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The use of English referring expressions by Chinese children living in Britain

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THE USE OF ENGLISH REFERRING EXPRESSIONS BY CHINESE CHILDREN LIVING IN BRITAIN

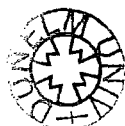## CHANGMING WU

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Abstract

Title: The use of English referring expressions by the Chinese children
in Britain.
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This thesis examined the English referring expressions used by the Chinese children living in Britain and English children matched by English language ability to the Chinese children. Two adult groups (one Chinese and one English) were used as controls. Two experiments were conducted in a year time apart, involving 166 participants in total. In the experiments, participants described stories presented in pictures to listeners who could (E1) or could not (E2) see the pictures. The stories in E1 described two protagonists of different genders, those in E2 described two of the same gender.

Predictions concerned the use of appropriate referring expressions on first mention of novel entities and on second mention of familiar entities; whether a thematic subject strategy was used; whether Chinese children's choice of specific referring expressions (Bare Nouns, Demonstratives, and Zero Anaphors) was influenced by their first language; and which factors (Fist Language, English Language Ability, Cognitive Ability, and Age) were significant predictors of the children's use of English referring expressions.

The main results were as follows: Both groups of children used definite references on second mention more frequently than they used indefinite references on first mention. There were hardly any transcripts showing use of a thematic subject strategy. Instead, participants used either an explicit strategy, in which full explicit noun phrases were used throughout or a strategy in which the subject slot is reserved for the current topic, which may change a the discourse proceeds. English parents predominantly used this second strategy. Regression analyses showed that cognitive ability was the best predictor of first mention indefinites in both experiments and of second mention definites in E1, where definite articles were appropriate for identifying the referent. English language ability was the best predictor of second mention definites in both experiments.

These results were discussed in relation to previous studies and the notion of mental models. It was concluded that Chinese children did not use an inter-language that contained information about specific words or phrases. The major effect of first language may be discourse level strategies, but this was only appeared with the parents.

Acknowledgements

Among the many people who, in diverse ways, have contributed to the production of this thesis, I owe a particular debt of gratitude to my supervisor – Professor Rosemary. J. Stevenson, who gave me the opportunity to study for the degree, who introduced me to a way of thinking about psycholinguistic problems that I found very congenial, whose support and academic expertise and helpful guidance I relied upon throughout my research, and whose constructive comments and clarity of focus led me away from many pitfalls. I am grateful to her for sharing her knowledge and insightful ideas generously and for giving me courage when it was hard to carry on. Very special thanks go to her for her continuing accessibility when she was poorly.

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My acknowledgments would not be completed without the mention of my family, particularly my parents who taught me the value of education; my husband, whose love and support helped maintaining sanity,

Dedication

I dedicate this thesis to two people in particular,
My mother, Mrs Dingqun Wu, and my father, Mr.
Tierui Wu, who are filling my life with love. Thank
you for the opportunities, support and guidance
with which you have always provided me.

Declaration

The research contained in this thesis was carried out by the author between 1997-2000 while being a postgraduate student in the Department of Psychology at the University of Durham. None of the work contained in this thesis has been submitted in candidate for any other degrees.

Statement of Copyright

The copyright of this thesis rests with the author. No quotation from it should be published without their prior written consent and information derived from it should be acknowledged.

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Table of Contents

Chapter 1   Theoretical Background To The Current Study

1.1   The Aims

This study investigates how Chinese children living in Britain use English referring expressions compared with English children. Three analytic approaches are taken. First, the Chinese children's use of referring expressions is compared to that of English children. The children were matched for English language ability (Details in Chapter 4) in a standard analysis of variance design (ANOVA in later appearances). Second, multiple regressions are used to examine how well Age, Cognitive Ability, English Language Ability, and First Language each predict appropriate use of referring expressions. Last, qualitative measures were used to examine the use of a thematic subject constraint.

The layout of this thesis is as follows: In Chapter 1, I place the work of the thesis in a theoretical context by first discussing the functions of English definite and indefinite articles and then showing how the theory of mental models (Johnson-Laird, 1983) provides a useful framework for thinking about how people use articles appropriately. The theory of mental models focuses on the role of cognition in the use of referring expressions. It shows how inferences are needed to supplement the information in the linguistic string in order to comprehend and produce referring expressions. In Chapter 2, in contrast, I focus on the role of language in the use of referring expressions by discussing the linguistic features that define referring expressions in English on the one hand and Chinese on the other. In Chapter 3, I review acquisition studies of referring expressions, first, the studies on first language (L1) acquisition and, then, the studies on second language (L2) acquisition. The studies of Emslie and Stevenson (1981), Karmiloff-Smith (1985), and Warden
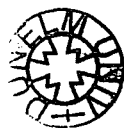
(1981a), on which the current study is based, are of particular interest in Chapter 3.

In Chapter 4, I describe the general background to the current study. All the children were required to do two preliminary tests before any of the experiments started, so that the children's cognitive ability and English language ability were assessed, aiming to 1) create the English language ability matched groups between the Chinese and English; 2) conduct the correlation and multiple regression analyses. (Details in Chapter 4.)

In Chapters 5 and 6, I describe and report the results of the two experiments. Three sets of results are reported. Comparisons are made: Chinese children vs. English children, Chinese children vs. their parents, and English children vs. their parents. Data are analysed in two ways: First, ANOVAs are run on the three sets of data mentioned above. Second, multiple regression analyses are conducted on the children's data only. (The parents' data are excluded from any of the regression analyses.) In the multiple regression analyses, Age, Cognitive Ability, Linguistic Ability (English Language Ability), and First Language are the four predictor variables.

In Chapter 7, I discuss the general findings from the current study. First, I discuss all the findings from ANOVAs, regarding: 1) Referent introducing expressions, 2) Referent maintaining expressions, 3) The use of a thematic subject constraint, and 4) Other types of referring expressions. Second, the regression data are discussed in relation to three of the four predictor variables. Age was excluded from the discussion since no significant influence of Age was found in the study. Further studies are suggested at the end.

1.2   Functions of Articles

In the English language, the indefinite and definite articles mainly function referentially. Indefinite descriptions do not presuppose mutual

knowledge and therefore serve to mark referent introductions (new information), whereas definite descriptions denote mutually known entities (old information). The semantic properties and pragmatic functions of the indefinite and definite descriptions in English language are discussed in Sections 1.2.1 & 1.2.2, respectively.

1.2.1   Indefinite Descriptions

In this section, I mainly concentrate on the uses of the indefinite article based on the work of Christophersen (1939) and Hawkins (1978).

Introductory Use   An entity is introduced into discourse for first time often by means of an indefinite article:

> 1.1   Once upon a time, there lived <u>an old farmer</u> and his
>   wife in a small village that had no children. ...

The indefinite article 'an' is used here to introduce a person who has not been previously identified to listeners in discourse. In this case, 'a/an' implies 'a certain' (Maratsos, 1976). The centre of attention is one particular entity (being taken out of a whole class of such objects) and its specific characteristics. This individual entity is known to speakers, but not to listeners. In order to use an indefinite article appropriately in an identifying expression, a speaker, being able to appreciate that what is known to him/her is new to his/her listener, has to use an indefinite article for the introduction. This use of indefinite article is also known as referential usage, meaning to mark referents (or membership of a class) for the first time (Lee, et al. 1994, Zehler et al. 1982).

Existential Use   The indefinite article together with a noun phrase (NP in the later appearances) may be used to indicate the existence of the NP. Examples are typically introduced by the phrases 'there is/are', or with the verb 'have/get', as in the following examples:

> 1.2   There is <u>a famous university</u> in my hometown.

> 1.3   My daughter has <u>a pet hamster</u> called Hammy.

Generic Use   The generic use of indefinite articles mirrors a conception of the whole genus as one individual unit, accompanied by certain knowledge that what is said about this individual would have been equally true if we had chosen another member of the same class instead.

    1.4   <u>A horse</u> is a useful animal.

In this example it is not the case that one particular horse is being singled out, but rather that there is a reference to the complete species of horses. Formally this use may be identified in many cases by the substitutability of a definite article or plural forms. Examples are given in 1.5 and 1.6.

    1.5   <u>The horse</u> is a useful animal.

    1.6   <u>Horses</u> are useful animals.

The contrast between generic 'a' and 'the' is similar to that between 'every' and 'all'. 'The' represents an aggregating generic, it embraces the whole plurality; 'a' is a singularizing form, it points out single items separately.

Indicating Use   An indefinite article is used to indicate unspecified referents when a speaker has no particular class member in mind:

    1.7   I need <u>a ruler</u>.

In this case 'a' implies 'any'. The speaker does not mean a particular ruler, but any one from this class will do.

Naming Use   (the nominative use of 'a') Here a referent has already been identified and is referred to by 'that' as in Example 1.8. An indefinite article used here names the class to which the entity belongs. In this case, 'a' is used in the sense of 'one'.

    1.8   That is <u>a cat</u>.

Used On Subsequent Mentions   On the other hand, indefinite articles may single out one entity which has already been mentioned in discourse or whose existence in discourse would be inferred from the shared general knowledge. Consider this example:

1.9 There are many racing-horses in the farm. <u>A horse</u>
just came back from a race.

'A horse' in the second sentence has already been introduced by the first sentence. So it means 'one member of the class of horses' which has been introduced previously in discourse. But the indefinite description is used here to denote one of the racing-horses. Consider another example:

1.10 I paid thirty-five pounds for a book this morning and
was horrified to discover <u>a page</u> was missing.

'A page' in the second part of the sentence is not a new entity in the discourse context, since 'a book' has already been mentioned in the first part of the sentence. "A page" is used to show just one of the pages in this book.

All in all, indefinite articles mainly function as Introduction; Existence; Generic; Indication; and Naming. And they may also be used on subsequent mentions. The introductory use of indefinite articles is, as discussed above, to introduce an entity to listeners in discourse. This referential use of indefinite articles is one of the major issues addressed in this thesis. I shall return to this function of indefinite articles later in Section 1.3 when I discuss mental models.

1.2.2 Definite Descriptions

Definite articles have attracted a great deal attention from Psychologists, Linguistists, and Philosophers (Appelt, 1985; Carter, 1987; Clark, 1977; Clark and Marshall, 1981; Cohen, 1978; Dale, 1992; Grosz, 1977; Hawkins, 1978; Heim, 1982; Kronfeld, 1990; Neale, 1990; Poesio, 1993; Poesio & Vieira, 1996; Russell, 1905; Sidner, 1979; Strawson, 1950; Webber, 1979;). One of the reasons for this interest in definite descriptions is that definite NPs are one of the most common constructions in English. Two uses of definite descriptions are most commonly discussed in the literature: 1) definites that pick up a referent introduced in a discourse (the second mention or the referential/anaphoric use); 2) definite descriptions that pick up a previously un-mentioned

referent from the context (the first mention use) (as discussed in Grosz, 1977).

Before talking more about how to use definite articles appropriately, it is necessary to classify the uses of definite articles. In this thesis, I used the classification proposed by Hawkins (1978), which is a refinement of the scheme proposed by Christophersen (1939). Hawkins (1978) lists eight classes of definite descriptions. Details are given below.

Anaphoric Use   These are definites used to refer back in discourse to an entity or an event introduced in the form of an indefinite description.

When a listener hears an indefinite description, he/she enters an object into his/her mental model (to be discussed in Section 1.3) of discourse. The subsequent use of a definite article signals that the listener should pick out this object from his/her mental model of discourse. Thus, the act of referring anaphorically involves a form of instruction to the listener to match the linguistic referent of definite description with a particular object in his/her mental model of the discourse.

Visible Situation Use   This use occurs when an object referred to is visible to both a speaker and his/her listener and it is unique in that situation, as in the following examples:

1.11   Pass me <u>the bucket</u>.

1.12   Look at <u>the tree</u>.

Under such visible situations, a speaker assumes that the descriptive predicate used will enable a listener to identify the intended object ('the bucket', 'the tree' in the above examples), since there is only one appropriate referent in the listener's visual field. If there is more than one bucket/tree in the listener's vision, then the use of definite descriptions 'the bucket' or 'the tree' will cause ambiguity for the listener. It is not strictly necessary in the visible situation use that the

speaker can actually see the referent. But it is vital that the listener should be able to see the intended object in order to carry out the above requests.

Immediate Situation Use   These are the cases where the referent exists in the immediate situation in which the propositional act of reference is taking place. Consider the examples:

> 1.13   Don't go in there.   <u>The dog</u> will bite you.

> 1.14   Mind <u>the step</u>.

Although he/she is being informed of the existence of these objects ('the dog', 'the step'), the listener does not have to be able to actually see the referent in the immediate situation. He/she is being instructed to use the immediate situation of the utterance to determine which dog is meant and not other possible dogs. It is the dog in the house where the notice is displayed.

Larger Situation Use   Two classes of definite descriptions are used in situations in which a speaker appeals to a listener's knowledge of entities, which exist in the non-immediate or larger situation of utterance (knowledge they share by being members of the same community, for instance). Specific and general knowledge are the two extremes.

A definite description may be based on the use of specific knowledge in the larger situation. For instance: people from the same village will share a pool of knowledge of various entities existing in that village and they can start a conversation saying 'the church' or 'the pub' without a preceding indefinite description, meaning the church or the pub of their village. Members of the same nationality can also talk about 'the Queen', 'the President' on the first mention. This is the case in which the specific referent is actually known about as a separate individual, distinct from its class. This is equivalent to the use of definite NPs, as in Example 1.15, in which it is assumed that the speaker and listener are both inhabitants of Changchun, a city, which used to have a big reservoir:

1.15   The reservoir is no longer there.

A definite description may also make use of general knowledge in larger situation. Consider the following sentence in the context of a wedding:

1.16   Have you seen the bridesmaids?

Such a first mention of 'the bridesmaids' is possible on the basis of the knowledge that weddings typically have bridesmaids. In the same way, a first mention of 'the bride', 'the best man', and 'the cake' would be possible. In this case, the listener is being instructed to locate the referent in the appropriate larger situation to which the referent belongs. It is important to note that if the speaker and listener are from different communities, and do not share general knowledge under certain situations, then the use of definite articles on the first mention will be ambiguous, such as: 'the cake' used in the context of a wedding between a European person and a Chinese, since it is not essential for a Chinese wedding to have a cake.

Associative Anaphoric Use   This is the class of definites for which Clark (1977) uses the term Bridging Inference (Christophersen, 1939; Jespersen, 1949; Hawkins, 1978). In this case, a speaker and listener have the knowledge of relations between certain objects (the triggers) and their components or attributes (the associates). It also reflects both the importance (in some sense) and the frequency of the relation. Consider the examples:

1.17 A book ...   The author is unknown. The content is
       abysmal.

1.18 A house ...   The roof is leaking. The windows are
       broken.

1.19   A car ...   The make ... / The colour ...

On these occasions there is no preceding indefinite reference to 'the author' or 'the content'. Mention of a book is sufficient to permit the immediately following first mention definite descriptions, 'the author' /

'the content'. When the definite article is used in this way, it indicates that the entity referred to by 'the author' / 'the content' is understood as being the author or the content of the previously mentioned book. It appears that the mention of one NP, e.g. 'a book', can conjure up a whole set of associations for the listener, which permit the use of the definite descriptions 'the author', 'the content'. This is because these objects (e.g. a book, the author, the content, etc.) co-occur with sufficient frequency and are sufficiently closely related for associative anaphora to be possible. The listener in this case must be able to first identify the correct set of associates, and then locate the referent in this set.

Unfamiliar Use   This is the case when a speaker and listener do not share any knowledge of the referent being talked about. These definite descriptions are not anaphoric (do not refer to any information about the situation of utterance), and are not associates of some trigger in the previous discourse. Hawkins (1978) groups these definites in classes with NP complements. Consider the examples:

> 1.20 I remember <u>the time</u> when I left home for the first
> time and went to a farm in 1977.

> 1.21 There was a funny story on <u>the front page</u> of The
> Guardian this morning.

Unexplanaory Modifier Use   Finally, Hawkins (1978) lists a small number of modifiers, which require the use of 'the', even though they do not function to introduce the unknown, definite referent to listeners. Consider the example:

> 1.22 My husband and I share <u>the same secrets</u>.

Please note that there is nothing in this modifier that actually informs a listener which secrets it is that my husband and I share. It points merely to an identity between the two sets of secrets, my husband's and my own.

In summary, definite articles mainly functions as Anaphoric, which means that the definite description is used on subsequent mentions to refer back to a previously mentioned entity in discourse. On hearing a

definite description used anaphorically, a listener should be able to match it to a particular entity previously introduced into the discourse and add more information to it. A definite article may also be used on first mention in certain situations, such as: Visible, Immediate, and Larger Situation. The entity which a definite description is referring to must be in the listener's current vision or immediate vision, or the speaker and listener share general knowledge of the topic of the conversation. Alternatively, the listener may be able to make a bridging inference based on general knowledge of an entity already introduced into discourse. A definite description may also appear in some NP complements and some unexplanaory modifiers. The anaphoric use of the definite article and its uses on first mention are the important issues to be discussed in this thesis.

In this section, I discussed the functions of indefinite and definite articles. Now I try to describe and explain how a speaker uses these functions and how a listener interprets them in discourse in terms of Johnson-Laird's (1983) theory of mental models.

1.3   Mental Models

1.3.1   Brief Introduction

A mental model, as conceived in this thesis, is an internal model (or a representation) of the situation described by each sentence in the discourse. Johnson-Laird (1983) proposed that there are two kinds of representations for discourse: one is a propositional representation and the other is a mental model. The propositional representation is similar in structure to the linguistic input. It consists of the concepts activated by the meaning of the words in the sentence and the concepts are linked together in ways specified by the syntactic structure of the sentence (Stevenson, 1993). A propositional representation describes the basic idea underlying the sentence. Consider the following sentence:

1.23 The protesters blocked the roads.

This proposition expressed by the sentence is:

BLOCK (protesters, roads)

In the above proposition, 'BLOCK' is the predicate and 'protesters' and 'road' are the two arguments. So a propositional representation consists of two parts - the predicate and arguments. The proposition above does not identify the referents in the sentence; the referents must be inferred from background knowledge of the described situation. These inferences, together with linguistic information in the proposition, are used to construct a mental model (Stevenson, 1993).

A mental model is a non-linguistic representation of the situation described by the sentence. It can represent objects, relations between objects, actions and sequences of events. Mental models are structurally similar to part of the real world rather than to any linguistic input. It is based on propositional representations and it also draws on general knowledge and other representations to go beyond what is explicitly asserted (Bransford, Barclay and Franks, 1972; Bransford and McCarrell, 1977).

Inferences, plausible rather than logical, are involved in constructing a mental model, which enable the listener to go beyond a propositional representation and construct a mental model of the situation described by the sentence (Stevenson, 1993). The information contained in a mental model may be used to answer questions, and to make inferences. A mental model may be supplemented by, or even created from, perception, memory, imagination and other mental processes (Emslie, 1986).

The mental model will contain a representation of individuals, events and relations plus what is known about the knowledge of the other participants in the discourse (Emslie, 1986). This mutual knowledge (the speaker and listener's knowledge of each other's knowledge) determines how individuals ought to be described and how descriptions will be understood. That is to say during discourse, a speaker must take into account what a listener knows in order to make his/her intentions clear to

the listener. During discourse whenever a new individual is introduced into a discourse, a corresponding entity is then introduced into the listener's mental model. And whenever the individual is mentioned again in a discourse, the entity standing for that individual is then located in the model and the new information is integrated with the representation of that individual.

The question then is what are the speaker's and the listener's tasks during discourse? The speaker's task is to choose an appropriate form to refer to a particular object in order to describe his/her model to the listener. The speaker's description of a particular entity will be influenced not only by the content of his/her own model, but by his/her intentions and judgement of the structure or content of the listener's model; the listener's task is to construct a representation of the discourse which is similar enough to that of the speaker's for him/her to interpret the speaker's utterances.

Johnson-Laird and Garnham (1980) proposed that during discourse both the speaker and listener construct, rarely the same, mental models of the discourse. Such models contain representations of entities relevant to the present discourse, and of properties of those entities. Furthermore, Johnson-Laird and Garnham (1980) argue that, in addition to his/her own model, a speaker also needs to construct the listener's model and update this model as the discourse proceeds. By comparing his/her own model of the situation with the listener's model, the speaker can decide whether a definite or indefinite description is needed.

Having introduced the basic idea of the theory of mental model (Johnson-Laird, 1983) and the speaker and listener's task during discourse, now in the following sections, I shall continue the discussion on mental models, detailing the speaker's and listener's models in relation to indefinite and definite descriptions. According to Johnson – Laird's (1983) theory, the use of such models is the starting point for understanding how referring expressions are used.

1.3.2 Listener's Model

1.3.2-1   Listener's Model & Indefinite Descriptions

On hearing an indefinite description, a listener is instructed that something new is being introduced and so a new memory location is set up to accept the incoming new information in the indefinite description. During the procedure of constructing his/her discourse model, the listener adds a new token to the mental model of the discourse. Consider the sentence:

1.24   Pass me <u>a bucket</u>.

Here the listener is instructed, on hearing the indefinite description 'a bucket', to put a new token representing a member of the class of buckets into his/her mental model. Similarly in:

1.25   John is <u>a bully</u>.

The indefinite description instructs a listener to put a new token representing a member of the class of bullies into his/her mental model and link it to 'John' with a relation of identity, e.g. John = bully.

Indefinite descriptions may also single out one entity, which has already been established in the discourse or whose existence in the discourse would be inferred from the shared general knowledge. Remember Example 1.9:

1.9   There are many racing-horses in the farm.   <u>A horse</u> just came back from a race.

'A horse' in the second sentence has already been introduced into the model linguistically by the first sentence. On hearing this indefinite description, the listener would look back through the memory representation to search for the appropriate antecedent and then select one of the tokens representing a member of the class of horses. So the indefinite description in this case is not used to introduce a new entity to the discourse, but means 'one member of the class of horses' which has been introduced previously in the discourse. Remember Example 1.10:

1.10 I paid thirty-five pounds for a book this morning and
was horrified to discover <u>a page</u> was missing.

'A page' in the second part of the sentence is not a new entity to the model, since 'a book' is already in the current model. The listener would know from the shared general knowledge that books contain many pages and the indefinite description in this case simply singles out one of the pages in this book.

In summary, on hearing indefinite descriptions, a listener is normally instructed that a new entity is being introduced into the discourse, so that a new location of memory is set up to accept the incoming new information into his/her model. On the other hand, indefinite descriptions may single out one entity which has already been established in a discourse or whose existence in the discourse would be inferred from the shared general knowledge with the speaker. In the study reported here, the focus is on the use of indefinite descriptions to introduce new entities to listeners.

1.3.2-2   Listener's Model & Definite Descriptions

On hearing definite descriptions, how a listener constructs, integrates, and updates his/her model is what will be discussed in this section. Definite descriptions, as discussed in Section 1.2.2, are first and most commonly expected to appear on subsequent mentions of an entity in a discourse. This corresponds to the anaphoric use of definite articles (Hawkins, 1978). But under certain circumstances, definite descriptions may be used to mention an entity for the first time. This corresponds to either the 'unfamiliar' use of the definite article (Hawkins, 1978) or to the visible, immediate, and larger situation uses and the use of bridging inferences based on general knowledge of a previously introduced entity (Hawkins, 1978). These different uses of the definite descriptions are to be discussed below under the subtitles: Constructing a mental model (the unfamiliar use); Updating a mental model (the anaphoric use); and

Integrating mental models (the visible, immediate, and larger situation uses and also the use of bridging inferences).

Constructing A Mental Model   Definite descriptions in Examples 1.26 & 1.27 below are 'unfamiliar uses' termed by Hawkins (1978).

>   1.26   There was an article about the Fuel Crisis on <u>the front</u>
>   <u>page</u> of The Times this morning.
>
>   1.27   I like <u>the name</u> Mania.

On hearing a definite description of this kind, a listener may construct a new model of a unique token representing the entity, which is provided by the speaker later in the sentence. These definite descriptions are used on first mention and the entities described in definite descriptions have never been introduced previously in the discourse. So new models are constructed on hearing them.

Updating A Mental Model   The semantics of definite descriptions indicate (among other things) that someone or something familiar is being referred to. A listener, on hearing the definite description used on subsequent mentions, is expected to know that the information provided by the definite description is already in his/her model, so he/she is seen as looking back through the mental model of the discourse in order to search for something to match the current information. Thus a definite description triggers an instruction to look in the mental model for an entity that was previously introduced. When a listener has found out the matching information, the new information in the current sentence is then added to it. This is the procedure of updating the model by adding a piece of new information.

Such a strategy will, of course, handle the simple cases of definite descriptions, since the presence of them indicates to the listener that he/she is dealing with a known entity, and should search for an appropriate antecedent in the mental model.

If a definite description is presented in a singular form, then there should not be other tokens of the same type in the discourse model and a listener is instructed to find one unique token and match it to the verb.

As Johnson-Laird and Garnham (1980) express: a singular definite description "specifically debars the presence of other tokens of the same type from the discourse model". Consider the sentences here:

1.28   The university appointed a new professor yesterday.

Barbara met <u>the professor</u> a couple of minutes ago.

The single definite description 'the professor' in the second sentence is the only token of the same kind mentioned in the discourse already, so the listener would be able to match it easily to the entity, which is previously introduced. If the university appointed more than one new professors yesterday, then the listener would have a problem in deciding which professor was the one Barbara talked about, because more than one tokens corresponding to 'the professor' have been introduced into the mental model.

On hearing a plural definite description, a listener is instructed to link every single token of a set or link the set as a whole to other arguments of the verb.

Integrating A Mental Model   One use of a first mention definite article is what Hawkins terms 'the associative anaphoric use'. On hearing a definite description of this kind, a listener is instructed to trigger off a set of associates and the definite description is used as one of them. Consider the following example:

1.29   I went to a new school with my mum. She was

talking to <u>the headteacher</u>.

The second sentence requires the introduction of a token representing a member of the class of headteachers. Such a token may already be available in the listener's model if the word 'school' triggers the listener's imagination, so that he/she creates a representation of a prototypical school with a headteacher, a deputy head, year heads, and class teachers, etc. If 'school' does not trigger off the associations between a school and a headteacher, then the definite description itself can trigger its introduction by way of bridging inferences based on our knowledge of schools. The information about the headteacher is

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integrated with the model of the situation described in the preceding sentence. Another example (Christophersen, 1939) (discussed previously): 'a wedding', 'the bride', and 'the cake'. If 'a wedding' is mentioned in the previous utterance, then 'the bride' and 'the cake' may be used in the following utterances in the form of definite descriptions under the same topic. The listener is expected to integrate this new information into his/her mental model on the basis of general knowledge.

Similar inference processes are used to integrate new information into the mental model when visible, immediate and larger situation uses of definite articles are encountered. For example, on hearing 1.13:

1.13   Don't go in there. The dog will bite you.

The listener infers that a dog is in the location mentioned in the first sentence and will integrate this inference into the mental model of the warning described by the first sentence.

Thus definite descriptions are, first and most commonly, expected to appear on subsequent mentions of an entity in a discourse, but under certain circumstances, they may be used to mention an entity for the first time. On hearing a definite description used on subsequent mentions, a listener is expected to know that the described entity is already in his/her mental model, so he/she should look back through the memory to match the current information with an existing entity in the model. This is the process of updating his/her mental model.

On hearing an 'unfamiliar use' of a definite description, a listener constructs a new mental model of the situation described by the sentence, since there is no antecedent for the definite NP already in the model. This is a process of constructing his/her mental model. On hearing a definite description used on first mention, a listener uses inferences to integrate the description into the mental model by linking this new information with an entity already in the model. This is the process of integrating information in a mental model.

1.3.3   Speaker's Model

During a discourse, a speaker may use different referential expressions to refer to different entities. The way a speaker chooses between different types of referential devices, under different informational conditions during the discourse, reflects his/her presuppositions about the recoverability of the intended referents, in other words, indicates his/her judgement of the listener's discourse model, or depends on the speaker's knowledge about his/her listener's mental model. A speaker's model is discussed as follows in depth in relation to the uses of indefinite and definite articles.

1.3.3-1 Speaker's Model & Indefinite Descriptions

As discussed above, when an indefinite description is used, it normally indicates that something new is being introduced and so a new memory location contained in the description is being set up. When choosing an indefinite description, a speaker should know that he/she is talking about a new entity to the discourse, although it is already known to him/her. The new entity has not been introduced to the discourse and so the listener has no idea at all about the entity. In order to set up a referent in an appropriate way in this situation, the speaker, appreciating that what is known to him/her is new to the listener, has to use an indefinite article to introduce the entity to the discourse. Remember Example 1.1: "Once upon a time, there lived <u>an old farmer</u> and his wife in a small village..." The indefinite description 'an old farmer' is used to introduce a new entity into a discourse. Obviously, the phrase 'an old farmer' is known to the speaker, but unknown to the listener, so that an indefinite description should be used to indicate that the entity being introduced is somebody new to the listener. But in Examples 1.4 & 1.7:

    1.4   <u>A horse</u> is a useful animal.

    1.7 I need <u>a ruler</u>.

The speaker is not intending to single out a particular entity (one particular horse/ruler), he/she is referring to the whole set of the class of

horse/ruler. Quite often a speaker uses an indefinite description to indicate a class membership. Like in Example 1.8: That is <u>a cat</u>.

