摘要

本研究探討閩南語 *ka* 字句的第一語言習得。目的是要了解閩南語 *ka* 字句的四大屬性，*ka* 名詞組的指涉性、*ka* 名詞的省略性、*ka* 動詞的動作性，以及現在進行標誌的使用在學齡前兒童母語習得中所扮演的角色。主要的研究議題包含屬性效應、副屬性效應、題型效應、非典型作答模式，以及年齡效應。本研究共設計兩個測驗：文法判斷測驗與看圖回答測驗。研究參與者為 64 位以閩南語為母語的人士，包含 48 位平均年齡為 4 至 6 歲的兒童及 16 位成人。

研究結果顯示，不同的屬性、副屬性、題型及年齡，皆影響閩南語 *ka* 字句的習得。*ka* 字句的四大屬性對實驗對象而言難易程度有所不同：*ka* 動詞的動作性最簡單，*ka* 名詞組的指涉性次之，現在進行標誌的使用再次之，*ka* 名詞的省略性難度最高。此次序可用 Pinker (1989)的保守理論來解釋。在副屬性效應方面，本研究結果支持 *ka* 字句的理論性研究，實驗參與者在一般指涉和定指名詞表現優於非定指名詞、非狀態動詞優於狀態動詞、無目的性動詞優於有目的性動詞。根據這些結果，我們更進一步發展 Pinker (1989)的保守理論，提出在習得區別出可出現和不可出現在某特定句型的元素的過程中，本研究之學齡前兒童似乎歷經三個發展階段：階段 1: 無區別→階段 2: 部分區別→階段 3: 完全區別。在題型效應方面，基本上受試者在文法判斷測驗表現優於看圖回答測驗，支持理解先於口語能力的看法 (Oviatt 1980, Brown 1987, Gerken and Shady 1996)。最後，觀察各個年齡層的表現，我們發現 5 歲是閩南語 *ka* 字句的轉變階段，然而直到 6 歲時，*ka* 字句發展才達到完全成熟。

ABSTRACT

The present study aims to explore children's acquisition of the Taiwanese *ka* construction. Four major constraints, i.e., Referentiality, Omission, Dynamicity, and Progressive, were examined in the present study. Property effects, sub-property effects, task effects, age effects and other related patterns were investigated in this pioneer research. A comprehension task (Grammaticality Judgment task, the GJ task) and a production task (a Picture-cued Production task, the PP task) were employed. Forty-eight preschoolers in Xinying City, Tainan County and sixteen adults were asked to participate in the experiment. The preschoolers were further divided into three age groups, ranging from 4 to 6.

The findings suggested that main properties, sub-properties, tasks, and age were all crucial factors in the acquisition of the Taiwanese *ka* construction. The four constraints were found to impose a different degree of difficulty on the subjects: Dynamicity > Referentiality > Progressive > Omission (from easy to difficult). The hierarchical sequence supports Pinker's (1989) Theory of Conservativism. Concerning the sub-property effects, the present results argued for the previous theoretical analyses in that our subjects did prefer Nonstative to Stative, Definite/Generic to Indefinite, and Atelic to Telic. The above findings showed that in acquiring the contrast between elements permitted and prohibited in a certain construction, our children seemed to go through three developmental stages: Stage 1: No Contrast→Stage 2: Partial Contrast→Stage 3: Full Contrast. Moreover, it was found that our children performed better on the GJ task than on the PP task, supporting the view that comprehension is prior to production (Oviatt 1980, Brown 1987, Gerken and Shady 1996). In addition, it was found that age 5 was a transitional point for the acquisition of the Taiwanese *ka* construction and age 6 was the cutting age where our children achieved an adult-like grammar.

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LIST OF ABBREVIATIONS

ASP	Aspect marker
Ba	The morpheme of *ba*
CL	Classifier
DUR	Durative aspect marker
GJ	Grammaticality judgment task
Ka	The morpheme of *ka*
NP	Noun phrase
PP	Picture-cued production task
PT	Particle
SFH	Semantic Feature Hypothesis
teh	Present progressive marker '*teh*'
VP	Verb phrase

CHAPTER ONE
INTRODUCTION

1.1 Motivation

Issues concerning nature of the *ba* construction in Mandarin Chinese have received a wide range of discussion in the field of Chinese linguistics possibly because of its peculiar features and challenges it imposes on different theoretical frameworks, for example, the Theta Criterion (Chomsky, 1981)[1] (Chao 1968, Thompson 1973, Li 1974, Li and Thompson 1981, Ross 1991, Gao 1997, Li 2001). Roughly speaking, the *ba* construction in Mandarin Chinese is considered as a 'disposal' form, which conveys "how a person is handled, manipulated, or dealt with; how something is disposed of; or how an affair is conducted." (Wang 1957, pp. 160-161, cited from Li 1974, pp. 200-201). Like the Mandarin *ba* construction, the *ka* construction is viewed as serving a similar function in Taiwanese Southern Min. During the past few decades, little attention has been paid to this structure partially because the *ka* construction is considered as a counterpart of the Mandarin *ba* construction and they share many peculiar features. For example, like the Mandarin *ba* construction, an indefinite NP cannot show up in the *ka* construction and a stative verb is impossible to occur in the *ka* construction.

(1) a. Ka hit king pangking sau sau le. (definite NP)
KA that CL room sweep sweep PT
'Clean that room!'

[1] According to the Theta Criterion, each argument NP must bear one and only one theta role.
(i) Ta ba pingguo chi le liang ge.
he BA apples eat ASP two CL
'He ate two of the apples.'
In (i), *liang ge* 'two' is supposed to be a constituent of an NP. Also, if it is a constituent of the NP, the NP must have a theta role. In (i), the theta role is assigned by *chi* 'eat' since the NP is the object of the verb. In this way, *pingguo* 'apples' is left without a theta assigner because the verb *chi* 'eat' only has a theta role to assign. Thus, this sentence will be predicted ungrammatical by the Theta Criterion.

b. *Ka cit king pangking sau sau le. (indefinite NP)
KA a CL room sweep sweep PT
'Clean a room!' (Li 1995, p. 13)

(2) a. Muemue ka hue tantiau. (nonstative verb)
the little sister KA flowers throw away
'The little sister threw away the flowers.'

b. *Muemue ka hue kahi. (stative verb)
the little sister KA flowers like
'The little sister likes the flowers.'

However, though similar, significant differences are observed. Recently some studies have shown that the *ka* construction is an even more complicated structure than the *ba* construction and the *ka* construction has some very different syntactic and semantic properties from the *ba* construction (Teng 1982, Li 1995, Cheng and Tsao 1995, Hung 1995, Tsao 2003, Yang 2006). For instance, a syntactically absent *ka*-NP, and the occurrence of a progressive marker *teh* is sometimes permitted in the Taiwanese *ka* construction but never in the Mandarin *ba* construction (Teng 1982, Li 1995, Cheng and Tsao 1995, Hung 1995, Tsao 2003, Yang 2006).

(3) a. Titi oh, cang mama ka __ phah. (Taiwanese)
the little brother PT, yesterday mother KA hit
'The little brother, Mother hit him yesterday.'

b. *Didi o, zuotian mama ba __ da le yi dun. (Mandarin)
the little brother PT, yesterday mother BA hit ASP a CL
'The little brother, Mother hit him yesterday.'

(4) a. Mama teh ka i phah. (Taiwanese)
mother PROG KA him hit
'Mother is hitting him.'

b. *Mama zai ba ta da. (Mandarin)

mother PROG BA him hit

'Mother is hitting him.'

The distinct properties of the *ka* construction thus motivate us to see if the same developmental trend found in the Mandarin *ba* construction can be applied to the Taiwanese *ka* construction.

1.2 Theoretical Background

In this section issues in language acquisition related to the present study will be discussed such as Theory of Conservativism, age effects and task effects. In addition, the present study assumes the Semantic Feature Hypothesis proposed by Clark (1971), and Vendler's (1967) classification of verb types. The main notions of the Semantic Feature Hypothesis will be summarized briefly and then Vendler's analysis will be reviewed in the following section, too.

1.2.1 Theory of Conservativism

To argue against Baker's (1979) view that lexical structures are arbitrarily represented and thus have to be learned piecemeal, Pinker (1989) put forward the Theory of Conservativism. He claims that lexical structures are not completely arbitrary, and are learnable by rule. According to Pinker, there are three levels of semantic representations:

i) The lexical specification of each individual verb

ii) The narrow-range (NR) subclasses, which are the sets of verbs that share particular semantic meanings, and whose argument structures can in fact alternate

iii) The broad-range (BR) classes, which are larger sets of verbs sharing general semantic meanings that all verbs participating in a particular syntactic alternations have in common; the semantic commonalities are presumably necessary for the syntactic alternations to occur

The three levels are exemplified by English dative constructions. The verbs *bring* and *pull* both show up in the form of NP1 V NP2 to NP3 but only *bring* but not *pull* can alternate with the form of NP1 V NP3 NP2:

(5) a. John brought the present to Mary.

b. John brought Mary the present.

(6) a. John pulled the chair to Mary.

b.*John pulled Mary the chair.

As shown in (5), *bring* can appear in the prepositional dative form as well as the double object dative form. However, *pull* can only show up in the form of the prepositional dative as in (6). The three levels of representations for them are as follows:

(7) *bring*

a. The verb level: X acts on Y and then Y goes with X to Z

b. The BR level: cause to go

c. The NR level: continuous force, no specific manner of motion, that is, one can *bring* by many different kinds of manner, including pulling

(8) *pull*

a. The verb level: X acts on Y and then Y goes to Z alone

b. The BR level: cause to go

c. The NR level: continuous force, specific manner of motion, that is, one can only *pull* by the manner of pulling

Pinker argues that the alternations are primarily semantically driven. Once children

learn the semantic contrast between *bring* and *pull*, they will then apply it to the syntactic alternations straightforwardly. For instance, children will learn the verb level representations of *bring* and *pull* and other verbs at first, then distinguish the kinds of *bring* verbs from those of *pull* verbs by the existence of a specific manner or not and finally apply the contrast to the dative alternations.

The implication for the theory is that children will not use the syntactic alternations (the BR level) before they acquire the semantic contrast between different kinds of verbs (the NR level) since the contrast is the element necessary for the syntactic alternations to occur. In this sense, children are conservative learners. However, once they master the contrast, they will immediately apply it to the construction. According to the theory, we predict that children have to learn the contrast between the element exhibited and that prohibited in the *ka* construction before they apply the contrast to the *ka* construction because only when they possess the semantic contrast can they apply the contrast to the *ka* construction.

1.2.2 Age Effects

It seems to be a natural tendency that age plays a crucial role in children's language acquisition. Results of many empirical studies have illustrated that children's language comprehension and production improve with age (Lenneberg 1967, Erbaugh 1982, Cheung 1992, Fahn 1993). Lenneberg (1967) found that children at the age of one could produce one word which may convey more than one meaning. At the age of three, children could produce two words with well-established semantic relations. And, most of the four-year-olds' utterances were comprehensible. In a longitudinal study of children's acquisition of the Mandarin *ba* construction, Erbaugh (1982) found that the *ba* construction appeared in children's speech as early as they were 2;3 years old. However, the use of this

construction was not mastered by children until the age of 3;6. Cheung (1992) conducted a statistical analysis on the longitudinal data provided in Tse, Tang, Shi, and Li's study (1991) and indicated that children's error ratio principally decreased with age. Fahn (1993) examined children's acquisition of the *ba* construction and found that age five was a crucial cutoff point for certain constraints while age six was a demarcation point for the other constraints[2]. Therefore, in this study age will be one of the issues under investigation.

1.2.3 Task Effects

The other focus of this study is on task effects. In order to examine children's linguistic competence and performance, both comprehension and production tasks will be designed in the present study. Comprehension tasks are generally considered as much easier than production tasks because it is assumed that children have to acquire the necessary linguistic knowledge before they can actually use it (Miller 1963, Oviatt 1980, Brown 1987, Gerken and Shady 1996, Wu and Wen 1997). In an investigation of children's phonological development, Miller (1963) pointed out that a subject clearly perceived the contrast between English *s* and *th*, yet she could not produce the contrast herself. Brown (1987) also stated that children may be incapable of producing a sentence with an embedded relative clause in it but they may be able to understand it. Wu and Wen (1997) found that their subjects' performances on the grammaticality judgment task was better than on the translation task. To verify this view, task effects will be discussed in this research.

[2] Fahn (1993) examined five constraints of the *ba* constraint: (1) The Progressive constraint: a progressive marker is impossible to occur in the *ba* construction; (2) the Verb Selection constraint: certain types of verbs cannot show up in the *ba* construction; (3) the Modifier constraint: certain verbs require modifiers to co-occur with the *ba* construction; (4) the Compound Verb constraint: certain compound verbs cannot show up in the *ba* construction; (5) the Definiteness constraint: the *ba*-NP cannot be indefinite.

1.2.4 The Semantic Feature Hypothesis

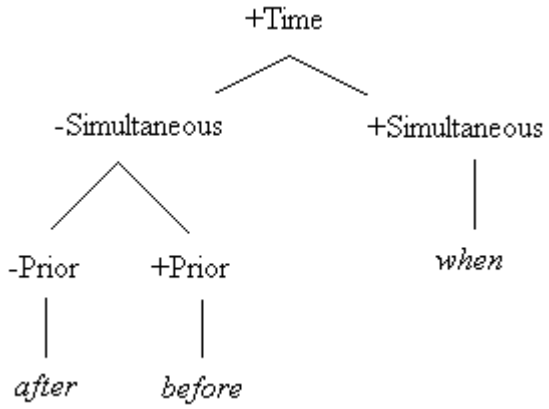
Based on a componential or feature analysis of words, Clark (1971) develops the theory of the Semantic Feature Hypothesis (SFH). Two properties of the componential analysis of words are emphasized in the theory:

i) The meanings of words can be represented as a set of components arranged in a hierarchy.

ii) Feature representations are given positive and negative values.

For example, the temporal prepositions *before*, *after* and *while* can be represented in a feature hierarchy as follows:

(9) Feature Representations of *when*, *before* and *after*



The first feature specification that comes into play is [+Time] which includes the words referring to some aspect of time. The next feature, Simultaneous, which is dominated by [+Time], has two values: [+Simultaneous] and [-Simultaneous]. Finally, the feature [+/-Prior] only occurs in words specified as [-Simultaneous]. These features are organized in a hierarchical order, with [+Time] dominating [+/-Simultaneous], and [-Simultaneous] dominating [+/-Prior].

According to the hypothesis, it is predicted that superordinate features in a feature hierarchy would be acquired first since these features are usually common to several different words and thus are general concepts, for instance, [+/-Time] or [+/-Simultaneous]. Also, plus values would be mastered before minus values

because the plus values are usually simpler or unmarked in a pair of relational terms. With regard to the temporal prepositions above, a distinction between *before* and *after* would be acquired later than the general distinction between *before*/*after* and *when*. Moreover, the precedence of positive over negative features expects that *when* would be mastered prior to *before*/*after*, and *before* prior to *after*.

The psychological validity of SFH has been proved in children's acquisition of relational terms. Clark (1971) examined the acquisitional process of *before*, *after* and *when* and found that *when* was mastered first, followed by *before* and finally *after*. Also, it was shown in Donaldson and Balfour's (1968), and Donaldson and Wales's (1970) studies that at the first stage, children seemed to treat *more* and *less* as synonyms. They performed well on questions about *more* but they consistently misinterpreted *less* as if it means *more*. Clark claimed that the results were explicable with SFH if it is supposed that children had mastered the feature [+Amount] which was shared by *more* and *less* but had not yet acquired the feature [+/-Polar] for differentiating the pair.

1.2.5 Vendler's (1967) Classification of Verbs

Vendler (1967) classifies verbs into four types, that is, Stative, Activities, Accomplishments, and Achievements, as stated in Table 1.1:

Table 1.1 Vendler's (1967) Verb Classification

Type		Example
1. Statives[3]	Static, durative, atelic	*know*, *love*
2. Activities	Dynamic, durative, atelic	*run*, *walk*
3. Accomplishments	Dynamic, durative, telic	*build a house*, *walk to school*
4. Achievements	Dynamic, instantaneous	*recognize*, *find*

Based on the discussion, States are verbs lacking continuous senses, for instance, *know* and *love* belong to this category. They can not have a progressive aspect since they do not possess continuous senses. Activities such as *run* and *walk* are verbs denoting processes going on in time with no terminal point. Accomplishments are verbs denoting processes going on in time with a terminal point, and after achieving the goal, the action can no longer continue. Verbs like *build a house* and *walk to school* are members of this type. Achievements are verbs that have a terminal point, but the time for reaching this point is instantaneous, for example, *recognize* and *find* are verbs of this type.

In the present study it is assumed that the classification of verbs here is also applicable to Taiwanese. Also, later in Chapter Four, we will develop the feature specifications of Taiwanese verbs based on Vendler's (1967) classification of verb types.

1.3 Research Questions

This study addresses the following four questions about the acquisition of the *ka* construction in Taiwanese:

[3] Vendler (1967) uses the term States for this type of verbs. However, in this study, we employ the term Statives.

1) What is the developmental sequence for the acquisition of various properties of the Taiwanese *ka*-construction?
2) Do children perform similarly on each property's sub types?
3) Are there any age effects on children's comprehension and production of the *ka* construction?
4) Do the children's comprehension and production pattern alike in the acquisition of the *ka* construction?

1.4 Significance of the Study

The Mandarin *ba* construction has been recognized to be a very complicated syntactic structure in the literature. And the *ka* construction is considered to serve a similar function in Taiwanese. However, children's acquisition of the *ka* construction in Taiwanese has not been fully investigated in literature. Previous studies of the *ka* construction usually limit their analyses to the theoretical aspect. The purpose of this study, hence, is to investigate the *ka* construction in Taiwanese from an acquisitional perspective. The Taiwanese *ka* construction has at least four functions: patient, source, goal and benefactive (Teng 1982, Cheng and Tsao 1995, Hung 1995, Tsao 2003). However, due to time limitation not all four functions will be investigated in this study. Only *ka* as a patient marker will be examined. The reason is that *ka* as a patient marker seems to correspond to that of *ba* in Mandarin Chinese (Cheng and Tsao 1995, Hung 1995). This study is a pioneer study of the acquisition of the *ka* construction. The purpose is not to exhaust the subject but to bridge the gap between the theoretical and the experimental analyses in this field. Thus, only *ka* as a patient marker will be investigated.

1.5 Organization of the Thesis

This thesis is organized as follows. Chapter Two reviews some previous theoretical and empirical studies of the Taiwanese *ka* construction, and discusses the properties of the construction. Chapter Three reports the experimental design of this study. Chapter Four presents and reports the experimental results. Finally, Chapter Five provides concluding statements and suggestions for further research.

CHAPTER TWO
LITERATURE REVIEW AND LINGUISTIC PROPERTIES OF TAIWANESE *KA*

In this chapter previous analyses and linguistic properties of the *ka* construction in Taiwanese will be discussed. Also, experimental studies of the acquisition of Mandarin *ba* will be reviewed instead of Taiwanese *ka* since the two constructions are said to be similar and no empirical studies of the *ka* construction have been reported in the literature. In section 2.1 theoretical analyses of the *ka* sentences will be examined. Then, in section 2.2 comparisons between Taiwanese *ka* and Mandarin *ba* will be discussed. In section 2.3 properties of the construction examined in the present study will be investigated followed by reviews of two empirical studies of the *ba* construction in section 2.4. Finally, section 2.5 summarizes the main points of this chapter.

2.1 Theoretical Studies of Taiwanese *Ka*

As mentioned in Chapter One, few studies have been done on the Taiwanese *ka* construction. To our knowledge, Teng 1982 is probably the earliest one, followed by Tsao and Lu 1990, Li 1995, Hung 1995, Cheng and Tsao 1995 and then Tsao 2003. Since both Tsao and Lu's and Cheng and Tsao's analyses mainly focus on the historical origin of *ka*, and Tsao's study is very similar to Hung's, in this section we will review Teng 1982, Li 1995, Hung 1995, and Cheng and Tsao 1995.

2.1.1 Teng (1982)

As pointed out by Teng, unlike the Mandarin *ba* construction, which carries a disposal meaning, the Taiwanese *ka* has various functions such as a goal, source, patient or benefactive marker. Given the various functions of *ka*, Teng states that

"*ka* is a disposal marker only when its object is at the same time the true object of the main verb in the sentence. A true object is defined in terms of transitivity (p. 334)" as in (1):

(1) I ka gua me.
he KA I blame
'He blamed me.'

