constituents in the focus domain can produce assertions when added to presuppositions. The denotata in the focus domain are **predicates** or **arguments**, or else complete **propositions**. Based on this statement, we characterize the question-answer pairs in our task-oriented discourses as being of three types of focus structures and consider that the communicative interaction between the adult-child's prompting-conditioning process as a complementing process in completing the focus structure of information.

(99) RC of SUBJ argument completing in '*Who prompt*' condition (identifying context): (Pear_YBH21_Huang.cha: line 119)

1.*RES: oh hao ranhou ne
oh ok then Q
哦，好， 然後 呢?
'Ok. And then?'

2. *RES: ta na zou le zhihou fasheng sheme shi
he take away PRF afterwards happen what event
他 拿 走 了 之後 發生 什麼 事?
'What happened after he took that away?'

3. *CHI: m ye diedao
m ye fall
嗯 耶 跌倒
'Fell.'

4. *RES: **aN <u>shei</u> diedao le**
aN who fall PRF
啊? 誰 跌倒 了?
'aN, who fell?'

%REF: ET
%ENT: Person
%PMP: **Who Prompt**
%ACT: Ask for identification
%STP: Wh – Question

5. *CHI: **na ge na ge qi jaotache de ren**
that CL that CL ride bicycle DE person
那 個 那 個 騎 腳踏車 的 人
'The…the one who rode the bicycle.'

%REF: DEM ET
%ENT: Person
%CON: **SUBJ argument completing**
%ACT: Identify
%STP: **IN - A - RC**
%GND: Predicate grounding
%FUN: Identifying

In utterance 4 of Ex. (99), the adult (researcher) made a question for the child to identify the referent who fells. In utterance 5, the child produced an isolated noun phrase RC (IN-type RC) to respond. This IN-RC can be seen as the child's choice to formulate a subject role to fill in the subject slot of 'who' in the preceding WH-question '*shei diedao*', *who fells.* In this prompting-conditioning pair, child's argument completing varies differently with respect to the different types of argument in the preceding prompting sentence. So the 'OBL argument completing' would be the utterance made by the child to serve as filling in the oblique slot in the preceding question, as shown in Ex. (100).

(100) RC of OBL argument completing in '*Who prompt*' condition (identifying context): Pear_OGC01_Hsu.cha: line 471

*RES:	hao	na	ni	**dui**	**shei**	ganjue	zui	bu	hao
	ok	then	you	for	who	feel	the most	no	good
	好,	那	你	對	誰	感覺	最	不	好?

'Ok. Then who did you feel for is the worst?'

%PMP: **Who Prompt**
%ACT: Ask for identification
%STP: WH – Question

*CHI:	qi	jiaotache	de	ren
	ride	bicycle	DE	person
	騎	腳踏車	的	人

'The one who rode the bicycle.'

%REF: ET
%ENT: Person
%CON: **OBL Argument completing**
%ACT: Identify
%STP: IN - A - RC
%GND: Predicate grounding
%FUN: Identifying

To see more about how this '**argument completing**' process works in the adjacent pair between the adult and child, let us consider the discourse proceeding in the experiment by Hsu et al. (2009), who elicit Mandarin-speaking children's production of relative clauses by creating a series of identifying context and requesting the child to identify the target referent in focus.

4.3 Hsu et al.'s Elicitation Task

Hsu et al. (2009) made use of a picture-based presentation task to elicit production of relative clauses from twenty three Mandarin-speaking young children (mean age of 4;8). Eight sets of pictures were used in the experiment. Each set of pictures included a base picture which introduced two identical characters/objects and their events, and four question-type pictures which involved a change of the referent from the base picture were presented afterwards. The four questions were intended to elicit free-standing DP of RC (i.e. isolated noun phrase of RC) and full sentence-type of RC respectively, in which each question is targeted for subject-gapped RC or

object-gapped RC. The 8 pictures × 4 question types yielded 32 trials for each child. The target referents to be relativized contained person (girl and boy), animal (cat and cow), and object (truck and television). In presenting the base picture, the experimenter gave the child a lead-in description of events or actions about the identical objects/characters in the picture. Then in the phase of displaying question pictures, the child was required to reply to the questions for identifying the referent which underwent a change. Here we reanalyze these question types as SUBJ argument completing and DO argument completing, as exemplified in (101-102) below.

(101) SUBJ Argument completing (Subject argument being questioned and to be answered)

na	yi	ge	nuhai	biancheng	hongse	de?
which	*one*	*CL*	*girl*	*become*	*red*	*DE*

'Which girl turned red? '

(102) DO Argument completing (Direct object argument being questioned and to be answered)

laoshu	zai	kan	na	yi	ge	nuhai
mouse	*DUR*	*watch*	*which*	*one*	*CL*	*girl*

'Which girl is the mouse watching?'

Discourses form six child-participants (3 males and 3 females) with the experimenter in Hsu et al's study[7] were transcribed and coded as we did in our previous

[7]Thanks go to Prof. Natalie Hsu for sharing the data in our re-analyses.

task-oriented discourses. We reanalyze part of Hsu et al.'s production data with the view to showing that discourse-level account might explain what we observe in the elicitation task. Our re-analyses are presented below.

Table 4.26: Distribution of RC in SUBJ Argument completing question-answer pair in Hsu et al.'s study (2009)

	Referent Property						
NP_{RC}	Person		Animal		Object		Total
Head NP	A/S	O	A/S	O	A/S	O	
SUBJ	49	11	0	9	2	10	81 (71.1%)
OBJ	0	0	0	0	0	0	0 (0%)
IN	12	0	0	1	0	3	16 (14.0%)
PN	9	2	0	0	0	2	13 (11.4%)
Mismatch	2	1	0	1	0	0	4 (3.5%)
	72	14	0	11	2	15	114

Table 4.27: Distribution of RC in DO (Direct Object) Argument completing question-answer pair in Hsu et al.'s study (2009)

	Referent Property						
NP_{RC}	Person		Animal		Object		Total
Head NP	A/S	O	A/S	O	A/S	O	
SUBJ	0	1	0	0	0	0	1 (0.9%)
OBJ	36	9	0	6	2	7	60 (55.6%)
IN	14	2	0	3	0	4	23 (21.3%)
PN	2	1	0	0	1	1	5 (4.6%)
Mismatch	10	6	1	1	0	1	19 (17.6%)
	62	19	1	10	3	13	108

Table 4.26 and 4.27 summarize our findings on the use of *DE*-marked relative clauses from Hsu et al.'s data by Head NP type, NP_{RC}, and referent type. The most obvious finding reflected in Table 4.23-24 is that the occurrence of Head NP types coincide nearly completely with the Type Argument completing pair, i.e., SUBJ Head RC with SUBJ argument completing and OBJ Head RC with DO Argument completing. In fact, all these occurring can be seen as a *structural copying process* in adult's request for identification and child's response to identify, as illustrated in (103).

(103) DO Argument completing as a structural copying (NData_No01.cha: line 858)

1.*RES: wa laoshu gen niao you chuxian le
Wa mouse and bird again appear FP
哇, 老鼠 跟 鳥 又 出現 了.
'Wa, the mouse and the bird come again.'

2. *RES: na ge **<u>na zhi laoshu zheng zai kan</u>** na ge nanhai
that CL that CL mouse being DUR watch which CL boy
那 個, 那 隻 老鼠 正 在 看 哪 個 男孩?
'Which boy is the mouse watching?'

3. *RES: ranhou **<u>na zhi niao you zai kan</u>** na yi ge nanhai ne
then that CL bird again DUR watch which one CL boy Q
然後 那 隻 鳥 又 在 看 哪 一 個 男孩 呢?
'And which boy is the bird watching?'

… (One line omitted)

4. *CHI: **<u>na zhi laoshu zai kan</u>** zai ti qiu de nanhai
that CL mouse DUR watch DUR kick ball DE boy
那 隻 老鼠 在 看 在 踢 球 的 男孩.
'The mouse is watching the boy who is kicking the ball.'

%REF: ET-ES
%ENT: Person
%CON: Structural copying / DO Argument completing
%ACT: RID
%STP: OBJ - A- RC
%GND: Predicate grounding
%FUN: Identifying

5. *CHI: **<u>na zhi niao zai kan</u>** diu qiu de nanhai
that CL bird DUR watch throw ball DE boy
那 隻 鳥 在 看 丟 球 的 男孩
'The birs is watching the boy who is throwing the ball.'