Finally, an indefinite description in 'there is/are' phrases or used together with verbs 'have/get' may express the existence of an entity rather than to introduce a new entity to the discourse as in Examples 1.2 & 1.3:

> 1.2   There is <u>a famous university</u> in my hometown.

> 1.3   My daughter has <u>a pet</u> hamster named Hammy.

On the whole, in using indefinite articles, a speaker, first and foremost, is introducing a new entity to a discourse, which, although known to the speaker, has not yet been mentioned previously in the discourse (in Example 1.1); secondly, a speaker may use indefinite articles to identify the whole class of a referent rather than a single particular entity (in Example 1.7) or to indicate a membership of a class (in Example 1.8); finally, a speaker is intending to describe the existence of a referent through phrases of 'there is/are' or the verbs 'have/get' (in Examples 1.2 & 1.3).

1.3.3-2   Speaker's Model & Definite Descriptions

A definite description is used by a speaker when he/she judges that a listener has already represented the entity in his/her mental model or can add to his/her discourse model a unique token either on the basis of specific linguistic information or on the basis of shared knowledge for which there is either a linguistic or situational 'trigger' (Hawkins, 1978). A definite description informs a listener that the entity to which reference is being made is, or is going to be, the only such referent relevant to the current discourse.

A definite description is used anaphorically when the entity to which reference is being made has previously been identified linguistically, thus there is already a unique token in the listener's mental model.

> 1.30 A boy and a girl are walking along the seaside. <u>The</u>
> <u>boy</u> is going to fish by the sea, while <u>the girl</u> is about
> to make a sandcastle. ...

Alternatively, the speaker may make use of relationships such as class inclusion to imply a link with the antecedent as in Examples 1.31 & 1.32:

> 1.31 Tony was working at <u>a lathe</u> yesterday. All of a
> sudden <u>the machine</u> stopped turning.

> 1.32 Bill was wearing <u>trousers</u>. <u>The pants</u> had a big patch
> on them.

In these cases, the listener must make a bridging inference to interpret the definite description as intended. A speaker uses such first mention definites when he/she assumes that the listener can easily infer the intended referent from either knowledge of the prior discourse or general knowledge of the described situation.

Thus there are three important points to note when a speaker chooses to use definite descriptions: 1) A speaker must judge whether or not the token for that entity is in the listener's mental model at the time the sentence is spoken. If it is not, a speaker introduces the entity to a discourse by an indefinite description in order to allow a listener to allocate memory location for this new entity in his/her mental model. If a speaker judges that a token expressing the entity is in the listener's mental model, then he/she will refer to the entity using a definite description; 2) A speaker must be sure that the listener is familiar with the semantic relationship between the two terms, when a bridging inference has to be made to link the two terms together, e.g. a lathe - a machine; trousers - pants, etc. On using of this kind of definite descriptions, the speaker should know that a previous mention of an entity is not enough on its own to ensure the successful interpretation of a definite description in the following sentences and that the listener must have the relevant knowledge of the world and of the specific context to be able to identify this token and make a link between the two tokens.

3) In what Hawkins terms the visible, immediate and larger situation uses definite descriptions can be used without a prior introduction of the relevant entity if the speaker judges that identifiability of the referent is possible because of shared knowledge of the visible context or 'general knowledge of the existence of certain types of objects in certain types of situation ... [and] of the predictability of the object in question in this situation' (Hawkings, 1978, p. 119). This general knowledge may be common knowledge by virtue of speaker's and listener's shared local background or shared cultural, national, and/or regional background. As Grannis (1972) suggests, the definite article signals that the speaker is uniquely defining a mutual world of discourse. To this extent a speaker is "inviting-or compelling" his listener to share in a conspiracy of uniqueness.

Having explained the theory of mental models, which is being adopted as a theoretical framework for the current investigation into the Chinese children's use of English referring expressions, now it is time to discuss the linguistic features of referring expressions in both the English and Chinese languages.

Chapter 2   Typological Considerations - English and Chinese

In this Chapter I focus on the linguistic component in the children's use of referring expressions. The basic concepts concerning reference and referring expressions are introduced first. They are discussed mainly within the English language rather than any other languages, this being the specific language that the thesis is about. Next, the linguistic features regarding referring expressions in the two languages - English and Mandarin Chinese, are introduced.

2.1   Basic Concepts

2.1.1   Reference

Reference is a semantic relation expressed by grammatical means. It involves a minimum of two people: a speaker and a listener. Reference in conversation is "the speaker's ability to guide the listener to select precise referents of NPs" (Rochester & Martin 1977, p.245). A speaker signals referents to a listener and if the signalling strategy is successful, the listener has no difficulty in finding the referent, so that both the speaker and listener are jointly attending to the same object or idea.

English NPs may be either referential or non-referential. (It is the referential feature that is of interest in this thesis.) A NP is referential whenever it is used to refer to an entity. This entity may be physical or conceptual, real or hypothetical, singular or plural. It is possible to use different linguistic forms to refer to the same entity and the same linguistic form to refer to different entities. The questions then are: what does a speaker know that enables him/her to choose an appropriate form

to refer to a particular entity and what does a listener know that enables him/her to identify the intended referent of a particular form? In the English language, as discussed in Chapter 1, an indefinite description introduces an entity, a definite description refers back to it that has been previously introduced into a discourse, and a definite description on first mention of an entity requests a listener to infer the existence of the referent either from general knowledge of the described situation or by discovering a link between a new entity and an entity already introduced into the discourse.

2.1.2 Referring Expressions

Referring, from a psychological point of view, is analogous to pointing in that a speaker chooses a linguistic expression to point to an entity, or group of entities, that s/he wishes to talk about (Emslie, 1986).

Although definites and indefinites both function referentially (as discussed in Chapter 1), they differ from each other. A definite description refers to an entity that a speaker believes it is known to a listener, while an indefinite description refers to an entity, which a speaker believes a listener does not yet know about. When a new entity is first introduced into a discourse, an indefinite description is used. When an entity has already been introduced, an appropriate definite expression is used. A pronoun is appropriate when an entity has already been mentioned in the discourse and is also receiving the most attention by the speaker. Pronouns are needed to the extent that the entity is in the speaker's and also in the listener 's mental model. If there are two or three discourse entities, which are similar in any aspect (e.g. they are of the same gender, etc.), the referring expressions need to be sufficiently rich to distinguish them (e.g. modifiers, etc.) otherwise ambiguity will be increased.

Referentiality is considered to be a pragmatic as well as semantic property of mentions of objects in discourse. A linguistic expression is said to be referential when it is used to refer to a particular individual

that a speaker assumes has already been established in a discourse or is intended to be established as a new entity in a listener's mental model of the discourse.

In terms of the discussion of mental models in the preceding chapter, the referent of a NP is determined through constructing a mental model. By contrast the grammatical means of expressing reference is captured in the propositional representation of a sentence. The construction of a mental model uses the propositional representation, together with inferences based on general knowledge to construct a model of the situation described by the sentence. Thus, the use of a mental model involves general cognitive processes (e.g. inferences), whereas the use of a propositional representation involves only linguistic processes (e.g. lexical or grammatical). In this Chapter, I focus mainly on the lexical or grammatical means of expressing references and on linguistic knowledge needed to use referring expressions appropriately, not on the cognitive skills to identify a unique referent.

2.2   English Language

In order to understand the similarities and differences between the Chinese and English children's use of English referring expressions, it is important to look at the semantic and pragmatic functions of NPs in the English language.

In the English language, indefinite, definite articles and pronouns mainly function referentially. Indefinite articles (or indefinite descriptions/indefinites) do not presuppose mutual knowledge and therefore serve to mark referent introductions (new information), whereas definite articles (or definite descriptions/definites) and pronouns denote mutually known entities (old information). Table 2.1 shows the classes of indefinite and definite descriptions in the English language.

	-Indefinites	The Indefinite Article: <u>a</u>
		Quantifier Expressions: <u>all</u>, <u>any</u>, <u>some</u>, <u>two</u>,
		Pronouns: <u>something</u>, <u>many</u>
Referring Expressions		
		Proper Names: <u>John</u>, <u>Beijing</u>
		Personal Pronouns: <u>I</u>, <u>she</u>, <u>us</u>
	-Definites	Demonstratives: <u>this</u>, <u>that</u>, <u>these</u>, <u>those</u>
		The Definite Article: <u>the</u>
		NPs with a modifier: <u>the man who was singing</u>, <u>the little girl's mum</u>

Table 2.1   The classes of indefinite and definite descriptions in the English language.

2.2.1 Indefinite Descriptions

As discussed in Chapter 1, indefinite articles are mostly used on first mention. An entity is introduced into a discourse for the first time often by means of an indefinite article, as in Example 1.1: "Once upon a time, there lived <u>an old farmer</u> and his wife in a small village..." Also an indefinite article together with a NP may be used to indicate the existence of the NP, as in Example 1.2: "There is <u>a famous university</u> in my hometown." This use of an indefinite article typically appears in 'there is/are' phrases or with verbs 'have/get'. The generic use of an indefinite article mirrors a conception of the whole genus as one individual unit and what is said about this individual would have been equally true to another individual from the same class. Indicating and naming are other two functions of indefinite articles. In Example 1.7: "I need <u>a ruler</u>". The

speaker does not mean a particular ruler, but to indicate a kind of tools that the speaker needs. In Example 1.8: "That is <u>a cat</u>", an indefinite article is used to name the class to which the entity belongs. On the other hand, indefinite articles may also be used on subsequent mentions. As in Example 1.10: "I paid thirty-five pounds for a book this morning and was horrified to discover <u>a page</u> was missing", 'a page' is a part of the entity (book), which has already been mentioned in the first part of the sentence.

Again in summary, indefinite articles mainly function as Introduction; Existence; Generic; Indication; and Naming. And they may also be used on subsequent mentions. The introductory use of an indefinite article is to introduce an entity to a listener in a discourse. This referential use of an indefinite article is one of the essential issues addressed in this thesis.

2.2.2   Definite Descriptions

As discussed in Chapter 1, definite articles mainly function Anaphorically, which means that a definite description is used on subsequent mentions to refer back to a previously mentioned entity in a discourse, as in: "Kath was discussing an interesting book in the class. I went to discuss <u>the book</u> with her afterwards." On hearing the definite description used anaphorically, a listener should be able to match 'the book' to a particular entity previously introduced into the discourse (here 'an interesting book') and add more information to 'the book'. A definite article may also be used on first mentions under different situations, such as: Visible, Immediate, and Larger Situation. The entity which a definite description is referring to must be in the listener's current vision or immediate vision, or the speaker and listener share general knowledge of the topic of the conversation. In Example 1.11 "Pass me <u>the bucket</u>", 'the bucket' locates in both the listener's and speaker's vision and it must be the only bucket in that situation, otherwise the use of a definite article will cause ambiguity. In Example 1.14 "Mind <u>the step</u>", 'the step' is in

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the listener's immediate vision. In Example 1.15 "The reservoir is no longer there", the speaker and the listener should share the knowledge of 'the reservoir', so that a definite article is used appropriately in this situation. Alternatively, a listener may be able to make a bridging inference based on general knowledge of the entity already introduced into a discourse. A definite description may also appear in some NP complements and some unexplanaory modifiers. The referential use of a definite article and its use on first mention are the other essential issues to be discussed in this thesis.

2.2.3   NP Features

According to Brown (1973) the presence of the English articles 'a/an' or 'the' with singular referent depends on the specificity [+/-S] of the referent, and on whether or not it can be presupposed [+/-P] that a listener will know which specific referent (SR for short) the speaker has in mind. In an extension of Brown's work, Bickerton (1981) proposed that an English NP reference falls into two binary semantic features: [+/-SR] and [+/- HK (assumed hearer's knowledge)], so we can have the following four categories of references as shown in Table 2.2.

	Specific Referent [+SR]	Non-specific Referent [-SR]
Hearer's Knowledge Assumed [+HR]	**the** 1) A boy and a girl.... The boy..., while <u>the girl</u> ... 2) <u>The sun</u> is hot. 3) Pass me <u>the bucket</u>. 4) <u>The reservoir</u> is no longer there.	**a; the; φ** 1) <u>A horse</u> is a useful animal. 2) <u>The horse</u> is a useful animal. 3) <u>Horses</u> are useful animals.
Hearer's Knowledge Not Assumed [-HK]	**a; φ** 1) <u>A dog</u> bit me yesterday. 2) <u>Books</u> are everywhere in the house.	**a; φ** 1) I want <u>an orange</u>. 2) Is there any <u>water</u> in the thermos?

Table 2.2 The four categorise of the English NPs based on the works of Brown (1973) and Bickerton (1981).

In standard English, NPs falling in [+SR] [+HK] category are marked with obligatory 'the', where the definite article functions referentially; while those falling in [-SR] [-HK] and [+SR] [-HK] are marked with an indefinite article 'a' or zero article 'φ'. These NPs are non-referential. Category [-SR] [+HK] represents the generic use, which in Standard English can be marked with 'a', 'the', or 'φ'. The English NPs in categories [+SR] [+HK] and [+SR] [-HK] are particularly examined in this thesis.

Bickerton also claims that no language would mark Categories 1 and 3 one way and Categories 2 and 4 another, since these categories share no common semantic features. We will see in Section 2.3 that referential forms in Chinese are consistent with this claim.

2.2.4 *Pronouns*

Reference and substitution are two terms often mentioned in connection with pronouns and their function (Thavenius, 1983). A pronoun regarded as a substitute does not invest it with an independent and meaningful function. It is a linguistic replacer of a full NP, functioning to avoid repeating a full NP, which carries the meaning. A substitute pronoun in context is a carrier of meaning. Consider an example cited from Bloomfield (1933, p.247): "My axe is too blunt. I must get a sharper one." "One" used in the second sentence is a replacer of the word "axe" appeared in the first sentence.

A pronoun regarded as referential, on the other hand, means that the pronoun contributes semantically to discourse, as well as to its cohesion and coherence. The meaning of a pronoun always depends on an identifying referent, often mediated through a discourse referent. Consider the example:

2.1   Dr. Niu has moved to Durham recently. He took up a job
        in the Physics Department.

The pronoun 'He' refers to Dr. Niu. There is no difficulty in identifying the referent in the context. When a pronoun refers to (or substitutes for) a previously mentioned entity (as in Example 2.1), it is called an Anaphoric Pronoun. (Anaphoric pronouns are of great interest in this thesis.) By contrast, Dectic Pronouns refer to an entity in the physical situation. As in 2.2:

2.2   It is our new car.

In language there is always a choice to be made between alternative ways of expression. A speaker's decisions are, however, influenced by linguistic and extra-linguistic factors, which restrict the choice. A speaker will use pronouns to refer in two ways: he/she can refer to something that is mentioned in discourse, and the reference is then textual and anaphoric (Anaphoric Pronouns); or he/she can refer to

something that has not been mentioned, but can be retrieved from the current situational setting (Dectic Pronouns).

In general it can be supposed that if a speaker believes that a pronoun will be correctly interpreted, he/she may choose a pronoun rather than a full NP. Pronouns (e.g. "it", "he") are typically used when a referent is highly salient for both the speaker and listener, while full NPs, e.g. 'the dog', which are more informative, are used when a referent is not highly salient in discourse (Ariel, 1990; Grosz, Joshi & Weinstein (1983); Gundel, Hedberg, & Zacharski, 1993; Marslen-Wilson, Levy, & Tyler, 1982).

2.2.5 *Degrees Of Informativeness Of Referents*

If languages are classified according to degrees of informativeness of referents, the English language is considered one of the most informative languages and the Chinese language one of the least informative (Huang, 1984). English always specifies the existence of referents through the use of such signals as anaphoric pronouns. For example:

> 2.3 A: Did Bill see Mary yesterday?
>
> B: Yes, <u>he</u> saw <u>her</u>.

In English a zero pronoun (ϕ) is only allowed as the subject of a tenseless sentence/phrase, but not as the subject of a tensed sentence, or as the object of any sentence either (Huang, 1984). Consider 2.4 A-F (anything with * is ungrammatical):

> 2.4 A   Peter promised Bill ϕ to see Mary.
>
> B   Peter preferred ϕ seeing Mary.
>
> C*   Peter promised Bill that ϕ would see Mary.
>
> D*   Peter promised Bill that Mary would see ϕ.
>
> E*   Peter promised Bill to see ϕ.
>
> F*   Peter preferred Mary's seeing ϕ.

In 2.4 (A) & (B), ɸ is the subject of tenseless phrases; in (C), ɸ is the subject of a tensed sentence; in (D) - (F), ɸ is the object of the sentences. This restriction appears to be purely grammatical in nature, having nothing to do with semantic or pragmatic factors. This is clear from the following discourse. Although the reference of an otherwise omitted pronoun is clear, omission is prohibited (Huang, 1984):

> 2.5 A: Did Bill see Mary yesterday?
>
> B: (1)   Yes, <u>he</u> saw <u>her</u>.
>
>   (2)*   Yes, ɸ saw her.
>
>   (3)*   Yes, he saw ɸ.
>
>   (4)*   Yes, ɸ saw ɸ.
>
>   (5)*   Yes, I guess ɸ saw ɸ.
>
>   (6)*   Yes, Bill said ɸ saw ɸ.

In contrast, the Chinese language belongs to the category of least referentially informative languages. The referents of Chinese are usually omitted in a context where they can be understood from the discourse and pragmatic contexts. A zero pronoun may occur as the subject or object of a sentence, regardless of whether it is finite or not (Huang, 1984). The following discourse is from Chinese, where all of speaker B's answers (1-6) are well-formed:

2.6A 铁如　　看见　　　国红　　了 吗 ？
Tieru　see　Guohong

(Did Tieru see Guohong?)

B1.　他　看见　　她　　　了 .
he　see　she/her

(He saw her.)

2.　φ　看见　　她　　了 .
see　she/her

((He) saw her.)

3.　他　看见　φ　了 .
he　see

(He saw (her).)

4.　φ　看见　φ　了 .
see

((He) saw (her).)

5.　我　猜　φ　看见　φ　了 .
I　guess　see

(I guess (he) saw (her).)

6.　铁如　说　φ　看见　φ　了 .
Tieru　say　see

(Tieru said that (he) saw (her).)

2.3 Chinese Language

The typological features of Mandarin Chinese will be discussed in this
section. The word *Mandarin Chinese* or *Modern Standard Chinese*
denoting the major dialect family of China (spoken in most provinces of
the P.R.China, Singapore, and Taiwan) is an established linguistic term
in the West (Li & Thompson, 1981). There are many striking features of

Mandarin Chinese which set it apart from English. The features that are to be discussed in this chapter are: 1) classifiers; 2) semantic and pragmatic features of NPs; 3) types of anaphors; 4) topic prominence.

2.3.1 Classifiers

2.3.1-1 Definition And Structures

To English speakers, one of the most striking features of the Mandarin NPs is the classifier (CL for short) (Li & Thompson, 1981). A classifier is a word that must occur before a noun (N), that is accompanied by a number (NUM) and/or a demonstrative (DET) or certain quantifiers (QUAN). Consider the following structures:

NUM + CL + N

> 2.7:　三　　　个　　　人
> 　　　three　CL　people
> 　　　(three people)

DET + CL + N

> 2.8:　那　　　条　　　　'
> 　　　that　　CL　　　dog
> 　　　(that dog)

QUAN + CL + N

> 2.9:　几　　　件　　　衣
> 　　　a few　CL　　garment
> 　　　(a few garments)

2.3.1-2 Types Of Classifiers

There are several dozen classifiers, most of which can be found in Chao (1968). Hickmann, et al (1996), Li and Thompson (1981) propose two types of classifiers. The first is the 'general' classifier (GCL for short) 个, which can be used with any kind of nouns:

> 2.10:　一　　　个　　　看
> 　　　a　　GCL　view/opinion
> 　　　(a/one point of view/opinion)

The second type consists of 'specific' classifiers (SCL for short) (over a hundred), the selection of which is determined by the nouns/sets of nouns they accompany. That means certain types of nouns/sets of nouns require certain specific classifiers to go with them. There are classifiers for measurement, containers, aggregates and so on (Hickmann, et al 1996). For example, <u>pound</u>' is a classifier in 'a pound of rice' , '<u>bottle</u>' is a classifier in 'a bottle of milk and so on. Basically, these specific classifiers enable you to talk about a mass noun as if it were a count noun. Other nouns like: books, caps, shoes, shirts, birds, horses, cattle, and teachers, etc. all have their own specific classifiers, which are obligatory in all contexts where these nouns are accompanied by numbers.

2.3.1-3   Functions Of Classifiers

All classifiers, either general (GCL) or specific (SCL) can mark either definite or indefinite references (Hickmann, et al 1996). If the classifier phrase includes a demonstrative, then it is necessarily definite, since the demonstrative serves to point out known entities. The noun phrase 人 ren (person) in Example 2.11 is definite [+SR] [+HK]:

2.11:   <u>这   个   人</u>

    this   CL   person

    (this person)

If, on the other hand, a classifier phrase includes a number but no demonstrative, then it is indefinite [-SR] [-HK], as in 2.12:

2.12:   <u>两   盆   水</u>

    two   bowl   water

          SCL

    (two bowls of water)

In a situation denoting a new entity, a general classifier is typically used. Special classifiers rather than general classifiers are preferred in a situation referring to definiteness. (Hickmann, et al 1996; Li & Thompson, 1981). However, this classification is not clear cut and there are many exceptions.

2.3.2 Semantic And Pragmatic Features Of NPs

The Mandarin Chinese does not have the words that correspond to the
English words the' and a' (Li & Thomps on, 1981, p 131-2), so it is
not obligatory, as in English, to mark indefinite or definite references
lexically. Alternatively, it is possible to indicate definiteness by sentence
structures or NP positions in the sentence, or even depending on a certain
discourse context where the referent is being described. (The last way is
a cognitive rather than linguistic issue, since inferences are involved in
the process.) Below, I identify the lexical expressions that are available
in Chinese for marking definiteness/indefiniteness, after which I describe
the alternative means by which definiteness/indefniteness may be marked.

2.3.2-1 Lexical Encodings

Table 2.3 shows all the classes of indefinite and definite lexical
descriptions in Mandarin Chinese. Only some of the entries in the table
are discussed, since the rest are self-explanatory.

Referring Expressions	-Indefinites	The number — ¹, one The number(— , one) + a determiner: e.g. — 点 a bit; — 些 some 几 several 谁 somebody; 什么 something Bare nouns

	-Definites	Proper Names: 西藏 Tibet; 张 三 Zhangsan
		
		Personal Pronouns: 他 he; 她 she;
		
		Demonstratives: 这 this; 那 that
		
		A modifier + a noun:
		  e.g. 正在 唱歌的 孩子 the child who is singing
		    铃铃 的 奶奶 Lingling' s Grann
		Bare nouns
		
		A number (other than one) + 都 all:
		
		Zero Pronouns

---

¹ " — " in the table stands for "one" in Chinese.

Table 2.3   The classes of indefinite and definite descriptions in Chinese.
Indefinite References   The great majority of the indefiniteness in Mandarin Chinese are presented by the number ʻoneʼ together with a classifier, because the number ʻoneʼ functions, more or less, the indefinite article in English, as in 2.13:

2.13:   她 / 他   买   了   ___一___顶___   帽 子 °
          s/he   buy   a/one SCL   hat
                (S/He bought a/one hat.)

Also, indefiniteness may be marked if a noun phrase is preceded by some determiners containing the number ʻoneʼ as a component, such as 一 些 (some), 一 点 (a bit), again this is mainly because of the specific meaning of the number ʻoneʼ. Consider Examples 2.14 and 2.15:

2.14:   ___一 些___   学 生   来 了 .
        some   student   come
        (Some students came.)

2.15:   我   想   喝   ___一 点___   水 .
        I   want   drink   a bit   water
            (I want some drink.)

Alternatively, bare nouns (nouns with zero articles), may mark indefinite references. (They may also mark definiteness, which is discussed later in this section.) Consider Example 2.16:

2.16: ⒈   跑   了 .
       dog   run   away
       (A/The dog ran away.)

Any of these indefinite NPs may come from either of the -SR categoriy of Brown (1973) and Bickerton (1981) or from the [+SR] [-HK] categories. That is, these different categories are not clearly distinguished in Chinese.

Definite References   In Mandarin Chinese, previously mentioned information is often marked with bare nouns as in 2.17. (The bare noun (guest) may also indicate a new entity, as discussed previously.)

2.17 客人　　走　　了．

      guest   leave

      (The/A guest left.)

If a noun has a demonstrative classifier phrase, then this NP is necessarily definite, since the demonstrative serves to point out known entities as discussed previously.

2.18: 你　认识　不　认识　那　个　人？

     you know not know that CL person

     (Do you know that person?)

If a noun has a number, other than 'one' together with 都 (all) to refer to the plurality of the subject, it is regarded as a definite reference, because 都 (all) means every member of a certain class. Here are two examples:

2.19: 三　个　孩子　都　上学．

     three CL   child   all   go to school

     (All the three children go to school.)

2.20: 两　件　毛衣　都　在　柜子里．

     two   CL jumper all   in   wardrobe

     (Both of the two jumpers are in the wardrobe.)

Finally, pronouns including zero pronouns (φ), always denote mutually known referents, which partially shares the same characteristic with the English (Note zero pronouns are not allowed in English). Such as:

2.21: 他 / φ　买　走 了．

     he   buy

     (He/(He) bought (it).)

The above definite expressions may be in either of the two [+HK] categories of Brown (1973) and Bickerton (1981). Hence definiteness in Chinese appears to differentiate between novel and familiar referents.

Summary   The number 'one' together with a classifier may be used to mark indefinite; also the phrase containing exist/have' is always used to introduce a new entity. The demonstratives and zero pronouns,

however, refer to the previously mentioned entities. Only bare nouns fail to distinguish between definite and indefinite references.

2.3.2-2 Grammatical Structures

Definite and indefinite references in Mandarin Chinese are commonly indicated by either sentence structures or NP positions in the sentence. Consider the following three structures:

1. A noun phrase in a sentence beginning with a location expression, such as: 花瓶 里, (in the vase), 书架 上 (on the bookshelf), etc. is more likely to be a definite reference.

<div align="center">

2.22: 在　碗　里　有　　两　　个　　鸡蛋.
in bowl have two CL egg
(There are two eggs in the bowl.)

</div>

鸡蛋 (egg) (in 2.22) refers to the two eggs in the bowl. Because there are only two eggs in the bowl, it is a definite reference.

2. A NP used in the existential phrase containing the verb 有 (have/ exist) is indefinite. This phrase is similar to 'there are/is' in English.

<div align="center">

2.23: 刚才　　有　　人　　给　你　打　　电话.
just now have somebody give you make telephone
(Somebody called you just now.)

</div>

人 (somebody) (in 2.23) is in the existential phrase containing the verb 有 (have/exist), so it is an indefinite reference.

3. A NP positioned at the beginning of a sentence may be an indefinite reference, if the speaker is making a general comment rather than narrating an event or incident.

<div align="center">

2.24: 香蕉　　很　　好　　吃.
banana very good eat
(Bananas are delicious.)

</div>

<div align="center">

2.25: 猫　　捉　　老鼠.
cat catch mice
(Cats can catch mice.)

</div>

In 2.24 & 2.25, 香蕉 (banana) and 猫 (cat), both positioned at the beginning of a sentence, are of indefinite references. (They are actually the topics to be commented on.) But things are different in questions. Consider Examples 2.26 and 2.27:

2.26:　笔　　在　　　哪 ?
　　　　 pen　 is　　 where
　　　　 (Where is the pen?)

2.27:　哪　　　　有　　　笔?
　　　　 where　 is　　 pen
　　　　 (Where is/are pen/s?)

笔 (pen) in Example 2.26 is a definite reference, while in Example 2.27 is an indefinite reference. The difference between 2.26 and 2.27 is the position of the noun 笔 (pen). In 2.26, the noun is placed before the verb,so it refers to a mutual known pen, while in 2.27 the noun is positioned after the verb, so it refers to a new entity.

To summarise, indefinites may be marked by an existential phrase or by a sentence in which the NP positioned at the beginning with an exception in questions, while definites may be marked by a sentence beginning with a location expression.

2.3.2-3   Dependence On The Context

Unlike the other indicators of definiteness and indefiniteness, dependence on context is cognitive rather than linguistic. However, it is included here to complete the account of ways in which definiteness and indefiniteness can be identified in Chinese. Consider Example 2.28:

2.28:　我　　买　　了　　花.
　　　　 I　　 buy　　　 flower
　　　　 (I have bought some/the flowers.)

If 2.28 is occurred in a context in which 花 (flower) has already been introduced or is understood by both the speaker and listener, then it is definite. Otherwise, it is indefinite.

2.3.2-4 Summary

In summary, there are three different ways to indicate definiteness and indefiniteness in Mandarin Chinese. First of all, the way to mark definite and indefinite may be lexical. As discussed previously, by means of lexicon, the number one, t oget her wt h a cl assi fi er may be used t o mar k indefinite; also the phrase containing 有 exist/have is always used to introduce a new entity. The demonstratives and zero pronouns, however, refer to the previously mentioned entities. Bare nouns fail to distinguish between definite and indefinite references; Alternatively, definite and indefinite references are commonly indicated by either sentence structures or NP positions in the sentence. A NP in a sentence beginning with a location expression is more likely to be a definite reference, while a NP used in the existential phrase containing the verb 有 (have/ exist) is indefinite, in the case of a NP positioned at the beginning of a sentence, it indicates an indefinite reference in a declarative sentence and a definite reference in a question. Finally, if the above two ways fail to mark definiteness and indefiniteness, then the discourse context is involved, which is cognitive rather than linguistic.

