Chapter Two

Literature Review and Linguistic Properties of the *pro*-drop Phenomenon

This chapter compares and contrasts Chinese and English *pro*-drop phenomena by discussing linguistic theories, linguistic properties and literature review on L1 acquisition of the *pro*-drop parameter. Section 2.1 reviews some major theories of the *pro*-drop phenomenon cross-linguistically and language-specifically. In Section 2.2, the linguistic properties of *pro*-drop vs. non-*pro*-drop languages are discussed, and the syntactic positions and semantic interpretations of *pro*-drop are also analyzed. In Section 2.3, three empirical studies of the early *pro*-drop production are reviewed. Section 2.4 is a summary of the major points discussed in Chapter Two.

2.1 Theories of the *Pro*-drop Phenomenon

*Pro*-drop languages can be divided into two types, i.e., radical *pro*-drop and agreement-based *pro*-drop ones (Tamburelli 2007: 207; Neeleman and Szendro 2007). There are often fascinating problems with null NPs for the study of empty categories. There is variation in *pro*-drop phenomena cross-linguistically under the rubric of different accounts for the *pro*-drop phenomenon. The cases of *pro*-drop in Chinese will be the focus of the present study. Some theoretical studies for the *pro*-drop phenomenon and theoretically debated issues of null NPs are discussed in this section, i.e., Chomsky’s *pro*-drop/null subject parameter (1982), Huang’s GCR (generalized control rule) (1984, 1989), Deal’s constructional/functional account of null NPs (2005).
2.1.1 Chomsky (1982)

Chomsky (1982) proposes the pro-drop parameter (i.e., the null subject parameter). The basic idea of the parameter is that a referential pronominal could be omitted if and only if its content can be recovered or identified morphsyntactically. The distributional properties of the four types of empty categories are specified by the different features indicated in Table 2-1, which also shows the nature of null NPs in terms of Chomsky's taxonomy of empty categories within Government and Binding theory (or GB theory).

<table>
<thead>
<tr>
<th>Feature</th>
<th>Lexical</th>
<th>Empty</th>
</tr>
</thead>
<tbody>
<tr>
<td>[+anaphoric, -pronominal]</td>
<td>lexical anaphor</td>
<td>NP-trace</td>
</tr>
<tr>
<td>[-anaphoric, +pronominal]</td>
<td>pronoun</td>
<td>pro</td>
</tr>
<tr>
<td>[+anaphoric, +pronominal]</td>
<td>(Cannot be lexically filled)</td>
<td>PRO</td>
</tr>
<tr>
<td>[-anaphoric, -pronominal]</td>
<td>R-expression</td>
<td>Variable</td>
</tr>
</tbody>
</table>

(summarized from Chomsky 1982 and Haegeman 1994)

With regard to pro, one of the empty categories shown in Table 2-1, The pro-drop/null subject parameter predicts that null subjects can occur in agreement-based pro-drop languages, e.g., Italian and Spanish, which subject-verb agreement systems are rich to determine the content of null subjects in finite sentences (Chomsky 1982). With regard to null objects, there is no system verb-object agreement either in Italian-type pro-drop languages (e.g., Spanish and Italian) or non-pro-drop languages, e.g., English and French. Pronominal objects cannot be dropped from a finite clause in any of these languages.
On the other hand, the null subject parameter is also an example of a parameter with some clustered properties. According to Isabelli (2004), cross-linguistic variation strongly suggests that subject omission shall not be an isolated property, but forms parts of a cluster of properties. For languages such as Spanish and Italian, it has been proposed that the presence of null subjects co-occurs with other grammatical properties like free verb-subject inversion, absence of that-trace effects, and lack of lexical pleonastic subjects (Chomsky 1981, Jaeggli 1982, Rizzi 1982). Spanish and Italian are [+null subject] languages, and are generally assumed to permit null subjects, verb-subject inversion, show no that-trace effects, and disallow lexical pleonastic subjects. On the other hand, [-null subject] languages, such as English and French, disallow null pronouns, show lexical pleonastic pronouns, show that-trace effects, and disallow verb-subject inversion in declarative sentences. This agreement-based theory of pro-drop is also supported by some generative studies on language acquisition, i.e., the pro-drop/null subject parameter has been set roughly at the same time as children acquire inflection (Hilles 1991, Deprez and Pierce 1993).

Nevertheless, the classical pro-drop parameter faces considerable difficulties in certain aspects (Huang 1991, Jaeggli and Safir 1989). One of the difficulties is that it fails to account for the null subject phenomena in ‘radical pro-drop’ languages, such like Chinese, Japanese, Korean, Jiwarli, Malayalam, Palauan, and Tuvaluan (Huang 2000: 58). For instance, a null subject in a pro-drop language like Italian is usually identified by the Agreement morpheme on the verb, which does not play a role in Chinese. Despite the lack of rich verbal inflections, various kinds of Chinese pronominal arguments can be dropped freely. In other words, the use of null NPs in Chinese could not be fully determined by an agreement-based theory of pro-drop.

Another difficulty is related to the conception that referential objects cannot be dropped in languages which do not have object-verb/preposition agreement. In
contrast, the object *pro*-drops which are unidentified and/or have no agreement exist in languages such as Chinese, Japanese, Korean, Jiwarli, Burmese, Thai, Palauan, Malayalam, European Portuguese, etc.\(^5\) (Huang 2000: 59).

Subsequent studies on the *pro*-drop parameter have been conducted in many aspects. One of which includes language acquisition (e.g., Lin 1991, Hyams 1989, Ou 2001, White 1985), and the licensing and identification of the ‘null phenomenon’ in various linguistic environments.