%REF: ET-ES
%ENT: Person
%CON: Structural copying / DO Argument completing
%ACT: RID
%STP: OBJ - A- RC
%GND: Predicate grounding
%FUN: Identifying

The child's response in utterance 4 and 5 of Ex. (103) can be seen as a fill-in to complete the direct object argument slot in the preceding SVO question in utterance 2, and the child copies the SV construction (*laoshu—kan*, 'mouse—watch') in answering the question. This 'argument completing' process has been reported in the previous results presented in Table 4.24 concerning the '*who prompt*' utterances in the *Pear Retelling* task in which the adult requires the child to identify the referent in focus. Compared to our *Pear Retelling* task, Hsu et al.'s elicitation task can be viewed as a discourse wherein the AID (Ask to identify) -- RID (Reply to identify) communicative acts are repeated again and again, and thus the structural copying would occur

repeatedly, resulting in the high percentage of SUBJ/ OBJ Head NPs in SUBJ/ DO argument completing pairs in Hsu et al.'s data (in Table 4.26, SUBJ Head in SUBJ completing: n=81, 71.1%; in Table 4.27: OBJ Head in DO completing: n=60, 55.6%).

Another obvious finding to note is that the distribution of NP_{RC} type in Hsu et al.'s elicitation task fairly complies with the discourse factors of information flow posited in the literature. Namely, human subject heads, as being in need to be grounded by relating to their own activities, show prevalent occurrence in Subject-gapped RC (see Table 4.26, SUBJ-A/S-RC, n=49, in *person* head referent), while nonhuman subject heads, as requiring more of an NP anchoring, tend to occur with Object-gapped RC (see Table 4.26, SUBJ-O-RC, n=9, 10 respectively in *animal* and *object* head referents). Intriguingly, this pattern is also applicable in DO argument completing. In other words, head NPs of RC in subject or object positions of the sentence observe the discourse principles of the information management with respect to the humanness factor (i.e. entity property). In fact, the effect of humanness can be specifically observed in the *Mismatch* examples we obtained in Hsu et al.'s data.

As can be in Table 4.27, children showed much more mismatching responses to the questions in DO Argument completing condition. When the child failed to focus on the referent in the preceding AID (Ask to identify) question, mismatching answer would occur, which display the information factor at work. Consider Ex. (104) below.

(104) Mismatch in DO Argument completing (NData_No06.cha: line 189)

*RES: xiao laoshu zai kan na yi tai dianshi a
little mouse DUR watch which one set TV Q
小 老鼠 在 看 哪 一 台 電視 啊?
'Which TV is the little mouse watching?'

*CHI: ta… ta kan mo dianshi de
it……it watch touch TV DE
它…它 看 摸 電視 的
'It watches (the person) who watches the TV.'

*RES: aN?
What
啊?
'What?'

*CHI: mo dianshi de ren
touch TV DE person
'摸電視的人'
'The person who touches the TV.'

%REF: ET-ES
%ENT: Person (Mismatch)
%CON: DO Argument completing
%ACT: (Third) RID
%STP: IN- A-RC
%GND: Predicate grounding
%FUN: Identifying

The mismatch in (104) occurs as the referent in the adult's question was targeted for the object TV to be identified, but the child responded with the focus on the person who touches the TV. The child's answer exactly complies with the principle of information management in that the referent in his/ her focal consciousness can be grounded by the activity the referent (in the child's case: the person, *ren*) is engaged in. So he predication of he referent was used in he first consideration.

Chapter 5

Discussion and conclusion

5.1 Discussion

In the foregoing chapters, we have reviewed the discourse-pragmatic factors in some spontaneous data that play a major and explanatory role in accounting for the distribution and use of relative clauses. These factors concern the process in which the interlocutors in conversation make grammatical choices based on their assumptions toward the addressee's cognitive state of knowledge regarding the referent in their focal consciousness. The term *information flow* is adopted thereby. Nevertheless, the robustness and adequate explanation of this discourse-level position is sometimes ignored, in one way due to the great amounts of studies being concerned with the comprehension of relative clauses and the structural properties inherent to the relative clauses, and in another way due to the fairly scant research on the observational data from the daily use of relative clauses. Few studies consider the information flow principles at work in the use of relative clauses in ordinary conversation, few works on Mandarin RC take this approach, and we know of no previous work that explores Mandarin-speaking children's use of relative clauses from the interactional dimension of the communicative situation. All this motivates the current study.

As with previous studies on the adult use of relative clauses in conversation, one would expect that children's usage on RC would be affected by many aspects of information flow. We recruited seven factors to investigate in the current study, including (i) information status of the referent NP (ii) entity property (humanness or animacy) (iii) focus structure in the adult's prompting and child's conditioning pair (iv) grounding device (v) communicative acts (vi) syntactic type, and (vii) functions. Since Mandarin Chinese has a uniform *X-DE-Y* schema which conveys various modification functions, including relative clauses and others, by associating the head referent *Y* and the modifying constituent *X*, we primarily examine the *V-DE-Y/(Y)* type in the current study but have relative clauses as our major concern.

The use of these *DE*-marked expressions, including RC, by children in the three tasks: *Frog Retelling*, *Pear Retelling* and *Lego Construction*, reveals a dynamic and overall effect from the variant dimensions of information flow. We have presented at some length on the results and distribution of these *DE*-marked expressions in the three different tasks as well as the elicitation task by Hsu et al. (2009). This is the attempt to address the first basic question we posited in the Introduction. Since the above-mentioned results we have shown focused on the individual and specific factor of information flow, we return now to the more general aspect and the question of the comprehensive effect of the information flow involved in the use of *DE*-marked

expression, especially RC, in the task-oriented discourse settings. Our main findings are presented individually below.

a. Information status is the crucial factor in deciding the repertoire of different task-oriented discourses with respect to the norms and uses of the *DE*-marked expressions.

Table 5.1 presents the general picture of information status in the three tasks. Table 5.2 summarizes the distribution of RC percentage in the three tasks under different information status, and Table 5.3 summarizes the distribution of subtype RC: SRC vs. ORC in the three tasks under different information status.

Table 5.1: Percentage of information status in *Frog*, *Lego*, and *Pear* tasks

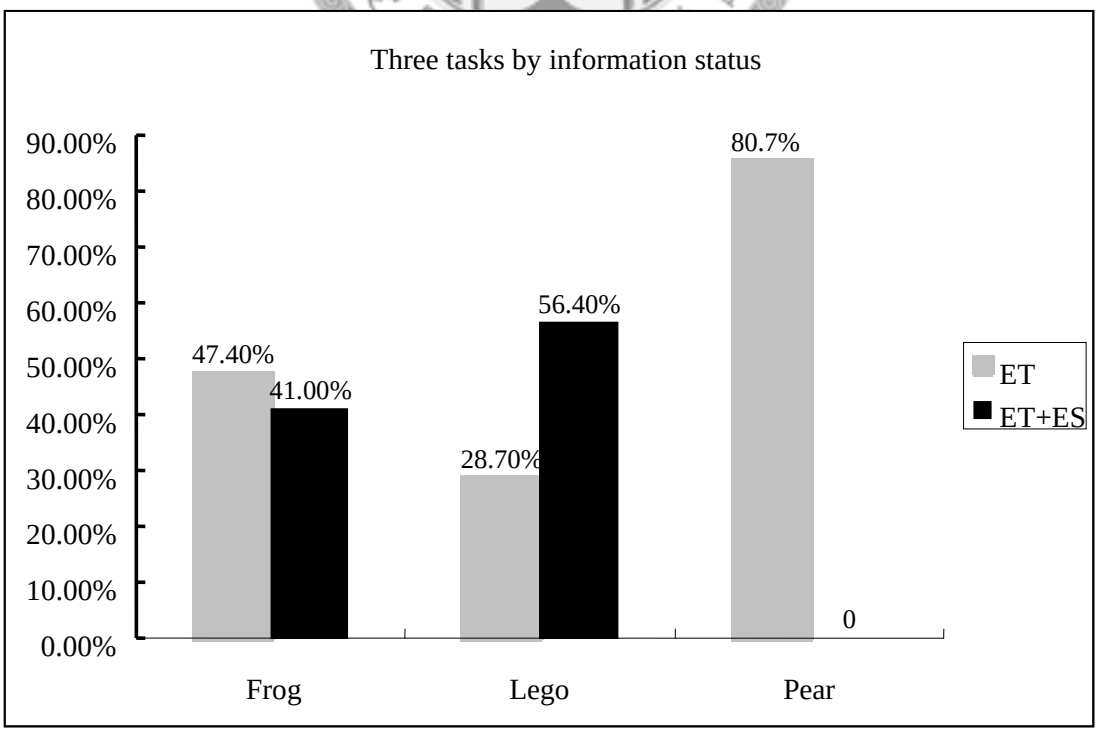
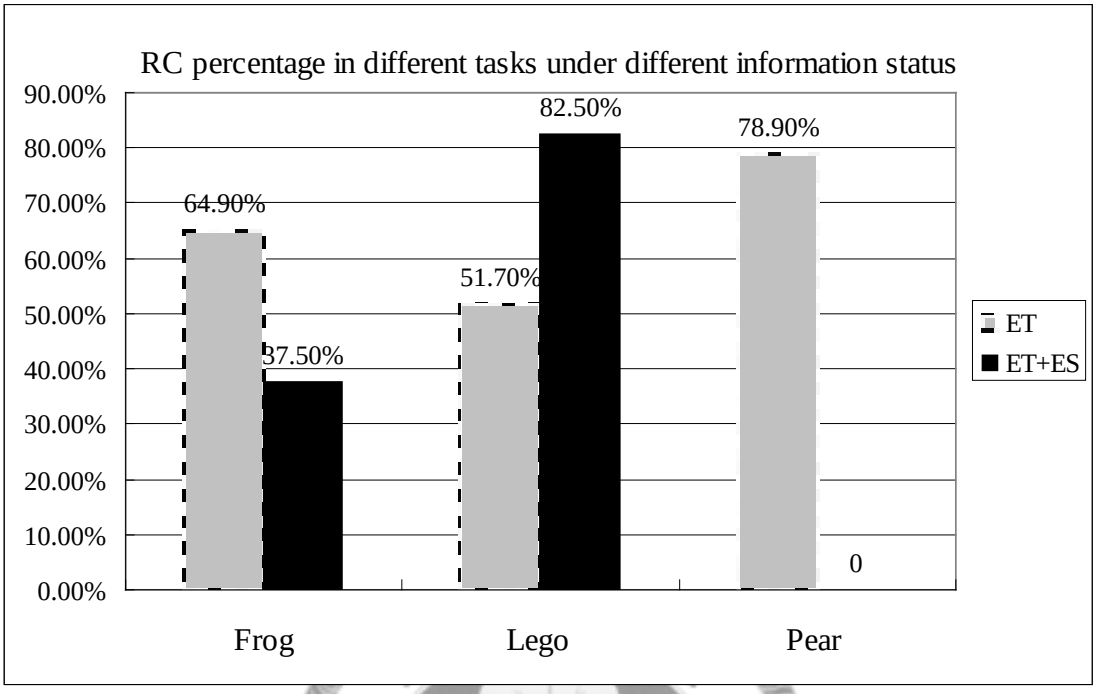