2.3.3 Types Of Anaphors

The anaphoric devices in Mandarin Chinese, broadly speaking, fall into three formal categories: nominal, pronominal and zero anaphor (Chen, 1986; Wu, 1999). Since the main features of the nominal anaphors have been discussed in Section 2.3.2, here I mainly focus on pronominal and zero anaphors in Mandarin Chinese.

2.3.3-1 Pronominal Anaphor

Functions   Similarly to English, pronouns in Mandarin Chinese constitute a special class of NPs. A pronoun always refers to a known entity, an entity whose identity has already been established by the time the pronoun is being used. For example:

2.29 A:　花园　　里　　有　　很多　　花.

　　　　　garden   in   exist   a lot of   flower

(There are a lot of flowers in the garden.)

B:　它们　都　　很　　美丽.

　　　　they   all   very   beautiful

(They are all very beautiful.)

In 2.29, the noun 花 (flower) is the antecedent of the pronoun 它们 (they). The antecedent and the pronoun are co-referential with each other because of the anaphoric property of the pronoun.

System　　Mandarin Chinese differs from English in that its third person singular pronoun does not specify gender (Chen, 1986). Although three different characters have been introduced into the language to indicate male, female, and non-human referents in written form, in spoken Chinese, a single word ta(1) is equivalent to " he" , " she" , and " it" in English The plural for m pronouns are for med through addi ng a suffix men(2) to ta(1) . Also there is no case marking on Mandarin pronouns. For example, there is only one word for both ' he' and ' him , also one word for ' we' and ' us' , etc.   Mandar i n Chi nese is , therefore, less informative than English in this respect. The pronominal system of Mandarin Chinese is summarised in Table 2.4.

Singular		
1st person	我 (I/me)	我 是 一 个 学 生 . (I am a student.)
2nd person	你, （您） (you)	你/您 好！ (How are you!)
3rd person	他, 她 , 它[2] (he/him, she/her, it)	她 来 看 他 了 . (She came to see him.)
Plural		
1st person	我们 (we/us)	我们 一 起 干 吧 . (Let us work together.)
2nd person	你们 (you)	你们 去 哪 儿 ？ (Where are you going?)
3rd person	她们, 他们, 它们 (they/them)	他们 都 走 了 . (They are all gone.) 它们 真 可 爱 . (How sweet they are!)

Table 2.4   Pronominal system of the spoken langauge
in Mandarin Chinese. (The spoken language is the topic of this thesis.)

2.3.3-2   Zero Anaphora

Zero anaphora refers to the situation in which there is a syntactic « hole»
in the sentence where a referent is understood by not explicitly
mentioned (Chen, 1986). It refers to an entity that appears earlier in a
discourse (Chen, 1986; Huang, 1984; Li & Thompson, 1981). It is a
characteristic of anaphoric reference that distinguishes Chinese from
English (Wu, 1999). Chinese speakers and listeners have to rely upon
contextual and pragmatic knowledge in order to interpret zero pronouns
rather than upon syntactic and semantic factors (Chen, 1986; Li &
Thompson, 1981, Wu, 1999). Zero pronouns also occur in English (e.g. «
John closed his books, ɸ (he) put them away). This context with English,
where syntax determines the interpretation of zero pronouns, is called ‹
verb phrase ellipsis› .

Another situation in which a referent is understood without being
overtly mentioned (zero anaphors occur) in each utterance is the so called

---

[2] 他 , 她 , and 它 all pronounced ₜa(l) in   spoken   language.

topic chain. Each utterance is about one referent. As soon as the referent has been set up in the first utterance, then it is normally omitted in the subsequent mentions. For example:

> 2.30   After John got off the plane, he went to the hotel
> directly. As soon as φ settled down, φ went to the
> conference. In the evening, φ went out with his
> friends for a meal.

In English, it has been suggested that topic chains, such as 2.30, are marked by the use of pronouns as opposed to definite descriptions (e.g. Karmiloff-Smith 1981).

When a subject is a zero pronoun, people tend to take the referent of the prior subject in the preceding sentence as its antecedent by default as long as such an assumption is not semantically incompatible. It is to be expected that explicit anaphoric devices are required when the reference of the subject of the prior sentence is discontinued in the current predication. But in Example 2.31 a zero anaphor refers to the preceding object (switching reference from the subject to object position). (Note reference to a preceding object by a zero anaphor is not possible in English.)

> 2.31   那 个 男 孩 很 感激 这位老伯，
> that boy very thank this old man
>
> 所 以 ， 当 φ 还 他 帽 子 的 时 候,
> so when return his cap time
>
> 他 送给 这位老伯 一 件 小 礼物.
> he give this old man a small present
>
> (That boy was very appreciative to the old man,
> so when (the old man) gave the cap back to him,
> he gave a small present to the old man.)

In writing, a zero anaphor for a switched-reference is more frequently used than in speaking. Taken in isolation, a zero anaphor used in such

situation appears bewildering, because it would be predicted to result in misunderstanding or ambiguity in the identification of the reference of the anaphor since a zero anaphor itself does not carry any information with regard to the identity of the antecedent.

2.3.4   Topic Prominence

According to the studies by Li and Thompson (1976) there are four basic types of languages: 1) languages that are Subject Prominent (Sp); 2) languages that are Topic Prominent (Tp); 3) languages that are both Sp and Tp; 4) languages that are neither Sp nor Tp. In Sp languages, such as English, the structure of sentences favours a description in which the grammatical relation (subject-predicate) plays a major role; in Tp languages, the basic structure of sentences favours a description in which the grammatical relation (topic-comment) plays a major role (Li & Thompson, 1976, p.459).

A topic, according to Li and Thompson (1976, p.86), has two semantic characteristics: 1) naming what the sentence is about; 2) referring to a known entity in the discourse. A topic always refers to an entity or a class of entities that has or have already been introduced to the discourse, so that the listener already knows about it or them. A topic always occurs in sentence-initial position and may be followed by a pause or a pause particle, e.g. 呀 , 吧, etc. in Mandarin Chinese.

Mandarin Chinese is a Topic Prominent language (Huang, 1984, 1989; Jin, 1994; Li & Thompson, 1976; Rutherford, 1983; Schachter, et al 1978, 1979). The following features (F1-4) of Mandarin Chinese are described and summarised by Huang (1984, 1989) and Jin (1994):

F1:   Phrase-structure rules - In Mandarin Chinese, a topic, not a subject, is a basic unit of a sentence. So topics are obligatory in Mandarin Chinese.

F2:   Empty elements - Mandarin Chinese allows empty elements to occur in the positions of topic, subject, and object.

2.32 A: 你　要　苹果　吗？

you　want　apple

(Do you want any apples?)

B: ф　要　ф.

want

((I)　want　(it).)

In Example 2.32B, two elements were dropped out: 1) the one functioned as both the topic and the subject (I); 2) the object (it); leaving only one element - predicate (want).

F3: Double nominative constructions - In Mandarin Chinese, it is common to have double nominative constructions. The first nominative is used as a topic and the second as a subject. A pause is often inserted between the two nominatives. The topic and subject in double nominative constructions can be non-coreferential as in Example 2.33 or co-referential as in 2.34.

2.33: 那　个　人　他　妈　病　了．

that　CL　man　his　mother　sick

(The man' s mother is sick)

2.34: 那　个　孩子　他　很　淘气．

that　CL　child　he　very　naughty

(The child is very naughty.)

F4: Definite markings - In Mandarin Chinese, the previously mentioned information is often marked with zero articles, or bare nouns (as discussed previously), e.g. 车(car) in Example 2.35. Bare nouns of this kind can occur at the positions of the topic, subject, object, and others.

2.35 我　买　了　车．

I　buy　car

(I bought the car.)

In summary, Mandarin Chinese is a topic prominent language. The topic appears in the first position and is always definite, referring to given information. In syntax, both empty elements and double nominative structures are allowed. They may occur in the positions of the topic, subject, and object. Bare nouns or zero articles may mark not only indefiniteness, but definiteness. English, on the other hand, is a subject prominent language since the subject and predicate play main roles in English syntax. Empty elements may occur in English (as in " John closed his books, φ put them away, and φ left"), but not double nominative structures. Bare nouns are not possible to mark definiteness.

2.3.5 Summary

Having discussed the referential systems of the two languages respectively, it is easy to summarise that the Chinese referential system differs from English in the following ways:

1. Richness of morphology - Unlike the English language which provide morphological systems (articles) to mark definiteness and indefiniteness, Chinese has basically no morphology, providing only rare and optional lexical markings, e.g. classifiers, (Hickmann, et al 1996).

2. Additional markings - Chinese sentence structure (word order) is a central marking in discourse and in the sentence (Hickmann, et al 1996). In contrast, the sentence structure in English provides very few additional markings to indicate definiteness and indefiniteness due to the richness of morphology.

3. Topic prominence - A topic, naming what the sentence is about, always refers to a known entity in discourse.

In the current study, the issue regarding the use of the English morphological markings (definite and indefinite expressions) to introduce a new entity to discourse and to maintain a familiar referent in the discourse are examined in two aspects: 1) how good the Chinese and

English children are at introducing novel referents with an indefinite reference; 2) how good both groups of children are at referring to a familiar referent with a definite reference.

As regards the influence of L1 (Chinese) on the learning of L2 (English), it might be expected that Chinese children will use more bare nouns than English children. The Chinese children may also use zero anaphors in contrast to the English children.

Chapter 3   Acquisition Studies Of Referential Expressions

English referential expressions have been studied in adults and children in various ways - from the grammatical point of view (Christophersen, 1939; Jespersen, 1949); from the viewpoint of comparative linguistics (Kramsky, 1972), and in terms of a psychological framework, either looking at adults' use and understanding (Hupet & Le Boudec, 1975; Pratt & Garton, 1982), or making a developmental study. Within a developmental framework, the acquisition of the articles has been studied both naturalistically (Brown, 1973) and experimentally (Garton, 1982, 1983; Karmiloff-Smith, 1979; Maratsos, 1976; Warden, 1976).

In the last 20 years, researchers in Second Language (L2) Acquisition have been trying to explain how children or adults with different first language (L1) backgrounds construct English referential expressions from the aspect of interlanguage (Huebner 1985; Lee et al 1994; Master 1987; Parrish 1987; Thomas 1989). The word "interlanguage" indicates the path that lies between the source or native language and the target or second language (Selinker, et al, 1975). It is likely that L2 learners whose L1s do not contain an article system differ in English article acquisition from those whose L1s contain such a system (Lee et al, 1994; Thomas, 1989).

In this chapter, I focus on: 1) studies of L1 acquisition; 2) studies of L2 acquisition. In discussing L1 acquisition studies, two subtitles are used: Definite vs. Indefinite Articles and Pronouns vs. Definite Articles. L2 acquisition studies are grouped into two sub-sections: Investigations of Bickerton's Four Contexts and Differences in Types of NPs.

3.1   L1 Acquisition Studies

3.1.1   Definite vs. Indefinite Articles

3.1.1-1   Naturalistic Study

Brown   Brown (1973) conducted a longitudinal study of the development of English as a first language, in which he provided us with the most detailed naturalistic study of the acquisition of definite and indefinite articles. Three children (aged 18 - 27 months) were visited either every week or every other week. Their spontaneous speech and conversations with their parents at home were assessed. Brown argued that appropriate usage of both articles could be defined in terms of specificity/non-specificity of the referent as conceived by the speaker/listener.

From his study Brown found: 1) children used indefinite descriptions when the referents were non-specific for both the speaker and listener; 2) children were able to use a definite description (including the use on first mention) correctly when the referent was mutually known to be specific; 3) children often used definite descriptions inappropriately when the referents were novel for the listener, as shown in the following example:

> Child: I want to open <u>the door.</u>
>
> Mum: Which door?"
>
> (Cited from Brown, 1973)

This is due to 'children's egocentrism' (in Brown's view). Brown concluded that not until between the ages of 32 and 42 months, roughly three years, do children control the specific/non-specific distinction as coded by the articles (Brown, p.355).

Overall, Brown's naturalistic data leave many questions unanswered. It is difficult to evaluate Brown's analysis of correct and incorrect usage in the absence of more specific knowledge about the context. It is not clear whether or not he is claiming that children can sometimes create a

discourse referent and maintain reference to it in the absence of the referent (Emslie, 1986).

3.1.1-2   Story Comprehension

Maratsos   Maratsos (1976) conducted a series of experiments with American children (aged 2;8-3;9) to examine the child's understanding and use of English articles with respect to the presupposedness of their referents. Three developmental groups (3-year olds, low performing 4-year olds, and high performing 4-year olds) were involved in his production study. The task was: the children listened to a story first and then were asked to complete questions on a question-and-answer sheet, aiming to test children's ability to use 'the' to refer to a specific referent that has previously been verbally identified, to use 'a' to refer to 1) a specific, but previously unidentified referent, and 2) a non-specific referent.

He found from his studies: 1) 3-year olds used the indefinite article appropriately to identify a new referent, but failed to use the definite article on subsequent mentions. They over used indefinite articles in this case; 2) 4-low and 4-high groups used the definite article appropriately on subsequent mentions, but only 4-high group used the indefinite article appropriately to identify new referents.

Maratsos' explanation for the infrequent use of definite articles by the 3-year olds is essentially one to do with memory failure (Emslie, 1986). Maratsos indicates "the three-year olds may well have lacked a clear representation of the referent's unique participation in the story context, leaving them only with a representation of class membership when answering questions (Maratsos, 1976, p.67-8)." Like Brown, Maratsos attributes the failure of the low performing 4-year olds to use indefinite articles to refer to a previous unidentified referent to their egocentrism (Maratsos, p.73).

Maratsos concludes that children aged 3-4 have acquired the distinction between specific and non-specific reference by using

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linguistic and extra-linguistic contexts. They use a definite article to refer to an identified referent, while an indefinite article to indicate or nominate a referent, which accords with Brown's (1973) naturalistic data on the spontaneous use of articles by two-year-old children. But they cannot take into account the listener's knowledge when it differs from their own until they are 5 years old.

Maratsos' studies have been heavily criticised on the methodology: 1) the experimenter and the testing place are not familiar to the children, so the children possibly feel uncomfortable during the experiment;   2) the experiments last an hour which is a very long time for young children, so the children are likely to be tired. If the children feel uncomfortable or they are tired, they may not bother to take the listener's knowledge into account; 3) the experimenter is the only listener during the test, so that it is quite possible that the children in the low performing 4-year old group may have assumed that the listener (the experimenter) already knows the answers to the questions, then they use the definite instead of indefinite article.

3.1.1-3   'Hide And Seek' Studies

Karmiloff-Smith   Karmiloff-Smith (1979) reported a series of 16 experiments on French speaking children's use of articles and other determiners. Ignoring the experiments concerning gender marking of determiners (because there is no counterpart in English), Karmiloff-Smith's Production Experiments 2, 4, and Comprehension Experiment 6 are particularly relevant to the current study.

In her Production Experiment 2, two functions of articles were analysed: 1) the naming function of the indefinite article; 2) the anaphoric function of the singular definite and indefinite articles. The use of modifiers acting as determiners was also analysed. There were 65 children (aged 3;3-11;7) involved in this experiment. Each child was asked to make a reference to a hidden object (an object he/she can no longer point to). The children were shown the contents of an opaque bag

containing four objects and then were asked to close his/her eyes or turn his/her back while the experimenter removed an object from the bag. After that the child was asked: "What did I do / What did I hide / Which X?"

She found from this experiment: 1) young children used the indefinite article appropriately for non-specific reference; 2) children from 4 years use the definite article appropriately for specific reference; 3) children as young as 5 could use modifiers to refer to a specific referent under a certain setting, where pointing was impossible.

In her Production Experiment 4, Karmiloff-Smith examined both the exophoric and anaphoric functions of determiners in a very simple situation. There were 61 children (aged 3;4-11;5) involved in this experiment. She explained to the child that her bag was full of tiny toys. She would be taking toys from the bag and performing actions such as putting something into the tin, dropping something, etc. Later the child was asked some questions like "What did I drop / What did I do / What did I put into the box?"

The results were: 1) the 3-year olds used a large number of indefinite articles (56%, 72%) even though a definite article was required; 2) 5-year olds used the definite article appropriately for specific reference (49%, 62%). She concluded: 1) children under 4 years used the indefinite article where a definite article was required and 2) from 5 years, and more consistently from 6 years, the child tended to use a definite article on subsequent mentions, e.g. the anaphoric function.

In her Comprehension Experiment 6, Karmiloff-Smith examined whether young children could use the indefinite and definite articles appropriately. There were 68 children (aged 3;3-11;1) involved in this experiment. The children were asked to listen to a short story and then answer the questions, e.g. "Who was it?" " Who was playing in the playground?" A definite article was expected in answering the first question and an indefinite article in answering the second one. She found: 1) with 3-year olds, the expected definite responses were not high (40%)

and the expected indefinite responses were very low (11%); 2) 4-, 5- and 6-year olds predominantly used definites (63%, 90%, 83%), even in the case of an expected indefinite response; 3) 7-year olds used 48% of definite responses in the indefinite situation; 4) with 8-, 9-, and 10-year olds the figures for the indefinite responses were over 50%.

In general, Karmiloff-Smith finds the same kind of trend in comprehension experiments as well, though acquisition seems to be earlier in comprehension experiments. As far as the use of the articles is concerned, she finds the earliest function for the indefinite article is the naming function, whilst the deictic function is the earliest for the definite article. Somewhere between 5-7 years old, three more functions are added: the numeral function for indefinite articles, the exophoric extralinguistic function for definite articles, and the anaphoric function for definite articles.

Garton   Garton (1982, 1983), based on the experimental approach of Karmiloff-Smith (1979), investigated 3-year-old children's comprehension and production of articles and other determiners. Determiners (in her words), including articles, are grammatical devices that are linked with nouns (Garton, 1983). The functions of articles (e.g. the deictic, exophoric, and anaphoric functions of definite articles and the naming and indefiniteness functions of indefinites) are studied in her production experiments.

Garton's (1982) Experiment 6 was based on Karmiloff-Smith's "Hide and Seek" condition, but the non-hidden object remained in view on the table. The results showed that different responses were given to different types of questions. The indefinite article was used in 24% of the responses to Hide Questions, and 58% to Do Questions; while the definite article was used in 21% to Hide Questions and 4% to Do Questions.

In Experiment 8, Garton (1983) used two conditions: Condition 1 - Seeing Condition (the experimenter could see the testing materials); Condition 2 - Blindfolded Condition (the experiment could not see them). Under each condition, three arrays were presented to each child and

questions were asked when the model farmer (moved by the experimenter) stopped beside an animal. Questions were related to the animals making up the array, e.g. 'Whom is the farmer talking to?' Three arrays were used, five animals - one singleton, two similar animals, and two identical animals, composed each of which. There were 12 children (aged 3;6) and 10 children (aged 3;7) involved in the Seeing and Blindfolded Conditions respectively.

Four types of responses were looked at under both conditions - article omissions (bare nouns), indefinite articles, definite articles, and demonstratives (this/that). Overall, Garton found that article omissions were the most common result across all conditions, particularly in the Seeing Condition (48%). Her results showed: in Blindfolded Condition, 1) article omission dropped to less than half (from 48% to 22%); 2) children demonstrated far more awareness of the uses of definite and indefinite articles than in any other experiments, (but unfortunately, it is hard to tell exactly what is going on here due to the way that Garton grouped responses); 3) half of the responses to the similar objects in Blindfolded Condition included a modifier (the + modifier + N), whereas no such responses were used in Seeing Condition, which suggests that children will linguistically specify an object if they need to do so.

The referents with which young children seem to have difficulties are the identical objects under Blindfolded Condition. They used a large percentage of demonstratives (63%) on the second mentions to identical objects. It looks as if children want to distinguish between the identical objects, but do not yet have the linguistic means for doing so appropriately, since demonstratives are inappropriate expressions under Blindfolded Condition. Very young children, in her experiments, showed sensitivity to various article functions. Children do seem to take into account the status of a referent and the knowledge of the listener. This is in spite of the fact that some children might have considered that, to some extend, the blindfolded experimenter knew what was going on, for it was the experimenter who had set up the array.

3.1.1-4   Telling Stories From Pictures Or Videos

Warden   Warden (1976) reports findings from three experiments designed to test English-speaking young children's (aged 3-9) use of definite and indefinite articles compared with adults group (aged 20).

In Experiment 1, a farmyard scene was arranged on a table, using identical model animals (3 horses, 4 cows, 4 pigs, 4 hens, 4 ducks, 4 sheep). There were two tasks for the participants. First - Description Task: each participant was asked to describe an action conducted by the experimenter with two model animals, e.g. "One animal knocked the other animal down"' etc. The expected responses were of the form of 'A + Noun is -ing a + Noun.' (E.g. A cow is chasing a duck.); second - Naming Task: each was required to name a previously unidentified animal indicated by the experimenter. They were expected to use indefinite articles nominatively in this task.

Warden found that 4-year olds used indefinite articles in Naming Task, but very few (21%) did in Describing Task. Children master the nominative use of indefinite articles before its use in identifying (referring) expressions. The control group (adults) also used some inappropriate definite descriptions (35%), to which Warden explained that all the participants (both adults and children) might have assumed that the experimenter was sharing their view of the events.

In Experiment 2, 4-year olds and a control group (adults) were shown a group of four drawings and asked to tell what was happening in the pictures. Two experimental conditions were created in order to examine whether the participants would take the listener's knowledge of a referent for granted. The two conditions were: 1) the "social " condition (both the participant and the experimenter shared the same view of the drawings); and 2) the "isolated " condition (only the participant had the view of the drawings). Half of the participants were involved in Condition 1 and the other half in Condition 2.

Warden found from this experiment: 1) adults used fewer definite and more indefinite referring expressions on first mention of a referent than the children in both conditions; 2) adults used definite references considerably more often in Condition 1 (M=3.4) than in Condition 2 (M=2.1); whereas the children used approximately the same frequency of definite references in both conditions (M=5.0 / 4.4); 3) no differences on frequencies of indefinite articles produced by either group in both conditions (adult: 3.3 / 3.4; children: 2.1 / 2.1); 4) no difference in children's use of either definite or indefinite referring expressions across the two conditions. Warden concluded that the participants had made certain presupposition regarding their listeners' knowledge of the referents.

In Experiment 3, the children participants (aged 3-9) were asked to tell a cartoon story to a same-aged partner who could not see the story pictures because of a screen standing in between. The adult group was told to tell a story to a person who did not know anything about the story. Two of the four referents in the story appeared twice, thus allowing for a first and second mention references.

The results showed: 1) adults used indefinite and definite articles appropriately across all the conditions; 2) very few age differences in the use of definite articles on second mentions; 3) young children (aged 3) used articles differently from the other children (aged 5-9) when a referent was mentioned for the first time. The younger children (aged 3) used more definite articles than indefinite articles, while the older children (age 5-9) used more indefinite than definite articles under this condition. But not until nine years of age children do not reliably identify their referents appropriately for the listeners. So Warden concluded that children under 9 had not acquired the full use of articles in referential language.

In a further experiment (1981b), Warden tried to find the contexts, which would encourage children's use of indefinite articles to identify referents for a listener. He suggested that the physical presence of

referents and listener might have encouraged the use of definite references on the first mention of a referent, so he designed 4 experimental conditions (see Table 3.1). In two conditions, the listener and speaker were together in the same room (listener present); in the other two conditions, the listener and the speaker were in two separate rooms (listener absent); in addition, two conditions required the speaker to describe a film while it was running (referents present) and the other two conditions required the speaker to describe the film after it had shown (referents absent).

	LISTENER	REFERENTS
CONDITION 1	Present	Present
CONDITION 2	Present	Absent
CONDITION 3	Absent	Present
CONDITION 4	Absent	Absent

Table 3.1   Four conditions in Warden's (1981b) experiment.

Warden found: 1) not all the participants mentioned the relevant five referents in their descriptions; 2) no age effects in the children's use of articles; 3) no condition effects; 4) adults consistently used articles appropriately; 5) the children failed to use articles consistently appropriately. Warden advanced possible reasons for children's failure to use indefinite articles appropriately. First, that "the contextual manipulations ... failed to simplify the context sufficiently to enable children to surmount their egocentricity (p.98)"; second, the children may have been inadequately motivated, so that the results "do not adequately represent the children's communicative competence (p.99); and third, it is possible "that strict observance of the rule for using identifying expressions is exceptional in normal conversation (p. 99)".

On the other hand, Warden suggests that a major difficulty for young children to use indefinite articles appropriately is the fact that indefinite articles have two functions, namely, " to indicate either an indefinite referent or a specific, but previously unidentified, referent (Warden,

1976, p.111). He also suggests that children may be forced to rely on definite articles until they have mastered the identifying function of indefinite articles, which depends on their awareness of their audience's point of view (Emslie, 1986).

The best way to test Warden's suggestion as to whether children intend to identify the referents or not, is by using a discourse context in which a listener can see the referents and by using a discourse context in which a listener cannot see the referents. In the present study, the first kind of control is used in Experiment 1 and the second used in Experiment 2. It is also important to use listeners who would not be expected to know the story before hand. This was controlled in the present study by having the children tell the stories to each other. (See Chapters 5 & 6 for details.) In Warden's Experiment 1 & 2 and Karmiloff-Smith's Experiment 6, the listener was the experimenter, who might be assumed to know the stories anyway.

Emslie and Stevenson   Emslie & Stevenson (1981) suggested that the children's poor performance in Warden's experiments might have been due to the cognitive complexity of the materials to be described. They, therefore, conducted 3 experiments similar to Warden's Experiment 3, but with much simplified pictures. A group of English-speaking children (aged 2-4) and an adult group of parents were asked to tell stories to their partners of the same age from cartoon pictures, while listeners could not see the pictures. Experiment 3 included student controls as well as parent controls.

The most consistent and surprising finding across all 3 experiments was that children as young as three years old (and even some two-year olds) used indefinite articles quite frequently on first mention of a referent (e.g. 84%, 68%, and 78% by the three-year olds in Experiments 1, 2, and 3, respectively). All groups did show some inappropriate use of 'the' on first mention, but the highest rate for this error type was quite low (14% for the four-year olds in Experiment 3) and this contrasts markedly with the findings of Maratsos, Warden and Karmiloff-Smith.

Children as young as 4-years old showed significant tendency to use indefinite articles more often than definite articles to refer to a unrelated referent (another new referent) appeared at the end of the story.

Emslie & Stevenson (1981) concluded that the good performance of their children was due to four possible reasons. First, in their tasks, the children were required to talk to each other rather than to the experimenter (as has done in Warden's and Karmiloff-Smith's studies). Emslie and Stevenson argue that, in tasks that require children to talk to the experimenter, the children may assume that the listener (the experimenter) is familiar with the referents since it is the experimenter who has designed the task. This could lead the children to use a definite article on the occasion where an indefinite article is expected; Second, in Emslie and Stevenson's experiments the speaker knew that the listener could not see the pictures because there was a screen standing between the speaker and listener. (This situation is comparable to Garton's (1983) Blindfolded Condition and to Warden's Experiment 3.) Third, they used very simple pictures with clear relationships between referents, which contrasts with Warden's Experiment 3, which used complex pictures with complex relationships. This difference in the materials may also explain why Warden failed to find appropriate use of indefinites for introducing a new referent. Fourth, although there were some inappropriate uses of 'the' on first mention, the children's performance was comparable to that of the parent controls. However, the student controls had no inappropriate uses at all. Emslie & Stevenson concluded that parents were the most suitable adult controls because students' performance may be influenced by higher order analytic abilities, and most students are not used to telling stories to children.

Power and Dal Martello   Power & Dal Martello (1986) conducted two experiments on 50 Italian-speaking children (aged 3-5) to examine whether the use of articles by Italian-speaking pre-school children corresponds to that of their English counterparts. To investigate this question they repeated as exactly as possible the procedure described by

Emslie & Stevenson (1981), except for one change necessitated by a slight difference between English and Italian in the usage of definite articles.

They found from Experiment 1: 1) there was a clear shift from indefinite articles on first mention to definite articles on second mentions, which could be due to the application by the child of an EGOCENTRIC rule (A rule which refers not to the listener's state of knowledge, but to the speaker's knowledge.); 2) the number of definite references on second mentions was significantly higher in all groups, which indicates that at least some of the children are already able to take account of the viewpoint of the listener; 3) the children's performance improved with age; 4) egocentric errors (the definite article use on first mention of a referent) were quite common in the 3- and 4- year-old groups (40%).

The second experiment was designed to check whether the children were using the Egocentric rule in shifting from indefinite to definite articles on second mentions. The same participants (as involved in Experiment 1) were asked to narrate a story to two listeners separately. The children were expected to use the definite article to refer to a referent for the first time to the second listener, because at this stage of experiment, the speaker was already familiar with the referent but not the listener, since the speaker had previously told the same story to the first listener. They argue when constructing a referential expression, children use indefinite articles if referents have come to their attention, and definite articles if the children themselves are familiar with the referents. This may be the reason why children tend to use indefinite articles on first mention and have a strong preference for definite articles on second mentions (Power & Dal Martello, 1986). They found form Experiment 2 that significantly more egocentric errors were made on the second narration of the story (60%) than on the first narration (39%). They conclude that children (aged 3-5) do make a large number of 'egocentric errors' in using articles, which has been well assessed on the second

narration of the story. However, the memory load was high in this experiment, which might account for the large number of "egocentric errors" Emslie and Stevenson's (1981) results showed that young children can take the listener's knowledge into account when the cognitive demands are low.