In Teng's study, the disposal *ka* is treated as a preposition. Teng further points out that it is possible to have a disposal *ka* sentence even when its non-*ka* counterpart is ungrammatical, as can be seen in (2):

(2) a. Li ka chiu giah-khi-lai.
you KA hand lift-up-come
'Raise your arms!'
b. *Li giah chiu khi-lai.
you lift hand up-come
'Raise your arms!' (pp. 334-335)

(2)a is a grammatical disposal *ka* sentence since *chiu* 'hand' is the object of the transitive verb *giah* 'raise.' However, its non-*ka* counterpart in (2)b is illicit.

Teng's definition of the disposal *ka* construction implies that the construction exhibits the following characteristics. Like the *ba*-NP, the *ka*-NP can be preposed to the sentence-initial position.

(3) a. Hit-e lang, li beh ka i tua-lai o?
that CL person you want KA him bring-come PT
'Are you bringing that man?'

b. Hit-pun cheh, li ka[1] be-khi a o?

that CL book you KA sell-go PT PT

'You sold that book?' (pp. 336-337)

In (3)a *hit-e lang* 'that person' is moved from the post-*ka* position, leaving a co-referential pronoun *i* 'him' in situ. Furthermore, the pronominal copy in situ can be deleted[2] when it is a third person singular as in (3)b, resulting in a syntactically absent *ka*-NP which is not possible in the *ba* construction. The missing *ka*-NP is considered as a result of deletion, and then the morpheme *ka* undergoes a phonetic change, ending with a glottal stop.

Also, unlike the *ba*-verb which requires an aspect marker as its minimal complement, the *ka*-verb can occur without one, as in (4):

(4) a. Mama ka i phah. (Taiwanese)

mother KA him hit

'Mother hit him.'

b. *Mama ba ta da. (Mandarin)

mother BA him hit

'Mother hit him.'

In (4)a, the *ka*-verb *phah* 'hit' is a monosyllabic verb, and the sentence is grammatical. However, in (4)b the *ba*-verb *da* 'hit' is also monosyllabic, but the sentence is illicit.

In addition, the *ka* construction is semantically neutral. Thus, many different

[1] Teng (1982) and Li (1995) claim that when the *ka*-NP is syntactically absent, the *ka* will undergo a phonetic change, ending with a glottal stop, that is, *ka* becomes *ka?*. However, Cheng and Tsao (1995) and Hung (1995) propose that *ka?* is further reduced to *ka* under fast speech. The present study is not going to tackle this problem and will simply adopt the view that *ka?* is further reduced to *ka* because we also cannot perceive the existence of a glottal stop.

[2] Some studies consider the syntactically absent *ka*-NP as a result of contraction instead of omission (Li 1995, Hung 1995, Tsao 1995). The validity of the two camps can not be verified in this study. Hence, in this study the statement of omission will be adopted for simplification.

categories of verbs can show up in the structure. In the study, Teng only categorizes the monosyllabic verbs that occur in the construction into the following nine types:

i) Verbs that take patient (e.g. *ciah* 'eat')

ii) Outward verbs (e.g. *be* 'sell')

iii) Inward verbs (e.g. *nia* 'collect')

iv) Perception verbs (e.g. *khuann* 'see')

v) Verbs of handling (e.g. *giu* 'pull')

vi) Verbs that take locative (e.g. *phah* 'hit')

vii) Verbs of utterance (e.g. *mng* 'ask')

viii) State verbs (e.g. *thiann* 'care')

ix) Verbs that take affected object (e.g. *khi* 'build') (pp. 344-347)

To sum up, Teng provides a detailed analysis of the Taiwanese disposal *ka* construction. Nevertheless, some inadequacies are found in the study. First, Teng does not discuss the referentiality of the *ka*-NP. Later studies such as Li (1995) or Tsao (2003) point out that an indefinite NP cannot occur in the *ka* construction. Second, Teng does not provide a generalization for the type of verb that can occur in the *ka* construction. Aside from lacking a generalization, the claim that all the nine types of monosyllabic verbs can show up in the *ka* construction is also problematic. Considering the following example:

(5) I cin suiau lang ka thiann/*ai/*kahi/*sionn.
he very need people KA care/love/like/miss
'He needs other people to care about/*love/*like/*miss him.'

The verbs *thiann* 'care', *ai* 'love', *kahi* 'like', and *sionn* 'miss' all belong to the type of state verbs and yet except for *thiann* 'care', the others are impossible to occur in the *ka* construction. The ungrammaticality clearly shows that state verbs are generally not compatible with the *ka* construction. Hence, further study will be

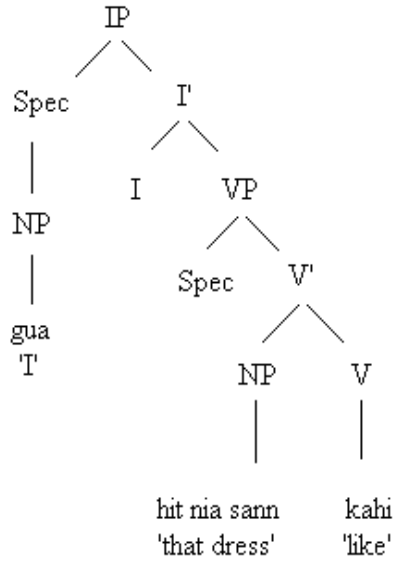
needed to capture a generalization for the verbs that can show up in the *ka* construction.

2.1.2 Li (1995)

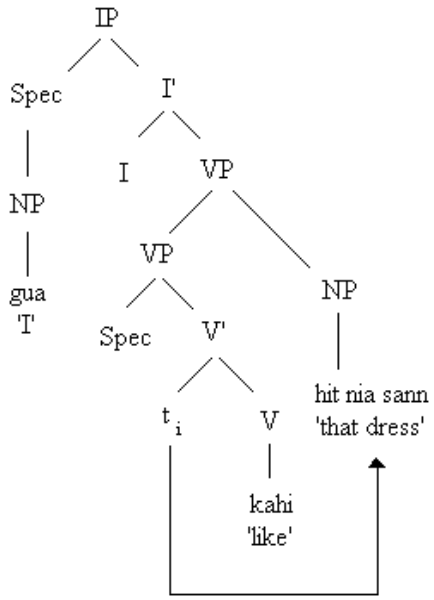
Li investigates the syntactic structure of *ka* as a disposal marker (the patient *ka*) in Taiwanese. Two theoretical assumptions are presupposed in her study: first, the Government and Binding theory developed by Chomsky (1981, 1982, 1986a and 1986b) and second, Li's (1990) and Chen's (1990) proposals. Inspired by Li and Chen, Li in this study assumes that the sentence structure in Taiwanese is S-O-V underlyingly, that is, Taiwanese is a head-final language. Also, adopting Chomsky's (1986b) analysis, the subject is presupposed to be universally base-generated in [Spec, IP] in Li's study. Furthermore, directionality and adjacency requirements of case assignment in Li's (1990) study is also assumed, and the assumption that accusative case in Taiwanese is assigned to the right is thus presupposed in the study. Given the above assumptions, a Taiwanese sentence like (6) will have a D-structure representation as in (7) and an S-structure representation as in (8):

(6) Gua kahi hit nia sann.
I like that CL dress
'I like the dress.'

(7) D-structure representation



(8) S-structure representation



As in (7), the object *hit nia sann* 'that dress' is base-generated at the left of the verb *kahi* 'like' and at SS, the object moves to a post-verbal VP-adjoined position to be assigned a case by the verb *kahi* 'like' as shown in (8).

Based on the above assumptions, Li proposes that *ka* is "a unique syntactic category, heading its own projection, selecting a VP complement (p. 35)." It is also argued that *ka* is a case assigner, discharging a [disposal] feature to [Spec, KaP] at LF,

hence the manipulative interpretation of the *ka* sentences.

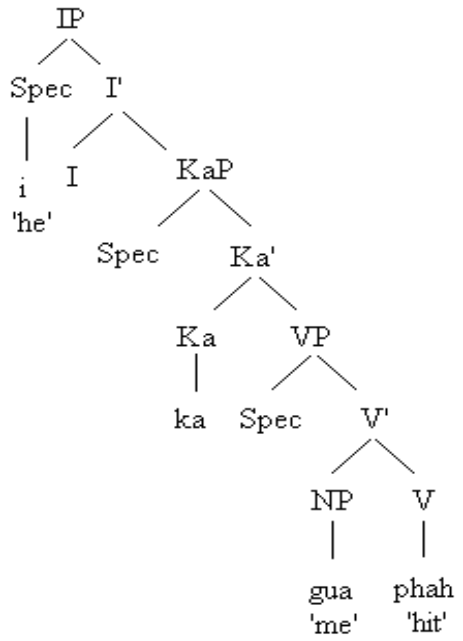
Based on Li's analysis, a *ka*-NP will move to [Spec, VP] to be case-marked and to [Spec, KaP] at LF to receive a disposal meaning. Li further claims that though the verb is a qualified case assigner, in the disposal construction, the NP will not move to the postverbal position because the verb only contains case while *ka* has two features to discharge, that is, [disposal] feature and case. Hence, the NP will take *ka* as a stronger trigger than the verb and move to the preverbal position instead of the postverbal position. Thus, a sentence like (9) has a DS representation as in (10), an SS representation as in (11), and an LF representation as in (12).

(9) I ka gua phah.

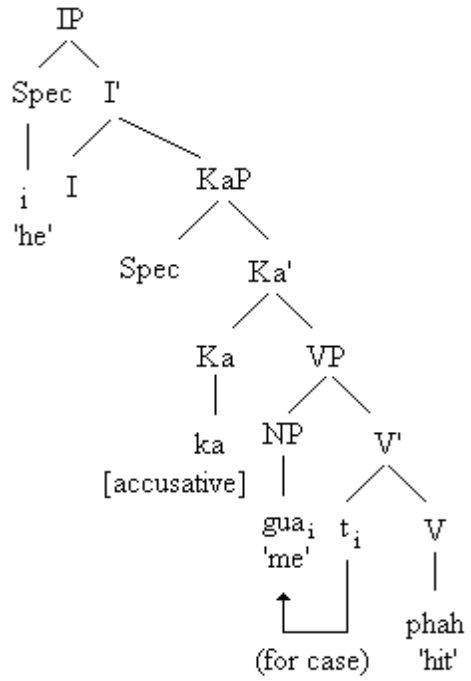
he KA me hit

'He hit me.'

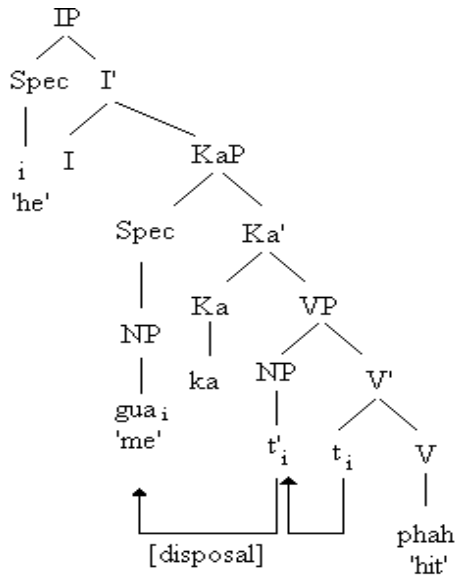
(10) D-structure representation



(11) S-structure representation



(12) LF representation



In (10), the verbal object *gua* 'me' is base-generated at the left of the verb *phah* 'hit', and to be assigned an accusative case by *ka*, it is moved to [Spec, VP] at SS as in (11). Furthermore, to receive a disposal feature discharged by *ka*, it is then moved to [Spec, KaP] at LF as in (12)[3].

[3] According to Li's analysis, the retained object construction in Taiwanese as in (i) will have two SS

A syntactic analysis of the *ka* construction is provided in Li's study. However, Li did not discuss the use of a progressive marker in the *ka* construction. It is pointed out that unlike the *ba* construction which is impossible to co-occur with a progressive marker, in the *ka* construction, a progressive marker is possible to show up (Hung 1995). Generally speaking, a progressive marker is compatible with the *ka* construction if the *ka*-verb is an atelic verb.

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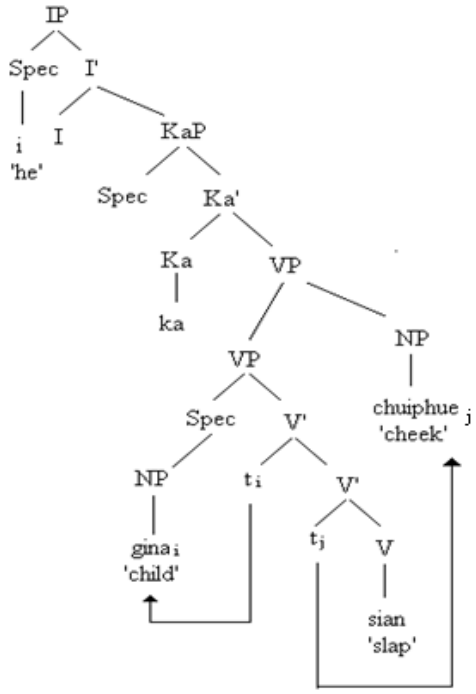
representations as in (ii) and (iii):

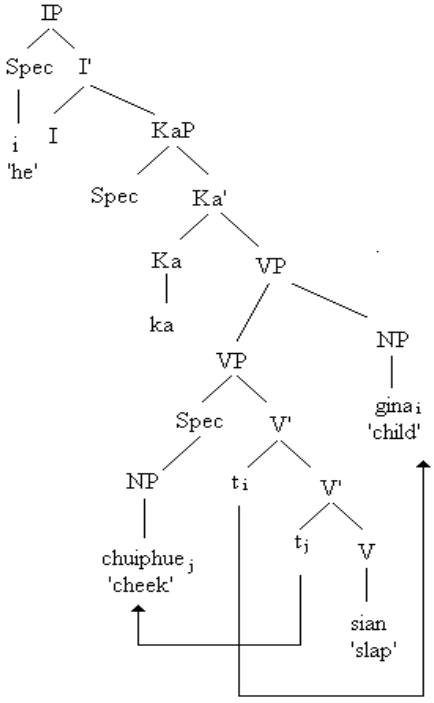
(i) I ka gina sian chuiphue.
He KA child slap cheek
'He slapped the child on the cheek.'

Li claims that the two objects *gina* 'child' and *chuiphue* 'cheek' are originally base-generated on the left of *sian* 'slap.' Also, since *ka* and *sian* 'slap' are both case assigners, the two objects can be case-marked by either *ka* or *sian* 'slap,' yielding two possible SS representations as in (ii) and (iii):

(ii) SS Representation



(iii) SS Representation



In both cases, the two objects can be case-marked by either the verb or *ka*. In other words, Li's analysis will predict that both (ii) and (iii) are possible sentences in Taiwanese. However, as shown in (iv), this prediction is wrong:

(iv) *I ka chuiphue sian gina.
He KA cheek slap child
'He slapped the child on the cheek.'

The ungrammaticality of (iv) is attributed to the semantic oddness. Li claims that *gina* 'child' and *chuiphue* 'cheek' stand in a possessive relation. A sentence like (iv) is odd because the listener has the concept of the subpart of the possessor first and then the idea of the possessor.

(13) a. Koko teh ka titi phah.

the brother PROG KA the little brother hit

'The brother is hitting the little brother.'

b. *Koko teh ka titi phah-si.

the brother PROG KA the little brother hit-die

'The brother is hitting the little brother to death.'

As shown in (13), *phah* 'hit' is an atelic verb while *phah-si* 'hit-die' is a telic one. The grammaticality of (13)a and the ungrammaticality of (13)b show that a progressive marker is incompatible with a telic *ka* verb.

2.1.3 Hung (1995)

Hung examines the four functions of the *ka* construction: a source, a goal, a patient and a benefactive marker. She further divides *ka* as a patient marker into two types according to the (non-)existence of a verbal complement: *ka* with a transitive verb but without any verbal complement and *ka* with a transitive verb and a verbal complement.

Ka without a verbal complement has the following sentence pattern: NP1 *ka* NP2 V, as in (14).

(14) Guan kiann ka gua cim.

my son KA I kiss

'My son kissed me.' (pp. 70-71)

The features of this type of *ka* are discussed in the study. First, the *ka*-NP is usually a definite NP as in (15)a or a specific NP as in (15)b. However, Hung further claims that a non-specific NP is sometimes possible in this construction as in (15)c[4].

[4] Hung uses example (15)c to show that a *ka*-NP can sometimes be non-specific. Latter in this section we will show that her analysis may be inappropriate.

(15) a. Alun ka in kiann that.

Alun KA his son kick

'Alun kicked his son.'

b. Alun ka cit e lang me.

Alun KA one CL person scold

'Alun scolded a person.'

c. M-tang oopeh ka lang me.

NEG-may randomly KA person scold.

'Don't scold others randomly.' (pp. 72-73)

Second, verbs of this construction are always transitive action verbs. Stative verbs are forbidden in this construction as shown in (16).

(16) a. *I ka cinn u.

he KA money have

'He has money.'

b. *Asam ka Ang senn.

Asam KA Ang surname

'Asam's surname is Ang.' (p. 73)

Third, the *ka* construction of this type can be in progressive forms, as in (17):

(17) Asam teh ka in kiann me.

Asam PROG KA his son scold

'Asam is scolding his son.' (p. 75)

Finally, Hung claims that the function of this construction is to make the verb become the semantic focus. There is no obvious semantic difference between this type of the *ka* construction and its non-*ka* counterpart. However, in this construction, the action expressed by the verb seems to become a semantic focus. A piece of evidence for this claim is that when the object of the verb is a pronominal NP, the *ka*

construction is usually used instead of its non-*ka* construction. A pronoun usually carries old information which is rarely a semantic focus. Thus, *ka* preposes the object NP to make the verb become the focus.

The second type of *ka* as a patient marker is *ka* with a verbal complement. It has the following sentence pattern: NP1 *ka* NP2 V complement. (18) is a *ka* sentence of this type. The verb consists of *kong* 'hit' and a complement *phua* 'break.'

(18) I ka puea kong-phua a.
he KA cup hit-break ASP
'He broke the cup.'

According to Hung, the *ka* construction of this type corresponds to the Mandarin *ba* construction, and it shares many features with the *ba* construction such as taking a definite or generic NP, taking a transitive action verb and a verbal complement.

The function of the disposal *ka* construction is to make the verb with its complement become the semantic focus, and most *ka* sentences with a verbal complement do not have non-*ka* counterparts, as in (19):

(19) a. Gua ka sann se chingkhi a.
I KA clothes wash clean PT
'I washed the clothes clean.'

b. *Gua se chingkhi sann a.
I wash clean clothes ASP
'I washed the clothes clean.' (p. 94)

Sentences in (19) can only exist in *ka* sentences. The ungrammaticality makes the preposing of the object NP become necessary. The object NP *sann* 'clothes' can move to the position before or after the subject. Also, when it is placed after the subject, it can be marked by *ka* or nothing. The preposing of an object NP marked

by *ka* makes the verb with its complement become the semantic focus.

According to Hung, *ka* as a source marker, a goal marker and a patient marker (the *ka* construction without a complement) are similar in that they all mark an object of an action, hence they can be categorized into an object marker[5]. *Ka* as a benefactive marker always marks a non-argument NP, which is often an entity indirectly affected by the action. Because other types of *ka* always mark an argument NP, *ka* as a benefactive marker is argued to be a different morpheme. The final type of *ka* is a disposal marker, that is, the patient marker *ka* occurring in the *ka* construction with a complement. This type of *ka* shares many characteristics with the disposal *ba* construction. Also, it has many features which are different from the other types of *ka*; hence, it is argued to be a different morpheme. According to these arguments, there are actually three types of *kas* in Taiwanese: *ka* as an object marker, *ka* as a disposal marker and *ka* as a benefactive marker.

Though Hung systematically compares the four functions of *ka*, her constraint on the progressive marker in the *ka* construction is not precise enough[6]. Also, her claim that a non-specific NP is sometimes possible in the *ka* construction seems to be ungrounded. Example (20), taken from Hung (1995), is used to show that a *ka*-NP can sometimes be non-specific NP.

(20) M-tang oopeh ka lang me.
NEG-may randomly KA person scold.
'Don't scold others randomly.'

[5] In light of Jackendoff's (1987) view that a thematic relationship can be more than one tier, Hung argues that "whether *ka* is a source marker, a goal marker, or a patient marker in another tier, in action tier, it has an identical function: to mark the object of an action (Hung 1995, p. 160)."

[6] Her analysis implies that a progressive marker can only occur in the *ka* construction with a monosyllabic verb. Nevertheless, a bisyllabic verb like *siuli* 'hit' is also consistent with the progressive marker.

(i) Koko teh ka titi siuli.
brother PROG KA little brother hit
'The brother is hitting the little brother.'