Table 5.2: Percentage of RC in three tasks by information status



As shown in Table 5.1, the distribution of information status generally coincides with the characteristics of the task. *Frog Story Retelling* is evenly distributed with linguistic and/or perceptual information; *Lego Construction* features more with perceptual plus linguistic information; *Pear Story Retelling* is primarily composed of linguistic information. Under different tasks is just like under different information conditions, and the use of RC constructions therefore varies correspondingly.

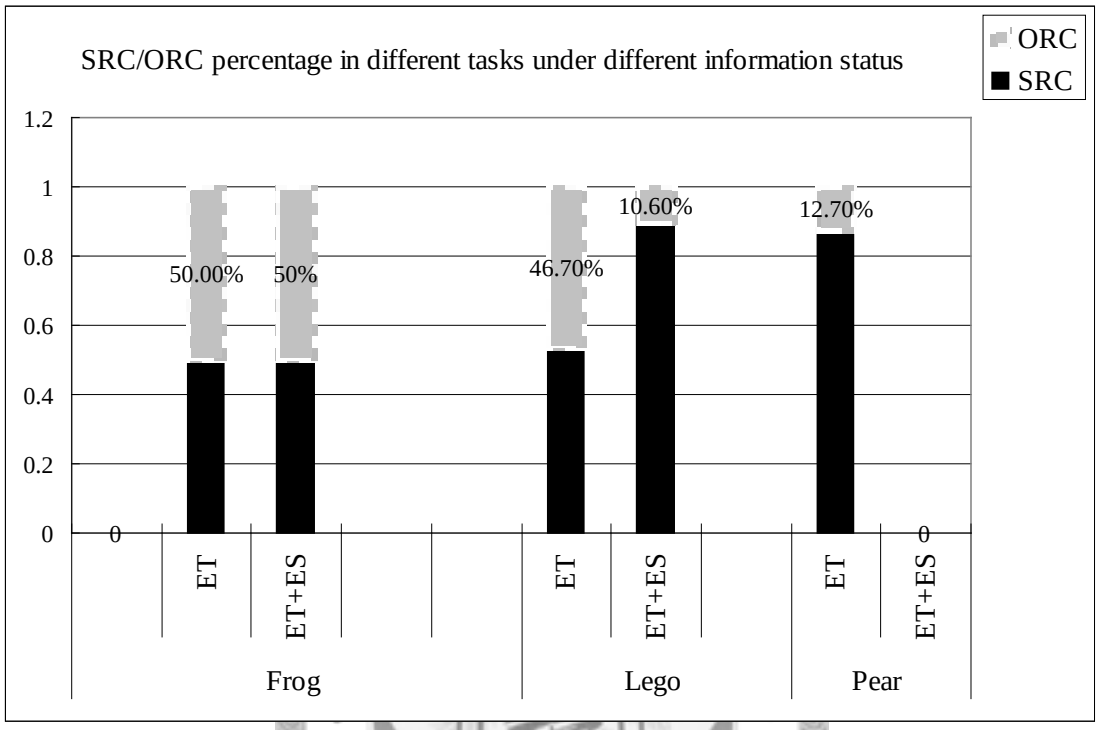
It is obvious that RC is the linguistic device prevalently chosen for associating the referent in focus, given that there is no perceptual information available (e.g., in *Pear Retelling task*, 78.9% in Table 5.2). If there are merged information statuses (e.g., ET, and ET+ES in *Frog* and *Lego*), RC can be arguably even more discourse-sensitive

as it appears to be mapping onto the distributional pattern of information status specific to the task. Intuitively, one would expect that if there is perceptual information involved in the context and accessible to the hearer, the need to use RC would be reduced. Nevertheless, our data from the *Frog* and *Lego* tasks show that the fact is that the relative ratio in RC in different information statuses correspond to the relative ratio of information status within the task (e.g., RC in ET/ ET+ES in *Lego*=51.7%/82.5% as seen in Table 5.2; ET/ET+ES in *Lego*=28.7%/56.4%, as seen in Table 5.1). This indicates that there exist some other factors motivating the distributional pattern we observe here, which will be discussed later.

Another obvious pattern we found to be correlated with the distributional pattern of information status is the use of RC subtypes: SRC vs. ORC. As can be seen in Table 5.3, the relative ratio of use in ORC and SRC intriguingly corresponds to the relative ratio between ET and ET+ ES information statuses across the three tasks. Again, it appears that while information status decides on the characteristic discourse organization of the individual task, there exist some other factors motivating the fluctuating patterns regarding the grammatical use of these constructions. We may not simply attribute the distributional patterns of SRC and ORC to the relative degree of difficulty in these grammatical structures. Rather, we would suggest that on the whole, they reflect differing levels of discourse effects on the profile of use in these

DE-marked expressions.

Table 5.3: Percentage of SRC vs. ORC in three tasks by information status



b. Communicative acts and entity properties work together on deciding the distributional pattern. Communicative acts relate to the interactive behavior between the adult and child (i.e. the adjacent pair of *prompting and conditioning* in our term), and the entity property associates with the grounding device available in referring to the entity in focus.

Table 5.4 shows the overall distribution of *DE*-marked RC by three major communicative acts observed in the three tasks. RID refers to child's reply to identify the entity, RDS means the child's reply to describe the entity, and RRT indicates the child's reply to retrieve the referent. Table 5.5 displays the major promptings made by

the adult in the three tasks while using *DE*-marked RC.