3.1.1-5   Summary

Seven studies on L1 acquisition of English articles were reviewed in this section.

Tasks And Conditions   Apart from Brown (1973) who did a naturalistic study, all the studies reviewed above were experimental studies, either a comprehension or a production task. Two experimental conditions were used in some of the studies of Garton (1982, 1983); Power & Dal Martello (1986); and Warden (1976,1981). One condition was the Seeing / Social Condition, which meant that both speakers and listeners could see the pictures or videos; the other was Blindfold / Isolated Condition, which meant that listeners could not see the pictures or videos.

Findings   1) Referent-introducing expressions – (use of indefinite articles to introduce new entities) Children as young as 3 years old, (Brown, 1973) or even earlier (Emslie & Stevenson, 1981), are able to use indefinite articles appropriately on the first mention of new entities. Maratsos (1976) found this ability in high performance 4 year olds. These results are inconsistent with the findings of Garton (1983), Karmiloff-Smith (1976), Power & Dal Martello (1986), and Warden (1976), where children were unable to use indefinite articles appropriately to introduce new referents until they were 8 or 9 years old. As regards the comparison of Seeing/Social Condition with Blindfold/Isolate Conditions, Warden (1976) found that there was no significant difference between the uses of definite and indefinite articles, whereas Garton (1983) found that definite articles were the most common response of the 3-year olds on the first mention of a referent in Blindfold Condition (Garton, 1983).

These are a number of possible reasons for the above discrepancies in the ease with which young children can use 'a' to introduce new referents appropriately. First, the studies showing late development in the appropriate use of 'a' either had no adult controls (Garton 1983, Karmiloff-Smith 1976, Power & Dal Martello 1986) or used students as controls (Warden, 1976, 1981). When parents were used as controls (Emslie & Stevenson, 1981), performance was comparable for all the children and adults. Second, in many of the experiments showing poor performance, the experimenter was the listener (e.g. Garton 1983; Karmiloff-Smith 1976; Warden, 1976, Experiments 1 & 2). It is possible that the children assume that the experimenter knows what is in the pictures, even when they are blindfolded during the experiment (Garton, 1983) or in another room (Warden 1976). When children are used as listeners, performance improves (Emslie & Stevenson 1981). Third, even when children are used as listeners, they may still be able to see the pictures, or the speakers may believe that the listener can see the pictures (Warden, 1976 Experiment 3). When a screen is placed between a speaker and listener, so that it is obvious that a listener cannot see the pictures, performance improves (Emslie & Stevenson, 1981). Fourth, in some experiments, there is a large cognitive load for the children, which may have masked their true ability for using indefinites appropriately. For example, the pictures to be described may be very complicated (Warden, 1976), the children may have to describe a video at the same time as watching it (Warden, 1976), or retrieve it from memory after the video has finished (Warden, 1976). Children may also have to describe a story from memory, rather than describing each picture one at a time (Power & Dal Martello, 1986). Emslie & Stevenson (1981) were the only investigators to control all of these features and they found that even 2-year olds' performance with indefinites on first mention was comparable to the parent controls. This suggests that young children do have the ability to introduce novel referents appropriately, but only display this ability when it is easy to infer the listener's knowledge state, when they

only have to tell a simple stories, and when their performance is compared to that of their parents rather than to students.

All these factors were also controlled in the present study, except that listeners could see the pictures in Experiment 1, whereas they could not see the pictures in Experiment 2. I, therefore, predicted the children's use of indefinites on first mention would be better in Experiment 2 than in Experiment 1, and comparable to the adult controls' in both experiments.

2) Referent-maintaining expressions – A consistent finding across all the studies reviewed is that young children from about 3 years of age use definite references appropriately to refer to a familiar referent. I expect the English children in the present study to do the same. What is of interest is whether or not the Chinese children perform in the same way. Warden (1976) found no age difference in this use of the definite article, but it is unclear whether or not L2 speakers will show a delayed development.

3) Modifiers and bare nouns – Karmiloff-Smith (1979) studied modifiers as well as articles in her "Hide And Seek" experiment. She found that children from 5 years old started to use modifiers in their determiner function in situations where pointing was impossible. Garton (1983) obtained a similar result with children aged 3;6 in the Blindfold Condition of Experiment 2: the children used mainly modifier phrases when pointing was not possible. Modifiers are unlikely to be used in the present Experiment 1, because pointing is possible in that experiment. However, in Experiment 2, where the listener cannot see the pictures, pointing may not be used. Furthermore, in the present Experiment 2 the two protagonists in the story are the same gender and so using a simple NP to refer to one of them would be ambiguous. It is expected, therefore, that modifiers will be used in this experiment, so that unambiguous references can be made. Since modifier phrases are more complex linguistically than simple NPs, it may well be that the Chinese children will use fewer modifiers that the English children.

Garton (1983) also studied Bare Nouns. She found that Bare Nouns were very common on the first mention of a referent among young children under Seeing Condition. In the present study, it is expected the Chinese children will produce more Bare Nouns than English children, because Bare Nouns are acceptable forms of reference in Chinese. (See discussion Chapter 2).

3.1.2   Pronouns vs. Definite Articles (The Thematic Subject Constraint)

Karmiloff-Smith   Karmiloff-Smith's (1981) study on children's production of stories focused on the way children maintain linguistic cohesion throughout spoken narratives. Her work suggests that until about 5 years of age, children do not use pronouns anaphorically, but deictically to refer to extra-linguistic entities. Children start using pronouns anaphorically, together with other devices to maintain cohesion in their narrative at about 6 years old. When children are over the age of 6, they tend to use a thematic subject. They maintain the main protagonist in the subject position and use a pronoun to refer to this protagonist. This suggests that children use a thematic subject strategy in order to handle the narrative as a whole.

According to Karmiloff-Smith, after the initial period of using deictic pronouns by the youngest children (under 6 years old), children generate a series of procedures for coping with narratives as a unit by: 1) introducing a referent by an indefinite article (if the referent is in shared knowledge with the listener, the children used a definite or a proper name); 2) creating a thematic subject and pre-empting the subject position solely for reference to the thematic subject using pronominalization or zero anaphora for subsequent references to the thematic subject; 3) once the child has a handle on the span of utterances as a treatable unit, he/she allows non-thematic subjects occasionally to occupy the subject position. Non-thematic subjects are referred to by definite descriptions.

Karmiloff-Smith (1985) developed this three-phase model in a series of studies in which 240 children (aged 4-9) were asked to tell 4 stories to the experimenter. In one type of the stories (Story Type 2), there were two protagonists of different genders, thus avoiding ambiguity if children chose to use pronouns to refer to them on the subsequent mentions in the discourse. Both protagonists appeared in every picture, so that the reference to each protagonist is reiterated. If pronominalization is determined by economy of repetition, this manipulation should encourage pronominalization for both protagonists. However, if pronominalization is governed by constraints of marking discourse roles (the thematic subject constraint), then children should only pronominalize the protagonist they choose as the main one. They should use definites for the subsidiary protagonist, despite both repeated reference to the latter and the lack of ambiguity due to the gender distinction. By contrast, if young participants used nominal markers deictically, they should use pronouns throughout for both protagonists. Results for story type 2 show: 1) level 1 is situated within the youngest age group, including the middle age (4-5 years old) group ones (69%); 2) the thematic subject constraint predominates the output of 6-7 year olds (58%); 3) level 3 covered the oldest (aged 8-9) group (68%). The older children use differential markers, pre-empting pronominalization for the main protagonist in subject position and definite NPs for the subsidiary protagonist in subject position despite repeated references to the latter.

Karmiloff-Smith claims that children at level 1 concentrate on the extra-linguistic stimulus and use referential terms deictically: she also claims that level 2 narratives are in some respects less complete than the outputs from level 1. Level 1 concentrates on the extra-linguistic stimulus which leads to a full description of each picture with a basic narrative organisation on the whole, but at level 2, the rigid pre-emption of the subject position of each sentence for the main protagonist can lead to less complete accounts and a lack of overall narrative organisation of the story compared with the outputs from level 1. Level 3 narratives are rich in both detail and linguistic structure due to the use of differential

markers to denote the discourse roles of referents and reflect an integrated system (Karmiloff-Smith, 1985, p.70). In this phase children's use and non-use of pronouns and other referring expressions show flexibility and serves to organise ongoing discourse relations into a cohesive discourse. Pronouns continue to be used for the thematic subject in the subject position, but definite NPs are used to place non-thematic subjects in the subject position.

Tyler   Tyler's (1984) study, in general, supports Karmiloff-Smith's Thematic Subject Theory (1981). What she contributes are: 1) a pronoun at Level 2 does not function referentially, but signals that the entity which is most prominent in the current discourse representation is continuing to be talked about. It is the structure of the discourse that places the strongest constraints on the integration of utterances into a coherent discourse; 2) at Level 3 children are sensitive to both the structure of the discourse and the lexical properties of the pronoun, such that both guide the integration of the incoming input with the existing discourse representation (Tyler, 1984).

Further more, Tyler points out that the role of inference in determining the properties of a pronoun is missing from Karmiloff-Smith's (1981) theory. Thus, in the sequence "After saying goodbye to Bill, John came back into the room. 'He' switched on the light", the resolution of the pronoun anaphor 'he' involves not only checking the number and gender of the potential antecedents, but also whether the property subsequently predicated of the anaphor (e.g. switching on the light) is consistent with what is already known about the potential antecedents (e.g. that John (and not Bill) has just entered the room) (Tyler, 1984).

Tyler concludes: 1) the thematic subject constraint proposed by Karmiloff-Smith (1981) for production of extended discourse is less dominant in younger children's comprehension (5-7 years old) of two sentences since the children take into account the lexical properties of a pronoun when mapping between utterance and discourse; 2) where there

is conflict between the verb and the protagonist, children respond either by making the protagonist consistent with the verb, or by introducing an entirely new element, suggesting that children's integration of utterance and discourse is primarily guided by the pragmatic considerations of the verb (Wigglesworth, 1990).

Bamberg   Bamberg (1986) investigates how German-speaking children (aged 3;6-10;1) establish reference to two main protagonists (a boy and a dog) in a picture book and how they linguistically follow these protagonists through their narrative account. She also examines the developmental trends in maintaining and switching reference. Bamberg's stimulus material was taken from Mayer's (1969) "Frog, where are you?" a commercial wordless storybook of 24 pages with a complicated episodic structure. There were three characters in the story: a boy, a dog, and a frog. Each child was asked to tell the story to the experimenter (who had the same view of the pictures as the child did) after s/he had gone through the storybook him/herself.

On the whole, Bamberg found that the children of all age groups showed a clear preference for definites (75%) or pronouns (16%) over indefinites (9%) when introducing the two main protagonists, while the adults showing a slight preference for indefinite reference over definite or pronominal reference. The only age difference, which she found out, was that none of the youngest group used indefinites for first mention of a referent. On second mentions of a referent, her data reveal that the children of all age groups, irrespective of whether they maintain reference to the boy or to the dog, show a strong tendency to refer pronominally to these referents. It should be noted that the oldest age group relies on nominal forms - when maintaining reference to the dog - in one-quarter of the cases (26%).

In comparing her results to those of Karmiloff-Smith (1981, 1985), Bamberg (1986) finds a thematic subject strategy in the youngest group (aged 3;6-4;0) of these German-speaking children, but not in older groups. Children aged 5-6 years old already focused less on the use of

this strategy. However it is uncertain whether or not the results were affected by her methodology, or by the complex structure of the stories.

Wigglesworth   Wigglesworth's (1990) study was designed to further investigate the ways in which children establish referents and use pronominal forms, with the aim of contributing to our understanding of the development of linguistic cohesive devices and story organisation. He tested 60 English-speaking children of 4, 6, and 8 years and 20 University students. The materials were two picture books containing 8 or 10 pictures. Book One was designed not to have a strong thematic subject, while Book Two was designed to encourage the development of a thematic subject. Each participant was tested separately with the experimenter and the participants seated side by side at a table. The experimenter showed the picture to him/her and asked, "What is happening?" The child responded and then turned to another page.

Wigglesworth found that when articles were used for first mention to refer to the first protagonist, the adult group showed a preference for indefinite reference (55%) over definites (15%) or pronominal reference (25%), and the children over 6 showed a clear preference for definites (50%) or pronominal reference (35%) over the indefinite reference (15%). The youngest group (aged 4) did not use any indefinite articles at all for the introduction of the first protagonist and showed a strong preference for pronouns (87%). No doubt these results reflect the use of a prompt to elicit descriptions and the shared visual field. Even so, the predominance of pronouns in the youngest children is consistent with Karmiloff-Smith's Level 1 of the thematic subject strategy, where pronouns are used deictically.

When maintaining referents, in Book One Wigglesworth found there was little evidence that either the 6- or 8-year-old groups had established a thematic subject. In Book Two, although it was designed specifically to encourage a thematic subject, the results suggested that children were not using a thematic subject strategy in the way described by Karmiloff-Smith. Only ten children used "they" to refer to "the children" (the

supposed thematic subject) after an incident with the dog, without first establishing "the children" with a full NP. Such a finding suggests that the subject NP is treated as the thematic subject and any switch to a new thematic subject is signalled by the use of a full NP.

Wigglesworth's (1996) study investigated the similarities and differences observed in individual approaches to the linguistic organization of narrative. Eighty monolingual English speaking children (aged 4, 6, 8, and 10) and twenty adults were asked to relate a narrative elicited from Mayer's (1969) picture book "Frog, Where are you?" the book which Bamberg used in her 1986 study. Each participant was tested individually. The experimenter was seated opposite the participant so that she could not see the pictures. The participants were asked, first, to look through the book in order to familiarize them with the story and then to tell the story to the experimenter.

Each narrative was initially classified into a strategy type: either a thematic subject strategy, a partial thematic strategy, a nominal strategy, or an anaphoric strategy. The results showed that the anaphoric strategy was the most frequent strategy. This strategy involved using up to 40 % of pronouns for switch reference to boy and / or boy&dog and using less than 50% of nouns for reference to boy and /or boy&dog. It was used most by the adults and older children (aged 8 and 10). The thematic subject strategy ranked as the next most popular one and the four-year-olds preferred this strategy overall. The nominal strategy was the least used overall. This strategy was using up to 20% of pronouns for switch reference to boy and / or boy&dog and more than 60% of nouns for reference to boy and / or boy&dog. Regarding developmental sequences, she found that a child would be expected to go through each stage in turn (the stage of no apparent strategy, a nominal strategy, a thematic strategy, and anaphoric strategy) from least advanced to most advanced in the organization of their narratives. These findings suggest that 1) at all ages children may adopt different approaches to the organization of their narratives and that there is, for all age groups, a choice of options

available, 2) the ability to access to a variety of strategies increased with age, and 3) the strategies adopted may be influenced by the referential complexity of the different contexts of discourse as well.

Summary   Karmiloff-Smith (1981, 1985) developed a 3-phase theory of thematic subjects. Children, aged 4-5 (at Level 1), concentrate on the extra-linguistic stimulus and use pronouns deictically. When they are over the age of 6 (at Level 2), children have a tendency to determine a thematic subject by repeatedly referring to the main protagonist (that they create themselves) in the subject position after the initial mention, this main protagonist is referred to by a pronoun on subsequent mentions. At Level 3 (aged 8-9), children continue to use pronouns to maintain the thematic subject in the subject position, but definite expressions are used to place non-thematic subjects (subsidiaries) in the subject position. This theory is partially supported by Tyler's (1984) study on Dutch-speaking children and Wigglesworth's (1990, 1996) investigation on German-speaking children. Tyler found that the thematic subject strategy might be weakened when lexical information can be used to distinguish between the protagonists (e.g. gender information). Wigglesworth found that at Level 3 the thematic subject is reintroduced with a full NP after a switch of reference in subject position to the non-thematic subject. This latter result is consistent with the idea that a shift of topic (shift of thematic subject) is signalled by a full NP.

The use of a thematic subject constraint was also investigated in this study. In Experiment 1, the two protagonists were of different genders. In line with Tyler's observations, it was predicted that the thematic subject constraint would be weak in this experiment. In Experiment 2, the two protagonists were the same gender. It was anticipated that under these circumstances, the children would make one of the protagonists the thematic subject in order to distinguish between the two. In addition, since null anaphors are used in topic chains in Chinese, I examined whether the Chinese children and adults used null anaphors instead of pronouns when referring to a main protagonist.

3.2 L2 Acquisition Studies

In this section I focus on studies in which L1 is either Chinese or comparable to Chinese, and in which the use of English referential expressions is investigated.

3.2.1 Investigations Of Bickerton's Four Contexts

Huebner   Huebner's (1979) analysis of the acquisition of English articles by one adult Hmong speaker (called Ge) provides the most in-depth longitudinal study of L2 acquisition of English articles. Ge was a 23-year-old male Hmong refugee from Laos, living in Honolulu and learning English in a natural setting without formal instruction. He had never studied English before in his native country. Data were collected during the first year after his arrival. His dialogue and extended narratives with friends or family members were taped every three weeks for 54 weeks.

Huebner found from the four tapes recorded at three-month intervals: 1) At Time 1: Firstly, Ge did not use indefinite articles to introduce new referents into a discourse, but used the pattern "have + (φ) + NP"; secondly, Ge marked [+SP] [+HK] NPs with 'the' except in the subject position. This might because that at this stage Ge's interlanguage, like his native language, is topic-prominent (as described in Chapter 2). Topics, which are usually sentence initial and often in subject position, are not marked, since topics must be old information or assumed within the realm of the hearer's knowledge (Huebner, 1979).

2) At Time 2: Ge marked all [+SP] noun phrases with 'the' (76.9% in [+SP] [+HK] and 94% in [+SP] [-HK]), regardless of the status of the hearer's knowledge.

3) At Time 3: an indefinite article began to appear (7.8%) in singular NPs in [-SP] [-HK], although the percentage was quite low.

4) At Time 4: 'the' became limited to [+SP] [+HK] NPs only (86.5%).

Huebner points out that Ge's interlanguage is shifting over the year from topic prominence to subject-prominence, which is supported by the fact that at Time 1 Ge had no pronouns except 'I', 'you', and an occasional 'he', but had lots of instances of zero anaphora. At Time 4, he had a full set of definite and indefinite pronouns, marked for number, case and gender, including reflexives. There are even cases of dummy 'it' and dummy 'they' subjects at this point. Zero anaphora almost disappeared. At this point, too, there are apparently no restrictions on NPs occurring in sentence initial position or the subject position with respect to specificity or status of hearer's knowledge (Huebner, 1979).

In general, this pattern of development is quite similar to the observed pattern in naturalistic date from English children (Brown, 1973). Ge initially used definites when the referent was mutually known ([+SP][+HK]). It differs from the native speaker's pattern in that the use of a topic prominent inter-language meant that the overuse of 'the' on first mention could be avoided.

Parrish   Parrish (1987) follows Huebner in looking at the acquisition of English articles by a single L2 learner, a 19-year-old Japanese woman, Mari, over a period of 4 months. Mari had received six years of English instruction in Japan; however, she indicated that her training had been primarily in grammar, reading and writing, and that she had had little practice in speaking or listening comprehension. Data were collected during 20- to 30-minute sessions every ten days. During each session, she was first asked to tell two stories (one about the U. S. and one about Japan) and then to describe a place, e.g. her city, the campus, etc. It was hoped that by recycling the same topics week to week, she was given equal opportunities to produce the various environments for articles. Her responses were recorded and transcribed shortly afterwards.

Parrish found from his data: 1) there was a gradual rise in the number of occurrences of 'the' in [+SR] [+HK], which is consistent with Huebner, (1979); 2) there was a gradual rise in the number of occurrences of 'a' in [+SR] [-HK]; 3) a tendency not to mark subject

position NPs with 'the' in [+SR] [+HK] was found, (which Huebner also found at Time 1 in his study).

The various findings lead to the conclusion that, although the participant's use of articles is not always target-like, it is to a great extent systematic. This systematicity is found to be governed by the semantic function of NPs and attempts to keep linguistically related forms consistent with one another. All of these points help to give us a greater understanding of the possible processes underlying interlanguage development (Parrish, 1987).

Master   Master (1987) performed a pseudolongitudinal study of the use of articles in spontaneous speech. His participants were 20 L2 adult learners comprising one participant at each of four developmental levels, across five L1 groups, two of which have formal equivalents of English articles (German and Spanish), and three of which do not (Chinese, Japanese, and Russian).

In terms of Bickerton's four contexts, Master finds that the first context in which overt articles are used with consistent appropriateness is [+SR] [+HK] context, no matter whether the L1 includes articles or not. He suggests that some L2 learners first associate 'the' with [+HR], rather than with [+SR], leading them to flood 'the' in [+SR] [+HK] and [-SR] [+HK] contexts. But paradoxically, in first-mention [+SR] [-HK] contexts, there are higher levels of 'the' than of 'a' in the production of half of his level 3 and 4 participants whose L1s lack articles (p.76). One problem in discerning what is and is not a flood is that neither Huebner nor Master defines the term, except loosely as "a dramatic rise in usage" (Master 1987, p.79)

Overall, Master's (1987) analysis reveals that in English article acquisition, those whose L1s contain an article system differ from those whose L1s do not, which indicates that English article usage, especially at the beginning levels, is clearly influenced by the first language (Master, 1987).

Thomas   Thomas (1989) conducted a study of the acquisition of English indefinite and definite articles on 30 L2 learners (aged 24-46). The participants represented nine native languages, with the largest subgroups being speakers of Japanese and Chinese. The participants' English language ability was assessed and then they were grouped into the low, mid, and high proficiency levels. Eight pairs of pictures (static or dynamic) were used in Description Experiment. The participants were tested in pairs (one was the speaker, the other the listener), seated back to back. Each was asked to describe four pairs of pictures to the listener. Their speech productions were taped.

The results showed that: 1) appropriate employment of both 'the' and 'a' increases as skill in L2 advances ('the' 77.4%, 73.2%, 88%; 'a' 56.3%, 55.1%, 64%); 2) at each level the participants performed significantly better with 'the' than with 'a'; 3) the mean percentage of 'the' in [+SR] [-HK] contexts was significantly higher than in [-SR] [-HK] contexts at all three proficiency levels.

Then Thomas compared the findings for L1s and L2s: 1) L1s exhibit early and accurate control of a in [-SR] [-HK] contexts and 'the' in [+SR] [-HK] contexts; 2) even beginning level L2s seem to use articles appropriately in 'the' contexts, but correct use of 'a' is significantly delayed; 3) both L1s and L2s over generalize 'the' in [+SR] [-HK] first-mention contexts but not in [-SR] [-HK] contexts.

Thomas then concludes that in the course of acquisition of the English article system both L1 and L2 learners may over-generalize definite articles in first-mention contexts, because they initially associate 'the' with the feature [+SR], which is inconsistent with Master's results (1987).

Summary   On the whole, L2 learners, at each level, perform significantly better with definite than with indefinite articles (Thomas, 1989). However, although Master (1987) noted this only happened with half of the participants whose L1 lacked articles. Tomas (1989) found, surprisingly, that this overuse of 'the' was more frequent in [+SR] [-HK]

contexts. Even beginning level L2s seem to use articles appropriately in the contexts where a definite article is required, where the correct use of indefinite articles is significantly delayed. At the low levels, definite articles in subject position and in [+SR] [+HK] contexts, were often missing, a finding attributed to the use of a topic prominent inter-language (Huebner, 1979). The results show that L1s do have effects on L2 acquisition. The interlanguage is shifting from L1 to L2 during L2 acquisition.

It might be expected, therefore, that the Chinese children in the present study will show a greater overuse of "the" at first mention than the English children, possibly using bare nouns instead, and that bare nouns are used in subject position to refer to topics.

3.2.2   Differences In Types Of NPs

Chaudron and Parker   Chaudron & Parker (1990) conducted a study to investigate Japanese learners' acquisition of English NPs, which include definite/indefinite NPs, pronouns, ϕ anaphora, or bare nouns.

They tested 40 adult Japanese L2s of three proficiency levels and 17 native English-speaking students as a control group. In a 'Free Production Task', each participant was asked to describe nine picture sequences. The first three pictures in a given picture sequence were presented to him/her first and then he/she turned a page and continued to describe the fourth until the last. The participants' oral responses were recorded.

Their results indicate that: 1) all the learners use more bare nouns and pronouns at the lower proficiency levels and an increase in use of both articles and existential or left-dislocated NPs as proficiency increases; 2) each proficiency level maintains a distinction between all three contexts (current, known, and new) in differing degrees of use of pronouns, bare nouns, definite articles, and indefinite articles; 3) the lowest proficiency learners are unexpectedly native-like in the use of indefinite articles, which is the only finding inconsistent with their

predictions; 4) pronouns, which are used by natives primarily in the current context, tend to be used with greater frequency by lower proficiency non-natives in all three contexts; definite nouns, which are primarily used by natives in either current or known contexts, have a higher frequency of use by non-natives in the new context.

Lee et al   Lee et al (1994) conducted a study investigating the use of English articles by three 6-year-old Chinese children over a period of 12 months, when they were learning English in Canada - an English-speaking environment. The purpose of this study was to examine the steps that Chinese-speaking children take in learning to use English articles appropriately. The participants were three 6-year-old Mandarin-speaking children. They had no previous exposure to English before arriving in Canada and were immediately enrolled in local primary schools. A Syntax Elicitation Task (SET) was devised for this longitudinal study. The task consisted of 25-41 items to accommodate the children's development. Each item contained 1-4 pictures depicting a particular situation or event. The child's task was to describe in English the content of the pictures. Starting from their third month in Canada, the children were interviewed individually once a month. During the first three interviews, the children spoke very little or no English even following a great deal of encouragement. The SET was introduced during the fourth interview, when the children had been in Canada for about 6 months. It took 10-15 minutes to complete the task. During each interview, the experimenter primarily addressed the child in English, speaking Chinese only when necessary.

Brown's (1973) scheme and the extended coding scheme were used in coding the use of articles in the transcribed corpora for each child. The results from their study showed that the correct use of articles by two of the three children exceeded 90% by the ninth month of exposure to English and the correct use of the articles by the third child reached the same point after 14 months of exposure. Two of the three children tended to use the definite article more than the indefinite article on obligatory

occasions. This is rather similar to the trend observed in native English-speaking children, as well as ESL adults. Results from the extended coding scheme showed that the use of "this/that" increased from the sixth to the ninth months of exposure to English in all three children and at the same time the missing curves (article missing) declined steadily, but the curve for article-correct (the correct use of "the") did not immediately ascend and the use of the "one" never accounted for more than 20% of all possible occasions, There were very few cases of overuse of either article.

Robertson   Robertson (2000) conducted a study to investigate the variability in the use of English articles by L2 Chinese learners. There were 18 Mandarin Chinese speaking postgraduates involved in his study. The participants were tested in pairs, sitting face to face at a table, with a screen between them. One of them acted as the Speaker, the other the Listener. The speaker had a sheet of A4 paper with a coloured diagram drawn on it. The Listener had a blank A4 sheet, a red pen, a blue pen, and a six-inch ruler. The speaker was required to describe the diagram to the Listener as clearly as possible, so that the Listener could be able to reproduce the same diagram on his/her own sheet.

One of his major findings was that the accuracy is higher in definite contexts (79.7%) than in indefinite contexts (72.1%), which consistent with the common findings in the studies of Huebner (1979) and Parrish (1987). Definite and indefinite contexts here are defined as contexts requiring definite or indefinite articles in English respectively.

Robertson also noted that there was some evidence that Chinese L2 learners start with demonstratives 'zhei' (this) / 'nei' (that) and the numeral 'yi' (one). It is said that the demonstratives are sharing some of the functions of definite articles and the number 'one' is taking on some functions of indefinite articles in English language (Huang, 1999).

Summary   Chinese L2 learners perform better in the contexts where a definite article is required (Lee et al 1994, Robertson, 2000), which is consistent with the findings from Japanese L2 learners (Huebner, 1979

and Parrish, 1987). At lower level of English language, Chinese L2s produce more pronouns and bare nouns on both the first mention and subsequent mentions of a referent; and across all levels they use more definite articles to introduce a new referent (Chaudron & Parker, 1990). The Chinese seem to start with demonstratives in the contexts where a definite article is required (Lee et al 1994, Robertson, 2000).

The results of this kind of research reinforce the predictions at the end of the last sub-section. It is expected that the Chinese children will show greater overuse of "the" on first mention than English children. It is also predicted that Chinese children may use more bare nouns in indefinite contexts, more demonstratives in definite contexts than English children and more bare nouns when referring to topics. As stated in Chapter 2 zero anaphors may also be associated with topics.

3.2.3   *The Current Study*

The experiments to be reported in this thesis are similar in design to Emslie and Stevenson's experiments (1981). In Experiment 1, Karmiloff-Smith's (1985) Story Type 2 was used as the experiment material. In Experiment 2, the story was similar in structure to the one used in Experiment 1, but the two protagonists were the same gender. The current investigation used both pre-school and primary school children. The age range covered 2;6 to 10;00.

The predictions for the two experiments can be summarised as follow:

Prediction 1 (Referent – Introducing Expressions)

The children's use of indefinites on first mention should be better in Experiment 2 than in Experiment 1. This is because in Experiment 1, listeners could see the pictures whereas in Experiment 2, they could not. When listeners can also see the pictures, the use of definite references could be seen as appropriate.