The NP *lang* ‘person’ in (20) is considered non-specific in Hung’s study. However, it seems to us that a more natural interpretation of the NP *lang* ‘person’ is to consider it as a generic NP. Thus, to claim that a non-specific NP is compatible with the *ka* construction based on an example like (20) may be inappropriate.

2.1.4 Cheng and Tsao (1995)

In light of Jackendoff’s (1987) view that a thematic relationship can be more than one tier, Cheng and Tsao (1995) reanalyze the four thematic roles of the *ka* construction: source, goal, patient, and benefective. They propose that the four *kas* are the same morpheme, and claim that it is the context with different di-transitive verbs that changes the meaning of the morpheme.

Jackendoff separates the semantic structure into two tiers: thematic tier which deals with the motion or location and action tier which deals with Agent-Patient relations. Hence, Agent and Patient belong to the action tier and Theme, Source, and Goal belong to the thematic tier. In addition, the correspondence of the thematic roles between the two tiers are not constant. Take sentence (21) as an example.

(21) a. Kingchat ka gua huat cinn.
policeman KA me fine money
‘The policeman fined me.’

b. I ka gua lau citkua cinn.
he KA me leave some money
‘He left me some money.’

In (21)a, the *ka*-NP *gua* ‘I’ is the object affected by the action *huat* ‘fine’ and it is also the starting point of the movement of *cinn* ‘money.’ Hence, it has two thematic roles: source in the thematic tier and patient in the action tier. With regard to the *ka*-NP *gua* ‘I’ in (21)b, it is the object affected by the action *lau* ‘leave’ and the ending point

of the moving of *cinn* ‘money.’ Thus, it has two thematic roles, too: goal in the thematic tier and patient in the action tier. Also, Cheng and Tsao propose that because *huat* ‘fine’ belongs to the type of taking verbs while *lau* ‘leave’ belongs to the class of giving verbs, though the *ka*-NP in (21)a and b are both the affected objects, the action of *huat* ‘fine’ is harmful to *gua* ‘I’ in (21)a while the action of *lau* ‘leave’ is beneficial to *gua* ‘I’ in (21)b. The role of *gua* in (21)b, thus, is better analyzed as benefactive. The example also shows that the meaning shift of the morpheme *ka* results from the context with different di-transitive verbs.

Except for the claim that the four *kas* are the same morpheme, according to the distribution of negative elements and adverbials, Cheng and Tsao further claim that the four functions of *ka* be derived from the preposition *kap* ‘with.’ It has been observed in the study that negative elements and time adverbials have to precede the *ka* phrase and the *kap* phrase as shown in (22)-(23).

(22) a. I bo ka gua me.
he NEG KA I scold
‘He did not scold me.’

b. I changam ka gua me.
he yesterday KA I scold
‘He scolded me yesterday.’ (Cheng and Tsao 1995, p. 31)

(23) a. I bo kap gua tautin khi Taitiong.
he NEG KAP I together go Taitiong
‘He and I did not go to Taitiong together.’

b. I changam kap gua tautin khi Taitiong.
he yesterday KAP I together go Taitiong
‘He and I went to Taitiong together yesterday.’

Examples like (22) and (23) show that *ka* and *kap* have similar syntactic behaviors.

Both the *ka* phrase and the *kap* phrase modify the verb phrase, and the scope of the negative elements like *bo* and time adverbials like *changam* includes the whole verb phrase or the sentence. Thus, the negative elements and time adverbials have to precede the *ka* phrase and the *kap* phrase. Based on the similar syntactic behaviors between *ka* and *kap*, Tsao and Cheng propose that the use of *ka* should be historically derived from *kap*.

Cheng and Tsao's analysis unifies different functions of *ka* and helps to capture a generalization of the use of Taiwanese *ka*. However, the reason why stative verbs are impossible to occur in the *ka* construction has not been given and the fact that a progressive marker is possible to occur in the construction under a proper context has not been discussed. Hence, further research is necessary.

2.1.5 Summary

In this section, four theoretical studies are discussed in detail. Teng's (1982) analysis focuses on the properties of the disposal *ka* sentences. Both semantic and syntactic properties are discussed in the study. According to him, Taiwanese *ka* has several functions and the disposal usage is only one of the functions. Li's (1995) analysis concentrates on proposing a syntactic analysis of the properties of the disposal *ka* construction. She claims that Taiwanese *ka* is a syntactic head, selecting a VP complement and assigning case to the position of VP specifier. As for Hung's (1995) study, the four functions of *ka*-a source marker, a goal marker, a patient marker and a benefactive marker-are investigated. The focus is on capturing the relation among different functions of *ka*. According to the semantic and syntactic properties of *ka*, Hung argues that there are actually three types of *kas* in Taiwanese: *ka* as an object marker, *ka* as a disposal marker and *ka* as a benefactive marker. With regard to Cheng and Tsao (1995), they propose that the four functions of *ka* are the same

morpheme and that the use of *ka* should be derived from *kap*. In the following section, we will discuss similarities and differences between Taiwanese *ka* and Mandarin *ba*.

2.2 A Comparison between Taiwanese *Ka* and Mandarin *Ba*

Based on the three theoretical analyses in section 2.1, it is noticed that there exist some similarities and differences between Taiwanese *ka* and Mandarin *ba*.

Taiwanese *ka* and Mandarin *ba* share two main properties. First, as exemplified in (24)-(26), the *ka* or *ba* NP is generally definite or generic. An indefinite NP cannot show up in both constructions.

(24) a. Mama ka hit te uann kongphua a. (Taiwanese)
Mother KA that CL bowl break PT
'Mother broke that bowl.'

b. Mama ba na ge wan dapo le. (Mandarin)
Mother BA that CL bowl break PT
'Mother broke that bowl.'

(25) a. Mama tianntiann ka uann kongphua. (Taiwanese)
Mother often KA bowl break
'Mother often breaks bowls.'

b. Mama changchang ba wan dapo. (Mandarin)
Mother often BA bowl break
'Mother often breaks bowls.'

(26) a. *Mama ka cit king pangking sau chingkhi. (Taiwanese)
Mother KA a CL room sweep clean
'Mother swept a room clean.'

b. *Mama ba yi jian fangjian sao ganjing. (Mandarin)
Mother BA a CL room sweep clean
'Mother swept a room clean.'

The *ka* and *ba* NP in (24) are definite because they are modified by definite markers *hit* 'that' in Taiwanese and *na* 'that' in Mandarin, respectively. In (25), the *ka* and *ba* NP indicate a class of elements, hence they are generic. The sentences are all grammatical. In (26), *cit king pangking* 'a room' in Taiwanese and *yi jian fangjian* 'a room' in Mandarin are indefinite and the sentences are ungrammatical.

Second, in general, a stative verb cannot appear in the *ka* or *ba* construction, as shown in (27):

(27) a. *Gua ka li sionn. (Taiwanese)
I KA you miss
'I misses you.'

b. *Wo ba ni xiang. (Mandarin)
I BA you miss
'I misses you.'

In (27), *sionn* 'miss' and *xiang* 'miss' are stative verbs in Taiwanese and Mandarin respectively and the two sentences are ungrammatical.

Though *ka* and *ba* are similar in some ways, significant differences exist. There are three main differences between them. First, monosyllabic verbs can occur without an aspect marker in the disposal *ka* construction while an aspect marker is always required in the disposal *ba* construction.

(28) a. Gua ka i phah. (Taiwanese)
I KA him hit
'I hit him.'

b. *Wo ba ta da. (Mandarin)

I BA him hit

'I hit him.' (Li 1995, p. 19)

In (28), *phah* 'hit 'in Taiwanese and *da* 'hit' in Mandarin are monosyllabic verbs. However, (28)a is grammatical, but (28)b is not.

Second, in a proper context, a *ka*-NP can be omitted while a *ba*-NP can never be absent:

(29) a. Cinliong ka ___ ciah. (Taiwanese)

as much as KA eat

'Eat as much as you can.'

b. *Wo yijing ba ___ chi le. (Mandarin)

I already BA eat ASP

'I have finished my meal.' (Li 1995, pp. 19-20)

Third, a progressive marker can sometimes show up in the *ka* construction whereas it is impossible in the *ba* construction.

(30) a. Mama teh ka muemue phah. (Taiwanese)

Mother PROG KA the little sister hit

'Mother is hitting the little sister.'

b. *Mama zai ba meimei da. (Mandarin)

Mother PROG BA the little sister hit

'Mother is hitting the little sister.'

After the above discussion, we know that the Taiwanese *ka* construction is not a mere counterpart of the Mandarin *ba* construction. Table 2.1 briefly summarizes the similarities and differences between them:

Table 2.1 Comparisons between *Ka* and *Ba*

	Taiwanese *ka*	Mandarin *ba*
Occurrence of an indefinite *ka* or *ba* NP	×	×
Occurrence of a stative *ka* or *ba* verb	×	×
Occurrence of a progressive marker	√	×
Zero verbal complement	√	×
Omission of the *ka* or *ba* NP	√	×

2.3 Properties of *Ka* in Taiwanese

In this section, important properties of *ka* as a patient marker related to the present study will be discussed in detail.[7] First, in 2.3.1 and 2.3.2, Referentiality and Omission constraints on the *ka* NP will be presented, and then in 2.3.3, and 2.3.4 Dynamicity, and Progressive constraints will be discussed.

2.3.1 Referentiality Constraint on the *Ka*-NP

The NPs following *ka* are generally definite or generic (Cheng and Tsao 1995, Li 1995, Tsao 2003).

(31) a. Ka hit king chu sau-sau le! (definite NP)
KA that CL house sweep-sweep PT
'Clean that house!'

[7] Except for the properties examined in section 2.3, there are other properties of the patient *ka*. For example, *chiong* is another patient marker in Taiwanese. The *chiong* phrase and the *ka* phrase can co-occur in the same sentence (Cheng and Tsao 1995, Li 1995, Hung 1995, Tsao 2003). Also, in the retained object construction, the *ka*-NP and the retained object have either a whole-part or a possessor-possessee relationship. Furthermore, only the NP that serves as a whole but not part and the NP that serves as a possessor but not possessee can occur as a *ka*-NP. These two properties are beyond the scope of this study and will not be examined in the present study.

b. Muemue tianntiann ka cheh oopeh tan. (generic NP)
little sister often KA books randomly throw
'The little sister often puts books in disorder.'

c. *Ka cit king chu sau-sau le! (indefinite NP)
KA a CL house sweep-sweep PT
'Clean a house!'

According to Li and Thompson (1981), a noun phrase with a classifier and a demonstrative is definite because the demonstrative serves to indicate an entity which is known to the speaker and the hearer. In (31)a, *hit king chu* 'that house' contains a demonstrative *hit* 'that,' hence it is a definite NP. Also, according to Li and Thompson (1981), a noun phrase with no modifier is generic if it denotes a class of entities instead of any specific members in that class. Thus, *cheh* 'books' in (31)b is a generic NP. In (31)c, *cit king chu* ' a house' is an indefinite NP since the speaker does not refer to a specific room that is known to the speaker and the hearer and *cit king chu* in Taiwanese cannot refer to a class of houses. The grammaticality of (31)a and (31)b and the ungrammaticality of (31)c show that an indefinite NP cannot occur in the *ka* construction.

2.3.2 Omission Constraint on the *Ka*-NP

It is often observed that a *ka*-NP does not have to be syntactically present (Teng 1982, Li 1995, Hung 1995). However, not all *ka* sentences allow a missing *ka*-NP. Only when the *ka* NP is third person singular can the *ka* NP be syntactically absent. Considering the following sentences:

(32) a. Asam oh, bo lang e ka __ tausannkang.
Asam PT NEG person will KA help
'As for Asam, nobody will help him.'

b. *Li oh, bo lang e ka __ tausannkang.

li PT NEG person will KA help

'As for you, nobody will help you.'

c. *Gua oh, bo lang e ka __ tausannkang.

I PT NEG person will KA help

'As for me, nobody will help me.' (Hung 1995, p. 7)

In (32), only the *ka*-NP in a can be missing but never the *ka*-NPs in b and c. The *ka*-NP in a is third person singular, in b it is second person singular and in c it is first person singular. The sentences in (32) show that only a third person singular *ka*-NP can be syntactically absent.

2.3.3 Dynamicity Constraint on the *Ka*-Verb

Not every type of verb is compatible with the *ka* construction. Generally speaking, a stative verb cannot show up in the construction.

(33) a. Muemue ka hue tantiau. (nonstative verb)

the little sister KA flowers throw away

'The little sister throws away the flowers.'

b. *Muemue ka hue kahi. (stative verb)

the little sister KA flowers like

'The little sister likes the flowers.'

2.3.4 Progressive Constraint on the *Ka*-Verb

The situation with the Taiwanese *ka* construction and the present progressive marker *teh* is rather complicated. According to Hung (1995), the *ka* sentences without a verbal complement can have a progressive form while those with a verbal complement cannot. She claims that a bare action verb only indicates an action but

not the accomplishment of an action whereas a verb with a complement always indicates the accomplishment of an action. Given this, the progressive marker can only occur in *ka* sentences without a verbal complement but not with it. Besides, for the *ka* sentences without a complement, Hung focuses only on the monosyllabic verb.

Hung's analysis is right but not precise enough. Bisyllabic verbs like *siuli* 'fix' can co-occur with a progressive marker, too. Also, since the occurrence of a progressive marker depends on the telicity of the *ka* verb, a more precise way to state this constraint is that a progressive marker can only show up in the *ka* construction with an atelic verb but not in those with a telic verb.

(34) a. I teh ka in kiann me.
he PROG KA his son scold
'He is scolding his son.'

b. Papa teh ka titi siuli.
father PROG KA little brother hit
'Father is hitting the little brother.'

c. *I teh ka png chia-liau.
he PROG KA rice eat-finish
'He is eating the rice all up.'

In (34)a the verb *me* 'scold' is a bare monosyllabic verb and in (34)b the verb *siuli* 'fix' is bisyllabic. Both of the verbs do not indicate accomplished actions, that is, they are atelic verbs, and the sentences are compatible with the progressive marker. However, in (34)c, a verbal complement *liau* 'finish' signifies the accomplishment of the action and makes the verb become a telic verb, which is contradictory to the meaning of the progressive marker, resulting in the ungrammaticality.

2.3.5 Summary

In this section, four major constraints on the *ka* construction are discussed: Referentiality, Omission, Dynamicity, and Progressive constraints. The Referentiality constraint states that only definite or generic NPs can show up in the construction. The Omission constraint states that only when the *ka*-NP is a third person singular pronoun can it be syntactically absent. As for the Dynamicity constraint, a stative verb cannot occur in the *ka* construction. Finally, the Progressive constraint states that a progressive marker can only show up in the *ka* sentences with an atelic verb.

2.4 Experimental Studies of the *Ba* Construction

Since there are no experimental studies of children's acquisition of the *ka* construction, this section recapitulates two experimental studies on the acquisition of the Mandarin *ba* construction as *ka* is said to be very similar to *ba*. One study emphasizes on the effects of the semantic information on the acquisition of the *ba* construction (Cheung 1992). The other study investigates children's acquisition of the various constraints on the *ba* construction (Fahn 1993).

2.4.1 Cheung (1992)

Cheung conducts an empirical study on investigating children's L1 acquisition of the Mandarin *ba* construction. The focus is on the effect of semantic information on the syntactic status of *ba*. Two specific questions are addressed:

1) How do children treat *ba* during their grammatical development? What is the categorical status of *ba* in children's grammar?
2) Do children rely on the Object Affectedness Linking Rule in the acquisition of the *ba* construction? (p. 76)

To answer the questions, Cheung suggests that a complex predicate analysis may be the best to account for the syntactic complexity of the *ba* construction based on the aspectual property of the construction. Three experimental tasks were designed to evaluate the developmental sequence of the *ba* construction: a picture selection task, a sentence imitation task and a picture-cued production task.

Thirty-two children, sixteen of the age five and the other six, and sixteen adults participated in the experiment. In the comprehension task, sixteen pairs of picture sets were created. Each set consisted of three panels. In a pair of picture sets, one depicted Locative *ba* sentence and the other Theme *ba* sentence. Two sets of example pictures are shown below (p. 81):

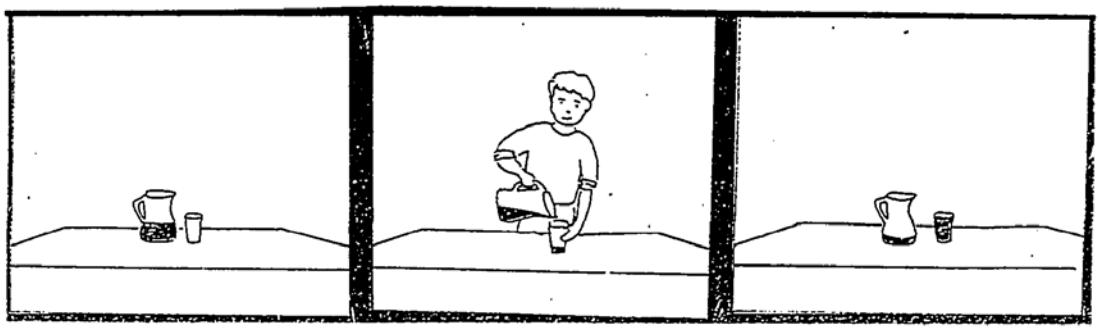


Figure 2.1 Locative-Full (LF)

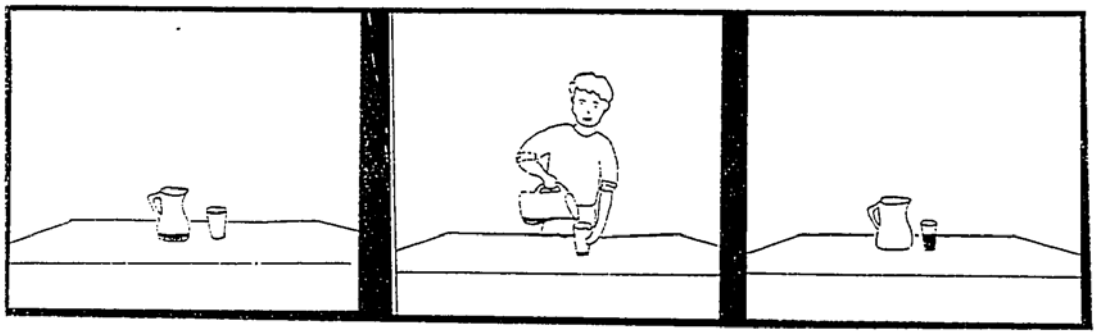


Figure 2.2 Theme-Gone (TG)

The first picture set presents a pitcher filled with juice and an empty glass, followed by a second panel showing a person pouring the juice from the pitcher into the glass. In the last panel, the person is gone and the glass is full of juice, though some is left in the pitcher. The second picture set is similar to the first set except that

in the first panel, the pitcher has less juice while in the third panel, the pitcher is empty though the glass is not full. That is, the two sets depict different entities which are affected by the action, the glass in the first set and the juice in the second. The picture sets are matched with two potential target sentences:

(35) a. Locative *Ba*

Loashi	ba	beizi	dao	man le	guozhi.
teacher	BA	cup	pour	full ASP	orange-juice

'The teacher poured the cup full with orange juice.'

b. Theme *Ba*

Loashi	ba	guozhi	dao	dao	le	beizi	li.
teacher	BA	orange-juice	pour	arrive	ASP	cup	inside

'The teacher poured orange juice into the cup.' (p. 81)

The subjects were asked to choose a picture set which can better describe the sentence that the experimenter utters. If a Locative *Ba* sentence is presented, the first picture set is expected to be chosen because the *ba*-NP underscores the location and the verb-compound *dao man* 'pour-full' indicates the fullness of the glass. On the other hand, when a Theme *Ba* is presented, the second picture set is supposed to be chosen if object affectedness determines the acquisition of the *ba* construction.

As for the sentence production task, the same picture sets used in the picture selection task were employed. One picture set of each pair was selected. Altogether, there were sixteen picture sets, eight from the Locative version and eight from the Theme version. The subjects were asked to describe the picture according to a prompt question. Two types of prompts were used, one focused on the theme and the other focused on the location. For example, when a picture set depicts the action of moving books from the floor to the bookshelves, the two possible prompts are shown below:

(36) a. Locative prompt

Xia pengyou ba shujia zhenyang le?

little boy BA bookshelf what ASP

'What did the boy do to the bookshelf?'

b. Theme prompt

Xia pengyou ba shu zhenyang le?

little boy BA book what ASP

'What did the boy do to the book?' (p. 110)

For half of the Locative picture sets, Locative prompts were used and for the other half, Theme prompts were used. The same procedure was performed for the Theme picture sets.