Table 5.4: Distribution of RC by three major communicative acts in three tasks

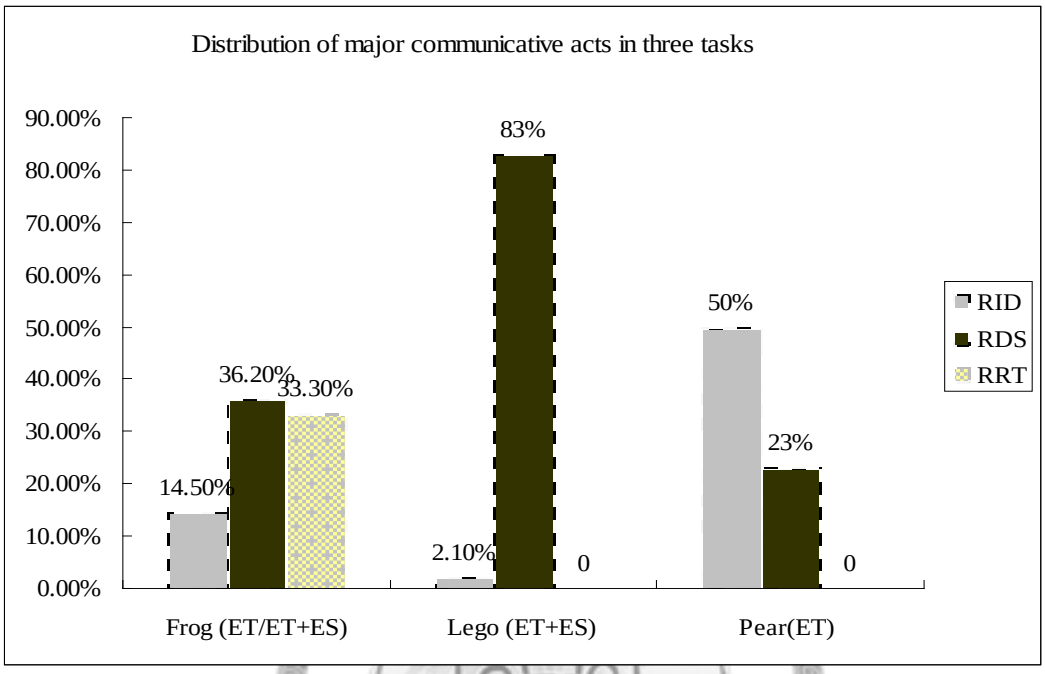
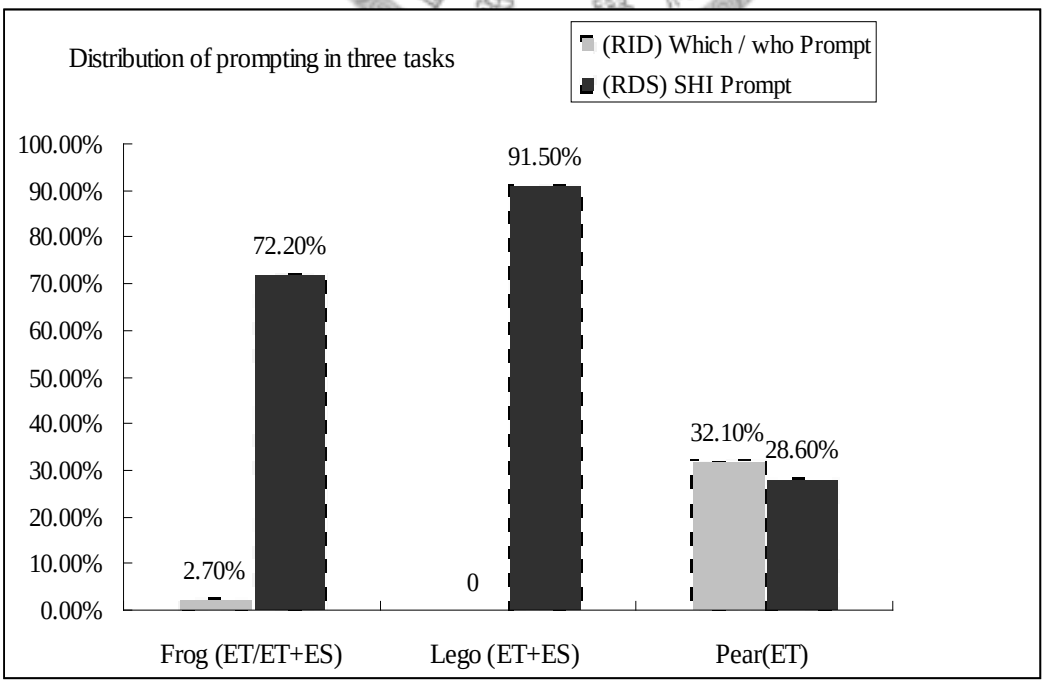


Table 5.5: Distribution of prompting of RC in three tasks

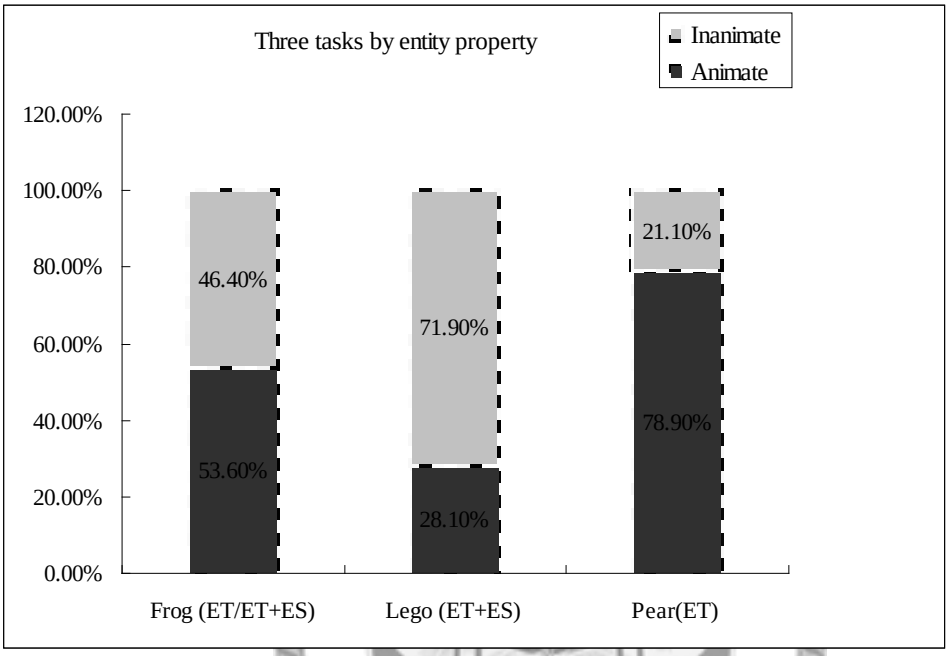


A systematic correlation we found concerning the distribution of RC is that the distribution of major communicative acts in RC matches nicely with the distribution of adult's prompting and child's conditioning in RC. Table 5.4 presents the general discourse profile pertaining to each task. In the *Frog Story Retelling* task, as expected, the appearance of RC serves the listener's need to relate the character with the event, and RC is frequently used to provide background information about the previously mentioned referents and to resituate the old referents for hearer's further moving on the scene. Communicative act of RC in *Frog* is therefore mainly to describe the event (RDS and RRT). In the *Lego Construction*, the children's use of RC primarily acts to predicate the function of the entity (the piece of block which the child built). Communicative act of RC in *Lego* is thus to describe the activity the constructed entity can do (RDS). In the *Pear Story Retelling* task, RC is more often used either to retrieve the character or to help the listener to identify the referent (RID and RDS).

By contrasting two major communicative acts (Describe/RDS and Identify/RID) against the prompting-conditioning adjacent pairs between adult and child, we found that the distributional pattern of communicative acts can map onto the distributional pattern of prompting-conditioning pairs, given that in RID, *Which* or *Who prompt* is frequently used, and in RDS, *SHI Prompt* is used.

Entity property (i.e. the head referent in the RC) is another interrelated factor we observed. Consider Table 5.6.

Table 5.6: Entity property (Inanimacy vs. Animacy) in three tasks



By comparing the distribution of entity property in three tasks (Table 5.6) to the distribution of SRC/ORC in three tasks by information status (Table 5.3), we found that the relative usage of ORC to SRC is similar to the relative distribution of Inanimacy to Animacy, except for *Lego* task. Namely, in *Frog* and *Pear* tasks, animate referents are used more with SRC and inanimate referents more with ORC, and SRC is generally used more than ORC. In Lego, SRC is used more than ORC, but it is the inanimate referents occurring more with SRC. We attribute this to the humanness factor which will be stated below.

The finding that animacy or inanimacy of the referents links with the structural type of RC is consistent with the observation reported by Fox and Thompson (1990b), who suggested that human/non-human referents rely on different grounding device to make the referent accessible to the hearer, and this device affects the grammatical types of RC with which the referent heads co-occur. This leads to our next finding.

c. Humanness is the more appropriate property than Animacy in explaining the distribution of RC Subtype (SRC vs. ORC).

That the inanimate referents in *Lego* task tend to occur with SRC has been reported in the foregoing section of results. We speculate that this is due to the fact that *Lego* task is the context ambient with the interlocutor's acting as the situational participant in providing the grounded linguistic and contextual information. Therefore, many referents (i.e., the Lego pieces) have been related to the participant in default, and the speaker would produce RC which leaves subject gapped and contains predicate only. We took this contextual situation to be the motivation for the great number of Subject-RC in our *Lego* task, and the referents in this context, in spite of being inanimate, associate with the human (the situational participant) by predicating the activity which the human can engage in and manipulate. Therefore, based on our

results, we suggest that it is the humanness of the referent entity itself or the humanness the referent is related to that can help explain the distribution of RC subtypes.

Humanness as one of the factors relevant to information flow can also get subsidiary support from experimental elicitation task. In Hsu et al.'s data (2009) we reanalyzed, human head referents occurred more with SRC, and nonhuman head referents occurred more with ORC in both SUBJ- and DO-Argument completing conditions. This can be seen in Table 5.7, in which human referents occur more in SRC in child's resposes to adult's eliciting questions (SUBJ-Argument completing: n=72, 83.7%, and DO-Argument completing: n=62, 76.5%), and nonhuman referents occur more in ORC in child's response to adult's eliciting questions (SUBJ-Argument completing: n=26, 92.9%, and DO-Argument completing: n=23, 85.2%).