2.1.2 Huang (1989)

In Chinese and German, discourse-old arguments may be freely dropped, regardless of person, grammatical function, or syntactic position, and this is an instance of topic-only argument drop. Huang (1984, 1989) develops the generalized control rule to defend the *pro*-drop/null subject parameter. He proposes that Chinese-type languages exhibit *pro* even though Agr is absent in these languages. The distribution of *pro* and PRO’s distribution is analyzed by Huang (1989) as follows:

(1) Huang’s GCR

Both *pro* and PRO may be controlled and both may be free.

(Huang 1989: 207)

In languages that contain rich agreement, e.g., Italian, Agr identifies or controls *pro* in its control domain. In Chinese-type languages, because of the lack of Agr, *pro* is identified by a nominal element from a higher domain. The free uses of the null pronouns are illustrated in (2).

\(^5\) Some researchers may propose that Chinese have some agreement markings, e.g., *men in wo-men* ‘we’ may be categorized as an agreement suffix meaning ‘plural’. We assume that Chinese has little agreement in the present study.
For Chinese-type languages, Huang (1989) proposes two types of null argument configuration: topic-linking and control. With respect to topic-linking, null topics can occur in finite clauses, and this is subject to discourse felicity. There is another type of null noun phrases in terms of Huang’s generalized control theory, which claims that the null subject (but not the object) of a finite clause may be controlled by an NP of the matrix clause, even if it is not a discourse topic. The following sentences illustrate the two entirely different accounts above:

(3) a. Zhangsan shuo [pro bu renshi Lisi]  
   ‘Zhangsan said that (he) did not know Lisi’

c. Zhangsan shuo [pro bu renshi Lisi]  “control”

According to Huang, (3c) is the case of true pro-drop in Chinese. As for (3b), Huang (1989) proposes the use of a Topic to identify the reference of a null subject. There are “discourse-oriented languages” and “sentence-oriented languages” (Huang 1984). Chinese is a discourse-oriented language in which noun argument is viewed as a variable that is bound by a discourse topic and is moved from the empty topic to the sentence-topic position, as illustrated in (4) by Huang (2000).
(4) a. Discourse Topici [s’ topici [s [e:] Infl lai le ]] 
    come LE
    ‘(He) came.’

b. Discourse Topici [s’ topici [s Lisi Infl [hen xihuan [e:] ]]]
    Lisi very like (him)
    ‘Lisi likes (him) very much.’

In (5a), the discourse topic binds a variable in subject position, whereas in (5b) a variable is bound by the topic in object position.

With regard to the control reading, Huang (1989) also well explains Chinese data in terms of his controlled-based account of pro-drop. Let us see three theoretical devices related to Huang (1989) to capture the variation in Chinese null NPs: a principle related to binding theory as in (5), a rule of “control” for null NPs as in (6), and a parameter applying topic/operator structures as in (7).

(5) Binding Principle B: A pronoun must be free in its governing category (Haegeman 1994).

(6) Generalized control rule (GCR)⁶: Co-index an empty pronominal with the closest nominal element (Huang 1989).

(7) Discourse-oriented parameter (DOP): A language is [+DOP] if it allows topic-chaining, topic-prominence, and discourse-bound anaphora.⁷

According to the generalized control rule, a null pronoun is required to be co-indexed with the closest nominal element. Huang (1984) defines the ‘close’ notion as:

---

⁶ This is another important notion of the GCR in addition to the main description stated in (1) on p.10.
⁷ This is a notion implied in Huang (1989) and further defined in Deal (2005: 69).
(8) A is closer to B than C is if:

a. A c-commands B but C does not c-command B

b. A is separated from B by fewer clause boundaries than C is (if both A and C c-command B)

By the two accounts for Chinese null NPs, Huang (1984, 1989) further analyzes the following two phenomena as in (9), where (9a) is motivated by Italian pro-drop and (9b) by English control.

(9) a. e … Agr "pro-drop"

b. DP … [CP e] “control”

The major contribution of Huang’s work is to include control even into tensed clauses, a claim that gains further support from Hebrew (Borer 1984) and Greek (Joseph 1992).

2.1.3 Deal (2005)

Deal (2005) argues that the licensing of null NPs is lexically determined, i.e., pro-drop constructions can be viewed as “functional” and “lexical” subtypes. English and French are pro-drop-less languages, and pro in these two languages seems to behave as a bound morpheme or head of a fixed expression so that its distribution is limited (Deal 2005: 33). Consider the following English examples given by Deal (2005: 28).

(10) a. As (*it) can be seen from the diagram, this idea is flawed.

b. He took this idea as far as (*it) is humanly possible.
The expletive ‘it’ is disallowed in the examples of English, and Deal claims that the linguistic environments for these instances can be sorted as lexical and functional heads. Deal states that *pro* is a viable lexical item, but not an allomorph or a deleted element. Once *pro* is a lexical item available to syntax, we can formulate lexicosyntactic linking rules like those above to account for its presence in various environments but not others. For instance, Deal presents a list of five null subject environments as shown in (11).

(11) Null subject environments

a. Agreement: \[pro \[Agr \ldots \]

b. Topicality: \[TopP pro \ldots \[IP \ldots \ti

c. Control: \[DP \ldots \[CP pro \ldots \]

d. Precedence: \[DP \ldots pro\]

e. Default: \((pro\) unlinked)\]

According to Deal (2005: 63), these environments, like functional morphemes, form a hierarchy, e.g., one with (11c) more specified than (11d), and (11e) is the least specified of all. The hierarchy predicts that where two or more environments fit a sentence, it is likely that it carries the most specified environment for interpretation. For example, in (12), this is true for control vs. default PRO in English, but the former blocks the latter.

(12) John wondered whether PROi/*j*/k... to be or not to be.