In the imitation task, sixteen sentences were used, half of them were grammatical and half ungrammatical. Among the ungrammatical sentences, four sentences belonged to the Theme *Ba* construction and four the Locative *Ba* construction. Likewise, eight counterparts of the ungrammatical sentences were created in the grammatical set. The subjects were required to repeat the grammatical or ungrammatical sentences which the experimenter said.

The results of the picture selection task illustrated that the subjects had a preference for matching the Locative sentence with the Locative picture set. However, the children did not prefer the Theme picture in response to a Theme *Ba* target sentence, indicating that object affectedness did not determine the acquisition of *ba*. The result, thus, did not support the Object Affectedness Linking Rule. According to Gropen et al. (1991), the rule states that "Link the argument that is specified as "cause to change" in the main event of a verb's semantic representation to the grammatical object (p.159)." That is, the affected element, the element which is caused to change its state by the action, tends to be encoded as the direct object of the

verb. Thus, if object affectedness was the only thing that matters, the subjects would encode an affected entity as the direct object regardless of its theta role. Therefore, they would match the target sentence with the picture set which better depicts the object that is affected. The difficulty the children showed in matching the Theme *Ba* sentences with the correct pictures showed that the children did not rely on the constraint of object affectedness alone in acquiring the *ba* construction.

Similar results were found in the production task. When a Theme *Ba* prompt was used, no Locative *Ba* sentence was elicited. However, when a Locative *Ba* prompt was used, some Theme *Ba* sentences were elicited. This result showed that the children's use of *ba* were not affected by picture types, implying that object affectedness did not determine the use of *ba*.

Also, spontaneous speech samples were analyzed in the study. The results of the experimental tasks and spontaneous speech data indicated that the *ba* construction appeared at age two and in the beginning only Theme *Ba* was used. The Locative *Ba* and other 3-argument *ba* sentences appeared around the age of five. The results also suggested that *ba* be a verb-like construction in child grammar.

In this study both comprehension and production tasks were employed to examine the nature of the *ba* construction. However, the subjects' age range was not broad enough. Only two age groups, 5-year-olds and 6-year-olds, were included. In the present study, three age groups, ranging from 4 to 6, will be included. Also, though the *ka* construction is similar to the *ba* construction, there are significant differences between them. Hence, children's acquisition of Taiwanese *ka* cannot be replicated by children's acquisition of Mandarin *ba*. A study of children's acquisition of Taiwanese *ka* is needed.

2.4.2 Fahn (1993)

Fahn investigated the acquisition of the *ba* construction and proposed that the *ba* construction is subject to five constraints. First, the Progressive constraint states that the progressive marker cannot occur in the construction. Second, the Verb Selection constraint says that only the 'Accomplishment' type of verb can occur in this construction. Third, the Modifier constraint states that appropriate modifiers are needed for the other three types of verbs, i.e., states, activities, and achievements, to occur in this construction. Fourth, the Compound Verb constraint says that only resultative verb compounds can occur in the *ba* construction. Finally, the Definiteness constraint says that the *ba*-NP must be definite or generic. Furthermore, to account for the characteristics of the *ba*-NP, that is, it can be a non-argument, the position it occupies is not always a theta position and it does not occur in a sentence-initial position, Fahn argued that the *ba*-NP should be a second topic.

To understand how children acquire these properties, three tasks, a puppet selection task, a question-answer task and an imitation task, were executed in this study. The puppet selection task was used to examine children's understanding of the five constraints. Two puppets were used with one uttering a grammatical sentence and the other an ungrammatical one. The subjects were asked to choose the puppet which produced the grammatical sentence. In the question-answer task, the fact that the *ba*-NP can be the antecedent of a reflexive was inspected. Eight sentences, four *ba* sentences and four non-*ba* counterparts, were used in the task. The participants had to answer which person, mentioned in the sentence, is the antecedent of the reflexive. The imitation task investigated children's treatment of regular topics or the *ba*-NPs in a chain, that is, to see how children formed a topic chain. Did they prefer to use the skill of maintenance, deletion or pronominalization? Five *ba*- and five non-*ba* sentences were used in the test. The subjects repeated what

they heard after the experimenter.

The participants were 100 Mandarin-speaking children aged from 2;6 to 7;5, and they were further divided into ten groups at half-year intervals, with ten children in each group.

The results of the puppet selection task showed that age seemed to play a central role in the experiment. Different age groups differed as to how well they mastered the five constraints. Also, the results indicated that age five was a crucial demarcation point for the Progressive, Verb Selection, and Modifier constraints whereas age six was a significant point for the development of the Compound Verb and the Definiteness constraints. In addition, the Progressive, Verb Selection, and Modifier constraints seemed to form a dimension while the Compound Verb and Definiteness constraints form the other dimension. The constraints on the first dimension were acquired earlier than those on the second dimension. However, whether there was an order among the three constraints in the first group or between the two constraints in the second group was not sure.

As regards the question answer task, the results showed that younger children (below the age of four) tended to select the non-subject as antecedent while the older ones (above the age of five) preferred the subject. As for the children between the ages of four and five, the situation was not so straightforward. This might designate a transition between the two preferences.

Concerning the imitation task, the results indicated that the children preferred the topics or the *ba*-NPs to form a topic chain and this tendency increased as they got older. Also, the deletion of the topics and the *ba*-NPs decreased with ages; pronominalization increased in the *ba*-NP chain while it decreased in the regular topic chain.

To account for that certain constraints were acquired earlier than others, the theory

of conservativism (Pinker 1989) and its implication of rapid learning were applied in the study. Based on the theory of conservativism, Fahn argued that the Definiteness constraint would not emerge until the distinction between definite and indefinite articles were acquired. Once the contrast was acquired, it would apply to the *ba*-construction according to the theory of rapid learning. Likewise, the Progressive constraint would not emerge until the progressive marker *zai* was acquired. Given this assumption, the relatively late acquisition of the Definiteness constraint was attributed to the relative difficulty of definite and indefinite articles compared to the progressive marker. In addition, evidence was given to show that the children acquire verb meanings, especially 'Accomplishment' verbs, relatively early (Erbaugh 1982). Also, the early acquisition of the Modifier constraint was attributed to the early emergency of verbs and aspect markers, and the frequent occurrence of modifiers in salient position. All these explained why the Verb selection and Modifier constraints were acquired before the Definiteness constraint. Cummulative Complexity (Brown 1973) and Developmental Law (O'Grady 1987) were also applied to account for the later occurrence of the Compound Verb constraint than the Progressive, Verb Selection and Modifier constraint. According to the theories, the late acquisition of the Compound Verb constraint was attributed to a more complex form and meaning of compound verbs.

In sum, this study gives us a comprehensive analysis of how the *ba* construction is formed in the development of children's grammatical system. Nevertheless, the number of the subjects in each age group was small. In addition, this study examined the acquisition of the Mandarin *ba* construction but not the Taiwanese *ka* construction. Based on the previous studies, the *ka* construction is an even more complicated structure than the *ba* construction. To get a better understanding of the developmental order of the Taiwanese *ka* construction, more study is needed.

2.4.3 Summary

Two studies of the acquisition of the Mandarin *ba* construction have been reviewed in this section. Cheung's (1992) findings showed that the *ba* construction should be treated as a verb-like construction in children's grammar and that the Object Affectedness Linking Rule alone could not explain children's acquisition of the construction. Fahn's (1993) study showed that the Progressive, Verb Selection, and Modifier constraints emerged before the Compound Verb and Definiteness constraints.

2.5 Summary of Chapter Two

In this chapter, we have reviewed four theoretical studies of the *ka* construction. Teng (1982) focuses on the properties of the disposal *ka* sentences and Li (1995) conducts a syntactic analysis to account for the disposal *ka* construction. The focus of Hung (1995) is on the relation among different functions of Taiwanese *ka*. As for Cheng and Tsao (1995), the historical origin of *ka* is investigated in the study. In addition, a comparison between the Taiwanese *ka* and the Mandarin *ba* constructions and the properties of the patient *ka* are discussed.

Besides, two experimental studies of the Mandarin *ba* construction have been reviewed. Cheung (1992) examined children's acquisition of the Theme *Ba* and the Locative *Ba* constructions, and Fahn (1993) investigated children's acquisition of different constraints on the *ba* construction.

Even though the *ka* construction has been examined by Teng, Li, Hung and Cheng and Tsao, their studies view the construction from a theoretical perspective. In addition, though Cheung and Fahn investigated the acquisition of the *ba* construction, the results may not apply to the *ka* construction. To bridge the gaps of the previous studies, the present study aims to conduct a comprehension task and a

production task to examine children's acquisition of the *ka* construction where *ka* is considered as a patient marker in Taiwanese. The research design of this study will be presented in the following chapter.

CHAPTER THREE
RESEARCH DESIGN

This chapter reports the subjects and research design of the present study. Section 3.1 presents the subjects of the study. The methodology and the procedures of the tasks will be reported in sections 3.2 and 3.3, respectively. Finally, a summary of Chapter Three will be given in section 3.4.

3.1 Subjects

Forty-eight children, attending kindergartens in Xinying City, Tainan County participated in this experiment. They are bilingual speakers of Taiwanese and Mandarin Chinese. Taiwanese is their home language. After entering the kindergarten, they started learning Mandarin Chinese. Tainan County is in the southern part of Taiwan and Xinying City is a small city in Tainan County. In Xinying City, Taiwanese is a mainstream language. A majority of citizens there speak Taiwanese in their daily lives and some people, mostly the elderly, there speak even only Taiwanese. Hence, our subjects grew up in a place which is full of Taiwanese input. Also, according to interviews with teachers in the kindergartens, parents or care-takers of our subjects are native Taiwanese speakers and they speak Taiwanese with our subjects most of the time. In fact some of them communicate with our subjects only in Taiwanese. In addition, though the dominant language in school is Mandarin, they have a two hour Taiwanese class once a week. From the description, it is certain that the major language of our subjects is Taiwanese, at least Taiwanese and Mandarin.

The children were further divided into three age groups with each group consisting of sixteen subjects: 4, 5 and 6 years old. Except for the preschoolers, a group of sixteen Chinese high school and college students served as native controls.

The demographic information is shown in Table 3.1:

Table 3.1 Demographics of the Subjects

Group (n=16)	Gender		Age	Mean
	Male	Female		
1	8	8	4;0~4;11	4;9
2	8	8	5;0~5;11	5;6
3	8	8	6;0~6;11	6;7
4	8	8	17;0~27;11	21;6

3.2 Methods and Materials

Data collection is one of the important issues concerning language acquisition. Generally speaking, methods can be either longitudinal or cross-sectional (Bennett-Kastor 1988). In a longitudinal study, data collection is done by observing subjects over a period of weeks, months or years. As for a cross-sectional study, subjects participate in experimental tasks designed to elicit intended answers. Some researchers prefer the longitudinal study because of the authenticity of the data collected (Bennett-Kastor 1988, Chang 1991, Stromswold 1996). However, a big drawback is that it is time-consuming since researchers usually have to wait for months or even years to get the needed data (Bennett-Kastor 1988). On the contrary, a cross-sectional study makes it possible to collect data within a short period of time. Due to time limitation, a cross-sectional method was employed in the present study.

Except for a distinction between a longitudinal and cross-sectional study, experimental tasks can be sorted into comprehension or production. A comprehension task is designed to study a subject's understanding or interpretation of a particular structure. On the other hand, a production task requires a subject to produce a certain structure on his or her own. Based on Karmiloff-Smith (1979),

both comprehension and production tasks are needed when we examine children's language acquisition. Examining either one of the tasks "could lead to extrapolations which are only narrowly valid (p. 61)." Hence, two tasks were utilized in the study to investigate our children's knowledge of the *ka* construction: a grammaticality judgment task (GJ task) for comprehension and a picture-cued production task for production (PP task).

The GJ task is originally used to study the nature of adult grammar. It is not used to investigate children's grammar until the late 19th century (McDaniel and Cairns 1996). There are several reasons behind this. One important reason is that it is believed that young children may not be able to make grammaticality judgment (Hakes 1980, van Kleeck 1982). However, recent studies have revealed that this belief is questionable (De Villers and de Villers 1974, Schlisselberg 1988, McDaniel and Cairn 1990). Children as young as three or four have the ability to make metalinguistic judgments just like adults do. Since then, the GJ task has been employed to investigate children's metalinguistic knowledge by researchers such as Stromswold (1990) and Smith-Lock (1993). Thus, in the present study the GJ task was chosen to examine children's comprehension of the *ka* construction.

The PP task falls into a broader category of elicited production tasks. An elicited production task is designed to investigate children's grammatical knowledge by having them produce desired structures. The structures investigated are usually elicited with situations or contexts that are associated with a specific meaning. Also, the provided situations or contexts are often designed to be uniquely felicitous for production of the structures under examination. Children aged about or above 3 years have been proved to be suitable for performing the task (Thornton 1996). This technique has been used to investigate children's grammar for more than 30 years (Thornton 1996). As early as 1958, Berko used the task to examine children's

morphological knowledge. After that, this technique has been widely adopted to study different aspects of children's grammars (Erreich 1984, Pinker 1989, Eisengerg and Cairns 1994). Since it is a well-established technique in the field of language acquisition, it was employed to examine the *ka* construction as well.

3.2.1 Materials of the Grammaticality Judgment Task

Two puppets, a cow and a bear, were used in this task. Based on the properties discussed in Chapter Two, test items for the GJ task were designed. There were four types of questions: questions related to the Referentiality constraint, the Omission constraint, the Dynamicity constraint, and the Progressive constraint. Table 3.2 provides details of the test items. In total there are twenty test items including four fillers.

Table 3.2 Test Items Examined in the GJ Task

Property	Sub-property	Example Items	Number of Items
Referentiality	Definite/Generic	*Muemue ka hit liap kama ciahtiau a.* 'The little sister ate that tangerine.'	2
	Indefinite	**Aing ka cit liau ia chit chingkhi a.* 'Aing wiped a chair clean.'	2
Omission	3rd person	*Titi oh, cece cang ka liap ne.* 'The little brother, the sister pinched him yesterday.'	2
	1st or 2nd person	**Gua oh, koko e ka phah.* 'The brother will hit me.'	2
Dynamicity	Nonstative	*Koko ka titi sak.* 'The brother pushed the little brother.'	2
	Stative	**Titi ka mama sionn.* 'The little brother misses Mother.'	2
Progressive	Atelic	*Cece teh ka titi liap.* 'The sister is tweaking the little brother.'	2
	Telic	**Papa teh ka ia chit chingkhi.* 'Father is wiping the chair clean.'	2
Filler		**Kaua titi ka.* 'The dog bit the little brother.'	4
Total			20

3.2.2 Materials of the Picture-cued Production Task

The same puppets used in the GJ task were used in the PP task. Test items for the PP task were similar to the GJ task. Table 3.3 provides details of each type and its corresponding item. In total there are eighteen test items including four fillers.

Table 3.3 Test Items Examined in the PP Task

Constraints	Features	Target Sentences	Number of Items
Referentiality	Definite/Generic	*Mama ka hit pun cheh khioh khilaih.* 'Mother picked up that book.'	2
	Indefinite	**Aing ka cit king pangking chit chingkhi a.* 'Aing wiped a room clean.'	2
Omission	3rd person	*Titi, cece ka liap.* 'The little brother, the sister pinched him.'	2
Dynamicity	Nonstative	*Banga ka muemue ting.* 'The mosquito stung the little sister.'	2
	Stative	**Titi ka mama sionn.* 'The little brother misses Mother.'	2
Progressive	Atelic	*Mama teh ka muemue phah.* 'Mother is hitting the little sister.'	2
	Telic	**Mama teh ka toha chit chingkhi.* 'Mother is wiping the desk clean.'	2
Filler		*Papa teh khun.* 'Father is sleeping.'	4
Total			18

3.3 Procedures

This section consists of three parts. In section 3.3.1 the process and provisional results of a pilot study is discussed. In section 3.3.2 a formal study is presented. Finally, the scoring policy of the present study is stated in section 3.3.3.

3.3.1 Pilot Study

A pilot study was conducted to examine Taiwanese children's acquisition of the

four constraints on the *ka* construction: the Referentiality constraint, the Semantic Relationship constraint, the Syllabicity constraint, and the Progressive constraint. For the Semantic Relationship constraint, it states that in a retained object construction, the *ka*-NP and the retained object can only have a part-whole or a possessor-possessee relationship but not a class-member relationship (Hung 1995). As for the Syllabicity constraint, it states that unlike the Mandarin *ba* construction which always requires a verbal complement, a bare verb can occur alone in the *ka* construction.

The pilot study employed two tasks, a grammaticality judgment (GJ) task and a picture-cued production (PP) task, to inspect three five-year-olds in Tainan County. In the GJ task, the subjects were asked to judge the grammaticality of test items uttered by the experimenter. In the PP task, the subjects had to produce target sentences based on the scenario provided by the experimenter.

Generally speaking, questions about the *ka*-verb were found easier than those about the *ka*-NP for the subjects. With regards to the four constraints, our children got the highest scores on the Syllabicity constraint, followed by the Progressive constraint, then the Referentiality constraint and the lowest on the Semantic Relationship constraint. It was found that the four constraints exhibited varying degrees of difficulty for the subjects as shown in (1):

(1) Difficult ⟷ Easy

Semantic Relationship＞Referentiality＞Progressive＞Syllabicity

The Semantic Relationship constraint was the most challenging one, and the Syllabicity constraint was the easiest one. In addition, the results seem to support those of Fahn's (1993) study. In examining children's acquisition of the *ba* construction, Fahn found that the Progressive constraint was acquired earlier than the Definiteness constraint. The results of the pilot study also showed that the

Progressive constraint was easier than the Referentiality constraint for our subjects.

Also, our subjects' performances on the two tasks were very similar. The scores of the GJ task was almost the same as the PP task, implying that task effects did not exist. However, it can also be attributed to the insufficiency of the training section for the GJ task. In the GJ task, one subject tended to judge the sentences from a pragmatic perspective rather than a syntactic aspect; hence the result was not satisfactory.

Some inadequacies were noted in the pilot study. First, the number of the subjects was small. Since only three subjects participated in the pilot study, they might not be representative enough. Second, not all properties of the *ka* construction were studied in the pilot study. For example, a syntactically absent *ka*-NP is possible only when the NP is third person singular. Also, not all kinds of verbs can show up in the construction. Stative verbs, in general, are incompatible with the *ka* construction. Furthermore, only five-year-olds participated in the pilot study. Based on Fahn's (1993) study, five and six years old were crucial stages for different constraints of the *ba* construction. Thus, more age groups are necessary. Because of the aforementioned inadequacies, a revised GJ task are designed in section 3.3.2. Also, forty-eight subjects aged from four to six participate in the study.

3.3.2 The Study

The PP task was conducted before the GJ task. Before the experiment was conducted, the experimenter used the cow and the bear to play with the child for one or two minutes. After the subject became familiar with the experimenter, he or she were encouraged to play as the bear, and the experimenter played as the cow. The experimenter then told the subject that the bear is taking a test. In the test, the bear will see a picture and will hear some utterances. After hearing the utterances, the

bear has to answer a question. The subject were further informed that the cow is the best friend of the bear. He will give the bear a hint before he answers the question. After the subject was aware of the situation, the experiment started. A picture depicting the intended *ka* sentence and a scenario describing the picture were provided to the subject. Also, a guided question “What did X do to Y?” was given after the descriptions. Then, the subject heard a cue of the verb. After hearing the cue, the subject had to answer the question.

For example, after presenting a picture depicting a woman picks up a book, the subject heard the experimenter say *Muemue e cheh lak ti leh thookha, mama khuann tioh, tio tui hit pun cheh co siannmih taici?* ‘The book of the little sister was on the floor. The mother saw the book. What did she do to that book?’. Then, the subject heard the cow say *khioh khilaih* ‘pick up’. After hearing the cue, the subject was asked to make one sentence to describe the picture. An example is presented in Table 3.4.

Table 3.4 A Sample Used in the PP Task

The subject saw:	The subject heard:	Expected sentence
	*Muemue e cheh lak ti leh thookha, mama khuann tioh, tio tui hit pun cheh co siannmih taici?* 'The book of the little sister was on the floor. The mother saw the book. What did she do to that book?' Hint: *khioh khilaih* 'pick up'	*Mama ka hit pun cheh khioh khilaih.* 'Mother picked up that book.'

If the subject's answer is in a *ka* form, the experimenter would proceed to the next test item. If not, the experimenter would ask the guided question again and put a stress on the patient to help elicit the *ka* construction. After asking the question twice, no matter what the subject answers, the experimenter moved to the next test items. To make sure that the subject understands the procedure, two practice items not related to the *ka* construction were used before the actual test items. Notice that the *ka* construction under investigation were completely avoided in the description or in the guided question since using the target sentence might cue the subject about the construction (Thornton 1996). Children's responses were recorded by a digital recorder by the experimenter.