Table 5.7: Distribution of Human/Nonhuman head referents by RC types in Hsu et al.'s study

Prompt / Entity / RC	SUBJ Argument completing		DO Argument completing	
	Human	Nonhuman (Animal/Object)	Human	Nonhuman (Animal/Object)
SRC	72 (83.7%)	2 (7.1%)	62 (76.5%)	4 (14.8%)
ORC	14 (16.3%)	26 (92.9%)	19 (23.5%)	23 (85.2%)
Total	86 (75.4%)	28 (24.6%)	81 (75%)	27 (25%)

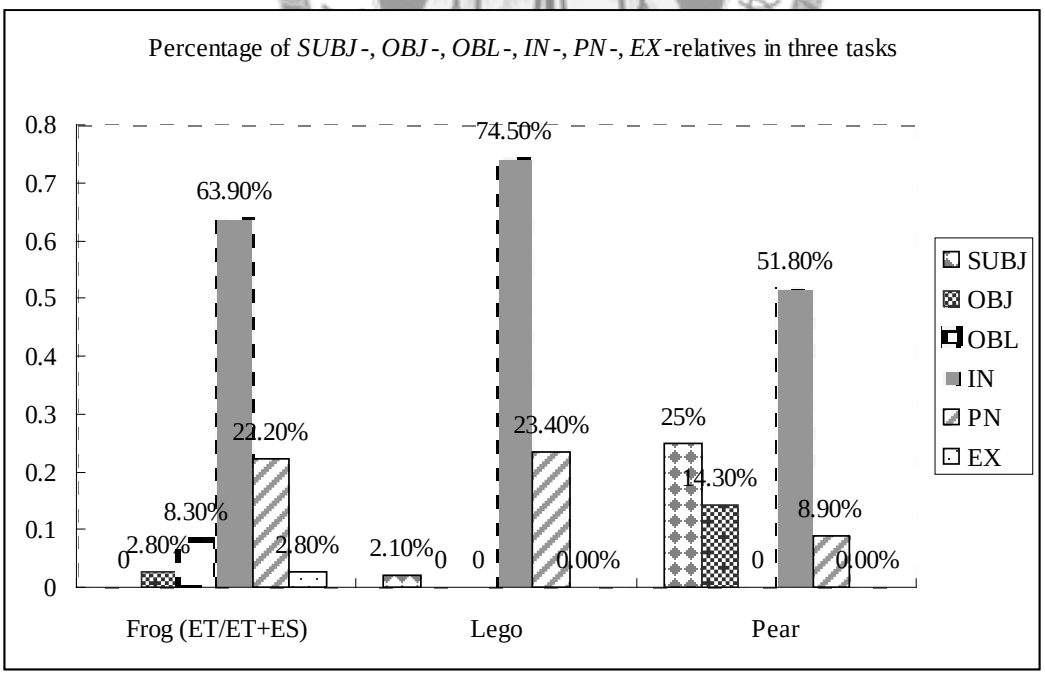
d. The prompting utterances motivate the use of different grammatical roles of RC. Put it in another way, the focus structure in the adult-child's question-answer (prompting-conditioning) pairs links the grammatical role of RC in sentences. This could be attributed to the phenomenon in focus structure that communication/interaction acts as a process of complementing: the hear answers the question by supplying meaningful complements (focus) to the given presupposition (topic) in the preceding question.

We have shown that the distribution of the RC subtypes (Subject-gapped RC, SRC and Object-gapped RC, ORC) is correlated with the humanness of head NP referent, and the correlation gets its source from the grounding device the head referent may pattern with. Based on our results, we now further propose that the prompting utterances produced by the adult, preceding the child's target *DE*-marked RC, are the factor affecting the destitution of the grammatical role of RC in the utterance.

Relative clauses can also be categorized according to the grammatical role of the Head NP in the main clause. These Head NP roles, adopted from Diessel and Tomasello (2000), include Subject (SUBJ), Object (OBJ), Oblique (OBL), PN (Predicate nominal), IN (isolated noun phrase), and EX (Existential). Diessel & Tomasello (2000), and Diessel (2004) have reported that young children's relative

clauses dominantly emerge in presentational constructions in which an intransitive subject-gapped relative is attached to the predicate nominal of a copular clause (i.e., PN-type RC), or, less frequently, the relative clause is attached to an isolated head noun, forming an isolated noun phrase (i.e., IN-type RC). In contrast, our data from the three tasks, as seen in Table 5.8, show that in *Frog* and *Lego* tasks, IN-relatives account for the majority of children's relative constructions, followed by the PN-relatives, whereas in *Pear* task, almost half of the children's relative clauses are IN-relatives, followed the SUBJ-, and OBJ-relatives.

Table 5.8: Percentage of *SUBJ-*, *OBJ-*, *OBL-*, *IN-*, *PN-*, *EX*-relatives in three tasks



Diessel and Tomassello proposed that the complexity of the emerging constructions plays an important role in the RC acquisition process. They suggested that the dominant occurrence of PN-type RCs in early child speech is because PN-RCs are similar to simple sentences when they occur in presentational construction. They also posited input frequency as one of the factors, since the mothers make frequent use of PN-relatives in child-directed speech.

Based on our observations, we would now add our support to the factor of ambient language in RC acquisition in terms of the '*interaction prompting*'. Recall that in the section of results, we have reported that the vast majority of adult's prompting utterances in the three tasks contain '*SHI prompt*', and the child's reply contains a lot of IN-RCs. Consider Table 5.9 and 5.10 repeating the prompting results in the Frog task.

Table 5.9: RC by prompting in Frog task

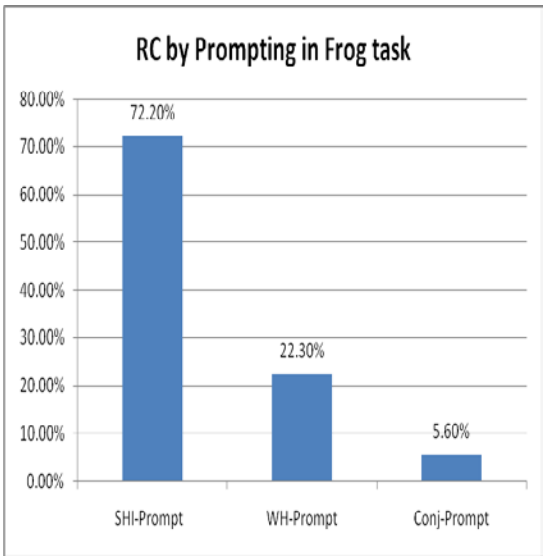
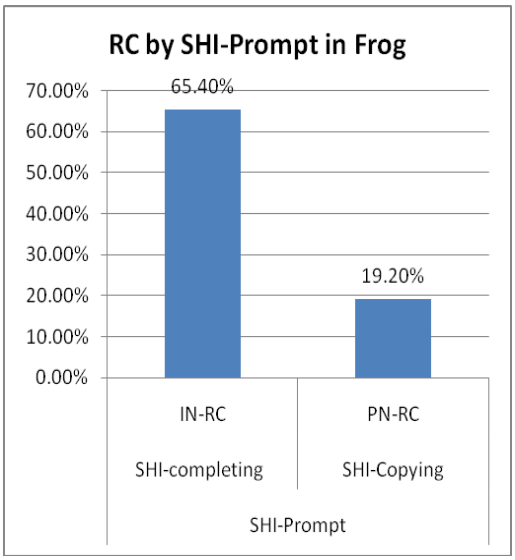


Table 5.10: RC by SHI-Prompt in Frog task



The prompting results in Frog task may suggest that if the adult makes questions containing copular *SHI* to ask the referent in focus, the child may be prompted to answer a sentence acting as a predicate noun in order to complete the adjacent/preceding question in the prompting-conditioning pair. Relative clauses chosen under the *SHI Prompt* condition are thus more likely to be in IN-typed form. We would like to suggest that this conforms to the function of the focus structure as serving its pragmatic relation in discourse. Namely, the focus component in the answer is to be as the complement of topic in the preceding question.

A strong support for this '*interaction prompting*' effect can be obtained from Hsu et al.'s experimental elicitation task. Using '*which prompt*' overwhelmingly in the adult's questions, the children seem to be led into an argument completing frame, and the answer with relative clauses can be generalized as a process to fill in the slot of the frame. Therefore, the SUBJ-, OBJ-types of RCs can be elicited because of the interactive dynamics.

5.2 Implication

Before we proceed to our final conclusion, two points which have not been taken into major concerns but deserve expounding and future investigation will be stated in this section.