It was also predicted, on the basis of L2 acquisition research that Chinese children would show greater overuse of "the" on first mention of novel referents than English children. The Chinese children may also produce more bare nouns on first mention than English children.

Prediction 2 (Referent – Maintaining Expressions)

On the basis of L1 acquisition studies, it is predicted that the English children will use definite references appropriately to refer to familiar referents. As regards the Chinese children, it is predicted that they will perform better on definite references to familiar entities than indefinite references to new entities. However, certain types of errors might also arise. They might produce more bare nouns and demonstratives than English children. Chinese children may also produce more pronouns than English children. Although pronouns are appropriate in Experiment 1, where the two protagonists are different genders, they are inappropriate in Experiment 2, where the two protagonists are the same gender.

Prediction 3 (The Thematic Subject constraint)

In Experiment 1, lexical cues disambiguate references to each protagonist, it is predicted that 'the thematic subject constraint' would be weak. In Experiment 2, where there are no lexical cues for disambiguating references to each protagonist, the children should be more likely to use the thematic subject constraint by referring to one of the two protagonists more frequently, to place the preferred protagonist in subject slot (Level 2), and to refer to it with a pronoun (Levels 2 and 3) or possible with a null anaphor or a bare noun with Chinese children.

Prediction 4 (Contributions of the four factors)

The use of referring expressions involves both linguistic and cognitive factors. It might be expected that the contributions of these two factors to appropriate usage will vary. In the experiments, L1 linguistic ability is controlled for by having the Chinese and English children matched and divided into ability groups on the basis of their ability to use English. Such matching and grouping, however, does not take into account

differences in age or difference in cognitive ability, both of which may affect overall performance. Nor does it take into account the effect of L1 on the Chinese children's performance. In order to trace out these multiple influences, multiple regression analyses were carried out on the frequencies of first mention indefinites, first mention definites and second mention definites. The predictor variables were Age, English Language Ability, Cognitive Ability, and First language.

Chapter 4   General Background To

The Experiments

4.1   General Design

This study investigates the Chinese children's use of English referring expressions. A group of Chinese children who were living in Britain during 1977-1999 were involved in this study. They were matched individually with a group of English children at the same English language level (The English language ability was assessed before any of the experiments started.) Two groups of adults, one Chinese, one English, were used as controls.

Two story-telling experiments were conducted during the period between 1977 and 1999 to examine and evaluate the participants' production of English referring expressions. Colored hand-drawn cartoon pictures were used in both experiments as materials. (Details of each test materials are given in Sections 5.2.2 and 6.2.2 respectively.) The principal differences between the two experiments are: 1) the listener's view of the test materials - whether the listener could see the pictures or not. Listener could see the pictures in Experiment 1, whereas they cannot in Experiment 2; 2) the gender of the protagonists - the two main protagonists are of either the same gender or different. In Experiment 1, they are of different genders, but in Experiment 2, they are the same. The effects of Age, Cognitive Ability, English Language Ability, and First Language on the children's use of English referring expressions were also examined.

4.2 Participants

There were 166 participants in total involved in the study: 39 Chinese children, 78 English children, 28 Chinese adults and 21 English adults.

Selection Of Participants   The experimenter spent a block of time in selecting children for the present study. There were two stages in the selection. The first stage was to find the Chinese children; the second was to match each Chinese child with an English child at the same English language level. The variables of the children are listed in Table 4.1.

Chinese	He/She is a native Mandarin Chinese speaker.
	He/She must have passed the two - word stage in the acquisition of English language.
	He/She goes to a local state school in Britain.
	He/She would remain in the UK until 1999 when the experiments finish.
English	He/She is an English monolingual.
	He/She is at the same English language level as the Chinese children.
	He/She goes to a local state school.

Table 4.1   Variables of the children used in the study.

The selected children were then assigned to one of five different sub-groups in Experiment 1 and three groups in Experiment 2 according to their scores of English language assessment. Group 1 is the lowest level and Group 3/5 is the highest level. Some of the children who participated in Experiment 1 moved away, so that it was impossible to get hold of them when Experiment 2 was running during 1998 – 1999. So the total number of the children involved in Experiment 2 was reduced from 39 to 22. This meant that there were not enough children for five English language ability groups and only three groups were used. Tables 4.2 and 4.3 give the details of the children involved in both experiments. The

ages in the two tables are the ages of the children when they were attending the first testing session.

No. of groups	No. Of Participants	Chinese		English	
		Range (Year)	Mean (Year)	Range (Year)	Mean (Year)
1	7	4;03-7;03	5;06	2;03-3;10	2;05
2	7	4;09-8;02	6;03	3;06-5;05	4;07
3	10	5;10-9;10	7;08	3;09-5;11	4;09
4	9	8;03-10;00	9;03	4;05-8;01	5;07
5	6	5;03-10;01	8;02	5;01-10;01	7;06

Table 4.2   The children used in Experiment 1.

No. of groups	No. Of Participants	Chinese		English	
		Range (Year)	Mean (Year)	Range (Year)	Mean (Year)
1	9	4;04-8;02	6;01	2;3-5;5	4;00
2	6	6;07-9;10	8;07	3;9-5;11	5;03
3	7	7;00-10;07	9;02	4;8-5;11	5;04

Table 4.3   The children used in Experiment 2.

All the children were normal developed without any permanent or temporary sensory impairment or motor impairment. Children were excluded from the study on the basis of exceptionally poor academic performance, or where their regular teachers considered that they had a particular language and/or developmental problem. None of them was on medication of a type that could affect performance and none of them was tired or ill when the experiments were conducted.

Chinese Children   The 39 Chinese children were recruited through the local Chinese Student-Scholar Associations (CSSAs) in County Durham, Newcastle upon Tyne, Edinburgh, and Birmingham in the United Kingdom. Eight out of the 39 children were born in Britain, three of the eight had experience of living in P.R. China. The mean years of residence in China for those three children were three months. The rest of the Chinese children were born in P. R. China. The mean years of their residence in the United Kingdom was 3 years and 9 months (ranging from

8 months to 7 years and 9 months, SD = 1.9 years). All the Chinese children were Mandarin Chinese speakers and Mandarin Chinese was the dominant language at home. The children were exposed to English outside of their own families, apart from watching television and reading books at home.

At the time of the first testing session, the children's age ranged from 4 years and 3 months to 10 years and 7 months, the mean age was 7;5, SD = 1.9 years. Nearly all the Chinese children's parents were working in UK universities either as academic staff or postgraduates during the time when the experiments were conducted.

English Children   There were 78 English children involved in the experiments. All of them were drawn from local state schools in County Durham in the United Kingdom (two nursery schools, two infants schools, and four primary schools). These particular schools were chosen mainly because they were easily accessible. The English children were roughly equivalent to the Chinese children in social background - children of academic or related professional parents. But children of office workers or manual workers were also included in the English group. All the English children were monolingual English speakers. They were matched to the Chinese children on the basis of English language ability. At the time of the first testing session, the English children's age ranged from 2;6 to 9;10, SD =1.8 years.

Head-teachers or ladies in charge were very keen to have the present study conducted in their schools. They played the main role in selecting potential participants. Each potential child was given a formal letter to take home, asking for the permission from the parents. Then the two preliminary tests (the English language ability test and the cognitive ability test) were conducted on those children whose parents were happy to have them participate in the study. After scoring the two tests, certain children were named to be involved in the study. Some very young children (about 2 and a half) were needed to match the Chinese children at the lowest English language ability group.

Adult Groups   Two adult groups were used as controls in the study. One was the Chinese, the other was the English. Most of the Chinese adults were the parents of the children who were involved in the study. They started to learn English as a second language in schools in P.R. China. Their ages ranged from 25 to 37 years old.

The English adults were recruited from local churches in Durham City, or University of Durham, UK. Everyone in the English adult group was a native English speaker with young child/ren. They were roughly in the same age group as the Chinese adults. Some of them worked full - time, some part - time. 80 % of them had got a degree from universities. Tables 4.4 and 4.5 give the details of the adult groups used in both experiments.

	No. of Participants	Range (Year)	Mean (Year)
Chinese adults	28	25 - 37	31
English adults	21	27 - 39	31

Table 4.4   The adult groups used in Experiment 1.

	No. Of Participants	Range (Year)	Mean (Year)
Chinese adults	10	25 - 37	31
English adults	10	27 - 39	31

Table 4.5   The adult groups used in Experiment 2.

4.3   Preliminary Assessments

4.3.1   English Language Ability Assessment

Materials   The Renfrew Action Picture Test (3rd edition) was used in this study as the English language ability test materials. This test has been used in all English speaking countries as a screening test for language development. The children's English language ability was evaluated in terms of the content and grammatical structure of their responses.

Procedure And Scoring   Each child was assessed individually. He/She was shown the ten action pictures in turn and was asked one question to each picture. The children's answers were audio taped and later were scored according to the manual book. There were two scoring aspects: Information and Grammar. The 'Information' (verbal formulation) means whether the children mentioned the key words or not. For example, 'cuddle', 'hug', 'play with', and 'teddy' were the key words for Picture 1. If the children mentioned one of them, then they scored 1. If they mentioned two of them, then they scored 2. etc. The 'Grammar' (function words and word endings) measured whether the children used the appropriate tense or voice. For an example, the present tense was required for Picture 1. Words like 'cuddling', 'hugging' were scored. Then the two parts (Information and Grammar) were added together to give a total score to each child. For example, the question for the first picture was: "What is this girl doing"? If the child said: "cuddling a teddy bear", then he/she would get two points for Information and one point for Grammar; the question for the second picture was: "What is the mother going to do?" if the child answered: "put boots on them", then he/she would get two points for Information and nil point for Grammar, since the future tense was required here.

Results   Table 4.6 show the English language ability scores of the two groups of children.

No. of Participants = 39	Chinese		English	
No. of groups	Mean	Range	Mean	Range
1	33.86	26-38	31.57	24-38
2	44.21	41-49	45.43	43-48
3	56.10	52-60	55.80	51-60
4	63.17	62-64	62.44	60-64
5	67.83	66-70	67.75	65-71

Table 4.6   English language ability scores.

4.3.2 Cognitive Ability Assessment

Materials   The British Ability Scales Second Edition (BAS II) was used to assess the children's cognitive ability. Verbal ability tasks in BAS II were ignored, since the participants used in the study had different native languages (Mandarin Chinese or English). Certain types of tests were selected. They were one pictorial reasoning ability task (Picture Similarities), four spatial ability tasks (Block Building, Copying, Pattern Constructions, and Recall of Designs), and two non-verbal reasoning ability tasks (Matrices and Quantitative Reasoning). Suitable tasks were chosen for each child according to his/her age. Table 4.7 gives the details of each task, age groups, and the cognitive abilities measured in the task.

Scale	Age Tasks	Ability Measured
Block Building	2;06-3;06	Visual-perceptual matching, especially of spatial orientation, in copying block patterns.
Picture Similarities	2;06-3;06 3;06-5;11	Non-verbal reasoning shown by matching pictures that have a common element or concept.
Copying	3;06-5;11	Visual-perceptual matching and fine-motor coordination in copying line drawings.
Pattern Construction	3;06-5;11	Non-verbal reasoning and spatial visualization in reproducing designs with colored blocks.
Matrices	6;00-over	Inductive reasoning: identification and application of rules governing relationships among abstract figures.
Quantitative Reasoning	6;00-over	Inductive reasoning: detection and application of rules concerning sequential patterns in dominos and relationships between pairs of numbers.
Recall of Designs	6;00-over	Short-term recall of visa-spatial relationships through reproduction of abstract figures.

Table 4.7   Descriptions of each scale in the cognitive ability task.

Procedure   The cognitive ability test was administered scored and interpreted by the experimenter. The experimenter received formal training in advance in the individual administration and interpretation of cognitive test batteries for children of the age ranges used in this study. Fundamental principles of assessment of children were given strong attention, such as establishing and maintaining rapport, eliciting optimum performance, following standard administration procedures, probing responses, and maintaining test security. Ability scores were obtained from each task and then were transformed into T- scores according to the Tables given in the BAS II Manual.

4.4   Procedure

The experimenter spent considerable time with all the children in their schools/nurseries prior to any tests, so that all the children were familiar with her by the time they were tested.

All the tests were conducted in quiet, well-ventilated rooms with adequate space and lighting and with minimal distractions. The experiments on the Chinese children were conducted during weekends or holidays in their own houses. The ones on the English children were carried out during school time in their own nurseries or schools. Quiet corners in the nurseries and school libraries/music rooms were used. All the children knew the testing room/place and none seemed at all concerned about being asked to go there. The surroundings of the testing place were very familiar to the children and they felt quite at home there.

Both the experimenter and the child were seated comfortably at a desk or a table during the tests. Breaks (maximum 10 minutes) were allowed during testing when appropriate. Considering the short attention spans of younger children, pauses were needed in the middle of tests until the child was once again attending. Two short testing sessions were used rather than one long session.

A co-operative relationship between the experimenter and the child was required. Every effort was made to ensure that children were at ease with the experimenter and with the testing environment before starting the test. The experimenter spoke in a friendly, conversational tone, commenting as appropriate to ensure the motivation and attention of the child. The children were encouraged for their effort rather than praised for correct responses. Each child was made to feel comfortable and was willing to work in the presence of the experimenter. The children had no difficulty at all in concentrating on the tasks.

Children often quite literally queued up for their 'turn' and several children in schools complained that they had not been asked to take part. The experimenter was, therefore, confident that the optimum conditions were obtained for an investigation of this kind.

Roughly the same procedure was used in the tests with the adult groups. A brief introduction and description were used before the tests.

All the adults were tested during their free time either at home or at work.

Pilot studies were conducted on the English children in one nursery, one infants' school, and one primary school before the experiments started, which enabled any necessary modifications to be made to the procedure. The main aims of the pilot studies were to give the experimenter some practice in testing young children. The children used in the pilot study were from different age groups, ranging from 2;05 to 10;06. These pilot studies are not reported here.

4.5 Methodological Issues

For the purpose of the present study, all the participants' speech output were transcribed shortly after the experiments and then were analyzed both qualitatively and quantitatively.

Quantitative Analyses   All the transcripts were scanned to pick out all the references and were grouped into four categories: 1) referent-introducing expressions, 2) first mention articles referring to protagonists and inanimate entities, 3) referent-maintaining expressions, and 4) other types of referring expressions. ANOVAs were run on the three sets of data: Chinese children vs. English children, Chinese children vs. their parents, and English children vs. their parents. Regressions were run on the four indicated factors (Age, Cognitive Ability, English Language Ability, and First Language) against each of the three dependent variables: first mention indefinites, first mention definites, and second mention definites. Quantitative analyses were run via SPSS (Version 10.0)

Qualitative Analyses   Qualitative analyses were used in the section of 'The use of a thematic subject constraint'. The key points in the analyses were: 1) protagonist identifications, 2) protagonist-reference frequencies, 3) subject slot occupiers and referential forms, 4) on the

whole, it was a coherent narrative or not, and 5) the strategies used in constructing coherent narratives.

Chapter 5   Experiment One

5.1   Brief Introduction

The experiment to be reported in this chapter is designed to investigate: 1) the ways in which Chinese and English children and their adult controls establish new referents in the discourse and maintain the familiar referents in the same discourse, (how they differentiate, name, or refer back to the previously mentioned referents in the same discourse), with the aim of contributing to my understanding of the children's development of linguistic referential devices, when English is a second language as well as when it is the native language. 2) the similarities and differences between the two language groups (Chinese and English) and between the two age groups (children and adults) in producing English referring expressions; and 3) which of the four indicated factors predict significant variance in the children's use of English referring expressions, the four factors being Age, Cognitive Ability, English Language Ability, and First Language.

The ability to relate a coherent, structured narrative demands considerable linguistic and cognitive skills. The information must be organized into a whole, characters must be named and differentiated, and linguistic referents must be established for future anaphoric reference. There have been a variety of approaches to the study of child discourse, with major focuses concerned with the analyses of children's stories of past events (e.g. Petersen & McCabe 1983) or reiterations of favorite tales (e.g. Sutton-Smith 1981). Other researchers have investigated children retelling previously heard stories (Geva & Olson 1983, Mandler & Johnson 1977) or analyzed various aspects of the narratives of children retelling past experiences (Jisa 1984/5, Petersen & McCabe 1983). The analyses of discourse elicited through prompts have received less attention, but represents a qualitatively different approach, which tests the children's ability to analytically sequence events and create a storyline (see, for example, Karmiloff-Smith 1981). Under these conditions, no substantive test of memory is involved,

since the children are prompted with the story pictures as they related the narratives and are not required to recall the storylines from a prior viewing, instead, the children's skill in developing a coherent narrative is tested. The two experiments reported in this thesis are designed based on these latter ideas.

From the developmental aspect, children must learn the referential system. Their referential ability must mature as they acquire a certain kind of language. Maratsos (1976) proposes that there are two semantic factors involved in acquiring competence in the use of articles: the first determines whether the referent is distinguished from all other members of its class by some unique specifications (e.g. use of definite articles) as opposed to a situation where only the referent's class membership or the idea of its class membership is marked, (e.g. indefinite articles); the second concerns the ability of the listener to make the same identification of class membership as the speaker.

Referents on their first mention in discourse may receive one of the two referring devices: an indefinite article or a definite article. The two types of devices are not only correlated with different assumptions about the identifiability of the referents, but also correlated with the speaker's mental model, the listener's model, and the speaker's model about the listener's model (as discussed in Chapter 1). If the listener cannot see the pictures, no matter whether the speaker knows the referent or not, the speaker should use an indefinite article to introduce a new referent. But in the situation where the listener shares the same vision with the speaker, then the use of both definite and indefinite articles would be appropriate. In this experiment, listeners can also see the pictures and so it is expected that definite references will predominate when new entities are introduced.

In choosing a particular device for an already introduced referent, the speaker is expected to use definite rather than indefinite descriptions because the speaker should be able to work out that these already introduced referents are in the listener's mental model and they can therefore be referred to with a definite reference. Since the two protagonists are different genders, either a definite NP or a pronoun would be appropriate. Both protagonists appear in every single picture, so that references to each protagonist should be repeated. If

pronominalization is determined by economy of repetition, this manipulation should encourage pronominalization for both protagonists. However, if pronominalization is governed by constraints of marking discourse roles (the thematic subject constraint), then children should reserve subject pronouns for the protagonist they choose as the main one and use subject definites for the subsidiary protagonist.

5.2 Method

5.2.1 Participants

There were 166 participants involved in this experiment: 39 Chinese children, 28 Chinese adults, 78 English children, and 21 English adults. Descriptions of the four groups were given in Chapter 4.

5.2.2 Materials

The idea of the stories was originally from Karmiloff-Smith's (1985) experimental materials Story Type 2. Of Karmiloff-Smith's four types of stories, Types 1 & 2 are suitable for the present study, because of the younger age of children used in the present study. Story Type 2 was used because it had two protagonists of different gender, which might encourage pronominalization for both protagonists. The relevant details of this story, adopted from Karmiloff-Smith's (1985) Table 1, are shown below:

Number of protagonists in story:	Two.
Can a main protagonist be easily established?	Yes.
Does the subsidiary protagonist appear in every picture?	Yes.
Are protagonists of different gender?	Yes.
Does every picture contain the main protagonist?	Yes.
Is there a sequence of linked events?	Yes.

Three versions of the story were used in the experiment. Karmiloff-Smith's Story Type 2 was used as one of the three versions. The other two versions

differed from the original only in terms of content. There are very few differences among the three versions in terms of the parameters, syntactic structures, and number of protagonists and inanimate entities. The stories are purposely extremely simple in structure, to avoid the children's performance being attributable solely to the cognitive complexity of multiple embedding of episodes story.

Six pictures of sequential events comprised one story, to ensure that participants produced between 6 and 12 utterances. All the three versions had two protagonists of different gender (a boy and a girl) and four inanimate entities (a bucket, a spade, a stone/tree trunk/log, and a sandcastle) in the stories. The two protagonists appeared in every picture. The bucket, spade and sandcastle appeared in Picture 2 and remained in the rest of pictures. The stone/tree trunk/log was present only at the last picture (Picture 6). The three stories were as follows:

Version One:

A boy dressed in green and a girl dressed in red are walking along a beach. The boy is fishing and the girl is building a sandcastle. The boy stretches towards the girl's bucket and the girl looks angry, holding out her arm. The boy takes the girl's bucket and the girl pulls back. The boy runs away with the bucket, the girl is in pursuit. The girl sits on a tree trunk and cries while the boy is fishing.

Version Two:

A boy dressed in green and a girl dressed in red are walking along a beach. The boy is swimming and the girl is building a sandcastle. The boy asks the girl to join him in swimming and the girl is not happy. The boy takes the girl's bucket and the girl pulls back. The boy runs away with the bucket. The girl is in pursuit. The girl sits on a stone and cries while the boy is throwing the bucket away.

Version Three:

A boy dressed in red and a girl dressed in green are walking along a beach. The girl is building a sand castle and the boy is building a sand castle, too. The girl

asks the boy to help her with her sand castle and the boy looks angry. The girl destroys the boy's sand castle and the boy is trying to stop her. The girl runs away with his bucket, the boy is in pursuit. The boy sits on a tree trunk and cries while the girl walks away.

The pictures were designed and colored by the experimenter and hand drawn by a Chinese postgraduate in Physics Department at University of Durham. Each picture measured 21 cm. X 15 cm. Version One pictures are given on pages 97 - 99.

Picture 1: A boy dressed in green and a girl dressed in red are walking along a beach.

Picture 2: The boy is fishing and the girl is building a sandcastle.

Picture 3: The boy stretches towards the girl's bucket and the girl looks angry, holding out her arm.

Picture 4: The boy takes the girl's bucket and the girl pulls back.

Picture 5: The boy runs away with the bucket, the girl in pursuit.

Picture 6: The girl sits on a tree trunk and cries while the boy is fishing.

5.3 *Results*

5.3.1 *Introducing New Referents*

Referent-introducing expressions are those that are used to introduce the two protagonists (a boy and a girl) and/or the four inanimate entities (a bucket, a spade, a sandcastle, and a log / stone) in the stories. The mean numbers and mean proportions of the appropriate referent-introducing expressions used by the children and parents are shown in Table 5.1. Only the indefinite references are regarded as appropriate introducing references, while all the definite articles and pronouns are treated as inappropriate.

	Mean total of utterances	Mean no. of appropriate	Mean proportions of appropriate
Chinese Children	5.7	2.0	0.4
English Children	6.0	1.7	0.3
Chinese Parents	6.2	2.4	0.4
English Parents	9.1	3.8	0.4

Table 5.1   Mean numbers and mean proportions of the appropriate referent-introducing expressions used by the children and their parents.

<u>Children's data</u>

The data of the children is shown in the top two rows of Table 5.1. A two-way ANOVA was carried out on the children's appropriate data. The factors were English Language Ability and First Language. The results revealed neither significant main effects nor significant interactions.

<u>Chinese children vs. Chinese parents</u>

A one–way ANOVA was carried out on the appropriate data of Chinese children and their parents. The factor was Children/Parents. The results revealed no significant effects.

<u>English children vs. English parents</u>

A one-way ANOVA was carried out on the appropriate data of English children and their parents. The factor was Children/Parents. The results revealed no significant effects.

5.3.2   *The Use Of The First Mention Indefinite Articles*

The two protagonists and four inanimate entities introduced by articles are counted here. Table 5.2 shows the mean numbers and mean proportions of the indefinite articles used by both the children and their parents when introducing the protagonists and inanimate entities.
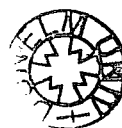
	Protagonist			Inanimate		
	Total	Mean	Proportion	Total	Mean	Proportion
Chinese Children	1.4	0.6	0.5	3.9	1.4	0.4
English Children	1.0	0.3	0.3	3.7	1.2	0.3
Chinese Parents	1.4	1.3	0.9	3.2	1.1	0.3
English Parents	0.9	0.8	0.9	5.4	2.7	0.5

Table 5.2   Mean numbers and mean proportions of the indefinite articles used on the first mention of the protagonists and inanimate entities.

Children's data

The top two rows of Table 5.2 show the mean numbers and mean proportions of the indefinite articles used by the children. A three-way ANOVA was carried out on the children's indefinite data. The factors were English Language Ability, First Language, and Type of Entity. The results revealed neither significant main effects nor significant interactions.

Chinese children vs. Chinese parents

A two-way ANOVA was carried out on the indefinite data of Chinese children and their parents. The factors were Children/Parents and Type of Entity. The results revealed two significant main effects. One was of Children/Parents (F = 6.26, df = 1,46, p < .016). The Chinese parents used more indefinite articles than the Chinese children. The other significant main effect was of Type of Entity (F = 21.24, df = 1,46, p < .000). The Chinese children and their parents used more indefinite articles to introduce the protagonists than to the inanimate entities. The results also revealed one 2-way interaction between Type of Entity and Children/Parents (F = 11.42, df = 1,46, p < .001). Inspection of Figure 5.1 indicates that the interaction existed because the parents used more indefinite articles referring to the protagonists than to the inanimate, whereas the children used comparable numbers of both. This difference was confirmed significant by a followed paired-samples t-test (t = 3.39, df = 8, p < .010 (two-tailed)).
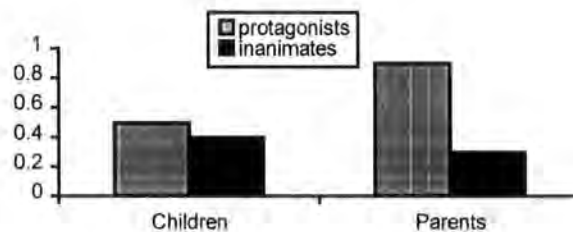
Figure 5.1   Mean proportions of indefinite articles used to introduce the protagonists and inanimates by Chinese children and parents.

English children vs. English parents

A two-way ANOVA was carried out on the indefinite data of English children and their parents. The factors were Children/Parents and Type of Entity. The results revealed two significant main effects. One was of Type of Entity (F = 6.0, df = 1,26, p < .021). There were more indefinite references used to introduce the Protagonists than to introduce the Inanimate. The other was of Children/Parents (F = 14.32, df = 1,26, p < .001). The parents used more indefinite articles than the children. The results also revealed one 2-way interaction between Type of Entity and Children/Parents (F = 8.84, df = 1,26, p < .006). Inspection of Figure 5.2 indicates that the interaction existed because the parents used more indefinite articles referring to the protagonists than to the inanimate, whereas the children used the same numbers of both. This difference was confirmed significant by a follow up paired-samples t-test (t = 5.53 = 17, p < .000).
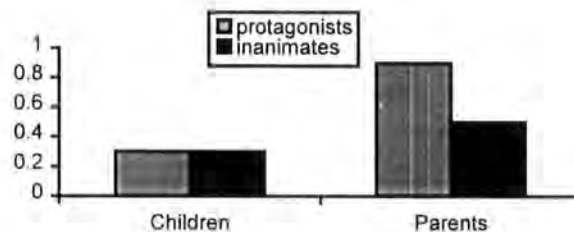
Figure 5.2   Mean proportions of indefinite articles used to introduce the

protagonists and inanimates by English children and parents.

5.3.3 *Maintaining The Familiar Referents*

When the referents have been set up in the discourse, the next question is how to maintain them within the same discourse. When reporting the production of referent-maintaining expressions, three sets of results are presented: 1) the use of referring expressions;   2) the effect of the thematic subject constraint: 3) other types of referring expressions (Bare Nouns and Demonstratives). In general, the data reported in this section were a combination of all the references to both the protagonists and the inanimates.

The mean numbers and mean proportions of the appropriate referring expressions used by the children and parents are shown in Table 5.3. In the section, all the definite articles, pronouns, and proper names are treated as appropriate, while the indefinite articles are regarded as inappropriate.

	Mean total of utterances	Mean no. of appropriate	Mean proportions of appropriate
Chinese Children	13.7	13.5	1.0
English Children	10.7	10.1	0.9
Chinese Parents	13.4	13.3	1.0
English Parents	24.3	23.4	1.0

Table 5.3   Mean numbers and mean proportions of the appropriate referent-maintaining expressions used by the children and their parents.

Children's data

The data of the children is shown in the top two rows of Table 5.3. A two-way ANOVA was carried out on the children's appropriate data. The factors were English Language Ability and First Language. The results revealed two significant main effects: one was of First Language ($F = 10.74$, df = 1,34, $p < .002$). The Chinese children produced more appropriate referring expressions than the English children; the other was of English Language Ability ($F = 3.94$, df = 4,34, $p < .010$). The children used more appropriate expressions as their English Language Ability improved.

Chinese children vs. Chinese parents

A one-way ANOVA was carried out on the appropriate data of Chinese children and their parents. The factor was Children/Parents. The results revealed neither significant main effects nor significant interactions.

English children vs. English parents

A one-way ANOVA was carried out on the appropriate data of English children and their parents. The factor was Children/Parents. The results revealed neither significant main effects nor significant interactions.

A one-way ANOVA was carried out on the appropriate data of English children and their parents. The factor was Children/Parents. The results revealed neither significant main effects nor significant interactions.

5.3.4   The Use Of A Thematic Subject Constraint

In this section the participants' ability to use a thematic subject constraint was examined. In the analyses, three narratives from the Chinese children group and seven from the English children group were excluded due to the fact that there were not enough utterances (less than five) to indicate the use/non-use of a thematic subject constraint. All the rest of the transcripts were included in the analyses. The numbers of the participants in each group are given in the table below.