In other words, the distribution of *pro* is not always free. *Pro* in English and French serves as a bound morpheme or head of a fixed phrase, and it is unable to

---

8 \(i, j, k\) are index markers indicating the different persons or entities in the context that the PRO may refers to.
combine freely with other lexical item.

Deal (2005) criticized Huang’s analysis (1984, 1989) by showing that an approach to language variation of pro-drop tied to features of morpheme-level lexical items (e.g., Borer 1984, Manzini and Wexler 1987, Chomsky 1995, Kayne 2005) has serious difficulty in accounting for the data on null NPs. Instead, Deal proposes that a small set of functional constructions for null NPs is a plausible cross-linguistic parameter, as shown in the English and French examples. More broadly, the functional constructions or morphemes represent a unified, simple approach to the phenomenon of null NPs for the structure of innate linguistic knowledge.

2.1.4 Summary

Some major theories of the pro-drop phenomenon have been reviewed in this section. Most of them discuss how the pro-drops can be identified and conditioned. One or two of them show some interpretation for pro-drops or discuss the referentiality of the pro-drops. In Table 2-2, we show what is included in the sample sentences and conception of each study in terms of three focuses. The three focuses are: (1) Distribution: it describes if a study discusses subjects/objects in matrix clauses and/or in embedded clauses; (2) Rule: it shows what kind of theoretical rules are applied in a study; (3) Interpretation: it shows if referential and/or non-referential pro-drop are analyzed in a study.
### Table 2-2: A Comparison of Three Previous Theoretical Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Distribution</th>
<th>Rule</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chomsky (1982)</td>
<td>Null subjects in matrix clauses</td>
<td>The <em>Pro</em>-drop Parameter</td>
<td>Referential</td>
</tr>
<tr>
<td>Huang (1989)</td>
<td>Null subjects/objects in matrix clauses; null subjects/objects in embedded clauses</td>
<td>The GCR</td>
<td>Referential</td>
</tr>
<tr>
<td>Deal (2005)</td>
<td>Not specified</td>
<td>None / “<em>Pro</em> is a bound lexical morpheme.”</td>
<td>Referential</td>
</tr>
</tbody>
</table>

As can be seen in Table 2-2, neither of the studies provides a complete account for the distribution and interpretation of *pro*-drop. All of them focus on some parts of the syntactic categories. Likewise, none of the three studies distinguishes null NPs in terms of referentiality. Thus, it is necessary for the present study to compare the categories and the various theories in detail.

The problems with each study are summarized below. Chomsky’s *pro*-drop parameter (1982) could not well account for what determines the null subjects/objects in Chinese-type languages, and it does not deal with null non-referential NPs, either. Subsequently, Huang (1989) develops the generalized control rule that seems able to account for most of the null NPs in Chinese, but it may not apply to other languages such as English and Italian. Moreover, there are some Chinese sentences that could not be explained by Huang’s analysis (1989) (Deal 2005; Huang 2000). For instance, an counterexample to the GCR is related to (3) on page 11. In (3), *pro* can refer to *Zhangsan* or someone else in the discourse except *Lisi*. However, Deal (2005) states that this kind of example could not be well accounted for by the GCR. She even claims that the GCR shall be dispensed and further proposes that the German and Chinese data may also be successfully accounted for by a theory of lexical linking.
2.2 Linguistic Properties of Pro-drop in Chinese and English

2.2.1 Syntactic Classification of Null NPs

As discussed in the previous sections, Chinese is a radical pro-drop language, and a Chinese speaker can use either a null subject or an overt NP in the subject position. Consider the free frequency counts of null subjects and null objects in (13). Chinese somehow can restrict the interpretation of null NPs in ways that agreement-based null subject languages do not. The referents are somehow all comprehensible for the speaker and the listener.

(13) a. Ta/kanjian ta/ le.

he see him LE

‘He saw him.’

b. φ/kanjian ta/ le.

φ see him LE

‘[He] saw him.’

c. Ta/kanjian φ/ le.

he see φ LE

‘He saw [him].’

d. φ/kanjian φ/ le.

φ see φ LE

‘[He] saw [him].’

Not only subjects but objects may drop from finite sentences in Chinese (Huang 1989). Thus, pronouns in sentence (14) can be either or both deleted.
A: Zhangsan kanjian ni le ma?

Zhangsan see you LE Q

B: a. (Ta) kanjian (wo) le.

he see me LE

b. Wo xiang (ta) kanjian (wo) le.

I think he see me LE

Note that one of the most common way of answering a yes-no question in Chinese is to repeat the verb, dropping parts or all of its arguments, as shown in (17b). In Sections 2.2.1.1 and 2.2.1.2, we will discuss the distribution of null subjects and null objects and how they can be identified or recovered.

2.2.1.1 Null Subjects in Matrix/Embedded clauses

Consider (15) and see how the null subjects can be identified or recovered.

(15) a. φ kanjian ta le.

φ See him LE

‘[He] saw him.’

b. Zhangsan shuo [pro/*y/*k/*... bu renshi Lisi].

Zhangsan say not know Lisi

‘Zhangsan said that (he) did not know Lisi.’

In (15a), the subject in the matrix clause is deleted; in (15b), the embedded subject is omitted. Nevertheless, the dropping of these NPs is not allowed in English as shown in (16).


b. Zhangsan said that *φ did not know Lisi.
Chinese allows the subject position of finite clauses to be filled with null NPs where they have a non-referential or a definite pronominal (referential) interpretation. For instance, in (17), the null NP has a definite referential interpretation\(^9\). In other words, the null NP refers to its antecedent *yige nuhaizi*. In contrast, as presented in (18), (19), (20), the null NPs can be identified by their antecedents in the discourse respectively.