The first point is related to the headed/headless *DE*-marked expressions/RC.

Most of previous studies in acquisition did not consider headless relative clauses which lack an overt head noun, and therefore a clear understanding about Mandarin headed/headless *DE*-marked expressions is lacking. The preliminary work addressing the link between information status and the headed/headless feature in Mandarin *DE*-marked expressions by Cheng et al. (2011) has observed that the headed and headless *DE*-marked referential forms are frequently linked with discourse-pragmatic factors, such as communicative acts and interactive roles undertaken and played by the interlocutors. In particular, the child's developmental progress of *DE*-marked referential expressions aligns with the communicative acts he/she intends to perform in discourse, and it reflects the child's competence as an active participant in discourse. Bearing this discourse-level account in mind, we observe that headedness feature plays a certain role in the information management with respect to the use of *DE*-marked expressions in our three task-oriented discourses.

For one thing, in the Frog task, headed RCs tend not to co-occur with demonstrative in child's communicative act of RDS (Reply to describe), while headless RC are found to appear with demonstrative (definite marker) in child's communicative act of RID (Reply to identify). This indicates that the covert/overt head in RC could be interrelated with both the definiteness and communicative act. With definite marker in the identifying context, the referent in focus is assumed to be

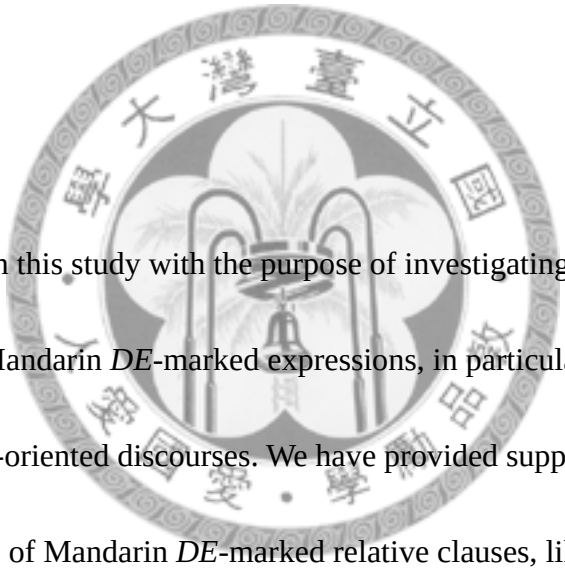
accessible and given to the hearer, so the head is more likely to be covert. However, without definite marker in the describing context, the referent in focus is assumed to be unfamiliar to the hearer, so the head is more likely to be overt.

However, the association between headedness and definiteness does not seem to be of this pattern in Lego and Pear tasks. We observe that RC of RDS in Lego task tends to be headless and occurring without demonstrative, while RC of RID in Pear task tends to be overt-headed and occurring with demonstrative. A possible explanation to this phenomenon is: this can be due to the information status pertaining to the individual task. Lego task is ambient with perceptual information, as the referents (i.e., Lego pieces) are often present in front of the interlocutors. Therefore, headless forms are used more often. In contrast, Pear task is ambient with linguistic information, and in the identifying context, overt heads seem to be necessary for the hearer to access the referent in focus.

Nevertheless, the observations we made in this study do not suffice to tease out the relationship among the factors of headedness, definiteness, and information status in the use of *DE*-marked RC. Future investigation is needed.

The second point is concerning the development of *DE*-marked expressions. We have explained that we recruit children of age 6 as our participants with expectations to collect more target *DE*-marked RC in older children's production. The prompting

questions in our three tasks seem to achieve its effect, and we observe that adult-child's prompting-conditioning pair does show the influence from the focus structure in the information flow. This implies that we may apply this discourse-level approach to the interaction/communication between mother-child dyad, which is a field worth researcher's further investigation. Our study also implies that future studies on younger children are necessary in elucidating the '*interactive prompting*' factor we presented in the discussions.



5.3 Conclusion

We embarked on this study with the purpose of investigating the grammatical patterns and use of Mandarin *DE*-marked expressions, in particular the relative clauses, in three task-oriented discourses. We have provided supporting evidence to the claim that the use of Mandarin *DE*-marked relative clauses, like relative clauses in other languages, follows a wide range of interactive and cognitive factors inherent in the communicative context to formulate the reference in focus.

We have shown that the information-flow patterns characteristic of Mandarin-speaking children's discourse with adult comply with the discourse-level claim made by previous studies. To summarize, the current study has shown that the grammatical use of constructions should be considered as an entire interactional

scenario, being dependent on issues of pragmatics, semantics and interactions. Based on our observations from the three task-oriented discourses as well as data from the experimental elicitation task by Hsu et al. (2009), we suggest that the differential usage and frequency of the *DE*-marked expressions/RC derives from at least five interrelated factors: (i) the information status of the referent in the interlocutor's focal consciousness, (ii) the communicative acts associated with the interactive behavior between the adult and child in each context (iii) the entity property associated with the grounding device available in referring to the entity in focus, (iv) humanness of the referent in focus, and (v) the adult's prompting in the interaction. This discourse-based approach of analysis highlights an important aspect of dynamic interaction among interaction, function, and form, which is not emphasized by the structure-based approach. Systematic factors of this kind related to information flow may help to explain the skewing distribution of differing grammatical types of RC. The most obvious finding we observed in the current study is that the interactive behavior between the adult and child show patterns of the influence of input. This can be used as evidence to argue for the insufficiency of structural complexity in explaining the acquisition and development of relative clauses.

In conclusion, the use of Mandarin *DE*-marked expressions as well as relative clauses can be viewed as a process of speakers' decision-making for the appropriate

construction to meet their interlocutor's cognitive and knowledge state to the information flow in the communicative situation. More specifically, the use and choice of *DE*-marked expressions in the course of communicating can be examined with a discourse-level position and it is arguably a *dialogic* behavior between the interlocutors. Therefore, the child's use of the grammatical expressions is affected by the adult, and vice versa.

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Appendix A: Recording Script of *Frog Story*

小青蛙 你在那裡?

1. 從前有一個男孩和一隻小狗。在森林裡撿到一隻小青蛙。
   他們把它帶回家，放在罐子裡。

2. 天黑了，男孩和小狗睡著了。
   小青蛙跑掉了。

3. 天亮了，醒過來。咦? 小青蛙不見了。

4. 男孩和小狗在房間裡找。到處都沒有。
   小狗把頭鑽進罐子裡。唉呀!卡住了!

5. 男孩和小狗看看窗外
   男孩叫:小青蛙，你在那裡?

6. 唉呀! 小狗掉下去了!

7. 男孩跳下去， 抱住小狗。
   罐子破掉了，小狗很高興。

8. 男孩和小狗到森林裡，尋找小青蛙。

9. 樹上有個大蜂窩， 小狗對它又跳又叫。
   男孩看看地洞。有沒有小青蛙呢?

10. 地洞裡跑出一隻小松鼠，男孩嚇一跳。
    小狗一直叫，蜂窩開始搖。

11. 男孩爬到一棵大樹上看看樹洞。
    這時候，蜂窩掉在地上。唉呀!蜜蜂飛出來了…

12. 蜜蜂生氣地追著小狗，小狗拼命跑。
    這時候，樹洞裡突然跑出一隻貓頭鷹。男孩嚇一跳，從樹上滾下來。

13. 貓頭鷹飛出來追男孩。男孩跑到一塊大石頭邊。

14. 小狗好害怕，
男孩爬到石頭上，抓住一根樹枝
大聲喊: 小青蛙，你在那裡?

15. 突然，樹枝動起來了，把男孩頂起來。
啊呀! 那不是樹枝，是一頭梅花鹿

16. 梅花鹿帶著男孩向前跑，它要去那裡呢?
小狗也跟著向前跑…

17. 跑啊跑…跑到一個山崖邊 梅花鹿突然停下來
把男孩往前丟，小狗也往下掉
啊…他們兩個都掉下去了!

18. 喔… 他們掉進池塘裡了!!

19. 男孩坐起來，小狗爬到他頭上
咦! 有一棵樹幹在池塘裡。 咦? 後面好像有聲音耶!

20. 男孩說: 噓! 別出聲音。

21. 男孩爬到樹幹上，小狗也爬上去。

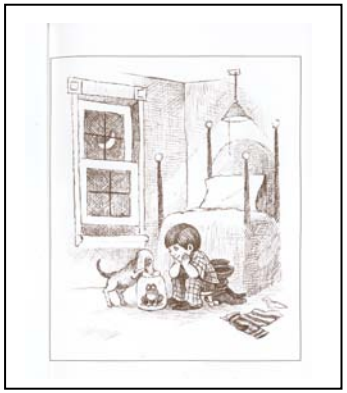
22. 喔…後面有一對青蛙先生和青蛙太太

23. 過一會兒，小青蛙們也出來了，好多小青蛙呦…

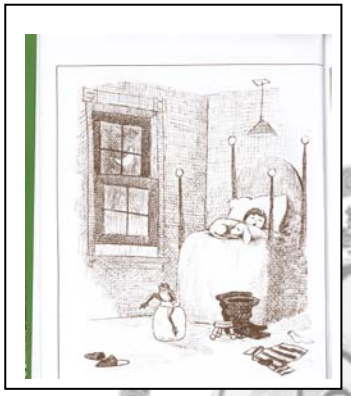
24. 那隻小青蛙有沒有在這裡呢?
有啊! 男孩找到小青蛙。帶它一起回家了!!