After finishing the PP task, the subject moved on to the GJ task. To start the experiment, the experimenter explained to the child that they are going to play another role-play game in which the child plays as a teacher and the experimenter a student.

The child was further told that the cow is from another country. He is not good at speaking Taiwanese and sometimes he will speak incorrect sentences. Then the experimenter told the subject that later the cow will speak, and the task of the bear is to tell the cow whether the sentence is correct or incorrect. After the child was familiar with the task, the experimenter presented the child with a sentence. After hearing the test sentence, the experimenter asked the child *Gua kong e cit ku ue si tioh a si m tioh?* 'Is the sentence I said correct or incorrect?' An example procedure is given in Table 3.5.

Table 3.5 A Sample Used in the GJ Task

The subject will hear:	Expected Answer
Muemue ka hit liap kama ciah tiau a. 'The little sister ate that tangerine.' Q: *Gua kong e cit ku ue si tioh a si m tioh?* 'Is the sentence I said correct or incorrect?'	*Tioh.* 'Correct.'

There was no follow-up question in the GJ task because it was found in the pilot study that our subjects could judge the (un-)grammaticality of the target sentence but they could not provide the explanation for their judgments. To make sure that the subject knows that only a syntactically ill-formed sentence would be considered incorrect but not a semantically or pragmatically ill-formed one, three practice sentences were used before the actual test items. Two of them were grammatical sentences which convey undesirable meanings, for instance, a boy dressed in a pink skirt. The other one was an ungrammatical sentence with a desirable meaning, that is, a brother bought a pair of shoes. If the subject judges the practice sentence according to its content rather than the form, the experimenter will explain to the subject that the meaning itself does not matter, just judge it by how it is described. Again, children's responses were

recorded by a digital recorder by the experimenter.

3.3.3 Scoring and Statistical Analysis

The two tasks employed in the present study consisted of both trial items and fillers. Responses to the trial items were examined while responses to the distracters were not considered. For the GJ task, a response was either an indication of a grammatical or ungrammatical sentence. One point were given to a correct response and zero to the incorrect one. Scores were counted separately for different trial sentences. With regard to the PP task, each correct response to the scenario described were given one point and an incorrect response zero point.

All data collected were processed by the SPSS package. The descriptive statistics procedure were conducted to yield mean scores and standard deviations on each property for every experimental group of the two tasks. Also, to examine the degree of differences between the trial groups the one-way analysis of variance (ANOVA) were performed. In addition to the descriptive statistics and ANOVA, the paired-sample T test were executed to inspect the extent of differences between properties and between tasks.

3.4 Summary of Chapter Three

This chapter introduced the backgrounds of the participants, the methods, and materials used in the two tasks (i.e., the PP task for production and the GJ task for comprehension). In addition, the procedures (a pilot study, formal study, and scoring policy) were described.

CHAPTER FOUR

RESULTS AND DISCUSSION

In this chapter, the results of the experiment will be presented, and answers to the research questions proposed in Chapter One will be discussed. Section 4.1 examines the hierarchical difficulty of the four constraints of the *ka* construction, and section 4.2 further discusses the difficulty of each sub-property. Section 4.3 compares the subjects' performances on the two tasks, and other patterns other than the target sentences will be examined in section 4.4. In section 4.5, age effects will be studied. Finally, a summary of the results is given in section 4.6.

4.1 Property Effects

This section addresses the first research question, that is, the effects of the four constraints on L1 acquisition of the Taiwanese *ka* construction: the Referentiality constraint, the Omission constraint, the Dynamicity constraint, and the Progressive constraint. The results of the four constraints will be presented first, followed by a discussion about the subjects' performances on the four constraints. Table 4.1 shows the general results of the experimental group and the control group.

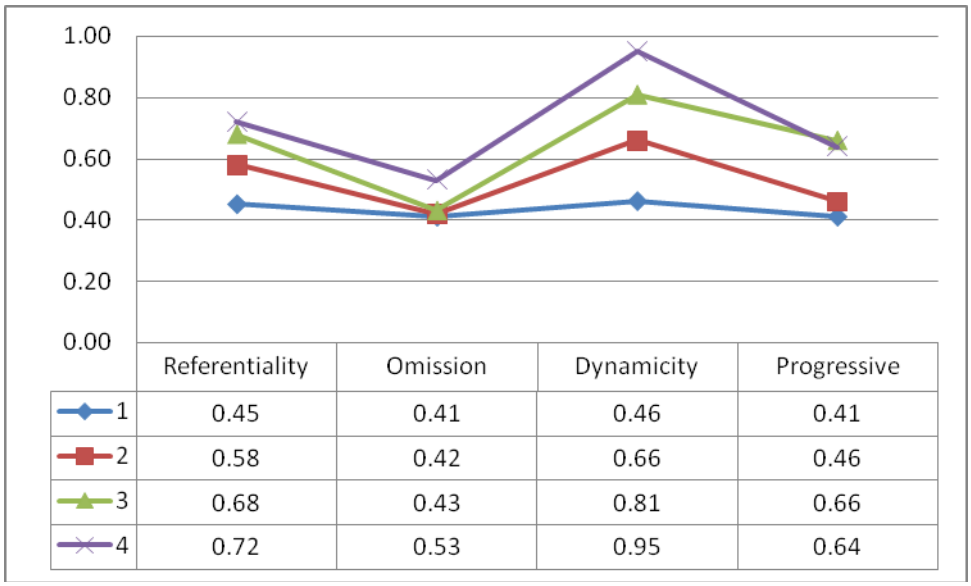
Table 4.1 Subjects' Correct Responses on the Four Constraints of the Taiwanese *ka* Construction (Average Means)

Constrain / Group	Referentiality		Omission		Dynamicity		Progressive	
	M	SD	M	SD	M	SD	M	SD
Experimental	0.57	0.20	0.42	0.15	0.64	0.24	0.51	0.20
Control	0.72	0.07	0.53	0.16	0.95	0.08	0.64	0.09

As illustrated in Table 4.1, the mean score of Omission was the lowest for both the experimental group (M=0.42) and the control group (M=0.53). Regarding the other three properties, both groups performed the best on Dynamicity (Experimental:

M=0.64; Control: M=0.95), followed by Referentiality (Experimental: M=0.57; Control: M=0.72), and Progressive (Experimental: M=0.51; Control: M=0.64). Namely, the performances of the two groups on the four constraints pattern alike and the degree of difficulty of the four constraints for both groups can be ranked from easy to difficult as Dynamicity > Referentiality > Progressive > Omission (p<0.05). Furthermore, an independent samples test was executed to see if there was a significant difference in the performances of the two groups on the four constraints. The results displayed that the performances of the adult group were significantly better than the experimental group on the four constraints (p<0.05), showing that there exists a gap in the acquisition of the Taiwanese *ka* construction. The above results correspond to the previous studies in that the average scores of our experimental group were lower than those of our control group, indicating that the *ka* construction is similar to the *ba* construction in that it has not been fully mastered at the initial stage of children's language development (Erbaugh 1982, Cheung 1992, Fahn 1993).

To see if the same developmental tendency can be seen in each age group's acquisition of the *ka* construction, one-way ANOVA and a paired samples test were applied with different age groups as an independent variable.



	Referentiality	Omission	Dynamicity	Progressive
1	0.45	0.41	0.46	0.41
2	0.58	0.42	0.66	0.46
3	0.68	0.43	0.81	0.66
4	0.72	0.53	0.95	0.64

Figure 4.1 Each Age Group's Correct Responses on the Properties of the *ka* Construction (Average Means)

A general developmental tendency was displayed in Figure 4.1. The performances of our subjects increased with age. Furthermore, Group 3 (age 6) had gained the adult-like ability ($p>0.05$). By contrast, the performances of the two younger groups were observed to be significantly worse ($p<0.05$) than those of the adult group, except for Omission, where no difference was found ($p>0.05$) (Group 1 vs. Group 4: Referentiality: $p=0.000$, Dynamicity: $p=0.000$, Progressive: $p=0.001$; Group 2 vs. Group 4: Dynamicity: $p=0.000$, Progressive: $p=0.021$). Group 2 (age 5) also performed like the control group on Referentiality ($p>0.05$). In addition, a comparison among the three younger age groups showed that a significant difference existed, except for Omission, where no difference was found. The result showed that Group 1 (age 4) attained significantly lower scores ($p<0.05$) than Group 3. However, the performances of Groups 1 and 2, and Groups 2 and 3 patterned similarly ($p>0.05$), showing that our subjects performed better gradually from ages 4 to 6. The result may also show that Group 2 was a transitional point for the acquisition of the *ka* construction.

The finding that our children gained an adult-like ability at the age of six corresponds to the previous findings on the children's acquisition of the Mandarin *ba* construction. In examining the children's acquisition of the *ba* construction, Cheung (1992) found that the six-year-olds produced more *ba* sentences than the five-year-olds; Fahn (1993) also found that the Compound Verb and the Definiteness constraints were not acquired until the age of six. Moreover, Fahn's (1993) findings also showed that age five seemed to be a transitional point for the acquisition of the *ba* construction since the five-year-olds had mastered the Verb Selection, Modifier and Progressive constraints but not the Compound Verb and the Definiteness constraints in her study.

The results of the paired samples test illustrated that Omission was the most difficult property for all groups, and Dynamicity the easiest one. The hierarchies of the four constraints for each group were summarized as follows:

(1) Group 1: Dynamicity = Referentiality = Progressive = Omission

Group 2: Dynamicity = Referentiality > Progressive = Omission

Group 3: Dynamicity > Referentiality = Progressive > Omission

Group 4: Dynamicity > Referentiality > Progressive > Omission

The results as in (1) supported our earlier finings that Dynamicity was the easiest to be acquired, followed by Referentiality, Progressive and finally Omission. In examining the children's acquisition of the Mandarin *ba* construction, Fahn (1993) found that the Verb Selection (=Dynamicity), Modifier, and Progressive constraint were acquired before the Definiteness (=Referentialtiy), and Compound Verb constraints. The result of the present study confirmed Fahn's study in that our subjects also scored higher on Dynamicity than on Referentiality. However, contrary to Fahn's findings, the Progressive constraint was not easier than the Definiteness constraint (=Referentiality) for our subjects.

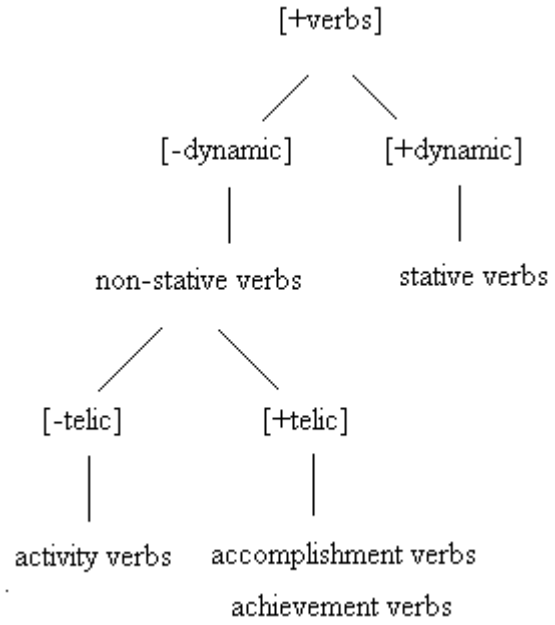
The earlier acquisition of Dynamicity than Referentiality, and Progressive can be explained by the theory of Conservativism (Pinker 1989) and its implication of Rapid Learning among language learners. The theory of Conservativism predicts that children have to acquire first the contrast distinguishing the verbs that are permitted in the *ka* construction from that are prohibited and then they can apply the contrast to the *ka* pattern. In other words, the children's acquisition of the contrast must precede their acquisition of the constraint.

Regarding Dynamicity and Referentiality, the relatively late acquisition of Referentiality than Dynamicity can be attributed to the relative difficulty of the contrast among generic, definite and indefinite markers compared to the contrast between non-stative and stative verbs. Also, the degree of difficulty of the contrasts may be explained by the early acquisition of verbs than referring expressions. Studies in Chinese (Tardif 1996, Tardif et al. 1996) and Korean (Gopnik and Choi 1990, 1995, Choi and Gopnik 1995) have shown that verbs may be more frequently used than nouns in the early language acquisition. Furthermore, based on findings for English (Bates et al. 1988, 1994) and Italian (Bates et al. 1979), Caselli et al. (2001) propose a four-stage model of lexical development and suggest that verbs are mastered prior to grammatical function words. The early acquisition of verbs before grammatical function words indicates that children may acquire the contrast between non-stative and stative verbs earlier than the contrast among definite, indefinite, and generic markers. According to the theory of Conservativism, the acquisition of a certain contrast must precede to the application of the contrast to the other syntactic structures. Since the contrast between non-stative and stative verbs may be mastered before the contrast among definite, indefinite, and generic markers, it is highly possible that the contrast between verb meanings is applied to the *ka* construction earlier than the contrast among referring expressions. Therefore, Dynamicity is

expected to be mastered prior to Referentiality.

The same argumentation may be applied to the later acquisition of Progressive than Dynamicity. Again, for children to acquire the constraints, they have to acquire the contrasts between non-stative and stative verbs, and telic and atelic verbs. The finding that Dynamicity was easier to be mastered than Progressive may be attributed to the late acquisition of the contrast between telic and atelic verbs than between non-stative and stative verbs. The degree of difficulty of the contrast may be explained by the Semantic Feature Hypothesis (SFH) (Clark 1971). Assuming Clark's (1971) Semantic Feature Hypothesis (SFH), and adopting Vendler's (1967) classification of verb types, we may hypothesize that verbs in Taiwanese can be classified as follow:

(2) Feature Representations of Verbs in Taiwanese (adopted from Vendler 1967)



According to Clark (1971), superordinate features in feature hierarchies are filled in first in children's representation of word meanings, followed by subordinate features. In our case, we may hypothesize that children had to acquire the features of [+/-telic] for them to distinguish telic verbs from atelic verbs. In addition, the distinction of

[+/-telic] might be subsumed under the feature of [+dynamic]. Hence, it is predicted that children would acquire the distinction of stative and non-stative verbs before they acquire that of telic and atelic verbs. The late acquisition of the distinction between telic and atelic verbs by our subjects then accounted for the finding that Progressive was acquired later than Dynamicity.

With regard to the result that Referentiality was acquired prior to Progressive, it could be resorted to the other function of *ka*, that is, *ka* as a benefactive marker. In the GJ task, our subjects were asked to judge the grammaticality of the item **Papa teh ka ia chit chingkhi* 'Father is wiping the chair clean.' Semantically speaking, *ka* in this sentence carries more like a dual function, a benefactive and a patient marker. Hung (1995) explores the four functions of *ka*, that is, *ka* as a patient, goal, source, and benefactive marker. She states that a progressive marker is compatible with *ka* as a benefactive marker, as shown in (3):

(3) a. Mama teh ka gua se sann.
mother PROG KA I wash clothes
'Mother is washing clothes for me.'

b. Mama teh ka titi se singkhu.
mother PROG KA the little brother wash body
'Mother is washing body for the little brother.' (Hung 1995, pp. 121-122)

Gua 'I' as in (3)a and *titi* 'the little brother' as in (3)b are analyzed as benefactive. Also, though a progressive marker *teh* is added in (3)a and (3)b, the two sentences remain grammatical. Hence, a progressive marker is compatible with *ka* as a benefactive marker. For the unexpected lower score of Progressive that our subjects obtained in the present study, it is highly possible that our subjects treated *ka* in the test item **Papa teh ka ia chit chingkhi* as a benefactive marker, yielding the present result. To confirm our claim, an item analysis was conducted. It was found that

our subjects did obtain a lower score in judging the grammaticality of the item **Papa teh ka ia chit chingkhi* 'Father is wiping the chair clean.' They only scored 0.27 in this item while their average score of each item was 0.64. Also, for distinguishing the benefactive *ka* from the other *kas*, Hung proposes that the benefactive *ka*-NP is syntactically optional while the other *ka*-NPs are arguments of the verb. In (3), *gua* 'I' and *titi* 'the little brother' are not arguments of the verb *se* 'wash' because the object positions have been occupied by *sann* 'clothes' and *singkhu* 'body.' Thus, *ka* serves as a benefactive marker in (3). However, the result of the present study implies that using the syntactic factor to distinguish the benefactive *ka* from the other *kas* may not be correct. In the present study, the subjects were asked to judge the grammaticality of **Papa teh ka ia chit chingkhi* 'Father is wiping the chair clean.' The *ka*-NP *ia* 'chair' is an argument of the sentences, and omission of the *ka* phrase in the sentence will result in ungrammaticality. Nevertheless, the results of the present study showed that our subjects tended to judge this sentence as grammatical, implying that they may consider that the *ka*-NP *ia* 'chair' benefits from the action of *chit* 'wipe,' and thus a progressive marker may be considered as compatible with the sentence. The result, then, suggests that a semantic factor may play an important role in deciding the thematic role of the *ka*-NP. Besides, the apparent lower score of our subjects can be explained better if the pragmatic factor is taken into consideration. As discussed in Chapter Two, Hung (1995) argues that the *ka* sentence with a bare verb functions differently from the one with a verb and a verbal complement. The later can be treated as a counterpart of the Mandarin *ba* construction, both of which preposes the verbal object to make it the semantic focus. On the other hand, the *ka* construction with a bare verb is viewed as a way of preposing the verbal object to make the verb become the focus. The same argument was stated in Tsao (2003), who clearly pointed out that the difference between the *ka* construction with and

without a verbal complement lies in their discourse functions, that is, the *ka* construction with a complement emphasizes the affected result of the object that undergoes the action while the *ka* construction without a complement focuses mainly on the action itself. In examining Progressive, our subjects were supposed to use a progressive marker in the *ka* construction with a bare verb in response to the elicited question "What did X do to Y?" which emphasizes the affected object but not the action itself. In view of this, they might naturally refuse to use a *ka* expression. To see if the pragmatic factor plays a role in the present study, we may further divid our grammatical target items into two groups: one consists of items with a bare verb and the other with a verb and a verbal complement, and calculate the average means. It was found that a pragmatic factor did come into play since the average mean for the items with a bare verb was merely 0.24 while that for the items with a verbal and a complement was 0.76, showing that our subjects might perceive the inappropriateness of employing a *ka* expression under such a context and thus used an non-*ka* expression instead.

As for Omission, the apparently difficulty our subjects had in acquiring the constraint could be explained by the existence of the task effect which will be discussed in section 4.4.

4.2 Sub-Property Effects

This section further investigates the difficulty level of each sub-property, that is, Definite/Generic, Indefinite, 3rd person, 1st/2nd person, Non-stative, Stative, Atelic, and Telic. As discussed in Chapter Two, the *ka*-NP is generally definite or generic. An indefinite NP rarely occurs in the construction. Also, a *ka*-NP can only be absent when it is a third person singular pronoun. Omission of a first or second person singular pronoun is prohibited in Taiwanese grammar. As for the constraint on the

ka-verb, a nonstative verb is considered to be more compatible with the *ka* construction than a stative verb. Finally, a progressive marker is expected to co-occur with an atelic *ka*-verb but not a telic one.

Table 4.2 illustrates the results of our subjects' performances on each sub-property.

Table 4.2 Subjects' Correct Responses on the Sub-Properties of the *ka* Construction (Average Means)

Property / Group	Referentiality				Omission			
	Definite/Generic		Indefinite		3rd Person		1st/2nd person	
	M	SD	M	SD	M	SD	M	SD
Experimental	0.78	0.26	0.42	0.17	0.40	0.18	0.54	0.35
Control	1.00	0.00	0.53	0.12	0.36	0.24	0.13	0.29
Property / Group	Dynamicity				Progressive			
	Nonstative		Stative		Atelic		Telic	
	M	SD	M	SD	M	SD	M	SD
Experimental	0.74	0.28	0.30	0.20	0.59	0.23	0.40	0.21
Control	0.89	0.16	0.00	0.00	0.56	0.14	0.27	0.11

As shown in Table 4.2, the performances of the experimental group and the control group on the sub-properties of Referentiality, Dynamicity and Progressive were quite similar. Regarding Referentiality, both groups showed a significant preference ($p<0.05$) for Definite/Generic (Experimental: M=0.78; Control: M=1.00) than for Indefinite (Experimental: M=0.42; Control: M=0.53); with regard to Dynamicity, they performed better ($p<0.05$) on Non-stative (Experimental: M=0.74; Control: M=0.89) than on Stative (Experimental: M=0.30; Control: M=0.00); in the case of Progressive, they achieved apparently a higher score ($p<0.05$) on Atelic (Experimental: M=0.59;

Control: M=0.56) than on Telic (Experimental: M=0.40; Control: M=0.27). On the other hand, the two groups performed differently on the sub-properties of Omission. The experimental group obtained a significantly better score (p<0.05) on 1st/2nd Person (M=0.54) than on 3rd Person (M=0.40) while the control group got a higher score (p<0.05) on 3rd Person (M=0.36) than on 1st/2nd Person (M=0.13).