(17) Ta\(_i\) kanjian yi ge nuhaizi, φ\(_j\)/ta\(_j\) daizhe yi ding xiao hong mao.

he see one CL girl, φ/she wear one CL small red hat.

‘He saw a girl; she is wearing a red hat.’

(18) A: Zhangsan\(_i\) kanjian ni\(_j\) le ma?

Zhangsan see you LE Q

B: a. (Ta\(_i\)) kanjian (wo\(_j\)) le.

he see me LE

b. Wo\(_j\) xiang (ta\(_i\)) kanjian (wo\(_j\)) le.

I think he see me LE

(19) φ\(_j\) kanjian ta\(_j\) le.

φ see him LE

‘[He] saw him.’

(20) φ lai le.

come LE

‘[He] \(\varphi\) came.’ \(\varphi\)=discourse referent)

As shown in the examples above, both matrix and embedded subjects can be deleted in Chinese as long as they are pragmatically inferable.

---

\(^9\) It is also called an R-expression in terms of Government and Binding Theory. See Haegeman (1994) for more information about the binding principles.
On the other hand, some studies show that subjects are always deleted in certain linguistic environment. Take (21) and (22) for instance.

(21) Zhangsan qu le meiguo yihou, (Li and Thompson 1978)
    Zhangsan go LE American after

    φ jiu bu gaoxing.
    then not happy.

    ‘After Zhangsan had gone to America, he was not happy.’

(22) John kan le dianyir, φ you du le xiaoshuo. (Xu 1986)
    John see LE movie also read LE novel

    ‘John saw the film, and he also read the novel.’

As illustrated in (21) and (22), Chinese subjects are obligatorily omitted in adverbial phrases and coordinate clauses.

2.2.1.2 Null Objects in Matrix/Embedded Clauses

In this section, we discuss how the null objects can be identified or recovered. Null Objects in Chinese seem more restricted than null subjects. In other words, there seems to be a subject/object asymmetry in the pro-drop phenomenon in Chinese. Take (23) for instance, the null object in the embedded clause in (23d) cannot refer to the subject Zhangsan in the matrix clause, whereas null subject in the embedded clause in (23c) can.

(23) a. φ lai le.
    come LE

    ‘[He] d came.’ (d=discourse referent)

    Zhangsan go American after

    then not happy.

    ‘After Zhangsan had gone to America, he was not happy.’

    John see LE movie also read LE novel

    ‘John saw the film, and he also read the novel.’

As illustrated in (21) and (22), Chinese subjects are obligatorily omitted in adverbial phrases and coordinate clauses.

2.2.1.2 Null Objects in Matrix/Embedded Clauses

In this section, we discuss how the null objects can be identified or recovered. Null Objects in Chinese seem more restricted than null subjects. In other words, there seems to be a subject/object asymmetry in the pro-drop phenomenon in Chinese. Take (23) for instance, the null object in the embedded clause in (23d) cannot refer to the subject Zhangsan in the matrix clause, whereas null subject in the embedded clause in (23c) can.

(23) a. φ lai le.
    come LE

    ‘[He] d came.’ (d=discourse referent)
b. Lisi hên xihuan φ_D,i.
   Lisi very like φ
   ‘Lisi likes [him]_D,i very much.’

   Zhangsan say φ not know Lisi
   ‘Zhangsan said that he_D did not know Lisi.’

   Zhangsan say Lisi not know φ
   ‘Zhangsan said that Lisi did not know [him]_D, i.’

It is possible to construe the null object with the subject in the matrix clause in certain contexts, as exemplified in (24).

(24) A: Shei kanjian-le Zhangsan/?
   who see-LE Zhangsan
   ‘Who saw Zhangsan?’

   B: Zhangsan shuo Lisi kanjian le φi.
   Zhangsan say L. see LE φ.
   ‘Zhangsan said Lisi saw him.’

It is controversial that the antecedent of φ is Zhangsan in Speaker A’s question or Zhangsan in the matrix clause. Even so, in (25), the reference of the null object cannot be identified by the subject in the matrix clause.

   Zhangsan hope Lisi can see φ
   ‘Zhangsan hopes that Lisi can see [him]D,i.’
When a matrix topic appears (even if it is distinct from the subject in the matrix clause), the null object can be identified by that topic. Consider (26) below.


that man Zhangsan say Lisi not know φ

‘That man, Zhangsan said that Lisi did not know [him].’

The null object in (26) can refer to the discourse topic, i.e., Neige ren. This can be explained in terms of topic-drop parameter (or discourse topic-drop parameter), and this type of null NPs arises from the positive setting of the topic-drop parameter (Guasti 2002: 156-160). When there is no overt topic, a null one is present, as exemplified in (27).

(27) [φ] Zhangsan shuo [ Lisi bu renshi φ ] .

Topic Zhangsan say Lisi not know

‘[Him/Her], Zhangsan said that Lisi did not know [him/her].’

This means that there is no null object; instead, the object has been topicalized (and then deleted). The empty category is thus an A-bound variable.

It is worth to note that in Chinese relative clauses, an object gap can only be A-bound by an operator, while a subject gap can be either bound by a pro or by an operator, as can be illustrated in (28).


Li Miss still find-not-out one can marry DE man

‘Miss Li still cannot find a man who [she] can marry.’

Li Miss still find-not-out one can marry DE man

‘Miss Li still cannot find a man who can marry [her].’


Li Miss still find-not-out one in-heart like DE man

‘Miss Li still cannot find a man who [she] loves in her heart.’

To summarize, Chinese is both a null-subject and a zero-topic language.