Appendix B: Frame and prompt sequence in *Frog Story* retelling

Frame 1

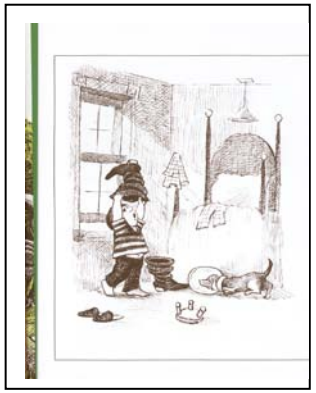


Frame 2



Frame 3

Frame 4



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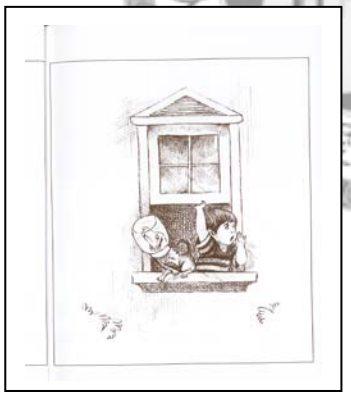
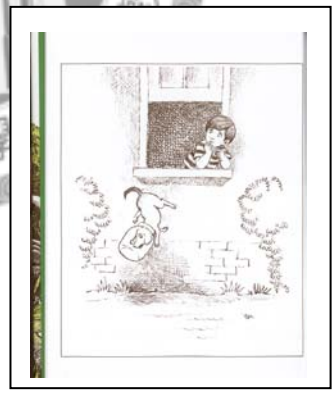
Frame 5



Frame 6



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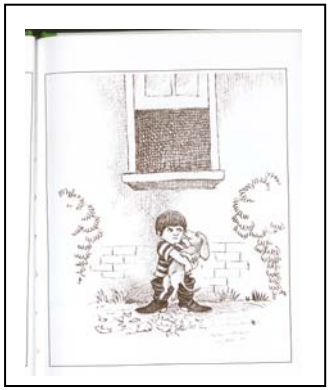
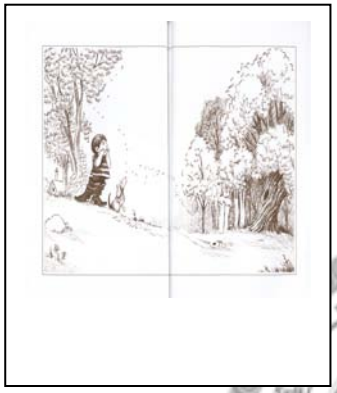
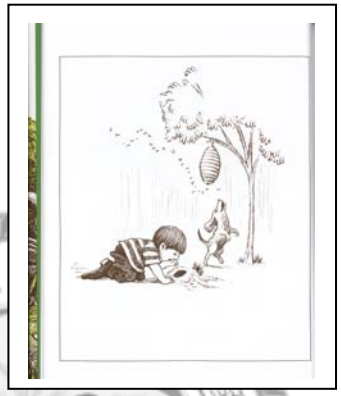
Frame 7



Frame 8



Frame 9



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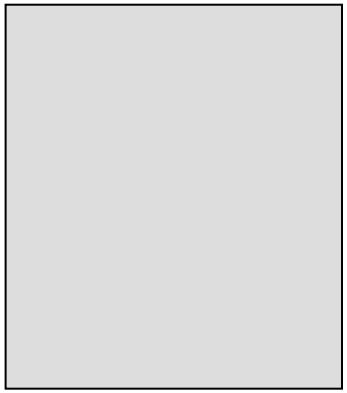
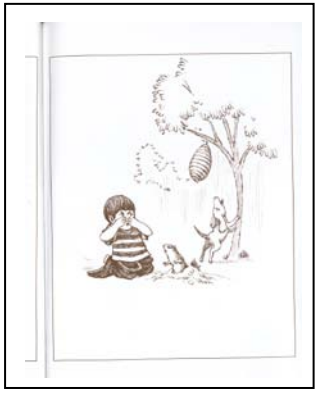
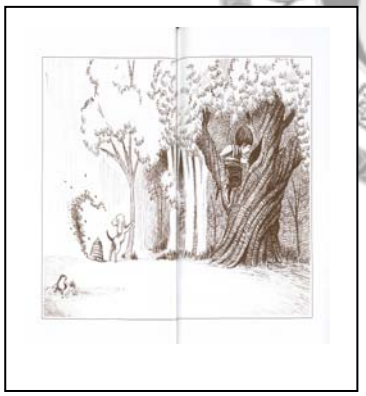


Frame 10



Frame 11



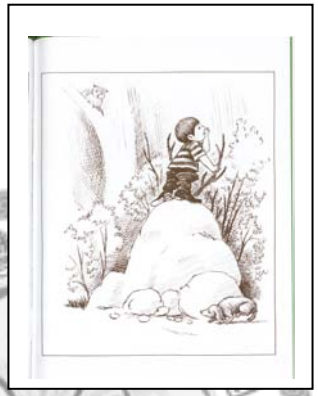
Blank (P4)

Frame 12

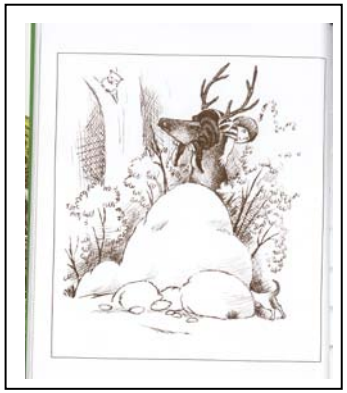
Frame 13

Blank (P5)

Frame 14



Frame 15



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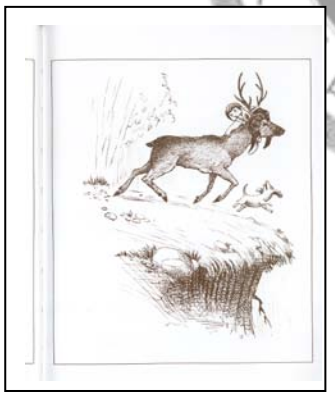
Frame 16



Frame 17

Blank (P7)

Frame 18

Frame 19

Blank (P8)

Frame 20

Frame (21)

Blank (P9)

Frame 22

Frame 23

Frame 24

Blank (P10)

Appendix C: The pictures of Lego bricks

CITY Series 1

CITY Series 2

Appendix D: The complete list of coding system in this study

1. The first layer: information status of the referent (Based on Prince's (1981) Assumed Familiarity Taxonomy)

Type	Code	Definition
1. Brand-new (unanchored)	BN-(U)	An entity is first introduced into the discourse by the speaker, but ***not linked*** by means of another NP. Thus the hearer may have to create a new entity in his/her mind simply with this isolated conception.
2. Brand-new anchored	BN-A	An entity is first introduced into the discourse by the speaker, and ***linked*** by means of another NP. Thus the speaker may create a new entity in his her model with the anchoring of some other discourse entity.
3. Unused	UN-U	An entity is first introduced into the discourse by the speaker, and the hearer may be assumed to have a corresponding entity in his/her own model and simply to place it in the discourse-model.
4. Textually evoked	ET	The NP is uttered whose entity is already in the discourse model earlier, on the textual grounds.
5. Situationally evoked	ES	The entity is uttered whose entity is already in the discourse model for situational reasons, such as discourse participants and salient features of the extra-contextual context.
6. Non-containing inferable	INF-N	A discourse entity is assumed by the speaker that the hearer can infer it via logical, or plausible reasoning from discourse entities already Evoked or from other Inferrables.
7. Containing inferable	INF-C	A discourse entity is assumed by the speaker that the hearer can infer it, and it is inferable by a set-member inference like the inferable relation between '*one egg*' and *these eggs containing the 'one egg'*.