It is hypothesized that if there is an identified thematic subject, then it should attract more references than non-thematic subjects. Table 5.4 shows the mean numbers of references to each protagonist in each of the four groups. In the table, 'P1' is the short term for Protagonist 1, who is the one mentioned first in the transcript; and 'P2' is the short term for Protagonist 2, who is mentioned second. As can be seen in the table, there was very little difference between the references to each protagonist across the four groups with the possible exception of the English parent group. But the result from a t-test showed that there was no significant difference between the references to P1 and P2 with the English parent group. Also there were no clear differences between language ability groups with respect to references to each protagonist by the children.

	No. of Participants	P1	P2
Chinese children	36	4.4	4.6
English children	32	3.7	3.5
Chinese parents	28	4.0	4.1
English parents	21	7.2	6.5

Table 5.4   Mean numbers of references to each protagonist. Note: 'P1' means Protagonist 1; 'P2' means Protagonist 2.

Secondly, all the useable transcripts were examined with respect to Karmiloff-Smith's theory of three developmental levels of a thematic subject constraint (listed in Table 5.5). The criteria for each level were based on those

listed on p. 69 of Karmiloff-Smith's paper (1985) together with additional criteria that are evident in her Figures 2-3 on p. 79-80 (1985).

Level 1	(1) Nominal referential devices (definite and demonstrative NPs, pronouns, etc.) are used in their deictic function, even at first mention of a referent; (2) In the cases where protagonists are first referred to with an indefinite NP, they are immediately pronominalized on subsequent mentions; (3) Stories reflect each picture accurately.
Level 2	(1) New referents are introduced with indefinite NPs; (2) Pronouns function anaphorically; (3) The subject slot of all sentences is occupied by references to the main protagonist only, for which pronouns only are used.
Level 3	(1) New referents are introduced with indefinite NPs; (2) Pronouns function anaphorically; (3) The subject slot of sentences is preferentially, but not rigidly, occupied by references to the main protagonist. Pronouns are used when the main protagonist is in the subject slot; definite NPs are used when the secondary protagonist is in the subject slot.

Table 5.5   Basic characteristics of Karmiloff-Smith's three levels narratives.

Table 5.6 shows narratives classified in each of Karmiloff-Smith's three levels. Proportions were used because of the unequal numbers in each group. As can be seen from the table, there were no transcripts at Level 2 or Level 3, the levels at which a thematic subject is identified.

	No. of participants	Level 1	Level 2	Level 3
Chinese children	36	0.19	-	-
English children	32	0.38	-	-
Chinese parents	28	-	-	-
English parents	21	0.05	-	-

Table 5.6   Proportions of narratives in each of Karmiloff-Smith's three levels.

Two examples of Level 1 are given in Examples 5.1-5.2.

Example 5.1 (from the Chinese children group):

"The boy walking with that. The boy playing that. This in the water. The boy swimming in the water and play in the sand, put sand into bucket, and the boy didn't got and she ran faster and faster. She throw it and the boy's crying."

Example 5.2 (from the English children group):

"They are talking. He is swimming and she is playing with sand. That still swimming and that one still looking, watching him swimming. They are fighting over the bucket. That boy took the bucket away. He is throwing the bucket and the girl sitting on a log."

According to Karmiloff-Smith (1985), when the speaker has not identified a thematic subject, explicit narratives are used. 'Explicit references' used in this thesis are definite NPs or proper names (PNs). A number of transcripts did use explicit references through out, even though pronouns would have been appropriate due to the different gender of the two protagonists. Some of these explicit narratives did not introduce the two protagonists with indefinite articles, hence they could be regarded as on the same level as Karmiloff-Smith's Level 1.

An example from the English children group is:

"The man is looking at the girl and the girl is looking at the man, and the boy is swimming in the sea, and the girl build a tower, and the boy is swimming with the girl and the girl and the man is swimming in the water now. And the girl is putting the spade into the bottom of it. The boy is snatching of it, because it was about the castle, and the spade dropped over the bucket, and the man is running to get some more sand for the castle, and the girl trying to get some sand, the boy took the bucket and the girl is crying."

The remaining explicit narratives did introduce the two protagonists with indefinite articles, so they could be regarded as at the same level as either Karmiloff-Smith's Level 2 or her Level 3.

An example from the Chinese parent group is:

"One day, two children are playing on the beach. The boy was swimming and the girl is building up a sand castle. The boy wants the girl swim as well. So he called the girl into the sea to swim. But the girl doest not want to swim. This made the boy angry. And then the boy goes to the beach to get the container from the hands of the girl. Then ran away. The girl wants the container back. So the girl chased a boy, but the boy threw the container into the sea which made the girl crying."

Table 5.7 shows the proportions of the different types of explicit narratives. In the table, 'PNs' mean proper names. As can be seen from the table, the English children produced larger proportions of explicit narratives without introducing the two protagonists appropriately. The Chinese, both the children and the parents, produced more explicit narratives with appropriate introductions to the two protagonists, mainly by using definite NPs throughout.

| | No. of participants | Protagonists introduced with definite references | Protagonists introduced with indefinite references | |
			all definite NPs	all PNs
Chinese children	36	0.17	0.31	0.19
English children	32	0.34	0.19	-
Chinese parents	28	0.07	0.68	0.18
English parents	21	0.10	0.14	0.14

Table 5.7   Proportions of explicit narratives in each group. Note: 'PN' means a proper name.

Apart from the above two types of narratives (those classified as one of Karmiloff-Smith's three levels and explicit narratives), other transcripts were fully coherent, and unambiguous, even though they included pronouns. However, the pronouns were mainly used in a systematic way to ensure that the intended referent could be identified. In most of these transcripts, names or modifier phrases were mainly used whenever a character was re-introduced and

then pronouns were used for as long as reference to that character was maintained.

An example from the English parent group is given:

"Amy and Steven are walking on the beach one day in Durham. Amy decides to go to a sandcastle and Steven decides to do a bit of fishing. Steven has filled up his bucket with his fish, so he decides he is going to take Amy's bucket to catch some more fish, but she is not happy about this. She is building a large castle and she wants to carry on building up some towers, so they start to have a fight about the bucket. Amy is very strong, and she can hold on to that bucket for a long time, but Steven gets hold of it and runs off in the other direction, and Amy starts chasing him, and all the sudden, Steven gets the bucket. He has got some more fish, and poorer Amy sitting on the log with nothing to take, so she is sitting on the log. She is very upset. She is thinking of a good track on her bother."

All these 'coherent' narratives can be regarded as being at the same level as Karmiloff-Smith's Level 2 or 3, the levels at which a thematic subject could have been identified, but was not. Table 5.8 shows the proportions of these coherent transcripts in each group together with the overall proportions of explicit transcripts (from Table 5.7), in which the protagonists appropriately identified. The total proportion of the two sets of transcripts indicates the extent to which the participants, except the English children group, produced coherent and unambiguous narratives, but did not identify a thematic subject. The majority of the English children's narratives were either a Karmiloff-Smith's Level 1 or fully explicit reference without appropriately introducing the protagonist. Note also that there were no zero anaphors in the Chinese transcripts.

	Coherent Transcripts	Explicit Transcripts (protagonists appropriately introduced)	Total
Chinese children	0.14	0.50	0.64
English children	0.09	0.19	0.28
Chinese parents	0.07	0.86	0.93
English parents	0.57	0.29	0.86

Table 5.8   Proportions of coherent narratives and the explicit narratives in which the protagonists were appropriately identified.

5.3.5 *Other Types Of Referring Expressions*

Bare Nouns and Demonstratives are examined in this section. Table 5.9 shows the mean numbers of these two types of referring expressions. No analyses were carried out due to the small numbers.

	Bare Nouns			Demonstratives		
	1st	2nd	Total	1st	2nd	Total
Chinese Children	0.38	0.9	1.28	0.1	0.13	0.23
English Children	0.26	0.33	0.59	0.33	0.54	0.87
Chinese Parents	0.79	0.5	1.29	0.07	0.36	0.43
English Parents	0.1	0.05	0.15	0.05	0.29	0.34

Table 5.9   Mean numbers of other types of referring expressions.

The table shows that 1) the Chinese parents and to a lesser extent, the Chinese children produced more Bare Nouns on first mention of a referent than English children and English parents. 2) The English children used Demonstratives more frequently on both first and second mention than the other three groups.

5.3.6 *Correlation And Regression Analyses Of The Children's Performance On The Three Main Categories Of Referring Expressions.*

First Mention Indefinites

Table 5.10 lists the four factors and first mention Indefinites along with the means and standard deviations for both Chinese and English children. The overall mean number of first mention Indefinites per child was 1.7. The distribution of each factor was fairly well distributed. They were all more or less symmetric with a reasonable amount of variability.

	Descriptive		Statistics					
	1st-mention Indefinites		Age		Language Ability		Cognitive Ability	
	M	S.D.	M	S.D.	M	S.D.	M	S.D.
Chinese	2.05	1.43	88.55	25.40	53.41	11.56	39.16	7.72
English	1.52	1.39	76.05	27.42	55.94	10.59	28.61	7.06

Table 5.10   Basic descriptive statistics of the variables. Note: M=mean, S.D.= standard deviation.

Table 5.11 shows the bivariate correlation coefficients between first mention Indefinites and the four factors. From the correlation matrix given below, it is apparent that three of the four factors (except First Language) showed significant and positive, but relatively low correlations with first mention Indefinites. The differences between the 3 correlation coefficients were very small. Cognitive Ability had the slightly highest correlation with first mention Indefinites (r = .274, p < .003). Age and Language Ability came next in order of correlations with first mention Indefinites. There was no significant correlation between first mention Indefinites and First Language.

	1st-mention Indefinites	Age	First Language	Language Ability	Cognitive Ability
1st-mention Indefinites	1.000	.254**	-.177	.237*	.274**
Age		1.000	-.216*	.589**	.673**
First Language			1.000	.109	-.566**
Language Ability				1.000	.357**
Cognitive Ability					1.000

Table 5.11   Correlation matrix for first mention Indefinites and four factors. Note: *. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

A stepwise regression was carried out to find out if any of the four factors was a worthwhile predictor of first mention Indefinites. Tables 5.12, 5.13, and 5.14 show that only Cognitive Ability was a worthwhile factor with a significant contribution to the children's performance on first mention Indefinites (r = .327, p < .003). Cognitive Ability alone accounted for 10.7% of the variance and was a significant factor of first mention Indefinites. The increment in R with the inclusion of the variables Age, First Language, and

Language Ability was not robust, and so those variables were dropped from the final equation.

Table 5.12 - Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.327[a]	.107	.075	1.37

Table 5.13 - Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1　(Constant)	.276	.486		.569	.571
Cognitive Ability	4.422E-02	.015	.274	3.025	.003

Table 5.14 - Excluded variables

Model	Beta In	t	Sig.	Partial Correlation	Collinearit y Statistics
					Tolerance
1　　　　　Age	.128[a]	1.046	.298	.098	.548
First Language	-.033[a]	-.296	.768	-.028	.679
Language Ability	.159[a]	1.658	.100	.155	.873

Tables 5.12, 5.13 and 5.14　Stepwise regression analyses for the four factors. Note: (1) Dependent variable: first mention Indefinites. (2) Factor in the Model: (Constant) Cognitive Ability.

The four factors were highly interrelated, with the exception of the pair of Language Ability and First Language. All pair-wise correlations were significant.

First Mention Definites

Table 5.15 lists the four factors (independent variables) and the dependent variable (first mention Definites) along with the means and standard deviations for both Chinese and English children. The overall mean number of first mention Definites per child was *2.85*. The distribution of each factor was fairly well distributed. They were all more or less symmetric with a reasonable amount of variability.

	Descriptive		Statistics					
	1st-mention Definites		Age		Language Ability		Cognitive Ability	
	M	S.D.	M	S.D.	M	S.D.	M	S.D.
Chinese	2.58	1.54	88.55	25.40	53.41	11.56	39.16	7.72
English	2.99	1.77	76.05	27.42	55.94	10.59	28.61	7.06

Table 5.15   Basic descriptive statistics of the variables.   Note: M=mean, S.D.=standard deviation.

Table 5.16 shows the bivariate correlation coefficients between first mention Definites and the four factors. From the correlation matrix given below, it is apparent that none of the predictor variables showed significant correlations with first mention Definites.

	1st-mention Definites	Age	First Language	Language Ability	Cognitive Ability
1st-mention Definites	1.000	.025	.114	.136	-.072
Age		1.000	-.216*	.589**	.673**
First Language			1.000	.109	-.566**
Language Ability				1.000	.357**
Cognitive Ability					1.000

Table 5.16   Correlation matrix for first mention Definites and four factors. Note: *. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

A stepwise regression was carried out to find out if any of the four factors was a worthwhile predictor of first mention Definites. The result showed that none was a worthwhile factor of first mention Definites.

The four factors were highly interrelated, with the exception of the pair of Language Ability and First Language. All pair-wise correlations were significant.

Second Mention Definites

Table 5.17 lists the four factors (independent variables) and the dependent variable (second mention Definites) along with the means and standard

deviations for both Chinese and English children. The overall mean number of second mention Definites per child was *11.24*. The distribution of each variable was fairly well distributed. They were all more or less symmetric with a reasonable amount of variability.

	Descriptive		Statistics					
	2nd-mention Definites		Age		Language Ability		Cognitive Ability	
	M	S.D	M	S.D.	M	S.D.	M	S.D.
Chinese	13.11	5.66	88.55	25.40	53.41	11.56	39.16	7.72
English	10.58	5.27	76.05	27.42	55.94	10.59	28.61	7.06

Table 5.17   Basic descriptive statistics of the variables. Note: M=mean, S.D.=standard deviation.

Table 5.18 shows the bivariate correlation coefficients between second mention Definites and the four factors. From the correlation matrix given below, it is apparent that all of the four factors showed significant, though relatively low, correlations with second mention Definites. Cognitive Ability had the slightly highest correlation with second mention Definites ($r = .334$, $p < .000$). Language Ability came next, followed by Age and First Language in order of correlations with second mention Definites.

	1st-mention Indefinites	Age	First Language	Language Ability	Cognitive Ability
2nd-mention Definites	1.000	.231*	-.216*	.319**	.334**
Age		1.000	-.216*	.589**	.673**
First Language			1.000	.109	-.566**
Language Ability				1.000	.357**
Cognitive Ability					1.000

Table 5.18   Correlation matrix for second mention Definites and four factors. Note: *. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

A stepwise regression was carried out to find out which of the four factors was a worthwhile predictor of second mention Definites. Tables 5.19, 5.20 and 5.21 show that both Cognitive Ability ($r = .334$, $p < .000$ in Model 1 and $r = .252$, $p < .008$ in Model 2) and Language Ability ($r = .229$, $p < 0.15$ in Model 2) are worthwhile factors with a significant contribution to the children's performance on second mention Definites. Cognitive Ability alone accounted

for 11% of the variance in Model 1. When Language Ability was added to the model (Model 2), Cognitive Ability accounts for 15.7% of the variance. The other two variables were dropped from the final equation.

Table 5.19 - Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.334[a]	.111	.103	5.21
2	.397[b]	.157	.142	5.10

Table 5.20 - Coefficents

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.715	1.847		2.554	.012
	Cognitive Ability	.209	.056	.334	3.762	.000
2	(Constant)	-4.0E-03	2.629		-.002	.999
	Cognitive Ability	.158	.058	.252	2.711	.008
	Language Ability	.115	.047	.229	2.471	.015

Table 5.21 - Excluded variables

Model		Beta In	t	Sig.	Partial Correlation	Collinearit y Statistics Tolerance
1	Age	.012[a]	.098	.922	.009	.548
	First Language	-.040[a]	-.372	.710	-.035	.679
	Language Ability	.229[a]	2.470	.015	.227	.873
2	Age	-.180[a]	-1.330	.186	-.125	.409
	First Language	-.174[a]	-1.520	.131	-.143	.568

Tables 5.19, 5.20 & 5.21   Stepwise regression analyses for the four factors. Note: (1) Dependent variable: second mention Definites,   (2) Predictor in the Model 1: (Constant) Cognitive Ability, (3) Predictor in Model 2: (Constant) Cognitive Ability and Language Ability.

5.4 Discussion

In this discussion, the key results are summarized in relation to the predictions. A broader discussion will be postponed until the final chapter where the results of the two experiments are discussed together.

In this experiment, the results for introducing new referents showed that both Chinese and English children produced large numbers of definite references. This result was predicted because both speaker and listener could see

the pictures. It is also possible that the children judged that most of the inanimate entities were predictable in the context of the story and that these inferences accounted for some of the first mention definites. An analysis of protagonists and inanimate entities separately supported this suggestion: definite expressions were mainly used with inanimate entities. Surprisingly, and contrary to expectations, the English children showed a larger difference between definite and indefinite references than the Chinese children. Whereas the English children produced more definites (called "inappropriate" in the analyses) than indefinites, the Chinese children showed little difference between the two kinds of references. Possibly the English children were more susceptible to context than the Chinese children, either the physical context (in which the listener could see the pictures) or the context of the story (in which many of the inanimate entities were predictable). Whatever, the precise reason, the prediction that the Chinese children would overuse 'the' on first mention more than English children was not supported.

The results for maintaining references to familiar referents were as predicted. Both groups of children produced more appropriate than inappropriate references. Once again, contrary to expectations, the Chinese children produced more appropriate expressions than the English children. There was also an interaction between Appropriateness, First Language, and English Language Ability in the references to familiar entities. The numbers of appropriate references were comparable for Chinese and English children in Groups 2, 3, and 5, but Chinese children produced more appropriate references than English children in Groups 1 and 4, particularly Group 1. It is not clear why there should be a difference in Group 4, but the difference in Group 1 no doubt arises because the English group 1 children were very young (2;3-3;10) compared to the Chinese group 1 (4;3-7;3).

There was no evidence of a thematic subject constraint in the data. First, there was no preference for referring to one protagonist rather than the other. This result is consistent with the idea that the thematic subject constraint is weaker when gender cues are available to distinguish the referents (Tyler, 1984). Second, with the consideration of Karmiloff-Smith's three levels of the

development of a thematic subject constraint, the data showed the participants in this experiment did not use a thematic subject strategy in their narrative production, although they were using some other types of strategies in producing a coherent and structured narrative.

As far as the specific features of the Chinese language were concerned, I predicted that the Chinese children would use more zero anaphors on subsequent mentions, which was unfortunately impossible to test in this experiment due to the fact that there was not a clear main character in the story. As regards other kinds of NPs, my prediction was that the Chinese children would use more Bare Nouns and Demonstratives than the English children. However, Chinese children did produce more Bare Nouns than English children as predicted, particularly on second mentions. The Chinese parents produced the most Bare Nouns overall on both first and second mentions. The prediction that Chinese children would produce more Demonstrative on second mention than English children was not supported. In fact the English children produced the most Demonstratives overall, possibly because as a group, they were younger than the Chinese children and were using demonstratives deictically.

In the regression analyses, Cognitive Ability was a significant predictor of first mention indefinites, and both Cognitive Ability and English Language Ability were significant predictors of second mention definites. There was no significant predictor of first mention definites, perhaps reflecting the fact that the prevalence of first mention definites could be due to a number of different factors. The significant role of Cognitive Ability is consistent with the role played by inferences in deciding which referring expressions to use when introducing novel referents and referring to familiar ones. Similarly, the effect of English Language Ability reflects the linguistic knowledge, syntactic and semantic, that is needed to use referring expression appropriately. It is not clear why English Language Ability did not predict first mention indefinites. The precise pattern of influences may be clearer when the results of Experiment 2 are considered.

Chapter 6   Experiment Two

6.1   Brief Introduction

The experiment to be reported in this chapter is, on the whole, the same design as the first one, aiming to investigate how the children and their parents use English referring expressions to establish and maintain referents in discourse. The major procedural difference between the two experiments is that in this experiment, listeners cannot see the pictures. Consequently, it is expected that the children should introduce novel referents with indefinite rather than definite NPs.

As far as maintaining familiar referents are concerned, it is expected that all the participants will use definite rather than indefinite references for subsequent mentions, as they did in Experiment 1. However, what counts as an appropriate definite reference is different in this experiment compared to Experiment 1. In this experiment, in which the two protagonists are the same gender only, modifiers and proper names are appropriate, whereas pronouns and definite articles are inappropriate, Whether or not the participants show a clear preference for appropriate references, however, depends on the strategies they might use to construct a coherent discourse. The strategy examined here is the use of a thematic subject.

If the speaker has set up a thematic subject and then refers back to it by a pronoun in the subject position and uses modifiers to refer back to the other one in non-subject position, then it is another case. In this experiment, use of the thematic subject constraint is encouraged, since in the story, the two main protagonists are the same gender and so there are no gender cues that can be used to distinguish between the two protagonists as in Experiment 1. It is expected, therefore, the children and their parents will make one protagonist the main one and use the thematic subject strategy in the later discourse by pronounominalizing this person and keeping it in the subject position. The other

main character should be referred back by a modifier in any position. In this experiment, a third character was introduced at the end of the story. Ways to switch references to this character were also examined.

6.2   Method

6.2.1   Participants

There were 86 participants involved in this experiment: 22 Chinese children, 10 Chinese adults, 44 English children, and 10 English adults.

All the children involved in Experiment 2 were the same children who took part in Experiment 1 during 1997-1998. The total number of the children participants in Experiment two reduced by 36% compared with those in Experiment 1. This was due to the families moving out of the area. The children's ages ranged from 5 years and 4 months to 11 years and 7 months for the Chinese children (Means = 8;9 years) and from 3 years and 3 moths to 6 years and 11 months for the English children (Means = 5;7 years).

All the adult participants were chosen randomly. They are not the same groups of adults who were involved in Experiment 1 during 1997 - 1998. Both the Chinese and English adults were roughly in the same age group. Most of them were member staff of the University of Durham, both academic and non-academic.

Again all the Chinese, either the children or adults, are Mandarin Chinese native speakers, and all the English participants, both the children and adults, are monolingual English language speakers.

6.2.2   Materials

Two versions of cartoon stories were used in this experiment with no differences with respect to referent status between the two versions. The pictures were designed by the experimenter herself and drawn and colored by Ms. Shirley Whiteley (a research coordinator in the Department of Psychology at University of Durham). Each picture measured 21 cm. x 15 cm..

Seven pictures of sequential events comprise one story, to ensure that participants produced between 7 and 14 utterances. There are two main characters and one subsidiary character. The two main protagonists are either two girls in Version One or two boys in Version Two. The subsidiary character in both versions is a woman, who does not appear until the last picture. The two girls/boys appear frequently together in each single picture, except the third one, where one of them appears on his/her own. There are 2 inanimate entities in each story, which are an ice cream and ice cream van in Version One or a ball and a dog in Version Two. The stories are as follows.

Version One:

Two girls are standing together in a park. One of the girls is walking away. The other is standing still. The girl dressed in green buys an ice cream from an ice-cream man. The girl walks towards the other girl, licking her ice cream. The girl dressed in red grabs the ice cream from the girl dressed in green. The girl dressed in red runs away, holding the ice cream; the girl dressed in green is standing still unhappily. The girl dressed in green is crying. A woman stops the girl dressed in red and takes the ice cream back.

Version Two:

Two boys are walking side by side along a beach. The one wearing short pants is fishing and the other is playing with a ball by himself. A dog from a distance grabs the ball away from the boy. The boy is crying and the other boy wearing short pants starts running towards the dog. The dog runs away with the ball and the boy wearing short pants is running fast after the dog. The boy gets the ball back from the dog and gives back to the other boy. A woman walks the dog away.

The pictures in each version are shown in pages 124-127. The details of the stories are shown below:

Number of protagonists in story:	Three.
Can a main protagonist be easily established?	Yes.
Does the subsidiary protagonist appear in every picture?	No.
Are the main protagonists of different gender?	No.
Does every picture contain main protagonists?	Yes.
Is there a sequence of linked events?	Yes.

6.2.3 Design And Procedure

Design   The same design was used as for Experiment 1. Participants were required to tell a story to a listener (another child at the same linguistic level) based on a sequence of seven pictures. The factors were Chinese children and English children; Chinese children and their parents; and English children and their parents. The dependent variables were Types of Referring Expressions used when introducing new referents and when referring to familiar referents. Additional measures taken for the children were Age, Cognitive Ability, English Language Ability, and First Language, which were used in multiple regression analyses.

Picture 1: Two girls are standing together in a park.
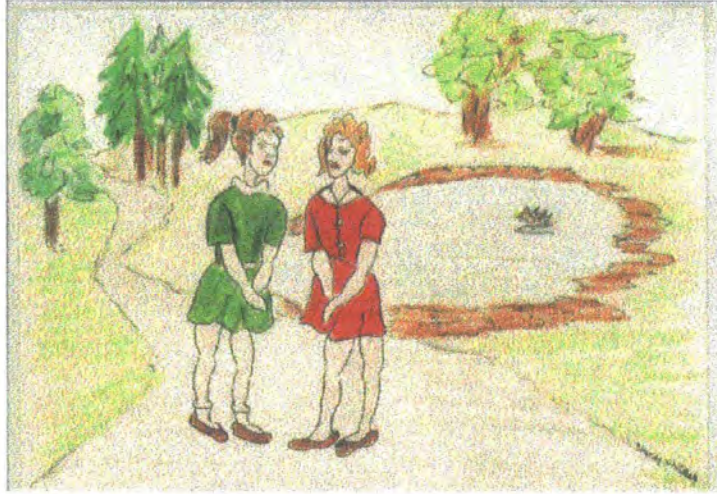
Picture 2: One of the girls is walking away. The other is standing still.
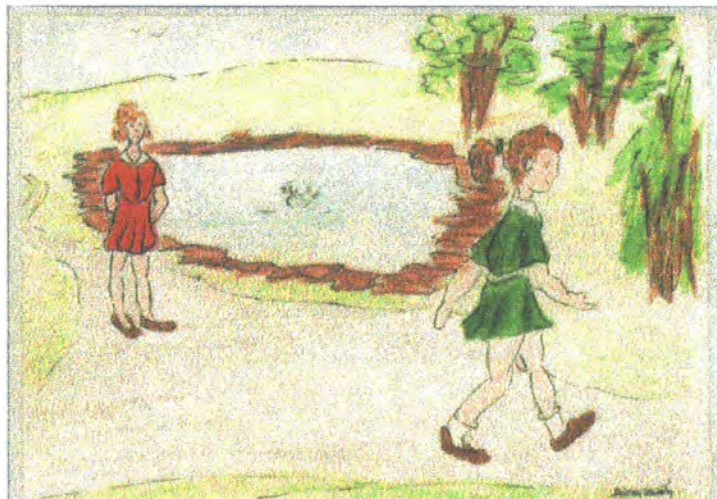
Picture 3:

The girl dressed in green buys an ice-cream from an ice-cream man.

Picture 4:

The girl walks towards the other girl, licking her ice-cream.

Picture 5:

The girl, dressed in red, grabs the ice-cream from the girl dressed in green.

Picture 6:

The girl dressed in red runs away, holding the ice-cream;

the girl dressed in green is standing still unhappily.

Picture 7:

The girl dressed in green is crying. A woman stops
the girl dressed in red and takes the ice-cream back.

Procedure   All the children were tested in pairs in a quite room/corner, where was familiar to them. Pairs were formed randomly. The two children of each pair sat opposite each other at a table. In between on the table stood a screen preventing them from seeing each other's story pictures. The screen was low enough to ensure that the children could still see each other over it. The experimenter sat at the side of the table in the middle in order to receive a full view of both children's pictures at all times. The children of each pair were given versions of the stories randomly. They were told to make up their own stories according to the pictures and later tell their stories to each other. First they were shown each picture one at a time by the experimenter separately and then were given a couple of minutes to make up their own stories. This was to ensure that the participants recognized the connection between the pictures. When they were ready to tell their stories, the pictures were removed and were again presented one at a time by the experimenter for the actual telling of the story. The children's speech output was audio taped.

All the adults went through the same procedure as in Experiment 1. They were tested individually rather than in pairs. First they were told briefly about the purpose of the experiment and then were shown all the pictures one by one in order, then a few minutes were given if required to make their own stories. They were also told to assume that the experimenter did not know the story herself. When they were ready, they told their stories to the experimenter and their speech outputs were also audio taped.

6.2.4   Reliability

The tapes were originally transcribed and coded by the experimenter herself and later were re-transcribed by an independent English native speaker. Less than 6% difference between the two transcriptions was found in the transcribing of referring expressions. Four transcripts, one from each group, are given below.

A Chinese child aged 7;6 (story version one):

One day, two girls met each other. The girl with a red dress said "Bye-Bye" to the green dress. The girl with the green dress came to buy an ice cream. Then

she met the girl with a red dress. The girl with a red dress snatched the ice cream off the other girl, then the red girl run away. The green girl began to cry. Then her mother takes the red girl here and to say sorry and the green girl was crying.

An English child aged 6;8 (story version two):

There are two boys who are going to the sea and then now he plays with the ball and the other one trying to get something done. And his dog comes along and gets their ball and one of the boys was crying. And then the dog runs off. The owner sees him and she tries to get it and then when the boys runs, the dog's lady going to go into the water and the owner gives the dog to one of the boys. I think. The owner takes the dog home.