Table 4.3 summarizes the statistic significances for the two groups.

Table 4.3 A Summary of the Statistic Significant Differences between the Experimental and Control Groups

Property	Sub-Property	Experimental	Control
Referentiality	Definite/Generic vs. Indefinite	p=0.000*	p=0.000*
Omission	3rd Person vs. 1st/2nd Person	p=0.007*	p=0.011*
Dynamicity	Non-stative vs. Stative	p=0.000*	p=0.000*
Progressive	Atelic vs. Telic	p=0.000*	p=0.000*

With the above results, a paired samples test was conducted with the age groups as an independent variable to see if the same tendencies can be found.

Table 4.4 Subjects' Correct Responses on the Sub-Properties of the *ka* Construction (Average Means)

Property / Group	Referentiality				Omission			
	Definite/Generic		Indefinite		3rd Person		1st/2nd person	
	M	SD	M	SD	M	SD	M	SD
Group 1	0.58	0.24	0.33	0.18	0.41	0.15	0.59	0.33
Group 2	0.81	0.25	0.45	0.14	0.44	0.11	0.63	0.43
Group 3	0.95	0.10	0.47	0.18	0.34	0.24	0.41	0.27
Group 4	1.00	0.00	0.53	0.12	0.36	0.24	0.13	0.29
Property / Group	Dynamicity				Progressive			
	Nonstative		Stative		Atelic		Telic	
	M	SD	M	SD	M	SD	M	SD
Group 1	0.58	0.28	0.38	0.18	0.48	0.17	0.39	0.20
Group 2	0.80	0.25	0.36	0.16	0.61	0.24	0.47	0.20
Group 3	0.84	0.24	0.16	0.18	0.69	0.23	0.33	0.20
Group 4	0.89	0.16	0.00	0.00	0.56	0.14	0.27	0.11

Table 4.4 shows that in the case of Referentiality, Indefinite was consistently found more difficult than Definite/Generic for each age group ($p<0.05$) to use in *ka* sentences. However, the one-way ANOVA result showed that significant differences were found among the performances of each age group. Regarding Definite/Generic, Groups 1 (M=0.58) and 2 (M=0.81) performed significantly worse ($p<0.05$) than Group 4 (M=1.00) while Group 3 (M=0.95) showed no significant difference ($p>0.05$). Furthermore, Group 1 scored significantly lower ($p<0.05$) than Groups 2 and 3 whereas Group 2 had a similar ability with Group 3. The result also suggested that in responding to Definite/Generic, there was a great improvement from ages 4 to

5 while from ages 5 to 6 they performed better gradually. As for Indefinite, the only significant difference (p<0.05) was found between Group 1 (M=0.33) and Group 4 (M=0.53), where Group 4 showed a higher preference for Indefinite than Group 1, which seems to be a counter intuitive result since our adults were supposed to know an indefinite *ka*-NP is impossible in the *ka* construction. Later in this section, we will argue that the result is not that surprising if the specific nature of the *ka*-NP is taken into consideration.

With regard to Omission, Group 1 scored better (p<0.05) on $1^{st}/2^{nd}$ Person (M=0.59) than on 3^{rd} Person (M=0.41) while Group 4 showed a higher preference (p<0.05) for 3^{rd} Person (M=0.36) than for $1^{st}/2^{nd}$ Person (M=0.13). Also, no significant difference was found between Groups 2 and 3 in the two sub-properties (p>0.05). However, concerning 3^{rd} Person, the results of between group comparisons showed that no significant difference was found among the four groups (p>0.05). As for $1^{st}/2^{nd}$ Person, Groups 1 (M=0.59) and 2 (M=0.63) were found to show a significantly higher preference (p<0.05) for $1^{st}/2^{nd}$ Person than Group 4 (M=0.13) while Group 3 (M=0.41) showed a similarly low preference for $1^{st}/2^{nd}$ Person as Group 4 (p>0.05).

Regarding Dynamicity, each age group displayed a higher preference (p<0.05) for Non-stative than Stative. Comparing the performances on Nonstative of each group, it was found that Group 1 (M=0.58) scored significantly lower (p<0.05) than Groups 3 (M=0.84) and 4 (M=0.89) whereas no significant differences were found among the other groups (p>0.05). Regarding Stative, the results showed Groups 1 (M=0.38) and 2 (M=0.36) performed significantly higher (p<0.05) than Group 4 (M=0.00); moreover, Group 3 (M=0.16) also displayed a significant reluctance (p<0.05) to use Stative than Groups 1 and 2.

With respect to Progressive, each group showed a preference for Atelic than

Telic. However, significant differences were only found in Groups 3 and 4 (p<0.05). The between group comparison was also conducted. No significant difference (p>0.05) existed among the four groups on Atelic. As for Telic, the only significant difference was found in Groups 2 (M=0.47) and 4 (M=0.27), where Group 2 showed a higher preference for Telic than Group 4, implying that there was a decrease in Group 2 on Telic. Tse, Tang, Shi and Li (1991) conducted a longitudinal study on children' acquisition of the Mandarin *ba* construction. The spontaneous speech data collected in their study was further analyzed by Cheung (1992). The error ratio was shown in Table 4.5 (Cheung 1992, pp. 125-126):

Table 4.5 Spontaneous Speech Samples: Error Ratio

	Correct		Error		Fragment		Total
2 yr	62	(67%)	17	(18%)	13	(14%)	92
3 yr	65	(68%)	22	(23%)	9	(9%)	96
4 yr	185	(76%)	25	(10%)	34	(14%)	244
5 yr	127	(69%)	22	(12%)	34	(19%)	183

As indicated in Fahn (1993), the correct use of the *ba* construction increased as the children grew up except for the five-year-olds. At the age of five, there was a decrease from 76% to 69%. No explanation was provided in Cheung (1992). Observing the present study, a decrease also found in our five years old's performances on Telic.

In sum, regarding Referentiality, Indefinite was consistently more difficult than Definite/Generic for each age group (p<0.05). With regard to Omission, it was found that 1st/2nd Person was significantly easier (p<0.05) than 3rd Person for Group 1 while the opposite result was found in Group 4 (p<0.05); also, the two sub-properties were of equal difficulty (p>0.05) for Groups 2 and 3. As for Dynamicity, each group performed better (p<0.05) on Nonstative than on Stative. Regarding Progressive,

Groups 1 and 2 showed no significant preference for either Telic or Atelic while Groups 3 and 4 attained higher scores ($p<0.05$) on Atelic than on Telic. Table 4.6 summarizes the statistic significances for each age group.

Table 4.6 A Summary of the Statistic Significances for Each Age Group

Property	Sub-Property	Group 1	Group 2	Group 3
Referentiality	Definite/Generic vs. Indefinite	p=0.002*	p=0.000*	p=0.000*
Omission	3rd Person vs. 1st/2nd Person	p=0.041*	p>0.05	p>0.05
Dynamicity	Nonstative vs. Stative	p=0.043*	p=0.000*	p=0.000*
Progressive	Atelic vs. Telic	p>0.05	p>0.05	p=0.000*

The present results supported our previous discussion that Group 3 had reached an adult-like grammar since their responses to the sub-properties of each main property patterned like the control group, except for Omission. This also confirms our claim that our subjects performed better gradually from ages 4 to 6. And it was found that age five was a transitional point for the acquisition of the *ka* construction. Our results showed that the five-year-olds performed similarly with the six-year-olds on most sub-properties; comparing to the adults, the five-year-olds obtained similar scores as the adults concerning most of the sub-properties.

The above results confirmed the previous theoretical analysis that Definite/Generic should be an important constraint on the *ka* construction since each age group showed a positive tendency in judging and producing sentences with a definite or generic *ka*-NP. However, the high scores for Indefinite in some cases showed that our subjects did not see eye to eye on the general view that the *ka*-NP cannot be indefinite. The contradictory result might be attributed to the probability that the indefinite NP in the present study was regarded as “specific,” that is, it refers to the referent that is known to the speaker but not the hearer (Li and Thompson 1981,

Radden and Dirven 2007). According to some studies, an indefinite *ka*-NP is sometimes possible if it refers to something that the speaker has in mind but is not accessible to the hearer (Hung 1995, Chen and Tsao 1995, and Tsao 2003)[1].

In the case of Omission, in contradiction to our expectation, not only Groups 1 to 3 did not perform better on 3rd Person than on 1st/2nd Person but Group 1 even showed a significant preference for 1st/2nd Person, indicating that our subjects had not yet acquired the contrast between 3rd and 1st/2nd Person. Besides, the results can be attributed to the existence of strong task effects, that is, the pictorial cued production may not be sufficient for eliciting the *ka* sentences. However, some inference could still be gained from the results here. That is, Group 1 still did not have the distinction between 3rd and 1st/2nd Person since they totally performed incorrectly on this constraint. Furthermore, Groups 2 and 3 might just partially master the contrast since they showed no preference for either 3rd or 1st/2nd Person, implying that Omission might be mastered relatively late.

With respect to Dynamicity, each group showed a significant preference for Nonstative, confirming the analysis that stative verbs are incompatible with the *ka* construcitn and that the contrast between Nonstative and Stative had been acquired. The result, hence, supported the previous theoretical analysis that the function of the *ka* construction is to emphasize the end result of the object that undergoes the action or to prepose the object to make the action become the semantic focus (Hung 1995; Tsao 2003). In other words, the action or the result of the action is the key to the construction. However, the degree of action that stative verbs have is relatively low. Hence, these verbs rarely occur in the *ka* construction. Also, Nonstative was scored

[1] An error ratio of Indefinite was then calculated. It was found that our subjects did judge 83% of the test items with an indefinite *ka*-NP as grammatical; however, less than 1% sentences produced by them contained an indefinite NP, showing that the indefinite NP in the present study was considered as "specific."

slightly lower than Definite/Generic. An item analysis was further conducted to find out the reason. It was found that our subjects performed especially worse on producing the target sentence *Banga ka muemue ting* 'The mosquito stung the little sister'. The slightly lower score of the subjects, thus, supported our previous claim that the subjects avoided using a *ka* expression in responding to our question 'What did X do to Y'. They simply found that the pragmatic context was inappropriate for a *ka* sentence with a bare verb to occur since the *ka* sentence with a bare verb preposes the verbal object to make the verb become the focus.

As for Progressive, it was expected that our subjects would accept Atelic and reject Telic. Contrary to the theoretical expectation, the two younger groups showed no preference for either Atelic or Telic (though their scores of Atelic were slightly higher than those of Telic), however, Groups 3 and 4 did show a strong preference for Atelic than for Telic, implying that not until age six, can the contrast between Atelic and Telic be acquired. Moreover, though our subjects generally preferred Atelic than Telic, their scores on Atelic were not as high as we expected. This phenomenon, again, strongly supported the claim that the discourse function of the *ka* construction with a bare verb is to make the verb the semantic focus. The progressive marker, however, can only show up in the *ka* construction with a bare verb. Hence, it was not that our subjects refused to use a progressive marker in the *ka* construction with an Atelic verb, but that they perceived the discourse context in the present study was not suitable to use the *ka* expression.

In light of the above results, a refinement of Pinker's (1989) Theory of Conservativism was made. According to Pinker (1989), three levels of semantic representations:

i) The specific representation of each individual words

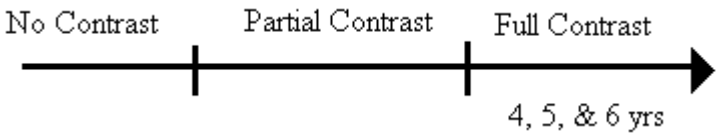
ii) The narrow-range (NR) subclasses, which are the set of elements that share particular elements of meanings

iii) The broad-range (BR) classes, which are larger sets of elements that share more general elements of meanings

It is argued that after children master the contrast between the subclass that is permitted in a certain construction and that is prohibited in the construction, they apply the contrast to the construction. According to the present results, we may hypothesize that in acquiring the contrast which is necessary for using a certain construction, children will go through three stages. That is, we further developed Pinker's (1989) second level of semantic representation into three developmental phases. We may argue that before children fully master the contrast between elements allowed or prohibited in the *ka* contrast, they have to go through three developmental stages: Stage 1: No Contrast →Stage 2: Partial Contrast→Stage 3: Full Contrast. Viewing these three stages from a statistic perspective, we may claim that Stage 1 should equal to the situation that the scores of an element prohibited in the construction were significantly scored higher ($p<0.05$) than those of an element admitted. In an analogy, Stage 2 should be equivalent to the situation that the performances of prohibited elements display no statistic difference from those of admitted elements ($p>0.05$). Stage 3, thus, should be an equivalent to the situation that the score of an admitted element is significantly higher ($p<0.05$) than that of an prohibited one.

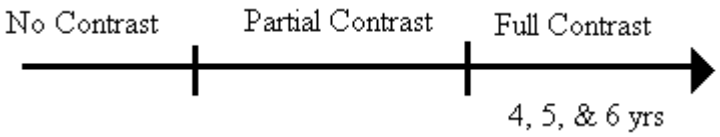
What follows displays which stage our groups were at in acquiring the four constraints according to the aforementioned statistic results:

(4) Dynamicity



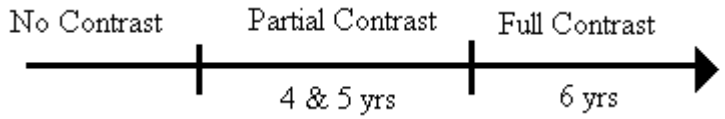
As shown in (4), at the age of 4, our subjects had proceeded to the full contrast stage in distinguishing Non-stative from Stative since there was a significant difference between Non-stative and Stative in each group.

(5) Referentiality



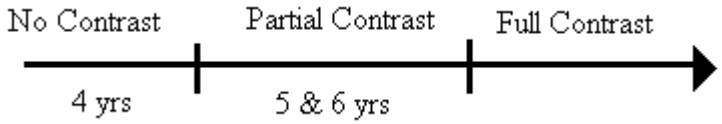
As illustrated in (5), in mastering the distinction among Definite, Generic and Indefinite, our subjects were all at the stage of full contrast since all of them performed significant better on Definite/Generic than on Indefinite.

(6) Progressive



As can be seen in (6), in differentiating Telic from Atelic, the 4-year-olds and 5-year-olds were still at the stage of partial contrast as they showed no significant preference for either Telic or Atelic, and the 6-year-olds had moved to the full contrast stage as they displayed a significant preference for Atelic.

(7) Omission



Finally, for the distinction of 1st, 2nd, and 3rd Person, our 4-year-olds were still at the no contrast stage since they significantly performed better on 1st/2nd Person than on 3rd

Person while our 5-year-olds and 6-year-olds had moved to the partial contrast stage as they showed no significant preference for either of the sub-properties.

4.3 Task Effects

To avoid extrapolations caused by a single task, both the comprehension task (i.e., the GJ task) and the production task (i.e., the PP task) were designed in the present study. The GJ task examined the children's linguistic competence of the Taiwanese *ka* construction according to the subjects' instinct judgments on the provided *ka* sentences. The PP task, on the other hand, investigated the subjects' performance of the *ka* construction with the pictorial scenarios and the experimenter's elicitation. Table 4.7 illustrates the subjects' mean scores of the two tasks.

Table 4.7 Subjects' Correct Responses to the Two Tasks (Average Means)

Task / Group	PP		GJ	
	M	SD	M	SD
Experimental	0.48	0.25	0.59	0.12
Control	0.67	0.09	0.77	0.07

It was found that the experimental group performed significantly better (p=0.000) on the comprehension task (M=0.59) than on the production task (M=0.48). The same finding was obtained in the adult group. For the control group, the PP task (M=0.67) was significantly (p=0.001) more challenging than the GJ task (M=0.77).

The differences between the two tasks for each group are shown in Figure 4.2.

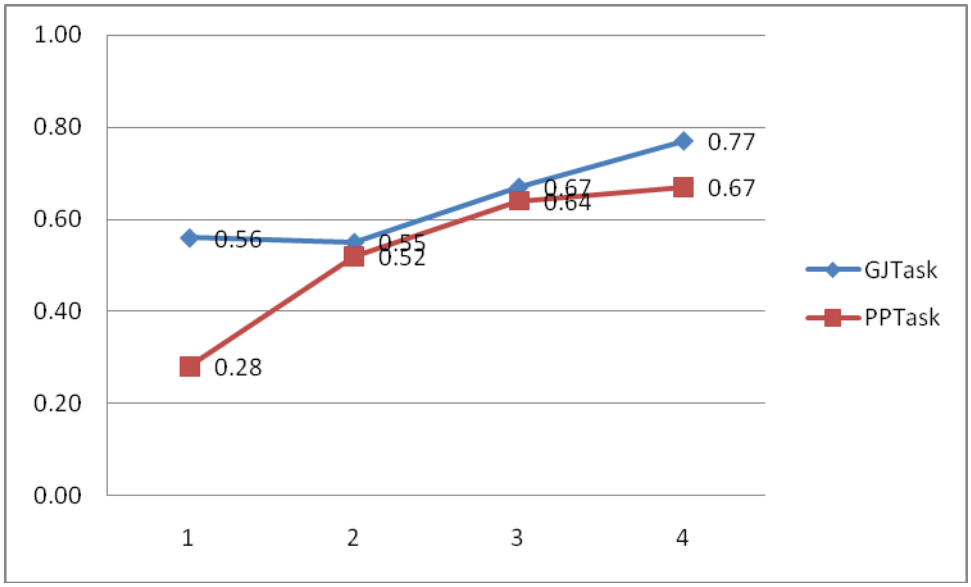


Figure 4.2 Each Group's Correct Responses to the Two Tasks (Average Means)

As shown in Figure 4.2, the PP task was consistently more difficult than the GJ task for all age groups. Also, except for Groups 2 and 3, where no significant preference (p>0.05) was detected, the other two groups displayed a significantly better performances (p<0.05) on the GJ task than on the PP task. Group 1 got a score of merely 0.28 in the PP task but obtained a higher score of 0.56 in the GJ task (p=0.000). The scores of Groups 2 and 3 increased to 0.52 and 0.64 in the PP task, and to 0.55 and 0.67 in the GJ task, respectively. However, no significant difference was found (p>0.05). Generally speaking, task effects were obtained in each group's perforamnces.

To further examine whether the same task effects can be found on each property of the *ka* construction, the subjects' mean scores of the properties in the two tasks are shown in Table 4.8.

Table 4.8 Subjects' Correct Responses on the Properties of the *ka* Construction in the Two Tasks (Average Means)

Property / Group	Referentiality				Omission			
	PP		GJ		PP		GJ	
	M	SD	M	SD	M	SD	M	SD
Experimental	0.59	0.38	0.54	0.15	0.05	0.19	0.60	0.22
Control	0.91	0.13	0.53	0.12	0.03	0.13	0.78	0.22
Property / Group	Dynamicity				Progressive			
	PP		GJ		PP		GJ	
	M	SD	M	SD	M	SD	M	SD
Experimental	0.66	0.31	0.63	0.23	0.41	0.32	0.61	0.21
Control	0.89	0.16	1.00	0.00	0.53	0.18	0.75	0.13

As illustrated in Table 4.8, both experimental and control groups obtained a higher score on the GJ task than on the PP task in general except for Referentiality, where opposite results were found. The results of a paired samples test further showed that the experimental group and the control group performed on Omission and Progressive in the two tasks significantly differently ($p<0.05$).

Regarding Referentiality, though our children's responses were higher in the PP task (M=0.59) than in the GJ task (M=0.54), the difference did not reach a statistic significance ($p>0.05$). As for Omission, the experimental group showed a great discrepancy in their performances on the two tasks. Their score of the GJ task was 0.60 while that of the PP task was merely 0.05 ($p=0.000$). With regard to Dynamicity, the score of the PP task (M=0.66) was similar to that of the GJ task (M=0.63), which showed no statistic significance ($p>0.05$). Lastly, the children's comprehension of Progressive (M=0.61) was better than their production of

Progressive (M=0.41) (p=0.000). For the control group, they performed significantly better (p>0.05) on the GJ task than on the PP task for all properties except for Referentiality, where they got a significantly higher score (p=0.000) on the PP task (M=0.91) than on the GJ task (M=0.53). Thus, task effects were found in the subjects' performances on each property.