2.2.2 Semantic Classification of Pro-drop

With respect to the referentiality of a null NP, we adopt the distinctions made in Mitchell (2004:16) that a mention is referential if the mention (a) introduces a new entity into the discourse, (b) is a definite descriptive term, a name, or an anaphoric expression for a referential mention previously showed in the discourse, or (c) a repetition of (a) in subsequent sentences. Referential mentions are further classified into generic and non-generic classes. According to Mitchell (2004:17), generic mentions refer to a class/kind/species of objects or a typical representative of that class/kind/species and does not point to or pick out any specific individual object(s) of that class/kind/species. So if any property predicates of a generic mention, it means the entire class referred to by the mention has that property, or all/most members of that class have the property. In contrast, a non-generic referential mention refers to one or more individual member entities of a particular class. The entity or entities can be accounted for by counting, pointing (specific) or cannot be precisely accounted for (underspecified). Both null referential and null non-referential NPs are produced in Chinese. We will introduce null referential NPs in Section 2.2.2.1 and null non-referential NPs in Section 2.2.2.2 respectively.
2.2.2.1 Referential Pro-drop

Null subjects in Chinese can be interpreted as a semantic variable, and they must have an antecedent. The antecedent has to c-command the empty category and has to be strictly local. Another point is the asymmetry between referential subjects and referential objects. First, only higher subjects, but not objects can be the antecedent of null subjects. Consider (29), the null argument can only refer to Zhangsan. It is impossible for it to refer to Lisi or someone else in the context or discourse.

(29) Zhangsan gao su Lisi shuo φ/*j/*k ying le guanjun.  
    ‘Zhangsan told Lisi that [he] won the championship.’

Second, Huang (1984) showed that, unlike overt pronouns in other languages, the null object in Chinese may not refer to any noun argument in the same sentence, and he related this property to the fact that Chinese is a discourse-oriented or topic-oriented language. People have to resort to a topic in the context to disambiguate a sentence, i.e., to make the meaning of the sentence clear.

For the null subject/object asymmetry, Bloom (1990) suggested that subjects tend to convey given information, whereas objects tend to convey new information. It certainly makes sense to introduce new information using a non-pronoun NP; otherwise, the use of a pronoun requires the listener to resolve the referent of the pronoun, and this may cause listeners’ misunderstanding of the references. The use of a non-pronoun NP is usually less ambiguous, which aids the resolution process. In fact, several researchers have argued that this is the preferred argument structure for English (Clancy 2001). As such, it is not just the preferred structure in adult language but a feature of child language (Freudenthal et al. 2002).

For the properties of null NPs, languages can be distinguished by two types, i.e., discourse-oriented and sentence-oriented languages (Huang 1984). Take Chinese and
English for example. English is a subject-oriented language. In contrast, Chinese is a pro-drop language and it does not have morphological tenses, and therefore it has no subject-tense agreement. Owing to no agreement, the subject of a Chinese sentence cannot be overtly present. The empty pronoun pro basically can appear everywhere in a sentence.

2.2.2.2 Non-referential Pro-drop

In Chinese-type languages, null non-referential NPs are allowed. For instance, the Chinese expletive element equivalent to English it or there (that is non-referential) can be phonologically null, as illustrated in (30)

(30) a. φ xiashiue le.

[It] snow LE
‘It is snowing.’

b. φ chutaiyang le.

[It] sunny LE
‘It is sunny.’

2.2.3. Properties of Null NPs in Child Chinese and English

In Section 2.1, we have discussed the null argument phenomenon observed in adult speech. Actually the uses of pro-drop are also frequently seen in early child language. Nevertheless, the properties of the pro-drop phenomenon do not seem all the same as those we can observe in adult’s production. Hyam (1986) shows that null subject is a grammatical option in early languages. Studies of child’s early language show that subjectless sentences occur both in languages that allow null subjects (e.g., Chinese and Italian) and those do not (e.g., English and French) (Wang et al. 1992: 221).
In child Chinese grammar, there are three characteristics of the null argument (i.e., null subjects and null objects phenomenon) (Wu 2002: 22-31). First, both null subject and null object can be observed in early Chinese-type languages. Second, there is an asymmetry of the null argument phenomenon in Chinese-speaking children that the frequency of null subjects is comparatively higher than that of null objects. Third, in the course of language acquisition, the proportion of null subjects in Chinese decreases remarkably whereas that of null objects remains low. In addition, Chinese learners omit subjects in the same linguistic environment in which adult speakers delete them.

In addition to grammatical accounts, there are performance-based accounts for the early null subjects, viewing that pro-drop reflects children’s cognitive limitation and process load plays a role in the options of NPs. For instance, with respect to the relationship of verb types and null NPs, Bloom examined the length of two verb types, past tense verbs (e.g., played) and verbs of cognitive and involuntary acts (e.g., love, sneeze) in the study of child language development by Brown (1973). It was found that the difference of the VP length between sentences with and without subjects was statistically significant. Bloom’s processing account seems to provide an insight into the question as to why children start off by omitting a subject. Nevertheless, the structures of Chinese verbs or verb types are rather different in those of English ones. Therefore, the influence of verb types on the Chinese pro-drop phenomenon is neglected in not discussed in the present study.

2.3 Empirical Studies of the Pro-drop Parameter

In this section, some previous empirical studies of the pro-drop phenomenon are reviewed, including the English language (Hyams and Wexler 1993), and a comparison between English and other languages concerning the pro-drop

2.3.1 Wang et al. (1992)

Wang et al. (1992) investigate the null subject phenomenon that can be frequently seen in early child language. According to Wang et al. (1992), in early child English, a null subject either has a definite reference that can be inferred from context or is an expletive (in 34), which however are ungrammatical in adult English grammar.