A Chinese parent:

There are two girls were arguing beside the pond. Suddenly one girl ran away. She went to the ice cream van and buy an ice cream. Then she walked back to the other girl. But the other girl grabbed her ice cream away for herself. And then ran away from her. She was crying there. One lady came and took the ice cream back to her, then she happy again.

An English parent:

Two girls standing by a pond and look not very happy, perhaps having an argument. One of them stays by the pond and the other one walks away and buys an ice cream, which comes back licking the ice cream. The other one is still looking. She snatches the ice cream from the girl who bought it and runs away with it, which upset the one who has lost the ice cream. But then a lady or the other girl's mother comes back dragging the girl steeled the ice cream and giving the ice cream back to the first girl.

6.3   Results

6.3.1   Introducing New Referents

6.3 *Results*

6.3.1 *Introducing New Referents*

Referent-introducing expressions are used when for the first time mentioning the three protagonists (*two boys/girls, and a woman*), the two inanimates (*ice-cream* and *ice-cream van* in Version One or *ball* and *dog* in Version Two). Three ways are considered appropriate to introduce protagonists: indefinite articles, numeral phrases (e.g.: " *two boys/girls.*"), and proper names. All definite articles, pronouns, and bare nouns (*e.g.: " girls", "boy"*), used to introduce protagonists for the first time are considered inappropriate. Some references were unclear, and so were not included in either of the two categories (appropriate and inappropriate), nor in any of the statistical analyses, because it was not known whether the intended references were appropriate or inappropriate. Indefinite articles are considered appropriate for inanimates. Table 6.1 shows the mean numbers and mean proportions of appropriate referent-introducing expressions.

	Mean total of utterances	Mean no. of appropriate	Mean proportions of appropriate
Chinese Children	3.6	2.6	0.7
English Children	3.1	1.5	0.5
Chinese Parents	3.3	2.2	0.7
English Parents	2.5	2.4	1.0

Table 6.1   Mean numbers and mean proportions of the appropriate referent-introducing expressions used by the children and their parents.

Children's data

The data of the children is shown in the top two rows of Table 6.1. A two-way ANOVA was carried out on the children's appropriate data. The factors were English Language Ability and First Language. The results revealed two significant main effects: one was of First Language ($F = 208.3$, $df = 1,19$, $p <$ .000). The Chinese children produced more appropriate introducing expressions than the English children; the other was of English Language Ability ($F = 4.28$, $df = 2,19$, $p < .029$). The children used more appropriate expressions as their English Language Ability improved.

<u>Chinese children vs. Chinese parents</u>

A one-way ANOVA was carried out on the appropriate data of Chinese children and their parents. The factor was Children/Parents. The results revealed neither significant main effects nor significant interactions.

<u>English children vs. English parents</u>

A one-way ANOVA was carried out on the appropriate data of English children and their parents. The factor was Children/Parents. The result revealed a significant main effect of Children/Parents ($F = 25.23$, $df = 1,31$, $p < .000$). The parents produced more appropriate references than the children.

6.3.2 *The Use Of The First Mention Indefinite Articles*

In this section I concentrate on how the children and their parents used the definite and indefinite articles when introducing new referents. Table 6.2 shows the mean numbers and mean proportions of the indefinite articles used by the children and parents when introducing the protagonists and inanimates.

	Protagonist			Inanimate		
	Mean Total	Mean	Proportion	Mean Total	Mean	Proportion
Chinese Children	0.9	0.4	0.4	1.6	1.2	0.8
English Children	0.9	0.1	0.1	1.5	0.9	0.6
Chinese Parents	0.6	0.1	0.2	1.3	1.0	0.8
English Parents	1.0	1.0	1.0	1.2	1.2	1.0

Table 6.2   Mean numbers and proportions of the indefinite articles used on the first mention of the protagonists and inanimate entities.

<u>Children's data</u>

The top two rows of Table 6.2 show the mean numbers and mean proportions of the indefinite articles used by the children. A three-way ANOVA was carried out on the children's indefinite data. The factors were English Language Ability, First Language, and Type of Entity. The results revealed a significant main effect of First Language ($F = 44.80$, $df = 1,19$, $p < .000$). The Chinese children produced more indefinite references than the English children.

<u>Chinese children vs. Chinese parents</u>

A two-way ANOVA was carried out on the indefinite data of Chinese children and their parents. The factors were Children/Parents and Type of Entity. The results revealed neither significant main effects nor significant interactions.

<u>English children vs. English parents</u>

A two-way ANOVA was carried out on the indefinite data of English children and their parents. The factors were Children/Parents and Type of Entity. The results revealed two significant main effects. One was of Type of Entity ($F = 8.43$, df = 1,30, $p < .007$). There were more indefinite references to Inanimates than to Protagonists. The other was of Children/Parent ($F = 6.49$, df = 1,30, $p < .016$). The parents used more indefinite articles than the children. The interaction between Children/Parents and Type of Entity was significant ($F = 6.64$, df = 1,30, $p < .015$). Inspection of Figure 6.1 indicates that the interaction arose because the children used more indefinite articles to introduce the inanimate than to the protagonist, whereas the parents used comparable numbers of both. This difference was confirmed significant by a followed paired-samples t-test ($t = -6.5$, df = 21, $p < .000$ (2-tailed)).
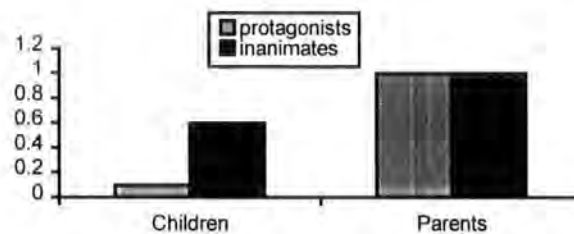
Figure 6.1   Mean proportions of indefinite articles used
to introduce the protagonists and inanimates by English children and parents.

6.3.3 *Maintaining The Familiar Referents*

When referents have been introduced into the discourse, the next question is how to maintain them within the same discourse. When reporting the production of referent-maintaining expressions, 3 sets of results are presented: 1) definite and indefinite referring expressions; 2) the use of appropriate definite references; 3) anaphors containing modifiers. In general, the data reported in this section were a combination of all the references to both the protagonists and the inanimates, otherwise it will be specified.

6.3.3-1   Definite Expressions

Table 6.3 shows the mean numbers and mean proportions of the definite references used to maintain the familiar referents on subsequent mentions. Any unclear references were omitted from the analyses, because the intended referents were not known.

	Mean total of utterances	Mean no. of definites	Mean proportions of definites
Chinese Children	12.4	11.5	0.9
English Children	8.9	7.9	0.9
Chinese Parents	11.1	10.6	1.0
English Parents	17.2	15.7	0.9

Table 6.3   Mean numbers and mean proportions of the definite expressions used by the children and their parents.

Children's data

The data of the children is shown in the top two rows of Table 6.3. A 2-way ANOVA was carried out on the children's definite data. The factors were English Language Ability and First Language. The results revealed neither significant main effects nor significant interactions.

Chinese children vs. Chinese parents

A one-way ANOVA was carried out on the definite data of Chinese children and their parents. The factor was Children/Parents. The results revealed no significant main effects.

English children vs. English parents

A one-way ANOVA was carried out on the definite data of English children and their parents. The factor was Children/Parents. The results revealed no significant main effects.

6.3.3-2   The Use Of Appropriate Definite References

In this section, the ability of the participants to use appropriate definite references is examined. Table 6.4 shows the mean numbers and mean proportions of appropriate definite references. Since the two protagonists were

the same gender, only Proper Names and Modifiers identify the referent appropriately. Definite NPs and pronouns do not identify a unique referent and so are inappropriate.

	Mean total of utterances	Mean no. of Appropriate definites	Mean proportions of appropriate definites
Chinese Children	11.5	2.7	0.2
English Children	7.9	0.8	0.1
Chinese Parents	10.6	4.1	0.4
English Parents	15.7	4.6	0.3

Table 6.4   Mean numbers and mean proportions of the appropriate definite expressions used by the children and their parents.

Children's data

The data of the children is shown in the top two rows of Table 6.4. A two-way ANOVA was carried out on the children's appropriate definite data. The factors were English Language Ability and First Language. The results revealed a significant main effect of English Language Ability (F = 3.83, df = 2,19, p < .040). The children used more appropriate definite expression as their English Language Ability improved.

Chinese children vs. Chinese parents

A one-way ANOVA was carried out on the appropriate definite data of Chinese children and their parents. The factor was Children/Parents. The results revealed neither significant main effects nor significant interactions.

English children vs. English parents

A one-way ANOVA was carried out on the appropriate definite data of English children and their parents. The factor was Children/Parents. The results revealed no significant main effects.

6.3.3-3   Anaphors Containing Modifiers

In this section the types of modifiers used is examined. Any modifiers located before the NP are called Pre-modifiers, *e.g. her mum, the other's mum, etc.*

Modifiers located after the NP are called Post-modifiers, *e.g. a lady wearing a purple suit, the lady who owns the dog, etc.*

In this section, main effects of First Language, English Language Ability, and Children/Parents are informative, because they would indicate differential ability to use modifiers. Significant effects of these factors are therefore reported in this section. Table 6.5 shows the mean numbers and mean proportions of pre-modifiers and post-modifiers used by the children and parents on the subsequent mentions of the two protagonists.

	Pre-modifier e.g. her mum / the other's mum		Post-modifier e.g. a lady wearing a purple suit / the lady who owns the dog	
	Mean	Proportion	Mean	Proportion
Chinese Children	1.3	0.7	0.6	0.3
English Children	2.1	0.8	0.6	0.2
Chinese Parents	0.3	0.3	0.7	0.7
English Parents	2.1	0.4	3.1	0.6

Table 6.5   Mean numbers and mean proportions of modifiers used by both the children and parents on the subsequent mentions.

Children's data

Data of the children are shown in the top two rows of Table 6.5. A two-way ANOVA was carried out on the pre-modifier data of Chinese and English children. The factors were English Language Ability and First Language. The results revealed neither significant main effects nor significant interactions.

Chinese children vs. Chinese parents

A one-way ANOVA was carried out on the pre-modifier data of Chinese children and their parents. The factor was Children/Parent. The results revealed no significant effects.

English children vs. English parents

A one-way ANOVA was carried out on the pre-modifier data of English children and their parents. The results revealed no significant effects.

A one-way ANOVA was carried out on the pre-modifier data of English children and their parents. The results revealed no significant effects.

6.3.4   The Use Of A Thematic Subject Constraint

In this section the participants' ability to use a thematic subject was examined. In the analyses, two narratives from the Chinese children group, three from the English children group, and one from the Chinese parent group were excluded due to the fact that there were not enough utterances (less than five) to indicate the use/non-use of a thematic subject. All the rest of the transcripts were included in the analyses. The numbers of the participants in each group are given in each table below. Proportions are used in most of the tables due to the unequal numbers in each group.

It is hypothesized that if there is an identified thematic subject, then it should attract more references than non-thematic subjects. Table 6.6 shows the mean numbers of references to each protagonist in each of the four groups. In the table, 'P1' is a short term for Protagonist 1, who is the one mentioned first; and 'P2' is a short term for Protagonist 2, the one mentioned secondly. As can be seen in the table, there was a clear difference between the references to each protagonist across the four groups. So an ANOVA comparing the references to Protagonist 1 with the references to Protagonist 2 in all four groups was run. The factors were References to P1/P2 and Group. The results showed that there was a significant main effect of the references to Protagonist 1 and Protagonist 2 ($F = 17.04$, $df = 1$, 60, $p < .000$). All the four groups made significantly more references to Protagonist 1 rather than to Protagonist 2. No significant interactions were found.

	No. of Participants	P1	P2
Chinese children	20	4.0	3.4
English children	19	2.8	2.3
Chinese parents	9	5.0	3.0
English parents	10	6.3	4.9

Table 6.6   Mean numbers of references to each protagonist. Note: 'P1' means Protagonist 1; 'P2' means Protagonist 2.

Secondly, all the useable transcripts were examined with respect to Karmiloff-Smith's theory of three developmental levels of a thematic subject. The criteria for each level are the same as those used in Experiment 1. Table 6.7 shows narratives classified in each of Karmiloff-Smith's three levels. As can be seen from the table, there were no Level 2 and virtually no Level 3 transcripts in any of the groups. Examples of a Level 1 and a Level 3 transcript are given here.

An example of Level 1 from the Chinese children group:

"Boys. One boy play and one boy get into the water fishing. A boy got his ball when the dog got it. He cried. A boy fished. The boy came. He ran. A little girl gave it back."

An example of Level 3 from the Chinese parent group:

"There are two girls were arguing beside the pond. Suddenly one girl ran away. She went to the ice-cream van and buy an ice-cream. Then she walked back to the other girl. But the other girl grabbed her ice cream away for herself. And then ran away from her. She was crying there. One lady came and took the ice-cream back to her, then she happy again."

	No. of participants	Level 1	Level 2	Level 3
Chinese children	20	0.25	-	0.05
English children	19	0.58	-	-
Chinese parents	9	-	-	0.11
English parents	10	0.1	-	-

Table 6.7   Proportions of narratives in each of Karmiloff-Smith's three levels.

As in Experiment 1, a number of participants used explicit references throughout, either modifiers or proper names or a mixture of the two. All these explicit narratives introduced the two protagonists with indefinite articles and so they could be regarded as at the same level as either Karmiloff-Smith's Level 2 or her Level 3. Two examples are given here.

An example of all modifiers from the Chinese children group:

"There are two boys. They are friends, walking on the beach. The boy with the orange jumper plays with a ball and the boy with the pink jumper

goes fishing. And then the boy with the ball sees a dog and comes over and takes his ball away. The other boy goes after the dog and catches the ball for him and then the owner of the dog comes over (and) takes a dog back."

An example of all proper names from the Chinese parent group:

"Rose and Mary met at the park. Rose went to buy an ice cream for herself and Mary is angry and take(s) the ice cream away and run(s) away. Mary was very sad. But Rose's mum took the ice-cream and gave to Mary back."

Again, as in Experiment 1, other transcripts were fully coherent and unambiguous, even though they contained pronouns. These transcripts generally reintroduce a character using a name or modifier phrase and then refer to that character with a pronoun until the other character is reintroduced. When a pronoun was used to reintroduce a character, it was usually when that character was originally in subject position and when the pronoun could be disambiguated using the earlier information about the character.

An example of this latter kind of transcript from the English parent group is:

"Two girls meet in the park. They do not look terribly friendly. One is leaving the other, walking away. They look a little bit unhappy. I don't know. She is going for an ice cream. She's bought an ice cream. She comes back, eating the ice cream. The other girl steeled it from her, and runs away with it. A lady brings a girl back with the ice cream to the crying girl. But we haven't seen the lady before. So we don't know who she is. So we don't know how to end."

Table 6.8 shows the proportions of these acceptable narratives in each group. As can be seen by comparing the total proportions with those of Karmiloff-smith's three Levels in Table 6.7, the participants mostly produced coherent and unambiguous narratives, but did not use a thematic subject. Note also that the Chinese participants did not use a zero anaphor to refer to the main protagonist.

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	Coherent Transcripts	Explicit Transcripts			TOTAL
		Modifiers	Proper names	Mixed	
Chinese children	0.25	0.20	0.20	0.05	0.70
English children	0.21	0.05	-	0.16	0.42
Chinese parents	0.56	0.11	0.22	-	0.89
English parents	0.80	0.10	-	-	0.90

Table 6.8   Proportions of narratives excluded from Karmiloff-Smith's three levels.

As mentioned in the Material Section, there is a third character at the end of the story in this experiment, aiming to examine how participants switch from the familiar characters to a new one and types of reference to introduce her into the discourse. Table 6.9 shows the numbers of narratives that mentioned the third character when she appeared in the very last picture. As can be seen from the table, the majority of the participants in each group mentioned this character and all but one English parent mentioned her in the subject slot.

	No. of participants	MENTIONED		NOT MENTION
		subject position	non-subject position	
Chinese children	20	18	-	2
English children	19	14	-	5
Chinese parents	9	9	-	-
English parents	10	9	1	-

Table 6.9   Numbers of narratives that mentioned the third protagonist.

This third character was introduced in a number of ways. Uses of an indefinite article and a possessive NP were appropriate introductions. Possessive NPs are expressions like "her Mum", "Emma's Mum", and "the owner of the dog". Inappropriate introductions used definite articles, demonstratives (e.g. this lady, etc.), and bare nouns. Numbers of appropriate and inappropriate introductions are shown in Table 6.10. The results showed that the majority of the participants introduced this third character appropriately.

	No. of participants mentioned	Appropriate			Inappropriate			
		Indef.	Posse.	Total	Def.	Dem.	B.N.	Total
Chinese children	18	8	5	13	3	1	1	5
English children	14	1	8	9	3	1	1	5
Chinese parents	9	2	5	7	2	-	-	2
English parents	10	8	-	8	1	-	1	2

Table 6.10   Numbers of narratives that appropriate and inappropriate introduced the third protagonist. Note: Indef. = indefinite article, Posse. = possessive phrases, Def. = definite article, Dem. = demonstratives.

6.3.5   Other Types Of Referring Expressions

Bare Nouns and Demonstratives are examined in this section. Table 6.11 shows the mean numbers of these two types of referring expressions used on the first and the second mentions. No analyses were carried out due to the small numbers.

	Bare Nouns			Demonstratives		
	1st	2nd	Total	1st	2nd	Total
Chinese Children	0.18	0.09	0.27	0.09	0.27	0.36
English Children	0.23	0.18	0.41	0.09	0.18	0.27
Chinese Parents	0.4	0.1	0.5	-	0.7	0.7
English Parents	0.2	-	0.2	-	0.1	0.1

Table 6.11   Mean numbers of other types of referring expressions.

Table 6.11 shows that 1) all the participants produced more bare nouns on the first mention of a new referent than on second mention of a familiar referent; 2) Both the Chinese children and their parents produced Demonstratives in the context where the definite article is more appropriate (on the subsequent mention).

6.3.6 Correlation And Regression Analyses Of The Children's Performance On The Three Main Categories Of Referring Expressions.

First Mention Indefinites

Table 6.12 lists the four factors and first mention Indefinites along with the means and standard deviations for both Chinese and English children. Three outliers were discarded from the analyses. This left 72 cases in the regressions. The overall mean number of first mention Indefinites per child was *1.14*. The distribution of each variable was fairly well distributed. They were all more or less symmetric with a reasonable amount of variability.

	Descriptive		Statistics					
	1st-mention Indefinites		Age		Language Ability		Cognitive Ability	
	M	S.D.	M	S.D.	M	S.D.	M	S.D.
Chinese	1.46	0.78	91.63	21.88	50.81	12.77	39	8.35
English	0.98	0.89	77.21	28.05	56.65	10.82	28.73	6.94

Table 6.12   Basic descriptive statistics of the variables.   Note: M=mean, S.D.= standard deviation.

Table 6.13 shows the bivariate correlation coefficients between first mention Indefinites and the four factors. From the correlation matrix given below, it is apparent that three of the four factors (except Language Ability) showed significant, but relatively low correlations with first mention Indefinites. Although the 3 significant correlation coefficients were very similar, Cognitive Ability had the slightly highest correlation with first mention Indefinites, with First Language and Age coming next in order of correlations with first mention Indefinites. There were no significant correlations between first mention Indefinites and Language Ability.

	1st-mention Indefinites	Age	First Language	Language Ability	Cognitive Ability
1st-mention Indefinites	1.000	.253*	-.259*	.206	.271*
Age		1.000	-.255*	.606**	.712**
First Language			1.000	.236*	-.551**
Language Ability				1.000	.343**
Cognitive Ability					1.000

Table 6.13   Correlation matrix for first mention Indefinites and four factors.
Note: *. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

A stepwise regression was carried out to find out which of the four factors was a worthwhile predictor of first mention Indefinites. Tables 6.14, 6.15 and 6.16 show that only Cognitive Ability is a worthwhile predictor with a significant contribution to the children's performance on first mention Indefinites (r = .271, p < .021). Cognitive Ability alone accounted for 7.4% of the variance and was a significant factor of first mention Indefinites. The rest three variables were dropped from the final equation.

Table 6.14 - Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.271[a]	.074	.06	.85

Table 6.15 - Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.274	.380		.720	.474
	Cognitive Ability	2.691E-02	.011	.271	2.359	.021

Table 6.16 - Excluded variables

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
1	Age	.121[a]	.734	.466	.088	.494
	Language Ability	.128[a]	1.043	.301	.125	.882
	First Language	-.158[a]	-1.146	.256	-.137	.696

Tables 6.14, 6.15, & 6.16   Stepwise regression analyses for the four factors.
Note: (1) Dependent variable: first mention Indefinites. (2) Predictor in the Model: (Constant) Cognitive Ability.

The four factors were highly interrelated. All pair-wise correlations were significant. These interrelations no doubt explained the high correlations between all the predictor variables.

First Mention Definites

Table 6.17 lists the four factors (independent variables) and the dependent variable (first mention Definites) along with the means and standard deviations for both Chinese and English children. One outlier was discarded form the analyses. This left 74 cases in the regressions. The overall mean number of first mention Definites per child was *1.22*. The distribution of each variable was fairly well distributed. They were all more or less symmetric with a reasonable amount of variability.

	Descriptive Statistics							
	1st-mention Definites		Age		Language Ability		Cognitive Ability	
	M	S.D.	M	S.D.	M	S.D.	M	S.D.
Chinese	0.88	0.73	93.04	22.55	51.24	12.69	39.24	8.26
English	1.39	0.91	76.86	27.98	56.64	10.77	28.76	6.85

Table 6.17   Basic descriptive statistics of the variables. Note: M=mean, S.D.=standard deviation.

Table 6.18 shows the bivariate correlation coefficients between first mention Definites and the four factors. From the correlation matrix given below, it is apparent that one of the factors, First Language, showed a significant correlation with first mention Definites ($r = .275$, $p < .018$). The remaining three factors did not show significant correlations with the dependent variable.

	1st-mention Definites	Age	First Language	Language Ability	Cognitive Ability
1st-mention Definites	1.000	-.105	.275*	.081	-.158
Age		1.000	-.283*	.605**	.725**
First Language			1.000	.221	-.564**
Language Ability				1.000	.351**
Cognitive Ability					1.000

Table 6.18   Correlation matrix for first mention Definites and four factors.
Note: *. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

A stepwise regression was carried out to find out which of the four factors was a worthwhile predictor of first mention Definites. Tables 6.19, 6.20, & 6.21 showed that only First Language was a worthwhile predictor with contribution to the children's performance on first mention Definites. First Language alone accounted for 7.5% of the variance and was a significant predictor of first mention Definites (r = .275, p < .18). The increment in R with the inclusion of the variables - Age, Language Ability, and Cognitive Ability, was not robust, and so those variables were dropped from the final equation. The four factors were highly interrelated, with the exception of the pair Language Ability and First Language. All pair-wise correlations were significant.

Table 6.19 - Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.275[a]	.075	.063	.85

Table 6.20 - Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.372	.362		1.029	.307
	First Language	.508	.209	.275	2.425	.018

Table 6.21

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
1	Age	-.029[a]	-.246	.806	-.029	.920
	Cognitive Ability	-.004[a]	-.030	.976	-.004	.681
	Language Ability	.021[a]	.180	.858	.021	.951

Tables 6.19, 6.20, & 6.21   Stepwise regression analyses for the four factors. Note: Dependent variable: first mention Definites. Predictor in the Model: (Constant) First Language.

Second Mention Definites

Table 6.22 lists the four factors (independent variables) and the dependent variable (second mention Definites) along with the means and standard deviations for both Chinese and English children. Two outliers were discarded from the analyses. This left 73 cases in the regressions. The overall mean number of second mention Definites per child was *5.04*. The distribution of each variable was fairly well distributed. They were all more or less symmetric with a reasonable amount of variability.

	Descriptive		Statistics					
	2nd-mention Definites		Age		Language Ability		Cognitive Ability	
	M	S.D	M	S.D.	M	S.D.	M	S.D.
Chinese	5.28	3.22	93.04	22.55	51.24	12.69	39.24	8.26
English	4.92	2.67	76.98	28.26	56.50	10.83	28.87	6.87

Table 6.22   Basic descriptive statistics of the variables. Note: M=mean, S.D.=standard deviation.

Table 6.23 shows the bivariate correlation coefficients between second mention Definites and the four factors. From the correlation matrix given below, it is apparent that one of the four factors, Language Ability, showed significant, though relatively low, correlations with second mention Definites (r = .301, p < .010). There were no other significant correlations.

	2nd-mention Definites	Age	First Language	Language Ability	Cognitive Ability
2nd-mention Definites	1.000	.212	-.061	.301**	.172
Age		1.000	-.280*	.612**	.725**
First Language			1.000	.215	-.560**
Language Ability				1.000	.366**
Cognitive Ability					1.000

Table 6.23   Correlation matrix for second mention Definites and four factors.
Note.   *. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

A stepwise regression was carried out to find out which of the four factors was a worthwhile predictor of second mention Definites. Tables 6.24, 6.25, and 6.26 show that Language Ability came to be a worthwhile predictor with a significant contribution to the children's performance on second mention Definites ($r = .301$, $p < .010$). Language Ability alone accounted for 9.1% of the variance and was a significant predictor of second mention Definites. The rest three variables were dropped from the final equation. The four factors were highly interrelated, with the exception of the pair of Language Ability and First Language. All pair-wise correlations were significant.

Table 6.24 - Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.301[a]	.091	.078	2.74

Table 6.25 - Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.017	1.546		.658	.513
Language Ability	7.356E-02	.028	.301	2.661	.010

Table 6.26 - Excluded variables

Model	Beta In	t	Sig.	Partial Correlation	Collinearit y Statistics
					Tolerance
1 Age	.044[a]	.307	.760	.037	.625
Cognitive Ability	.071[a]	.579	.564	.069	.866
First Language	-.132[a]	-1.138	.259	-.135	.954

Tables 6.24, 6.25, & 6.26   Stepwise regression analyses for the four factors.
Note: (1) Dependent variable: second mention Definites, (2) Predictor in the Model: (Constant) Language Ability.

6.4 Discussion

As predicted, the children produced more indefinite articles than definite articles in this experiment where the listener could not see the pictures. However, contrary to expectations, the difference was confined to the Chinese children. English children produced comparable numbers of definite and indefinite articles. This finding, in conjunction with other similar findings in both experiments will be discussed in Chapter 7.

Also contrary to expectations, the novel definites did not primarily occur with the inanimate entities, whose existence could often be inferred from the story context. That is, novel definites for inanimate entities could be regarded as appropriate. However, inanimate entities were mostly referred to by indefinites and it was the protagonists who were more likely to be referred to by definites. Furthermore, the English children were more likely to produce definites than indefinites. Although the 3-way interaction was not significant, observation of the data in Table 6.2 suggests that this First Language effect existed because the frequency of indefinites with protagonists was very low for English children and very high for Chinese children. That is, again contrary to expectations, the English children were poorer at referring appropriately to the Protagonists.

The results for referring to familiar referents confirmed the prediction, that there would be more definite than indefinite references used by all the participants. Further, English language ability also affected the use of definite references to familiar entities: The frequency increased from Group 1 to Group 2. On the other hand, there were more inappropriate than appropriate definite references, reflecting the use of a range of definite references to deal with the ambiguity of the choices.

The prediction of a thematic subject constraint was not supported. Although there were significantly more references to Protagonist 1 than Protagonist 2, there was no evidence to show that the participants in this experiment were performing in the same way as Karmiloff-Smith (1985) found in her experiment.

6.3.6   Correlation And Regression Analyses Of The Children's Performance On The Three Main Categories Of Referring Expressions.

<u>First Mention Indefinites</u>

Table 6.12 lists the four factors and first mention Indefinites along with the means and standard deviations for both Chinese and English children. Three outliers were discarded from the analyses. This left 72 cases in the regressions. The overall mean number of first mention Indefinites per child was *1.14*. The distribution of each variable was fairly well distributed. They were all more or less symmetric with a reasonable amount of variability.

	Descriptive		Statistics					
	1st-mention Indefinites		Age		Language Ability		Cognitive Ability	
	M	S.D.	M	S.D.	M	S.D.	M	S.D.
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Table 6.12   Basic descriptive statistics of the variables.   Note: M=mean, S.D.= standard deviation.

Table 6.13 shows the bivariate correlation coefficients between first mention Indefinites and the four factors. From the correlation matrix given below, it is apparent that three of the four factors (except Language Ability) showed significant, but relatively low correlations with first mention Indefinites. Although the 3 significant correlation coefficients were very similar, Cognitive Ability had the slightly highest correlation with first mention Indefinites, with First Language and Age coming next in order of correlations with first mention Indefinites. There were no significant correlations between first mention Indefinites and Language Ability.

	1st-mention Indefinites	Age	First Language	Language Ability	Cognitive Ability
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Language Ability				1.000	.343**

Cognitive Ability   1.000

Table 6.13   Correlation matrix for first mention Indefinites and four factors.
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A stepwise regression was carried out to find out which of the four factors was a worthwhile predictor of first mention Indefinites. Tables 6.14, 6.15 and 6.16 show that only Cognitive Ability is a worthwhile predictor with a significant contribution to the children's performance on first mention Indefinites (r = .271, p < .021). Cognitive Ability alone accounted for 7.4% of the variance and was a significant factor of first mention Indefinites. The rest three variables were dropped from the final equation.