To see if the same effects existed in each group's performances, a paired samples test was conducted with age group as an independent variable. As shown in Table 4.9, task effects were generally found in the performance on each property for each group except on Referentiality, where the subjects' performances on the PP task exceeded those on the GJ task.

Table 4.9 Each Group's Correct Responses on the Properties of the *ka* Construction in the Two Tasks (Average Means)

Property / Group	Referentiality				Omission			
	PP		GJ		PP		GJ	
	M	SD	M	SD	M	SD	M	SD
Group 1	0.36	0.41	0.53	0.18	0.00	0.00	0.61	0.20
Group 2	0.61	0.35	0.55	0.14	0.13	0.29	0.56	0.19
Group 3	0.81	0.21	0.55	0.14	0.03	0.13	0.62	0.26
Group 4	0.91	0.13	0.53	0.12	0.03	0.13	0.78	0.22
Property / Group	Dynamicity				Progressive			
	PP		GJ		PP		GJ	
	M	SD	M	SD	M	SD	M	SD
Group 1	0.42	0.33	0.50	0.18	0.20	0.21	0.61	0.18
Group 2	0.73	0.28	0.58	0.20	0.42	0.35	0.50	0.18
Group 3	0.83	0.15	0.80	0.21	0.59	0.27	0.72	0.22
Group 4	0.89	0.16	1.00	0.00	0.53	0.18	0.75	0.13

In response to Referentiality, Groups 1 and 2 performed equally on the PP (Group 1: M=0.36; Group 2: M=0.61) and GJ (Group 1: M=0.53; Group 2: M=0.55) tasks ($p>0.05$), while the other two groups performed on the PP task (Group 3: M=0.81; Group 4: M=0.91) significantly better than on the GJ task (Group 3: M=0.55; Group 4: M=0.53) ($p<0.05$). The exception of Referentiality supported our claim that in judging the grammaticality of the items with an indefinite *ka* NP, our subjects considered those items as "specific." Thus, they wrongly judged the items as grammatical. As for Omission, a surprisingly strong task effect was found ($p<0.05$). Each group made at least 50% correct responses to the GJ task. However, their

performances on the PP task was merely a far cry. Notice that there was a slightly decrease in the performance of our five-year-olds on the GJ task, though not significant. As for Dynamicity, the subjects' comprehension was in general prior to production. An exception was found again in Group 2, where production (M=0.73) was significantly (p<0.05) higher than comprehension (M=0.58), suggesting that our subjects may undergo an overgeneralization stage. Finally, Groups 1 and 4 performed better on the comprehension task (Group 1: M=0.61; Group 4: M=0.75) than on the production task (Group 1: M=0.20; Group 4: M=0.53) concerning Progressive (p<0.05). Also, Groups 2 and 3 performed slightly better on the GJ than PP tasks, though not significant (p>0.05). Again, a slightly decrease was found in the performance of our five-year-olds on the GJ task.

In the present study, it was found that a significant difference existed in the GJ and the PP tasks. As presented in Figure 4.2, and Tables 4.7-4.9, our subjects performed significantly better on the GJ task than on the PP task, confirming the generally-accepted view that comprehension is prior to production and that children understand more than they actually use (Oviatt 1980, Brown 1987, Gerken and Shady 1996). Brown (1987) states that evidence from observational and empirical studies supports the superiority of comprehension over production, and exemplifies the point with children's acquisition of the relative clauses. Children may be incapable of producing a sentence with an embedded relative clause in it but they may understand it. The result also supports the previous studies on different language aspects. Tyack and Ingram (1977) examined children's comprehension and production of English *wh*-questions, and found that even though their subjects produced fewer *why*-questions than *what* and *where*-questions, their comprehension of *why*-questions was not worse than that of *what* and *where*-questions. In Wen and Wu's (1997) study, comprehension was also proved to exceed production.

In addition to sustaining the view that comprehension is prior to production, the better performance of our subjects on the GJ task can be attributed to Hung's (1995) explanation that there is no obvious semantic difference between the *ka* construction with a bare verb like *ting* 'sting' or *phah* 'hit' and its non-*ka* counterpart. The function of this kind of the *ka* sentence is to make the verb become the semantic focus. Hence, when the object of the verb is a pronominal NP, which usually carries old information, the *ka* construction is more frequently used than the non-*ka* construction. In other words, when the verbal object is a full NP, the *ka* construction may not be a preferred one over its non-*ka* counterpart. In the PP task, the subjects were asked to produce sentences according to the pictorial scenarios and a stimuli question, "What did X do to Y?", which focused more on the verbal object than on the verb. Hence, it is reasonable for them to respond with a non-*ka* counterpart.

Besides, the insufficiency of requiring our subjects to produce a sentence-level target item may explicate the apparently significant task effect in our subjects' performances on Omission. The Omission constraint only applies to the case where the *ka*-NP is a third person singular pronoun, *i* 'he/she/it'. Thus, for omission to take place, the speaker must think that the NP is an old information and is understandable even when it is syntactically absent. Thus, the omission is preferred when the NP has been mentioned in a previous discourse and is comprehensible for the speaker. However, in the PP task, the subjects were asked to answer the stimuli question with a target sentence. Under the context, they might think that omission of a *ka*-NP would result in an unclear meaning, and hence preferred not to employ Omission. In addition, Omission was examined under an experimental context. Our subjects might consider this a formal situation, where people tend to use full, complete and explicit expressions. Hence, they avoided using Omission.

In sum, in the present study comprehension was found to precede production.

Our subjects found the PP task more challenging than the GJ task. Their performances on the GJ task were generally higher than those on the PP task.

4.4 Other Patterns Elicited

This section aims to examine the general patterns our subjects made in the PP task. There were three major types of patterns found other than the target sentences: 1) No elicitation, 2) Non-*ka* sentences, and 3) *Ka* sentences. No elicitation refers to the situation where nothing was elicited; the case of non-*ka* sentences is related to the situation where the subjects responded with the non-*ka* counterparts; the case of *ka* sentences is concerned with the situation where *ka* sentences were uttered, but they were not target sentences or they were ungrammatical. Non-*ka* sentences can be further divided into five sub-types: a. Key Words, where only a related verb was produced; b. S+V[-telic]+O, where a non-*ka* sentence with an atelic verb was produced; c. S+V[+telic]+O, where a non-*ka* sentence with a telic verb was produced; d. Code Switching, where the Taiwanese *ka* was replaced with the Mandarin Chinese *ba* or *gei*; e. Substitution of *ka*, where Taiwanese *tui* or *ho* was used instead of *ka*. Also, *Ka* sentences can be categorized into four sub-types: a. Without *Teh*, where the target sentence was a *ka* sentence with a progressive marker, but only a *ka* sentence without a progressive marker was elicited; b. Without Omission, where the target sentence was a *ka* sentence with a syntactically absent *ka* NP, but only a *ka* sentence was produced; c. Indefinite *Ka*-NP, where an indefinite *ka*-NP was used; d. *Teh*+V[+telic], where a progressive marker co-occurred with a telic *ka*-verb. Table 4.10 presents the three major types and their sub-types. Also, the frequency of each type and each sub-type was calculated.

Table 4.10 Other Patterns Elicited in the PP Task

Type		Example Sentence	Results	
			Experimental group	Control group
No Elicitation (E: 21; C:0)		--	21 (6.05%)	0
Non-*Ka* Sentences (E: 231; C: 43)	Key Words	*Khioh khilaih.* (G1S4) 'Pick up.'	33 (9.51%)	0
	S+V [-telic]+O	*Koko me titi.* (G1S9) 'The brother scolded the little brother.'	82 (23.63%)	42 (56.76%)
	S+V [+telic]+O	*Papa kongphua puea.* (G1S8) 'Father broke the cup.'	50 (14.41%)	1 (1.35%)
	Code Switching (*ka*→*ba*; *ka*→*gei*)	*Mama ba pangking chit chingkhi.* (G2S13) 'Aing wiped a room clean.'	28 (8.07%)	0
	*Substitution of *Ka* (*ka*→*tui*; *ka*→*ho*)	**Banga tui muemue ting.* (G3S4) 'The mosquito stung the little sister.'	38 (10.95%)	0
Ka Sentences (E: 95; C: 31)	Without *Teh*	*Mama (teh) ka muemue phah.* (G3S1) 'Mother is hitting the little sister.'	26 (7.49%)	9 (12.16%)
	Without Omission	*Koko ka (Abin) me.* (G2S8) 'The brother scolded Abin.'	47 (13.54%)	14 (18.92%)
	*Indefinite *Ka*-NP	**Papa ka cit tai kha tah chia be tngkhi a.* (G2S15) 'Father bought back a bicycle.'	6 (1.73%)	5 (6.76%)
	**Teh* + V [+telic]	**Aing teh ka cit e pangking chit chingkhi a.* 'Aing wiped a room clean.'(G3S4)	16 (4.61%)	3 (4.05%)
Total			347	74

* ungrammatical types or sentences

As shown in Table 4.10, a total of 347 unintended responses were found in the experimental group and 74 in the control group. For the 74 unexpected sentences, 43 were classified into Non *Ka* Sentences and 31 *Ka* Sentences. Also, the top three

sub types of error patterns in the control group were as follows: S+V [-telic]+O (56.76%), followed by Without Omission (18.92%) and Without *Teh* (12.16%). Among the unexpected responses of the experimental group, 21 sentences were in the category of No Elicitation, 231 sentences were of Non-*Ka* Sentences, and 95 sentences were of *Ka* Sentences. In addition, three of the most common error types were as follows: S+V [-telic]+O (23.63%), followed by S+V [+telic]+O (14.41%) and Without Omission (13.54%). It was found that S+V [-telic]+O and Without Omission were the types most frequently produced by the experimental group and the control group. Furthermore, the two types of ungrammatical *ka* sentences, (*Indefinite *ka*-NPs and **Teh* + V [+telic]), were found in both the experimental group and the control group.

To see if the same preferences and tendencies apply to each age group, the frequencies of the error patterns made by each age group are examined. Table 4.11 shows the frequencies of the error types produced by the four age groups.

Table 4.11 Other Patterns of Each Group Elicited in the PP Task

Type		Results			
		Group 1	Group 2	Group 3	17~27
No elicitation		12 (7.5%)	4 (3.74%)	5 (6.25%)	0
Non *Ka* Sentences	Key Words	26 (16.3%)	7 (6.54%)	0	0
	S+V [-telic]+O	44 (27.5%)	15 (14.02%)	23 (28.75%)	42 (56.76%)
	S+V [+telic]+O	35 (21.8%)	7 (6.54%)	8 (10%)	1 (1.35%)
	Code Switching (*ka*→*ba*; *ka*→*gei*)	9 (5.63%)	18 (16.82%)	1 (1.25%)	0
	*Substitution of *Ka* (*ka*→*tui*; *ka*→*ho*)	9 (5.63%)	24 (22.43%)	5 (6.25%)	0
Ka Sentences	Without *Teh*	10 (6.25%)	7 (6.54%)	9 (11.25%)	9 (12.16%)
	Without Omission	11 (6.88%)	16 (14.95%)	20 (25%)	14 (18.92%)
	*Indefinite *ka*-NP	0	3 (2.80%)	3 (3.75)	5 (6.76%)
	**teh* + V [+telic]	4 (2.5%)	6 (5.61%)	6 (7.5%)	3 (4.05%)
Total		160	107	80	74

Table 4.11 illustrates that the number of error responses decreased with age (G1: 160; G2: 107; G3: 80; G4: 74), indicating that our subjects' production of *ka* sentences got better as they grew older. In addition, there was a greater decrease from Groups 1 to 2 than from Groups 2 to 3, suggesting that the production of the *ka* construction improved a lot at the age of 5. Among the error patterns, the number of No Elicitation was used more frequently by Group 1 (G1: 12) than by the other groups (G2: 4; G3: 5; G4: 0). Key words was found highest in Group 1 (26), dropped dramatically in Group 2 (7) and vanished in Groups 3 and 4 (0). S+V [-telic]+O was

used relatively frequently by each group (G1: 44; G2: 15; G3: 23; G4: 42). S+V [+telic]+O was produced frequently by Group 1 (35) and rarely used by the other groups (G2: 7; G3: 8; G4: 1). Code Switching and Substitution of *Ka* were two patterns commonly used by Group 2 (18; 24) but seldom produced by the other groups. Without *Teh* were seldom produced by each group (G1: 10; G2: 7; G3: 9; G4: 9). Without Omission came with an increasing trend in the three younger groups (G1: 11; G2: 16; G3: 20) and decreased a little in Group 4 (14). Indefinite *ka*-NPs (G1: 0; G2: 3; G3: 3; G4: 5) and *teh* + V [+telic] (G1: 4; G2: 6; G3: 6; G4: 3) were not commonly produced by each group, and between them, *teh* + V [+telic] was used more often than Indefinite *ka*-NPs.

With regard to the error type of each group, it was found that the preference for each group was similar. What follows are the top three preferred patterns for each group:

(8) Group 1: S+V [-telic]+O > S+V [+telic]+O > Key Words

Group 2: Substitution of *Ka* > Code Switching > Without Omission

Group 3: S+V [-telic]+O > Without Omission > Without *Teh*

Group 4: S+V [-telic]+O > Without Omission > Without *Teh*

As illustrated in (8), S+V [-telic]+O and Without Omission were commonly found in each group. Also, S+V [-telic]+O was the pattern most frequently produced for each group except for Group 2 where Substitution of *Ka* took the first place.

According to the results presented above, we can see that the *ka* construction is complicated for our subjects because the number of error responses did not go down till the age of six. Also, the huge number of S+V[-telic]+O and Without Omission supported our previous claim that the use of the Taiwanese *ka* construction is highly related to the discourse context. When our subjects encountered an atelic verb, they tended to avoid using the *ka* construction, supporting the analysis that the function of

the *ka* sentence with a bare verb is to make the verb become the semantic focus (Hung 1995, Tsao 2003). In addition, with regard to Omission, our subjects may think that the *ka*-NP is an old information mentioned in the previous discourse and thus the NP is understandable even if it is syntactically absent.

There were some differences in using the top three preference types by each group. For example, Group 1, they did not use the *ka* construction not only when the verb was atelic but also when the verb was telic. Their reluctance to use the *ka* construction in general may suggest that they were still at a "no contrast" stage, where the distinction between the element exhibited in the construction and that prohibited had not been acquired at all. Hence, they generally avoided producing the *ka* sentences. Furthermore, the high frequency of Key Words used in Group 1 showed that their general control over their mother tongue was still not good. As for Group 2, it is interesting to see that their preference types were different from the other three groups. They preferred greatly to Substitution of *Ka* and Code Switching where *ka* was replaced by Taiwanese *tui* 'toward' or Mandarin *ba*, indicating that age five might be a transitional point for the acquisition of the *ka* construction. Group 2 entered a "partial contrast" stage, where the contrast between permitted and prohibited elements was only partially mastered. Also, this also showed that our subjects treated *ka* as a syntactic equivalent of Taiwanese *tui* 'toward' or Mandarin *ba*. The reason might lie in the similar meanings or distributional contexts they have. As pointed out in Chapter Two, except for being a patient marker, *ka* can also serve as a goal marker. As a goal marker, *ka* marks the entity which is the termination of a monetary transaction (Teng 1975). Similarly, *tui* 'toward' in Taiwanese can mark the entity toward which an action is performed. Hence, because of the semantic similarity between *ka* and *tui* our subjects tended to use them interchangeably. With regard to the substitution of Mandarin *ba* for *ka*, the high similarity of their semantic meaning

and syntactic distribution accounted for our subjects' performances. Both Taiwanese *ka* and Mandarin *ba* are analyzed as a disposal structure and it is generally agreed that when *ka* occurs with a telic verb, it is a counterpart of Mandarin *ba* (Teng 1982, Hung 1995, Tsao 2003). Hence, it is not surprising that our subjects substituted Mandarin *ba* for Taiwanese *ka*. With regard to the preference types of Group 3, it was found that they were the same as those of Group 4, showing that at the age of six, our subjects had an adult-like grammar and had entered the "full contrast" stage.

In addition, the two types of ungrammatical *ka* sentences, Indefinite *ka*-NP and *teh* + V [+telic], produced by our subjects again suggested that our subjects might consider the indefinite *ka*-NP in the present study as specific and the thematic role of the *ka*-NP as benefactive, hence the result.

4.5 Age Effects

Generally speaking, our children performed better with age. The four-year-olds performed worse than the other age groups, showing that they had not yet mastered the construction. At the age of 5, our subjects showed a dramatic improvement, suggesting that age 5 might be a transitional point for the acquisition of the *ka* construction. Finally, the six-year-olds performed similarly to the control group, exhibiting that children of age 6 had reached the adult-level grammar. In addition, the performances of age 4 seemed to be similar to those of age 5, and the performances of age 5 were similar to those of age 6, showing that there was a gradual improvement from ages 4 to 6.

With regard to the responses to the main constraints, each group was found to perform the best on Dynamicity and the worst on Omission. Besides, each group's responses showed a trend. What follows are the hierarchies of the main properties found in each group repeated from section 4.1:

(9) Group 1: Dynamicity = Referentiality = Progressive = Omission

Group 2: Dynamicity = Referentiality > Progressive = Omission

Group 3: Dynamicity > Referentiality = Progressive > Omission

Group 4: Dynamicity > Referentiality > Progressive > Omission

In general, Dynamicity was the least challenging for each group, followed by Referentiality, then Progressive and Omission.

As for the performances of the four groups on the sub-properties of the four constraints, the results displayed that statistical differences did exist. The four-year-olds showed a significantly higher preference for Definite/Generic than Indefinite ($p<0.05$) in response to Referentiality; regarding Omission, they performed better ($p<0.05$) on $1^{st}/2^{nd}$ Person than on 3^{rd} Person; in the case of Dynamicity, they preferred Non-stative to Stative ($p<0.05$); finally, with respect to Progressive, a preference for either Atelic or Telic was not found ($p>0.05$). In response to Referentiality, the five-year-olds performed significantly better on Definite/Generic than Indefinite ($p<0.05$); in the case of Omission, $1^{st}/2^{nd}$ Person was of the same difficulty as 3^{rd} Person ($p>0.05$) for them; regarding Dynamicity, they scored higher on Non-stative than on Stative ($p<0.05$); as for Progressive, they showed no significant preference for either Atelic or Telic ($p>0.05$). In the case of our six-year-olds, their responses to Referentiality showed a significantly higher score on Definite/Generic than on Indefinite ($p<0.05$); as for Omission, $1^{st}/2^{nd}$ Person was of the same difficulty as 3^{rd} Person for them ($p>0.05$); regarding Dynamicity, they showed a higher preference for Non-stative ($p<0.05$); regarding Progressive, the 6-year-olds performed better on Atelic than on Telic ($p<0.05$).

In the case of task effects, it was found that generally speaking, each age group performed better on the GJ task than on the PP task except for Referentiality, where an opposite result was obtained.

4.6 Summary of Chapter Four

The results of the present study demonstrated that different main properties, sub-properties, tasks and age all played a crucial role in the acquisition of the Taiwanese *ka* construction. It was found that the four main constraints presented different degrees of difficulties for our participants. A rough tendency is shown below:

(10) Easy ⟷ Difficult

Dynamicity→Referentiality→Progressive→Omission

With each main property, it was found that our subjects showed difference preference for the sub-properties of a main constraint. For Dynamicity and Referentiality, a general tendency found in each age group was that Nonstative was preferred to Stative and Definite/Generic was preferred to Indefinite. As for Progressive, a higher preference for Atelic than Telic was found at the age of 6 and in the control group while our two younger groups showed no preference for either one of them. Regarding Omission, the 4-year-olds preferred $1^{st}/2^{nd}$ Person than 3^{rd} Person whereas our adults displayed an opposite result. As for the 5-and 6-year-olds, no preference was detected. In addition, a discrepancy found in our subjects' performances on the two tasks indicated a developmental gap between comprehension and production. Finally, the above results suggested that the *ka* construction was not fully mastered until the age of 6. Also, it was found that age 5 might be a transitional point for the acquisition of the *ka* construction.

CHAPTER FIVE
CONCLUSION

The conclusion of the present study will be present in this chapter. Section 5.1 summarizes the major findings, followed by the limitations of the study and some suggestions for further research stated in section 5.2.

5.1 Summary of the Major Findings

This study examined children's acquisition of the Taiwanese *ka* construction. The focus was on the difficulty of the four constraints, that is, Referentiality, Omission, Dynamicity, and Progressive. Property effects, sub-property effects, task effects, other elicited patterns, and age effects were discussed in the present study. The major findings are summarized below.