(31) a. Read bear book. (Hyams 1983)
    b. Outside cold.

More interestingly, in a pro-drop language like Chinese, both null referential and null non-referential elements can be used in Chinese. For instance, the expletive elements equivalent to English *it* or *there* (that is non-referential) can be phonologically null, as in (32) illustrated by Wang et al. (1992: 224):

(32) a. φ Xiayu le.
    (It) rain LE
    ‘It is raining.’
    b. φ yao xiayu le.
    (It) going to rain LE
    ‘It is going to rain.’
    c. φ kanshangquao φ yao xiayu le.
    (It) seem (It) going to rain LE
    ‘It seems that it is going to rain.’
Wang et al. (1992) adopt the null subject parameter proposed by Jaeggli and
Safir (1989) to explain the *pro*-drop phenomenon as shown in (33).

(33) The Null Subject Parameter: Null subjects are permitted in all and only
languages with morphologically uniform inflectional paradigms.

Jaeggli and Safir (1989) view PRO and *pro* as two different empty categories. *Pro*
can be identified by AGR owing to their Morphologically Uniformity Hypothesis.
According to Jaeggli and Safir (1989), a morphologically paradigm is uniform if all
its forms are morphologically complex or none of them are. Since no forms are
morphologically complex in Chinese, null subjects are allowed. Jaeggli and Safir
(1989) also present three possible mechanisms for the identification of null NPs: (1)
local agreement that includes a tense feature; (2) a c-commanding nominals; (3) a
Topic. As has shown in Section 2.1.2, Chinese null NPs may be identified by a topic.
With respect to the distribution, a Chinese null pronominal may occur in subject
position of an embedded clause, since its reference can be identified by a
commanding NP. But it is not the case for null objects, i.e., null objects cannot occur
in object position of an embedded clause (Wang et al. 1992: 225-6). This might be
related to the null subject/object asymmetry since it is only a null subject (but not a
null object) that can occur in an embedded clause. To summarize, null subjects can be
identified by a c-commanding NP, while a discourse topic can be an identifier of null
objects.

Wang et al. (1992) cite Hyams (1983) and state that a matrix empty subject *pro*
can be identified by a discourse topic. According to Hyams’s hypothesis, the null
subject/object asymmetry would be firstly observed in Chinese-speaking children’s
utterances, and null objects would not be used until the children have the concept of
variables. To evaluate Jaeggli and Hyams’s studys, Wang et al. (1992) collected
discourse data on the acquisition of English and Chinese. The data were stories elicited from nine Chinese children (aging from 2; 0 to 4; 6), nine English-speaking children (aging from 2; 5 to 4; 5), and nine Chinese adult controllers. The major results are reported as follows. First, both Chinese and American children who were 2 years old or whose MLU was 3.5 used null subjects. The Chinese children also used null objects, while the English children used relatively much fewer null objects that are counted as errors (Wang et al. 2002: 244). This result partly supports that English-speaking children begin with the [+pro-drop] parameter. But the data did not completely correspond to Jaeggli and Hyams’s hypothesis in some respects. According to the data, when Chinese children’s MLU increased, the mean percentage of sentences with null subjects decreased, and the mean percentage of sentences with null objects increased. In contrast, as the English children’s MLU increased, the mean percentage of sentences with null subjects and null objects decreased dramatically. At each MLU level, both mean percentages were much higher for the Chinese children than the American ones. One dilemma to Jaeggli and Hyams’s hypothesis is that, “even after the children have developed variables, they also did not use null objects” (Wang et al. 2002: 251). Besides, the children shall change the setting on the Null Argument Parameter and use no subjects, but it was not the case in the data of Wang et al. (1992). Another difference between the two groups is that Chinese-speaking children used both null subjects and null objects simultaneously.

2.3.2 Hyams and Wexler (1993)

Hyams and Wexler (1993) propose a grammatical approach to null subjects to explain their statistical data. Despite this, Hyams and Wexler (1993) also evaluate some performance accounts (mainly the processing account) for subject omission in child language, and they tested and criticized the accounts by the statistical properties. A Principle-/Rule-Based account was first presented theoretically and conceptually.
Hyams (1983, 1986), Jaeggli and Hyams (1988), Pierce (1992), and others have argued that the omission of lexical subjects is associated with child’s grammatical system, which differs in allowing null subjects. It has been proposed by Hyams that a child initiates a setting of the null subject parameter and it is related to the typological variation among adult languages. The null subject parameter states that languages vary in the respect of subject omission, i.e., whether or not a subject in a sentence must be phonologically realized. Null subjects are not accepted in languages such as English, but they are grammatical in some languages, and there are grammatical, discourse, and pragmatic factors that determine when a subject can be null.

According to Hyams and Wexler (1993: 415), an adequate account for subject omission in child language shall explain a wide variety of empirical data and theoretical data, as well as the problem with the learnability of language. Consequently, Hyams and Wexler (1993) assess and criticize the performance accounts of subject dropping in child language. They firstly indicate the striking fact that the dropping in early child language is majorly restricted to subjects, and this is related to the notion of the null subject/object asymmetry, which is discussed in Hyams (1983) and further demonstrated in Hyams and Wexler (1993). However, it has been claimed by Hyams and Wexler that the performance accounts (e.g., the informative account of Greenfield and Smith 1976) failed to explain the asymmetry. Hyams and Wexler (1994: 34) further provide a purely grammatical account (see also Hyams and Wexler 1993). This view is based on the assumption that languages differ with respect to grammar types divided into a pro-drop grammar vs. a topic-drop grammar. In this view, languages like Italian have a pro-drop grammar since an Italian tensed sentence contains rich inflections on the predicate in the adult language, which identify a null subject (‘pro’).
For null NPs in early systems, Hyams (1986) assumes that subject drops in early language are the positive setting for the topic-drop parameter. If it is so, in a non-pro-drop language like English, shall subjects and objects be dropped as well? However, Hyams and Wexler (1993) report that English-speaking children omit subjects (48%) much often than they omit objects (9%).