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	Cognitive Ability	2.691E-02	.011	.271	2.359	.021

Table 6.16 - Excluded variables

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
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	Language Ability	.128[a]	1.043	.301	.125	.882
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Tables 6.14, 6.15, & 6.16   Stepwise regression analyses for the four factors.
Note: (1) Dependent variable: first mention Indefinites. (2) Predictor in the Model: (Constant) Cognitive Ability.

The four factors were highly interrelated. All pair-wise correlations were significant. These interrelations no doubt explained the high correlations between all the predictor variables.

First Mention Definites

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	Descriptive		Statistics					
	1st-mention Definites		Age		Language Ability		Cognitive Ability	
	M	S.D.	M	S.D.	M	S.D.	M	S.D.
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Age		1.000	-.283*	.605**	.725**
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Table 6.19 - Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.275[a]	.075	.063	.85

Table 6.20 - Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.372	.362		1.029	.307
	First Language	.508	.209	.275	2.425	.018

Table 6.21

Model		Beta In	t	Sig.	Partial Correlation	Collinearit y Statistics
						Tolerance
1	Age	-.029[a]	-.246	.806	-.029	.920
	Cognitive Ability	-.004[a]	-.030	.976	-.004	.681

Language Ability	.021[a]	.180	.858	.021	.951

Tables 6.19, 6.20, & 6.21   Stepwise regression analyses for the four factors. Note: Dependent variable: first mention Definites. Predictor in the Model: (Constant) First Language.

Second Mention Definites

Table 6.22 lists the four factors (independent variables) and the dependent variable (second mention Definites) along with the means and standard deviations for both Chinese and English children. Two outliers were discarded from the analyses. This left 73 cases in the regressions. The overall mean number of second mention Definites per child was *5.04*. The distribution of each variable was fairly well distributed. They were all more or less symmetric with a reasonable amount of variability.

	Descriptive		Statistics					
	2nd-mention Definites		Age		Language Ability		Cognitive Ability	
	M	S.D	M	S.D.	M	S.D.	M	S.D.
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Table 6.24 - Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.301[a]	.091	.078	2.74

Table 6.25 - Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	1.017	1.546		.658	.513
Language Ability	7.356E-02	.028	.301	2.661	.010

Table 6.26 - Excluded variables

Model	Beta In	t	Sig.	Partial Correlation	Collinearit y Statistics
					Tolerance
1 Age	.044[a]	.307	.760	.037	.625
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First Language	-.132[a]	-1.138	.259	-.135	.954

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Note: (1) Dependent variable: second mention Definites, (2) Predictor in the Model: (Constant) Language Ability.

6.4 Discussion

As predicted, the children produced more indefinite articles than definite articles in this experiment where the listener could not see the pictures. However, contrary to expectations, the difference was confined to the Chinese children. English children produced comparable numbers of definite and indefinite articles. This finding, in conjunction with other similar findings in both experiments will be discussed in Chapter 7.

Also contrary to expectations, the novel definites did not primarily occur with the inanimate entities, whose existence could often be inferred from the story context. That is, novel definites for inanimate entities could be regarded as appropriate. However, inanimate entities were mostly referred to by indefinites and it was the protagonists who were more likely to be referred to by definites. Furthermore, the English children were more likely to produce definites than indefinites. Although the 3-way interaction was not significant, observation of the data in Table 6.2 suggests that this First Language effect existed because the frequency of indefinites with protagonists was very low for English children and very high for Chinese children. That is, again contrary to expectations, the English children were poorer at referring appropriately to the Protagonists.

The results for referring to familiar referents confirmed the prediction, that there would be more definite than indefinite references used by all the participants. Further, English language ability also affected the use of definite references to familiar entities: The frequency increased from Group 1 to Group 2. On the other hand, there were more inappropriate than appropriate definite references, reflecting the use of a range of definite references to deal with the ambiguity of the choices.

The prediction of a thematic subject constraint was not supported. Although there were significantly more references to Protagonist 1 than Protagonist 2, there was no evidence to show that the participants in this experiment were performing in the same way as Karmiloff-Smith (1985) found in her experiment.

Data showed that the majority of the participants in this experiment used other strategies in producing coherent and structured narratives and the majority of the discourses were unambiguous. When switching to the third protagonist, all the participants introduced this character appropriately by using different types of referring expressions in subject position. In general, the children and the Chinese parents linked her to the familiar characters and the dog by saying 'her mum' and 'the owner of the dog', etc.

As far as the specific features of the Chinese language were concerned, my prediction that the Chinese children would use more zero anaphors on subsequent mentions was not supported. As far as other kinds of NPs were concerned, two findings were found. First, only few participants used Bare Nouns on the second mention of a referent and the Chinese parents used most Bare Nouns on first mention. Second, very few Demonstratives used on first and second mentions, the Chinese parents used the most.

Finally the regression analyses showed that Cognitive Ability was a significant predictor of the first mention indefinites and that English Language Ability was a significant predictor of the second mention definites. Both these observations are consistent with those in Experiment 1. However, in this experiment, First Language was a significant predictor of the first mention definites, no doubt reflecting the poorer ability on first mention of the English children when the listener could not see the pictures. In addition, Cognitive Ability was also a significant predictor of the second mention definites in Experiment 1, but not in Experiment 2.

Chapter 7   General Discussion

7.1   Review Of The ANOVA Data In The Light Of The Predictions

7.1.1   Referent Introducing Expressions

My main prediction for introducing novel referents was that performance with these first mention references should be better in Experiment 2 than in Experiment 1. That is, the children should be more likely to use indefinite references in Experiment 2. This was because listeners could see the pictures in Experiment 1, whereas they could not see the pictures in Experiment 2.

During discourse, a speaker may use different referential expressions to introduce a new referent. In principle, an indefinite article is appropriate for an introduction of a new referent. But if a speaker judges that a listener can readily infer the new information, then a definite reference may be used. As discussed in Chapter 1, a speaker makes this judgement by taking into account the listener's model of discourse so far; that is, the judgement depends on the speaker's knowledge about his/her listener's mental model. When a speaker and a listener share the same view of the pictures, as was the case in Experiment 1, then a speaker can reasonably assume that a listener has already constructed a mental model containing the entities in the pictures or can easily construct one on hearing definite references. Thus, the use of definite references on first mention is appropriate in Experiment 1.

By contrast, when a speaker is describing pictures that a listener cannot see, as in Experiment 2, then the speaker must assume that although the entities are in his/her model of the story and so are familiar, they will not be in the listener's model. Hence, the speaker should use indefinite references to introduce each entity into the listener's model.

A comparison of the results from the two experiments indicates that this prediction has been supported. The children produced more indefinite than definite references in Experiment 2, where listeners could not see the pictures; whereas they produced more definite than indefinite references in Experiment 1, where listeners could see the pictures. This differential pattern of introducing expressions across Experiments 1 and 2 supports the idea that young children are indeed able to make complex inferences needed to work out what the listener's mental model might be. This observation supports Emslie and Stevenson's (1981) claim that the poor performance of young children on first mention references observed in other studies (e.g. Karmiloff-Smith, 1979; Warden, 1981) may, in part, be due to the fact that listeners could also see the pictures.

However, although there was an increase in the use of first mention indefinites in Experiment 2 compared to Experiment 1, there were still more definites than would be expected if speakers were assuming that all the referents were new to the listener. This overuse of 'the' was in fact confined to the English children. Whereas in Experiment 1, the English children produced more definites than indefinites on first mention. They produced comparable numbers of definites and indefinites in Experiment 2. So why should the English children produce so many first mention definites in Experiment 2?

In the analyses, a second possible source of first mention definites was examined. This second source was the possibility that the first mention definites were mainly used with inanimate entities that could be inferred by the listener from general knowledge or from knowledge of the situations described by the story. For example, on hearing: " A boy and a girl were walking on the beach, ...", the listener could easily infer that a seaside is where the story takes place, and that objects like buckets and spades are predictable in a seaside context. Similar arguments apply to the stories in Experiment 2. The results of Experiment 1 supported the idea that the first mention definites were primarily due to the inanimate entities. However, this was not the case in Experiment 2, where

indefinites were used more often than definites to introduce the inanimate entities. (The data also suggested that definites were used more often than indefinites for protagonists, but this finding may not be reliable, due to the small numbers of references to protagonists.) This difference in the form of reference used to introduce inanimate entities suggests that it was, in fact, the shared visual field that produced the larger numbers of definites in Experiment 1 compared to Experiment 2 and that the use of definites in both experiments is unlikely to be due to the speaker assuming the listeners could infer the identities of the inanimate entities either from general knowledge or from knowledge of the situations described by the story.

How then can we explain the first mention definites in Experiment 2, particularly in the English children? It seems likely that even when the procedure makes it clear that the listener cannot see the pictures, the English children do not prefer to use indefinite references. This conclusion is supported by the parents' data. Whereas the Chinese children and their parents showed the same pattern of preferring to use indefinites to introduce new referents, the English children differed from their parents. The English parents used mainly appropriate indefinite references to introduce new referents, but the English children used comparable numbers of appropriate and inappropriate references. These results, therefore, do not support Emslie and Stevenson's (1981) conclusion that children will refer to novel entities appropriately if the experimental procedure is made sufficiently clear and simple. Instead, the result supports the findings of other studies that suggest that young children have difficulties in introducing novel referents appropriately (e.g. Garton, 1983; Karmiloff-Smith, 1979; Peterson, 1993; Power & Dal Martello, 1986; Warden, 1981) Such a conclusion is consistent with the difficulty one might expect children to have, when trying to judge that entities may be novel to the listener, even though they are familiar to the speaker. It may be that this judgement is ignored when the story itself is

made more difficult by the protagonists being the same gender. In Emslie and Stevenson's stories, the protagonists were different genders.

All in all, therefore, it appears that English children do have difficulties in introducing novel entities appropriately, at least when the story is made more difficult by the protagonists being the same gender. Furthermore, contrary to the predictions, their performance is poorer than that of the Chinese children. The most likely reason for this is that the English children's younger ages limited their ability to use introducing references appropriately.

7.1.2 Maintaining Reference To Familiar Referents

The major prediction for referring to familiar entities was that both groups of children would use definite references appropriately. There were two components to this prediction. First, the children would realise that a definite rather than an indefinite reference should be used to refer to a familiar referent. Second, the children would be able to choose an appropriate definite reference according to whether the two protagonists were of different genders or of the same gender.

The first component of the prediction was upheld in both experiments. All the children and their parents used more definite than indefinite references when referring back to familiar referents. However, the second component was upheld in Experiment 1, where definite NPs, pronouns, and proper names were appropriate, but not in Experiment 2, where only modifiers or proper names were appropriate. In Experiment 2, although the children and parents correctly used definite references to refer to familiar entities, they did not choose the most appropriate reference. That is, they did not use modifiers or proper names more often than definite NPs or pronouns, suggesting that they did not distinguish between the two protagonists (due to the fact that they were of the same gender). However the reason for this is that the choice of which definite reference to use depends on the use of discourse strategies used to ensure that each protagonist is clearly identified – either through the use of a

specific discourse strategy (such as 'a thematic subject strategy' etc.) or the use of explicit references. This issue will be discussed in Section 7.1.3.

Furthermore, in both experiments with both Chinese and English children, performance was superior with familiar compared to introductory references. That is, the children rarely used an indefinite reference to refer to a familiar entity, but they did use definite references to refer to entities that were novel for the listener, particularly the English children.

The main conclusion to be drawn from the results discussed in this section is that young children are able to use the definite expressions successfully to refer to familiar referents before they mastered indefinite references.

7.1.3   The Thematic Subject Constraint

All the transcripts of both experiments were examined and analysed qualitatively with reference to a thematic subject constraint. The main interest is to find out what strategies the participants in this study are using and whether they are performing in the same way as those in Karmiloff-Smith's study (1985). If not, how do they construct coherent narratives? There were two main predictions. One was that lexical properties of anaphors (e.g. pronouns) would weaken the need to create a thematic subject during narrative productions. As stated previously, one of the principle differences between the two experiments was whether the main characters in the story were the same gender or not. In Experiment 1, the two main characters were different genders, so that the lexical properties of pronouns ('he' or 'she') would make a thematic subject less likely to be set up, because the lexical properties (gender cues) play an important role in identifying each referent. Experiment 2 would be expected to show clear evidence of a thematic subject constraint, because there were no lexical cues (the two main characters were the same

gender), so a thematic subject strategy would be a good strategy for discriminating between the two protagonists for the listener.

The second main prediction concerned the precise observations that would indicate the use of a thematic subject constraint. This prediction is along the line of Karmiloff-Smith's work (1984, 1985). These are: A) if one of the protagonists (the main character) is referred to more often than the other; B) if the subject position is always reserved for the main character (the thematic subject) after having been introduced appropriately (Karmiloff-Smith's Level 2) OR on subsequent mentions both the main and subsidiary characters could appear in the subject slot. If it is the main character, then it should be pronominalized and if it is a subsidiary character, then it is referred to by a definite NP (Karmiloff-Smith's Level 3); C) how a novel subsidiary character is introduced, who appears at the end of the story (applied to Experiment 2 only).

There was only partial support across the two experiments for these predictions. Consistent with the first prediction, there was no evidence that the participants were using a thematic subject strategy in Experiment 1 from the aspect of referring to one character more frequently than the other. But there was some evidence that a thematic subject had been constructed in Experiment 2, because one character (the main one) received more subject references than the other and there was a significant difference between the frequencies of references to each one. However, there was virtually no evidence in either experiment that the children and their parents were reserving the subject slot for the main character which was pronominalized, and using different referring expressions to distinguish between the main character (by using a pronoun) and a subsidiary character (by using a definite NP). In other words, there were virtually no transcripts found in this study across the two experiments at Karmiloff-Smith's Level 2 and her Level 3.

As far as Experiment 1 is concerned, these two results mentioned above taken together suggest that, as Tyler (1984) argued, lexical cues can override the thematic subject constraint. The results of Experiment 2

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suggest that the more frequent use of one character over the other may not be a good indicator of the use of a thematic subject constraint as Karmiloff-Smith (1984) assumed. This is because Experiment 2 shows that there can be a preferred protagonist who is mentioned more frequently, even though there is no evidence of the use of a thematic subject constraint in the transcripts as Karmiloff-Smith stated (1984, 1985). Karmiloff-Smith (1984) also assumed that appropriate reference to a novel character later in the story was another feature of transcripts in which there was a thematic subject. However, the usefulness of this defining feature is also called into question by the present results. In Experiment 2, the new character in the last picture was introduced appropriately, but the transcripts showed no sign of the use of a thematic subject strategy.

All in all, the results of the two experiments showed that the participants in this study were not using a thematic subject strategy in constructing coherent narratives. Then the following questions were raised: What were they doing? Did they produce any coherent narratives? What strategies were they using in order to produce coherent narratives?

There was no doubt that all the participants in this study, except some of the English children, constructed well-structured and coherent narratives for their listeners in both experiments. The youngest English children, especially in Experiment 1, produced quite low percentage of well-structured and coherent narratives (28% in Experiment 1 and 42% in Experiment 2), which supports Stromqvist & Day's (1993) ideas. According to Stromqvist & Day, very young children lack the cognitive and linguistic maturity needed to produce coherent discourse. They lack the knowledge of events and their inter-relationships in the story, and they lack skills for structuring the information flow according to assumptions about shared information. These prerequisites to the narrative production task favour adults and older children, who have acquired a substantial amount of relevant knowledge and experience by

the time they are tested (Stromqvist & Day, 1993). This view may account for the poor performance of the youngest children in this study.

Although there was little evidence for the use of a thematic subject constraint, two other strategise were identified for maintaining coherence and clarity. One was an explicit strategy, in which definite NPs (Experiment 1) or modifier phrases (Experiment 2) or Proper Names (Experiments 1 & 2) were used throughout. The Chinese children and their parents used this strategy most frequently than the English in both experiments.

The second strategy (topic-as-subject) showed greater sensitivity to the need for coherence in discourse. In this strategy, pronouns were mainly used to refer to a character whenever that character had been re-introduced into the discourse. This strategy is similar to the one observed by Wigglesworth (1990, 1996), from which Wigglesworth concluded that a subject NP is treated as the thematic subject or topic and any switch to a new topic is signalled by a NP. Since the two main characters were present in every picture (in E1) or most of the pictures (in E2). This strategy is probably more effective than the use of a thematic subject as defined by Karmiloff-Smith. This strategy was preferred to the explicit strategy by the English parents in Experiment 1 and by the English and Chinese parents in Experiment 2. English children showed no clear preference for either strategy in Experiment 2, but showed a slight preference for the explicit strategy in Experiment 1.

According to Karmiloff-Smith (1984, 1985), the explicit strategy is less demanding than a thematic subject strategy, since it does not attempt to structure the discourse through differential use of referring expressions. This may be why the Chinese participants mainly used this strategy. Their grasp of English may have made a more complex strategy too difficult. Nevertheless, the more sophisticated strategy was preferred to the explicit strategy by the Chinese parents as well as the English parents in Experiment 2, suggesting that the need to disambiguate the two protagonists stimulated the use of this strategy.

It is likely that the different methodologies adopted in the studies contribute to the different findings compared with those found in Karmiloff-Smith's studies (1984, 1985). In Karmiloff-Smith's study (1985), the participants were asked to tell four out of eight stories, whereas in the present study, the participants were only requested to tell one story. Furthermore, Karmiloff-Smith's participants did not see all the pictures before they started each story. Telling more than one story at the same time might encourage the participants to create a thematic subject, especially when they did not know the structure of the story beforehand. Another possible reason is the sample size. The sample size in this study is smaller than that of Karmiloff-Smith's study (1985), which may limited the possibility of showing the use of a thematic subject constraint. But if this were the case, it is difficult to explain why the sample size in this study was sufficient to reveal other systematic strategies.

7.1.4 *Other Types of Referring Expressions*

Other types of referring expressions examined in this thesis were Bare Nouns (Articles missing), Demonstratives (e.g. this girl, that boy, etc.), and Zero Anaphors. In general, the prediction for other types of referring expressions was that the Chinese, rather than the English, would use more Bare Nouns and Demonstratives. The Chinese would use zero anaphors instead of pronouns on second mention of familiar referents.

The results showed that on first mention of new entities, the Chinese parents used the most Bare Nouns in both experiments; on second mentions, the Chinese children and their parents used the most Bare Nouns in Experiment 1. In Experiment 2, there were very few Bare Nouns in any group. Thus, the Chinese parents were the most likely to use Bare Nouns, although they, too, used very little on second mention in Experiment 2. The prediction concerning Bare Nouns was based on the findings of Chaudron & Parker (1990) and Huebner (1979). They found that L2 learners whose native languages lack articles tend to use more

Bare nouns, especially at lower proficiency levels of English. Since Chaudron & Parker and Huebner used adults in their studies, the present results are consistent with their findings, although the English proficiency level of the Chinese parents is not known in the present study. However, the Chinese children did not consistently overuse Bare Nouns. This finding, together with the finding that the Chinese parents did tend to overuse Bare Nouns, suggests that L1 effects may be greater in adults than in children, because of the greater experience adults have had in using L1s.

The English children produced the most Demonstratives on both first and second mention in Experiment 1. In Experiment 2, very few Demonstratives were produced by any group on first mention, whereas the Chinese parents used the most on second mention. The use of Demonstratives by English children in Experiment 1 may have been because a number of these children were using deictic references to point at entities when the listeners could also see the pictures. As regards the Chinese children, once again there is no evidence of any carry over from L1 to L2. The fact that the Chinese parents used the most Demonstratives in Experiment 2, gives some support to Robertson's (2000) findings, but the support is not conclusive. It is not clear, thought, how the Chinese parents might compare to the adults used by Robertson. Further more, Robertson did not compare the performance of his Chinese participants with that of native speakers.

The results showed that in both experiments, the Chinese participants did not use any zero anaphors instead of pronouns when referring to a main protagonist and they did not use more pronouns on second mention than the English, with one exception that the Chinese children used more pronouns in Experiment 2. These results were inconsistent with my initial predictions. Again these findings suggested first language did not affect the Chinese participants' use of the English referring expressions in a way to use zero anaphors instead of pronouns when referring to a main character and more pronouns on second mention.

Overall, the results with these other types of referring expressions suggest that young children do not possess an inter-language that contains information about specific words or phrases. Further more, it is clearly needed, comparing Chinese adults with English speakers matched on English proficiency to determine whether the lexical effects observed by other researchers is general (e.g. Chaudron & Parker, 1990; Huebner, 1979, Robertson, 2000).

7.2 Review Of The Regression Data In The Light Of The Four Predictor Variables

Age, Cognitive Ability, Linguistic Ability (English Language Ability), and First Language are the four predictor variables that I examined in the multiple regression analyses in this study. Age was found to have no significant effect at this level of analyses, so it is excluded from any considerations in this section. While discussing the regression results, I will also refer to the relevant ANOVA results when considering other observed effects of English Language Ability and First Language on the use of referring expressions.

7.2.1 Cognitive Ability & Referential Choices

The results of regression analyses showed that Cognitive Ability predicted significant variance in the children's use of indefinite articles on first mention in both experiments and in their use of definite articles on second mention in Experiment 1.

As discussed previously, in narrative productions, speakers' referential choices are based on assessments of their listeners' knowledge of a particular referent. In other words, speakers' referential choices depend on their mental models of the listeners' mental models. If speakers believe that an entity has already been mentioned and is resident in the listeners' mental model, (or "consciousness" in Chafe's (1987) & Reichman's (1981) words), then they will choose definite articles. If speakers believe that the entity has not yet been mentioned, then they will

use indefinite articles. In general, speakers' anaphoric choices are a manifestation of cognitive processes (Pu, 1995) and the findings from this study, on the whole, support this claim.

The most likely reason why Cognitive Ability was not a significant predictor variable in the children's use of definite articles on second mention in Experiment 2, is that definite articles were inappropriate in this experiment.

7.2.2   *English Language Ability & Referential Choices*

The results showed that English Language Ability was a significant predictor of the children's use of definite articles on second mention in both experiments. These results reflect the role of linguistic ability underlying the knowledge of how to use definite articles appropriately. The failure to find that English language ability significantly predicted first mention indefinites is most likely because of the greater cognitive involvement in first mention indefinites. Linguistic knowledge alone is not sufficient to successfully use a first mention indefinite. The ability to recognise that the listener's knowledge (or mental model) is different from one's own is needed and this ability is cognitive rather than linguistic.

The distinction between linguistic and cognitive ability can be seen in the use of second mention definite articles in Experiment 2: The number of definite articles increased with increasing English language ability. This result reflects the linguistic knowledge that definite NPs refer to familiar entities under the use of definite NPs. However, these definite articles were largely inappropriate in Experiment 2, since choice of an appropriate definite reference involves judgements (e.g. inferences) about how to identify a specific referent. The developmental trend referred to above concerns only the linguistic ability, because the cognitive component (choice of an appropriate referring expression) control is not measured in the same way, but only in the contest of the discourse as a whole

Overall, there were very few effects of English Language Ability, which is consistent with the idea that cognitive factors play a large role in the production of appropriate referring expressions. Indeed, in L1 acquisition studies, developmental differences of any kind seem mainly to emerge when the experimental task possesses cognitive difficulties for the children (see, e.g. Emslie & Stevenson, 1981). This suggests that what needs to be examined is the complexity of the story to be told rather than the complexity of the experiment method or procedure. Then developmental differences, either measured by age in L1 studies, or by English language ability in L2 studies, should be observed as the structure of the story increases in complexity. Results from L1 acquisition studies, in which developmental effects depend on the complexity of the story (e.g. Tyler, 1984) or in which developmental effects appear when complex stories are used (e.g. Bamberg, 1986; Wigglesworth, 1996), are consistent with this idea. However, as a final note, it cannot be ruled out that effects of English language ability were not widely observed in this study because the numbers of children in each group were very small.

7.2.3 First Language & Referential Choices

The results from regression analyses showed that First Language Ability predicted the children's use of definite articles on first mention in Experiment 2. This was due to the large number of inappropriate definite references from the English children. In Experiment 1, although First Language didn't turn out to be a significant predictor of the children's use of definite articles on first mention, the Chinese children were also more likely to produce less definite articles than the English children. This finding is mirrored in coherent discourse produced by the two groups of children. A proportion of the transcripts could not be analysed at all, because they were too short to show coherent structures and this was more likely to happen with the English children's transcripts. Such a finding is consistent with the idea that the better performance of the

Chinese children is due to their age and that the major influence on young children's performance with first mentions references is cognitive rather than linguistic.

In general, the results of both experiments fail to support the predictions about differences between the Chinese and the English children's use of English referring expressions. This can be seen from the discussions of the results for other types of referring expressions in section 7.14.

The only clear difference that could be attributed to First Language was found with the parents. English parents were more likely to use the topic–as–subject strategy than the Chinese parents. Thus it was in the more complex discourse processes, but not in the use of specific words or phrases, where a difference appeared, but only with the parents. This suggests that it may be at the level of discourse that these First Language effects arise, rather than the level of individual words and phrases. Unfortunately, the age difference between the Chinese and English children means that similar effect with the children cannot be assessed. More focused studies are needed to identify the reasons for the effect in adults and to pursue the possibility that there might be a similar effect in children.

7.3 *Suggestions For Further Studies*

In this present study, the English children when matched with the Chinese children by English language ability were very young compared to the Chinese children and they sometimes performed less well than the Chinese children. This poorer performance by the English children was no doubt due to their younger ages, but it does make a comparison of the First Language effects difficult. However, matching L2 speakers with L1 speakers by age is also difficult since their language abilities also have to be matched. A more suitable design would be, if practicable, to compare a group of Chinese L2 English speakers in Great Britain with a group of English L2 Chinese speakers in P. R. China, together with two L1 control

groups. Such a design would enable L2 speakers of both Chinese and English to be more closely matched by age. Another way to overcome the problems of age matching would be to use older children (over 10 years old), when age effects are less likely to occur, so that a better comparison of First Language effects could be obtained.

In this current study, there were very few First Language effects. The main one being that Chinese parents were more likely to use an explicit discourse strategy than the English parents. One way to examine this difference in more detail would be to have Chinese participants tell two versions of a story: one version in Chinese (L1) and one in English (L2). Then, more subtle effects of L1 on L2 learning with respect to producing coherent discourse could be examined by comparing the discourses produced in L1 with those produced in L2. A similar study could be done with Chinese children.

Finally, the use of a thematic subject constraint did not appear in this study, even though the story used in Experiment 1 was the same as one of the stories used by Karmiloff-Smith (1985), in which she found strong evidence for a thematic subject constraint. It was suggested that Karmiloff-Smith's results might have arisen because each child was to tell four stories, each of which had a different structure and also because Karmiloff-Smith's children did not see all the pictures beforehand. These two factors may have led the children to use a thematic subject strategy throughout. To test this proposition, it would be necessary to carry out a similar experiment to Karmiloff-Smith's (1985), in that the children are asked to tell a number of different stories, but where children's prior knowledge of the stories is manipulated. In half the stories, the children see all the pictures before hand (as in the present study). In the other half, the children do not see the pictures first (as in Karmiloff-Smith's (1984,1985) studies). On the basis of the results of this thesis, the main predictions would be: 1) as long as the children see the pictures before hand, they will use either an explicit strategy or a 'topic-as-subject' strategy when the two protagonists appear in every picture or most of the

pictures; 2) however, when there is only one protagonist in the initial picture, then a thematic subject strategy should predominate; and 3) when the children can not see the pictures before hand, the thematic subject strategy should predominate in every story.

7.4 Summary

The results of this thesis have led to a number of conclusions. Concerning referential choices; Chinese children, as well as English children, are better at producing appropriate second mention definites than appropriate first mention indefinites. Using listeners that cannot see the pictures improves performance of first mention indefinites, but not to a high level found with second mention definites. Concerning thematic subject constraints, appropriate use of definite references in Experiment 2 was only observed when the transcripts were examined for the use of discourse strategies. Two such strategies were observed, an explicit strategy and a 'topic-as-subject' strategy. The failure to find a thematic subject strategy was most likely a result of different procedures in this study compared to Karmiloff-Smith's (1984, 1985). It was suggested that the 'topic-as-subject' strategy was more effective than a thematic subject strategy in stories where both protagonists appeared in every picture or most of the pictures. Concerning other types of referring expressions, there was no evidence to support the idea that Chinese children would use specific kinds of referring expressions more often than English children. It was concluded that the Chinese children were not using an inter-language that contained information about specific words or phrases. Cognitive Ability predicted the children's use of indefinite articles on first mention in both experiments and in their use of definite articles on second mention in Experiment 1, which were consistent with the inferences needed to construct an evaluate mental models. English Language Ability was a significant predictor of the children's use of definite articles on second mention in both experiments, reflecting the knowledge that definites are used to refer to familiar entities underlies the use of them. There were only few effects of First Language and one

finding – that the English children produced more first mention definites than the Chinese children – could be attributed to the younger age of the English children. The only clear language effect was that Chinese generally preferred to use an explicit discourse strategy, whereas English parents preferred to use a strategy in which the subject slot was a topic character (the "topic-as-subject" strategy). It was concluded that discourse level factors might be more susceptible to First Language effects than word or phrase level factors.

Three further studies were suggested. One was an attempt to overcome the problems associated with the L1 children being younger than the L2 children. The second was aimed at exploring the difference in preferred discourse strategy between Chinese and English. The third was designed to test the explanation given for why Karmiloff-Smith (1984, 1985) observed a thematic subject strategy in the same story as this was used in the present Experiment 1.

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