Note: All these seven types may occur with one or more new attributes, as illustrated in *italics* below (Prince, 1981:237).

a. I bought ***a beautiful dress***. (Brand-new +attribute 'beautiful')

b. ***A rich guy I know*** bought a Cadillac. (Brand-new anchored + attribute 'rich')

c. ***Rotten Rizzo*** can't have a third term. (Unused + attribute 'rotten')

2. The second layer: humanness of the referent (animate vs. inanimate)

Five types are examined:

(a) Animate: Person, Animal

(b) Inanimate: Object, Locative, (Abstract) entity

3. The third layer: information availability of the referent in the *Prompting* and *Conditioning*

Type + Code	Definition
Prompting by the adult	
Constituent-relevant prompting	
1. Structural prompt	The adult uses a structural frame (e.g., a verbal slot: V-___) for the child to initiate the following utterances.
2. SHI prompt	The adult uses the SHI construction to elicit the description of the referent in focus.
3. Conj prompt	The adult uses a conjunction to elicit the proceeding of the referent in focus.
4. Temporal prompt	The adult uses a temporal frame (e.g., a temporal phrase slot: just now ____) for the child to initiate the following utterances.
WH-relevant prompting	
1. What prompt	The adult uses a What question to elicit the proposition related to the referent in focus.
2. Who prompt	The adult uses a Who question to elicit the predicate related to the referent in focus.
3. Which prompt	The adult uses a Which question to elicit the identification of the referent in focus.
4. How prompt	The adult uses a How question to elicit the manner and way related to the referent in focus.

The dynamics of Corresponding Conditioning by the child

	Constituent-relevant			
%PMP	Structural Prompt	SHI Prompt	Temporal Prompt	Conj Prompt
%CON	Structural copying	(3) SHI copying (4) SHI completing	2. Temporal copying 3. Temporal completing	(3) Conj copying (4) Conj completing
	WH-relevant			
%PMP	What Prompt	Who Prompt	Which Prompt	How Prompt
%CON	(4) Predicate noun completing **(5)** Argument completing* (6) Proposition Completing	(1) Predicate noun completing (2) Argument completing (3) Proposition completing	(1) Predicate noun completing (2)Argument completing (3) Proposition Completing	(1) Predicate completing (2) Proposition completing

*Note: The argument in the completing may be further specified as Subject (SUBJ) argument, Direct/ Indirect Object (DO and IO) argument and Oblique (OBL) argument.

Type + Code	Definition
Corresponding Conditioning	
1. Structural completing	The child follows the structural frame presented by the adult (e.g., the verbal slot: V-___) to initiate the subsequent utterances.
2. Temporal completing	The child follows temporal frame by the adult (e.g., the temporal phrase slot: just now ____) to initiate the subsequent sentences.
3. Proposition completing	The child answers the WH-question with the proposition related to the referent in focus.
4. Predicate completing	The child answers the WH-question by stating the event related to the referent in focus.
5. Predicate noun completing	The child answers the WH-question occurring in the previous SHI prompting by relating to the referent in focus.
6. Argument completing	The child answers the WH-question by stating the referent related to the argument structure of the adult's previous prompting
7. SHI/ Conj completing	The child follows the SHI/Conj construction to make a statement regarding the referent in focus. This conditioning may be seen as a kind of structural completion in responding to the prompting frame.
8. SHI/Temporal/Conj Copying	The child copies the SHI/Temporal/Conj to continue the utterance relating to the referent in focus.

4. The fourth layer: Communicative acts between the adult and child regarding the referent in focus

Communicative Acts from the adult:

Type/Code	Category	Act	Definition
Adult/	**Eliciting**		
START		Start	The adult encourages the child to initiate the topic by **using some fragmental utterances** as initials.
PROCEED		Proceed	The adult encourages the child to move forward the topic by using some connectors, and the child proceeds to the topic without using the connector.
Adult/	**Request**		
ART		(First/Second…) Ask for retrieval	The adult asks the child to retrieve the event, and the request could be made for several times, depending on the adult's expectation and understanding toward child's response.
AID		(First/Second…) Ask for identification	The adult asks the child to identify the referent in focus, and the request could be made for several times.
ADS		(First/Second…) Ask for description	The adult asks the child to describe the referent in focus, and the request could be made for several times.
ACL		(First/Second…) Ask for clarification	The adult asks the child to clarify the description regarding the referent in focus, and this can be done for several times
ACF		(First/Second…) Ask for confirmation	The adult asks the child to confirm the description regarding the referent in focus, and this can be done for several times.
ADF		(First/Second…) Ask for definition	The adult asks the child to define the generic

		property of the referent in focus, and this can be done for several times.
ARE	(First/Second…) Ask for request	The adult asks the child to make a request regarding the referent in his/her mind. This can be done for several times.
ACR	(First/Second…) Ask for contrast	The adult asks the child to make a contrast between the set of entities, and this can be done for several times.

Adult	**Enquiry**	
	(First/Second…)	
INQUIRE	Inquire	The adult makes an enquiry (questions) regarding the referent in focus.

Corresponding Acts from the child:

Type/Code	Category	Act	Definition
Child/	**Under eliciting**		
CONTINUE		Continue	The child continues the topic regarding the referent in focus by following the fragmental utterances or the connectors initiated by the adult.
Child/	**Under request**		
RRT	(First/Second…)	Retrieve	The child retrieves the event regarding the referent in focus upon the adult's request. And this can be made for several times.
RID	(First/Second…)	Identify	The child identifies the referent in focus upon the adult's request.
RDS	(First/Second…)	Describe	The child describes the referent in focus upon the adult's request.
RCL	(First/Second…)	Clarify	The child clarifies the description regarding the referent in focus upon the adult's request.
RCF	(First/Second…)	Confirm	The child confirms the description regarding the referent in focus upon the adult's request.
RDF	(First/Second…)	Define	The child defines the generic property of the referent in focus upon the adult's request.
RRE	(First/Second…)	Request	The child makes a request regarding the referent

		in focus upon the adult's request.
RCR	(First/Second…) Contrast	The child contrasts the different entities upon the adult's request.
Child/	**Under enquiry**	
ANSWER	(First/Second…) Answer	The child answers the adult's question regarding the referent in focus.

5. The fifth layer: The syntactic type of the conditioning utterances by children

%STP (Syntactic type)	Code	Examples
Restrictive relatives	RC*	你說有什麼過來? 有一個[騎腳踏車的人]過來 (New)
		那盆芭樂是 誰…誰的芭樂啊? 就是[在摘的那個人]的 (Given)
Pseudo-relative clause	PRC	他是在看哪一輛車? 那輛[女生沒有跳起來]的卡車
		你要讓他站裡面 這裡是[停車]的地方
		怎麼個不一樣法? 門是[打開]的
		撞到以後呢? 他就用[牽的]
Temporal coordination	TEM	第二天 [他醒來]的時候 小青蛙就不見了

*Note: In coding the RC, notation for the subtypes of the relative clauses has to be made additionally. There are 36 subtypes of RC characterized in the current study, as can be seen in the following coding table adopted from Table 2.2.

RC Coding table:

MC		RC		
		A	S	O
Head	IN	IN-A	IN-S	IN-O
Headless	(IN)	(IN)-A	(IN)-S	(IN)-O
Head	SUBJ	SUBJ-A	SUBJ-S	SUBJ-O
Headless	(SUBJ)	(SUBJ)-A	(SUBJ)-S	(SUBJ)-O
Head	OBJ	OBJ-A	OBJ-S	OBJ-O
Headless	(OBJ)	(OBJ)-A	(OBJ)-S	(OBJ)-O
Head	OBL	OBL-A	OBL-S	OBL-O
Headless	(OBL)	(OBL)-A	(OBL)-S	(OBL)-O
Head	PN	PN-A	PN-S	PN-O
Headless	(PN)	(PN)-A	(PN)-S	(PN)-O
Head	EX	EX-A	EX-S	EX-O
Headless	(EX)	(EX)-A	(EX)-S	(EX)-O

6. The sixth layer: Five grounding devices of the *DE*-marked expressions

Code	Examples	Note
NP Anchoring	［跟我一起工作］的一個人	The entity ‘一個人’ is linked by means of the discourse participant ‘我’
Predicate grounding	［坐下］的車車	The entity ‘車車’ is linked to the predicate ‘坐下’
Main-clause grounding	他找到了..一個直噴而上的泉水	The entity ‘泉水’ is grounded on the main clause containing a given referent ‘他’ with a main verb.
Subordinate clause grounding	第二天［他醒來的時候］, 小青蛙就不見了	The entity ‘小青蛙’ is grounded on the subordinate temporal clause.
Proposition/Frame linking:	The mother’s sister is a real bigot. Y’know and she hates *anyone* [who isn’t a Catholic].	The entity ‘anyone’is linked to the preceding proposition invoked by the frame of ‘bigot’.

7. The seventh layer: The function of the *DE*-marked expressions

Syntactic types and the functions of DE-marked expressions

Syntactic types	Code (%STP)	Function (%FUN)
a. Restrictive relative clause	RC	Characterizing
	RC	Identifying
b. Pseudo relative clause	PRC	N.A.*
c. Temporal coordination	TEM-B	Background predicate
	TEM-C	Completed action
	TEM-P	Planned action

*N.A.= not applicable