2.3.3 Kim (2000)

Kim presents the asymmetrical subject/object drop pattern found in Korean children and compares the Korean data with the other data selected from six languages, including Chinese and English (mainly Valian (1991) and Wang et al. 1992). Korean is a null subject and “discourse-oriented” language (Huang 1984), same as Chinese and Japanese. On the contrary, there are non-null subject languages (such as English and French) in which a sentential subject is obligatory.

Mainly focusing the discussion of Korean pro-drop uses, Kim (2000) compared the subject drops among English, Korean, and Chinese speakers. It was found that children acquiring any language tended to produce initially fewer overt subjects than adults. But their production of overt subjects increases with age and reached the adult rate rapidly. Kim’s results were in accordance with the findings of Valian (1991). Valian (1991) investigated the subjective uses in the data of twenty-one American children and adults, and found the children from Group I (mean MLU 1.77) used the subjects at almost 70% in utterances including a verb, while Group II (mean MLU 2.49) produced 90% of overt subjects, and the proportion of overt subjects was thereafter consistently higher. In Kim’s (2000) study, the children initially produced much fewer overt subjects than the adult speakers, but the proportion of overt subjects increased as they grew older. Thus, Kim (2000) argued that all children are initially inhibited from producing overt subjects for some
nonsyntactic reasons. According to Kim (2000), the non-syntactic factors that may contribute to children’s subject drop in any languages were: processing constraints, language-universal or language-particular discourse-pragmatic principles, and characteristics of the input they receive.

Let us take a look at Table 2-3 for the cross-linguistic comparison of *pro*-drop uses. Table 2-3 summarizes subject use in three different languages, i.e., English, Chinese, and Korean. As shown in Table 2-3, there is a sharp contrast between the overt subject rates in Korean and English. While Korean children’s production of overt subjects was at about the adult rate of 0.35–0.45 between the age ranging from 1;10 to 2;2, American children at the comparable age produced subjects almost 70%, and their overt subject use increased to almost 90% by 2;5. According to Kim (2000: 332), the subject-drop rates in the child language data in the two languages basically reflected the subject-drop rate in their respective adult target languages.

Table 2-3: Null Subject Use in English, Mandarin-Chinese, and Korean

<table>
<thead>
<tr>
<th></th>
<th>English10</th>
<th>Chinese</th>
<th>Korean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Rate</td>
<td>Age 2;0–2;5</td>
<td>Age 1;4–1;8</td>
</tr>
<tr>
<td>2;5</td>
<td>0.89</td>
<td>0.54</td>
<td>0.22</td>
</tr>
<tr>
<td>2;7</td>
<td>0.95</td>
<td>0.62</td>
<td>0.34</td>
</tr>
<tr>
<td>Adults</td>
<td>0.96–0.98</td>
<td>Adults 0.64</td>
<td>Adults 0.35–0.45</td>
</tr>
</tbody>
</table>

If we consider Chinese and Korean data, it appears that Korean adults produced considerably fewer overt subjects (0.35–0.45) than Chinese adults (0.64). Korean children appeared to drop subjects more often than Chinese children did. The

10 The English data were adapted from Valian (1991) while the Chinese data were adapted from Wang et al. (1992)
comparison shows that even languages of the “discourse-oriented” group may differ from each other considerably in the rate of subject drop.

There are two major accounts for the subject drop in child English, i.e., the Competence-deficit Hypotheses (Hyams 1983, 1986, Hyams and Wexler 1993) and Performance-Limitation Hypotheses (Bloom 1970, Bloom, 1990, 1993, Valian 1990a, 1990b, 1991, 1994). Hyams (1983, 1986) and Hyams and Wexler (1993) claim that young English speakers drop subjects because the initial and default value for the null subject parameter is [+null subject]. In other words, English-speakers in the earliest stages lack adult competence about overt subject use. In contrast, The Performance-limitation Hypotheses argue that young English speakers are prevented from producing overt subjects owing to performance limitations such as processing constraints and pragmatic factors, even though they know that their target language requires overt subjects. For example, if a child can produce one word at a time, it is hypothesized that a lack of subject would be often found in his/her speech.

On the other hand, the actual subject-drop rate in child language might not be predicted only based on how null subjects are identified but also based on actual frequency counts in the input. These findings all suggest that the phenomenon of subject drop in any child language cannot be accounted for solely by competence deficit and independently of performance limitations and input characteristics.

In relation to subject drop, another issue that has been discussed is the use of object drop. It has been found empirically that there is an asymmetry in subject/object drop rates. Kim (2000) found that English children omitted lexical subjects but rarely objects. Wang et al. (1992) observe that Chinese-speaking children dropped both subjects and objects, as is permissible in adult Chinese. In Wang et al.’s study, the 2-to 4-year-old Chinese children produced overt objects 74–80 % of the time. In contrast, the 2-year-old American children produced overt objects 92 %, and the older
children essentially never dropped objects in elicited production.

There are two generalizations made by Kim (2000) about the characteristics of object drop in child Korean. Korean-speaking children drop objects less frequently than they omit subject, the rough range of overt object rates across samples (except the earliest ones in the one-word stage) being 0.50–0.80. There are some hypotheses that might be relevant to this subject/object asymmetry. One of them is Huang (1982, 1984), who argues that the distribution of an object null argument in a discourse-oriented language is more restricted than the distribution of a subject null argument. He proposes the idea of “Topic-Chaining” by which the discourse topic is grammatically linked to a null sentence topic, which identifies a null argument. A topic may bind a variable in either subject or object positions, and these are two kinds of null NPs. Huang then proposes a third method of identifying null NPs: pro can occur in the subordinate subject position only when it is co-indexed with (or identified by) the super-ordinate clause subject. This is possible, because pro must be identified by its closest SUBJECT, which is the “most prominent nominal element” of a given domain. In other words, SUBJECT is the subject or AGR of a finite S, or the head N of an NP. Since the INFL of a Chinese finite clause does not contain AGR, the minimal SUBJECT above the subject of an embedded clause is the subject of the immediately super-ordinate clause. Therefore, pro can occur in the embedded subject position when it is co-indexed with the subject of the matrix clause. Nevertheless, the same description does not apply to the object position of an embedded clause because identification has to be given by the closest nominal element. Kim (2000) states that Huang’s study predicts that null objects are more restricted than null subjects in embedded clauses. She also points out that Huang’s (1982, 1984) syntactic study for the more restricted null objects in embedding contexts does not seem to account for the null subject/object symmetry observed in child Korean. In contrast, she proposes
the performance-limitation accounts for the subject drop phenomenon and argues that her account can explain the subject/object drop pattern in child Korean and a cross-linguistic comparison among seven languages. However, it is not clear if children universally start with the initial and default value of the null subject parameter as [–null subject] (Bloom 1990, 1993). Kim’s results are most consistent with Valian’s (1990a, 1990b, 1991, 1994) observation that early grammars show a high degree of sensitivity to characteristics of and frequency distributions in input and her study that the parameter is initially unset and that children entertain both values on an equal footing.

2.3.4 Summary

In Section 2.3, we have seen three empirical studies of the early pro-drop phenomena. The focuses of each study are compared below.

<table>
<thead>
<tr>
<th>Participants</th>
<th>Tasks</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wang et al. (1992)</td>
<td>9 Chinese children (2; 0 – 4; 6), 9 English children (2; 5 – 4; 5), and 9 Chinese woman controllers</td>
<td>Production task (story-telling with two story books to elicit clauses containing null subjects and null objects)</td>
</tr>
<tr>
<td>Hyams and Wexler (1993)</td>
<td>3 English kids (Adam 2;3-2;7, Eve 1;6-1;10, and Sarah 2;3-2;7)</td>
<td>Transcripts of the children’s speech from CHILDES (to calculate the proportion of missing subjects and objects)</td>
</tr>
</tbody>
</table>
Kim (2000) 5 Korean kids (P 1;7-2;6, C 1;11–2;6, J 2;0-2;4, HG 2;0-2;2, JL 1;4-1;7) (3 boys and 2 girls) Production task (to elicit the subjects’ spontaneous speech with their caregivers; calculate clauses containing an overt subject) Korean-speaking children initially produced predicates with no overt subjects at all. But their production of overt subjects increased with age. The children dropped subjects more than objects.

The significant analyses of each of the three studies are discussed as follows. By examining if subject drop in various languages is an expression of the positive setting for the topic-drop parameter, Wang et al. (1992) also found in their data convincingly that null object was not used in English. In contrast, they provided the evidence that both subject and object could be dropped in early Chinese. They state that the differences reflect that Chinese-speaking children have correctly set the topic-drop parameter and know that both null subjects and null objects can be identified by a discourse-bound operator in their language. But it is not the case for the English-speaking children. On the other hand, as for the interpretation of pro-drops, Wang et al. (1992) showed that both null NPs and null expletives could be used by Chinese speakers. But they are basically forbidden in English sentences. To be more precise, a Chinese null subject can either have a definite reference that can be inferred from context or can be an expletive.

Hyams and Wexler (1993) argue against the performance account for subject dropping (e.g., Bloom 1990) by statistical evidence in child language. They subsequently provide a purely grammatical account, with the main idea that Chinese-type language allows a subject NP if provided with a discourse topic, and it is assumed that subject drops in early language were the positive setting for the
topic-drop parameter.

There seems to be some problems in the experimental design of the three studies. First, the age difference is uncontrolled or neglected in the studies, especially the subjects aging from 2; 0 to 4; 6 in Wang et al. (1992). Whether the age difference plays a role in the distribution of the pro-drop phenomenon remains unsolved. Second, even if each of the three studies provides insight into the characteristics and interpretations of the early pro-drop productions language-specifically or cross-linguistically, it does not seem that Hyams and Wexler (1993) and Kim (2000) provided a complete analysis of all the pro-drop syntactic categories. As presented in Table 2-4, both of the two studies only discuss and analyze the referential subjects and objects in matrix clauses. Even Wang et al. (1992), which has a more complete analysis of various pro-drop categories, has some questions left for discussion (Wang et al. 1992: 245). For instance, how different is the null subject/object asymmetry between Chinese and English? How can the asymmetry be explained by the parameter theory?

Nevertheless, the findings of the three studies support the following points: (1) Children drop the subjects more often the objects; (2) Children’s production of overt subjects increases with age; (3) There seems to be some non-syntactic factors in affecting early null subjects and/or objects (adopted from Kim 2000: 347).

2.4 Summary of Chapter Two

In this chapter, some analyses of the pro-drop phenomenon have been reviewed. I have also presented the linguistic properties of pro in Chinese and English in terms of syntactic positions, semantic interpretations (referentiality), and early pro-drop phenomena. Finally, a number of empirical studies of the acquisition of the pro-drop parameter have been discussed, and some problems with each study are also presented.
In the next Chapter, the experiment of the present study will be described to test Chinese children’s acquisition of the *pro*-drop parameter.