First, the experimental results of the four constraints showed that the four constraints were of different degrees of difficulty for our subjects. The hierarchical sequence from easy to difficult was as Dynamicity > Referentiality > Progressive > Omission. This tendency showed that the contrast between Non-stative and Stative was acquired earlier than that between Definite/Generic and Indefinite, and Atelic and Telic, and the acquisitional order was explained by Pinker's (1989) theory of Conservativism.

Second, previous theoretical analysis about the constraints on the *ka* construction was confirmed in the present study. From the subjects' performances on the sub-properties of each constraint, it was found that Nonstative was strongly preferred to Stative, Definite/Generic to Indefinite, Atelic to Telic. However, an counter expectation result was found in our children's responses to Omission. They did not prefer 3rd Person to 1st/2nd Person. In addition, based on the results, we further developed Pinker's (1989) Theory of Conservativism.

Third, there was a significant difference between our subjects' performances on the PP and the GJ tasks, suggesting the existence of a strong task effect. Generally speaking, our subjects performed better on the GJ task than on the PP task, supporting the view that comprehension is prior to production.

Fourth, the error patterns our subjects produced can be grouped into three major types, 1) No Elicitation, 2) Non *Ka* Sentences, and 3) *Ka* Sentences. Also the top three sub-types preferred by each group are as follows:

(1) Group 1: S+V [-telic]+O > S+V [+telic]+O > Key words

Group 2: Substitution of *ka* > Code-switching > Without omission

Group 3: S+V [-telic]+O > Without omission > Without *teh*

Group 4: S+V [-telic]+O > Without omission > Without *teh*

From the preference types of each group, it was found that Group 1 was still at the "No Contrast" stage, Group 2 at the "Partial Contrast" stage and Group 3 at the "Full Contrast" stage.

Finally, the results showed that in the acquisition of the *ka* construction, age did play a crucial role. The four-year-olds performed worse than the five- and six-year-olds and the five-year-olds worse than the six-year-olds. It was also found that age five was a transitional point for acquiring the *ka* construction, and age six was a cutting point where the construction was fully mastered. Also, the four constraints showed a different degree of difficulty for different groups, as can be seen below:

(2) Group 1: Dynamicity = Referentiality = Progressive = Omission

Group 2: Dynamicity = Referentiality > Progressive = Omission

Group 3: Dynamicity > Referentiality = Progressive > Omission

Group 4: Dynamicity > Referentiality > Progressive > Omission

In general, Dynamicity was the least challenging for each group, followed by Referentiality, then Progressive and Omission.

5.2 Limitations of the Present Study and Suggestions for Future Research

What follows are limitations of the present study and suggestions for future research.

First of all, because this study is a pioneer study of the Taiwanese *ka* construction, only *ka* as a patient marker was examined. However, previous theoretical studies have pointed out that *ka* can serve as source, goal and benefactive, too. To get a full understanding of the acquisition of the construction, further research on *ka* as the other thematic roles can be conducted.

Second, only major constraints on the *ka* construction were examined in the present research. Other constraints like the co-occurrence of *ka* and *ciong*, another disposal marker in Taiwanese, and the preposing of an NP in the retained object construction, are also worthy of discussion. It is known that Taiwanese allows *ka* to co-occur with *ciong*, but the *ciong* phrase has to precede the *ka* phrase and that the *ciong* NP and the *ka* NP have to be co-referential. Moreover, in the retained object construction, only the NP which serves as the whole but not the part and the NP which serves as the possessor but not the possessee can occur as a *ka*-NP.

Third, in examining the Omission constraint on the *ka*-NP, a grammaticality judgment task and a pictorial scenario production task were employed in the present study. However, it was found that the elicitation of a sentence-level target item was not enough for our subjects to drop the *ka*-NP. Hence, other types of tasks like story (re-)telling may be employed to investigate this constraint.

REFERENCES

Bates, E., L. Benigni, I. Bretherton, L. Camaioni, and V. Volterra. 1979. *The Emergence of Symbols: Cognition and Communication in Infancy.* New York: Academic Press.

Bates, E., I. Bretherton, and L. Snyder. 1988. *From First Words to Grammar: Individual Differences and Dissociable Mechanisms.* New York: Cambridge University Press.

Bates, E., V. Marchman, D. Thal, L. Fenson, P. Dale, S. Reznick, J. Reilly, and J. Hartung. 1994. Developmental and stylistic variation in the composition of early vocabulary. *Journal of Child Language*, 21(1): 85-124.

Babyonyshev, Maria, Jennifer Ganger, David Pesetsky, and Kenneth Wexler. 2001. The maturation of grammatical principles: evidence from Russian unaccusatives. *Linguistic Inquiry*, 32: 1-44.

Benedict, Helen. 1979. Early lexical development: comprehension and production. *Journal of Child Language*, 6: 183-200.

Bennett-Kastor, Tina. 1988. *Analyzing Children's Language: Methods and Theories.* Oxford: Basil Blackwell.

Berko, J. 1958. The child's learning of English morphology. *Word*, 14: 150-177.

Bloom, L. 1970. *Language Development: Form and Function in Emerging Grammars.* Cambridge, MA: MIT Press.

Borer, H. and K. Wexler. 1987. The maturation of syntax. *Parameter Setting*, eds. by T. Roeper, and E. Williams, 123-172. Dordrecht, The Netherlands: Reidel.

Borer, H., and K. Wexler. 1992. Bi-unique relations and the maturation of grammatical principles. *Natural Linguistic and Linguistic Theory*, 10: 147-189.

Brown, Roger. 1973. *A First Language: the Early Stages.* Cambridge, MA: Harvard University Press.

Brown, H. Douglas. 1987. *Principles of Language Learning and Teaching.* London: Longman.

Chang, Chia-ying Nancy. 2008. *An Empirical Study of Hakka-Speaking Children's Acquisition of Passives.* MA Thesis, National Taiwan Normal University.

Chang, Miao-hsia Tammy. 1991. *The Discourse Functions of Mandarin Sentence-Final Particles: A Longitudinal Case Study of a Child from Twenty-seven Months through Three Years Old.* MA Thesis, National Taiwan Normal University.

Chao, Yuen-ren. 1968. *A Grammar of Spoken Chinese.* University of California Press.

Chen, C.-Y. D. 1990. Serialization in Mandarin. *Paper presented at the second North-Eastern Conference on Chinese Linguistics*, Philadelphia.

Cheng, Ya-yin. 1995. *The Acquisition of Relative Clauses in Chinese.* MA Thesis, National Taiwan Normal University.

Cheng, Ying, and Feng-fu Tsao. 1995. Minnan-yu "*ka*" yongfa zhi-jian de guanxi. *Papers from the 1994 Conference on Language Teaching and Linguistics in Taiwan, vol.1: Southern Min*, eds. by Feng-fu Tsao, and Mei-hui Tsai, 23-45. Taipei: Crane.

Cheung, Hintat. 1992. *The Acquisition of BA in Mandarin*. Ph.D. Dissertation, University of Kansas.

Cheung, Hung-nin Samuel. 1973. A comparative study in Chinese grammars: the *ba* construction. *Journal of Chinese Linguistics*, 1(3): 343-382.

Choi, S., and A. Gopnik. 1995. Early acquisition of verbs in Korean: a cross-linguistic study. *Journal of Child Language,* 22(3): 497-529.

Chomsky, Noam. 1981. *Lectures on Government and Binding.* Dordrecht: Foris.

Chomsky, Noam. 1982. *Some Concepts and Consequences of the Theory of Government and Binding.* Cambridge: MIT Press.

Chomsky, Noam. 1986a. *Knowledge of Language: Its Nature, Origin, and Use.* New York: Praeger.

Chomsky, Noam. 1986b. *Barriers.* Cambridge, MA: MIT Press.

Clark, E. 1971. On the acquisition of the meaning of “before” and “after”. *Journal of Verbal Learning and Verbal Behavior*, 10(3): 266-275.

Clashen, Harald. 1992. Learnability theory and the problem of development in language acquisition. *Theoretical Issues in Language Acquisition: Continuity and Change in Development*, eds. by J. Weissenborn, H. Goodluck, and R. Thomas, 53-76. New Jersey: Lawrence Erlbaum Associates.

Crain, S. 1991. Language acquisition in the absence of experience. *Behavioral and Brain Sciences*, 14: 597-612.

Crain, S., and M. Nakayama. 1987. Structure dependence in grammar formation. *Language*, 63: 522-543.

Crain, Stephen, and Rosalind Thornton. 1998. *Investigations in Universal Grammar: a Guide to Experiments on the Acquisition of Syntax and Semantics*. Cambridge, MA: MIT Press.

de Villiers, Peter A., and Jill G. de Villiers. Early judgments of semantic and syntactic acceptability by children. *Journal of Psycholinguistic Research*, 1(4): 299-310.

Donaldson, M., and G. Balfour. 1968. Less is more: a study of language comprehension in children. *British Journal of Psychology*, 59: 461-472.

Donaldson, M., and R. J. Wales. 1970. On the acquisition of some relational terms. *Cognitive and the development of language*, ed. by J. R. Hayes. New York: Wiley.

Eisenberg, S., and H. S. Cairns. 1994. The development of infinitives from three to five. *Journal of Child Language*, 21: 713-734.

Erbaugh, Mary. 1982. *Coming to Order: Natural Selection and the Origin of Syntax in the Mandarin Speaking Child.* Ph.D. Dissertation, University of Berkeley.

Erreich, S. 1984. Learning how to ask: patterns of inversion in yes/no and *wh*-questions. *Journal of Child Language*, 11: 579-592.

Fahn, R. S. 1993. *The Acquisition of Mandarin Chinese Ba Construction*. Ph.D. Dissertation, University of Hawaii.

Felix, S. 1992. A maturational process. *Theoretical Issues in Language Acquisition*, eds. by Jurgen Weissenborn, Helen Goodluck, and Thomas Roeper, 25-33. Hillsdale, NJ: Erlbaum.

Gao, Qian. 1997. Resultative verb compounds and *ba*-construction in Chinese. *Journal of Chinese Linguistics*, 25(1): 84-130.

Gerken, LouAnn, and Michele Shady. 1996. The picture selection task. *Methods for Assessing Children's Syntax*, eds. by Dana McDaniel, Cecile McKee, and Helen Smith Cairns, 257-285. Cambridge, MA: MIT Press.

Goldin-meadow, Susan, Martin Seligman, and Rochel Gelman. 1976. Language in the two-year-old. *Cognition*, 4: 189-202.

Gopnik, A., and Choi, S. 1990. Do linguistic differences lead to cognitive differences? A cross-linguistic study of semantic and cognitive development. *First Language*, 10: 199-215.

Gopnik, A., and Choi, S. 1995. Names, relational words, and cognitive development in English and Korean speakers: nouns are not always learned before verbs. *Beyond Names for Things: Young Children's Acquisition of Verbs*, eds by M. Tomasello, and W. Merriman. Hillsdale, NJ: Erlbaum.

Gropen, J., S. Pinker, M. Hollander, and R. Goldberg. 1991. Affectedness and direct objects: the role of lexical semantics in the acquisition of verb argument structure. *Cognition*, 41(1-3): 153-195.

Hakes, D. T. 1980. *The Development of Metalinguistic Abilities in Children.* Berlin: Springer-Verlag.

Huang, Ya-wei. 2007. *The Use of Count and Mass Classifiers in Chinese Preschoolers.* MA Thesis, National Taiwan Normal University.

Hung, Su-chen. 1995. *A Study of the Taiwanese Preposition KA and its Corresponding Mandarin Prepositions.* M.A Theses, National Tsing Hua University.

Hyams, Nina. 1986. *Language Acquisition and the Theory of Parameters.* Dordrecht, Reidel.

Jackendoff, Ray. 1987. The status of thematic relations in linguistic theory. *Linguistic Inquiry,* 18(3): 369-412.

Jakubowicz, Celia. 1996. Crosslinguistic investigation. *Methods for Assessing Children's Syntax*, eds. by Dana McDaniel, Cecile McKee, and Helen Smith Cairns, 257-285. Cambridge, MA: MIT Press.

Karmiloff-Smith, Annette. 1979. *A Functional Approach to Child Language.* New York: Cambridge University Press.

Kuo, Fang-ting. 1995. *Children's Use of the Chinese Passive.* MA Thesis, National Taiwan Normal University.

Lenneberg, Eric Heinz. 1967. *Biological Foundations of Language.* New York: John Wiley and Sons.

Li, Chi-chang Roy. 2008. *L1 Acquisition of Manner and Causal Questions by Examining Zenme with the Modal Hui.* MA Thesis, National Taiwan Normal University.

Li, Charles, and Sandra Thompson. 1981. *Mandarin Chinese: A Functional Reference Grammar*. Berkeley: University of California Press.

Li, Jia-wen Frances. 1995. *On the Disposal* Ka *in Taiwanese*. MA thesis, National Taiwan Normal University.

Li, Y.-H. Audrey. 1990. *Order and Constituent in Mandarin Chinese*. Dordrecht: Kluwer.

Li, Y.-H. Audrey. 2001. The *ba* construction. Site: http://www.usc.edu/dept/LAS/ealc/chinling/audreyli.htm

Li, Ying-che. 1974. What does disposal mean? Features of the verb and noun in Chinese. *Journal of Chinese Linguistics*, 2: 200-218.

Lin, Huei-ling. 2007. *Gei* in Mandarin Chinese vs. *ka* in Taiwan Southern Min. *Paper Presented in the Fifth Conference of the European Association of Chinese Linguistics (EACL-5)*, MPI, Leipzig (Germany), September 4-7, 2007.

Lin, Tzong-hong Jonah. 2001. *Lignt Verb Syntax and the Theory of Phrase Structure*. Ph.D. Dissertation, University of California, Irvine.

Liu, Feng-his. 1997. An aspectual analysis of *ba*. *Journal of East Asian Linguistics*, 6: 51-99.

Lust, Barbara. 1999. Universal grammar: the strong continuity hypothesis in first language acquisition. *Handbook of Child Language Acquisition,* eds. by William C. Ritchie, and Tej K. Bhatia, 111-155. San Diego, London: Academic Press.

Mao, Hoi-lam. 2008. *A Study on Cantonese Restrictive and Additive Focus Final Particles in Child Acquisition.* MA Thesis, National Tsing Hua University.

McDaniel, Dana, and Helen Smith Cairns. 1990. The child as informant: eliciting intuitions from young children. *Journal of Psycholinguistic Research*, 19: 331-344.

McDaniel, Dana, and Helen Smith Cairns. 1996. Eliciting judgments of grammaticality and reference. *Methods for Assessing Children's Syntax*, eds. by Dana McDaniel, Cecile McKee, and Helen Smith Cairns, 233-254. Cambridge, MA: MIT Press.

Miller, W. R. 1963. The acquisition of formal features of language. *American Journal of Orthopsychiatry*, 34: 862-867.

Naigles, Letitia. 1991. Book reviews *Learnability and Cognition: The Acquisition of Argument Structure* by Steven Pinker. *Language and Speech*, 34(1): 63-79.

Oviatt, Sharon. 1980. The emerging ability to comprehend language: an experimental approach. *Child Development*, 51: 97-106.

Pinker, Steven. 1984. *Language Learnability and Language Development.* Cambridge, MA: Harvard University Press.

Pinker, Steven. 1989. *Learnability and Cognition: The Acquisition of Argument Structure.* Cambridge, MA: MIT Press.

Radden, Günter, and René Dirven. 2007. *Cognitive English grammar*. Amsterdam; Philadelphia: John Benjamins Pub.

Ringbom, H. 1992. On L1 transfer in L2 comprehension and L2 production. *Language Learning*, 42: 85-112.

Ross, Claudia. 1991. Coverbs and category distinctions in Mandarin Chinese. *Journal of Chinese Linguistics*, 19(1): 79-114.

Schlisselberg, G. 1988. *Development of Selected Conservation Skills and the Ability to Judge Sentence Well-formedness in Young Children.* Ph.D. Dissertation, City University of New York.

Slobin, Dan Isaac. 1985. *The Crosslinguistic Study of Language Acquisition.* Hillsdale, NJ: Erlbaum.

Smith, Carlota. 1991. *The Parameter of Aspect.* Kluwer Academic Publishers.

Smith-Lock, K. M. 1993. Morphological analysis and the acquisition of morphology and syntax in specially language-impaired children. *Haskins Laboratories Status Report on Speech Research*, SR-114. Haskins Laboratories, New Haven, Conn.

Stromswold, Karin. 1990. *Learnability and the Acquisition of Auxiliaries.* Ph.D. Dissertation, MIT.

Stromswold, Karin. 1996. Analyzing children's spontaneous speech. *Methods for Assessing Children's Syntax*, eds. by Dana McDaniel, Cecile McKee, and Helen Smith Cairns, 257-285. Cambridge, MA: MIT Press.

Tardif, T. 1996. Nouns are not always learned before verbs: evidence from Mandarin speakers' early vocabularies. *Developmental Psychology*, 32(3): 492-504.

Tardif, T., M. Shatz, and L. Naigles. 1996. The influence of caregiver speech on children's use of nouns versus verbs: a comparison of English, Italian and Mandarin. *Abstracts of the VIIth International Congress for the Study of Child Language*, Istanbul.

Teng, Shou-hsin. 1975. *A Semantic Study of Transitivity Relations in Chinese.* Berkeley: University of California Press.

Teng, Shou-hsin. 1977. *A Basic Course in Chinese Grammar: a Graded Approach through Conversational Chinese.* San Francisco: Chinese Materials Center.

Teng, Shou-hsin. 1982. Disposal structures in Amoy. *Bulletin of the Institute of History and Philology, in Memory of the Late Yuen Ren Chao*, 53: 331-352.

Thompson, Sandra A. 1973. Transitivity and some problems with the *ba* construction in Mandarin Chinese. *Journal of Chinese Linguistics*, 1: 208-221.

Thornton, Rosalind. 1990. *Adventures in Long-Distance Moving: The Acquisition of Complex Wh-questions.* Doctoral dissertation, University of Connecticut, Storrs.

Thornton, Rosalind. 1996. Elicited production. *Methods for Assessing Children's Syntax*, eds. by Dana McDaniel, Cecile McKee, and Helen Smith Cairns, 77-102. Cambridge, MA: MIT Press.

Tsao, Feng-fu. 1987. A topic-comment approach to the *ba* construction. *Journal of Chinese Linguistics*, 15(1): 1-54.

Tsao, Feng-fu. 2003. Taiwan minnan-yu de *ka* zi ju. *Hanyu Fangyiang Yufa Yajiu he Tansuo*, ed. by Zhao-ming Dai, 114-136. Harbin: Heilongjiang Renmin Chubanshe.

Tsao, Feng-fu, and Cing-cing Lu. 1990. *Ka* as a source marker and a patient marker in Taiwanese. *Proceedings of the First International Symposium on Chinese Language and Linguistics*: 351-396.

Tse, K. P., Ting-chi Tang, Yu-huei Shih, and Cherry Y. Li. 1991. *Chinese Children's Language Acquisition and Development.* Taipei: National Science Foundation.

Tyack, Dorothy, and David, Ingram. 1977. Children's production and comprehension of questions. *Journal of Child Language*, 4: 211-224.

Van Kleeck, A. 1982. The emergence of linguistic awareness: a cognitive framework. *Merrill-Palmer Quarterly*, 28: 237-265.

Vendler, Zeno. 1967. *Linguistics in Philosophy.* Ithaca, NY: Cornell University Press.

Yang, Chung-yu Barry. 2006. Syntactic structure of *ka*-construction in Taiwanese Southern Min. *USTWPL*, 2: 141-171.

Wang, Li. 1957. *Hanyu shigao.* Peiking: Science Publishing Company.

Weissenborn, J., H. Goodluck, and T. Roeper. 1992. Introduction: old and new problems in the study of language acquisition. *Theoretical Issues in Language Acquisition*, eds. by J. Weissenborn, H. Goodluck, and T. Roeper, 1-51. Hillsdale, NJ: Erlbaum.

Wen, X., and B. Wu. 1997. Pro-drop and foreign language acquisition. *English Teaching and Learning*, 23: 65-78.

Wexler, Kenneth. 1999. Maturation and growth of grammar. *Handbook of Child Language Acquisition*, eds. by William C. Ritchie, and Tej K. Bhatia, 55-109. San Diego, London: Academic Press.

Wu, Chi-hua. 2001. *An Experimental Study of the Ba Construction in Second Language Acquisition of Chinese*. MA thesis, National Taiwan Normal University.

Wu, Hsiao-hui. 2006. *The Acquisition of the Bei-construction in Mandarin Chinese: A Rule-Based or an Item-Based Way.* MA Thesis, National Tsing Hua University.

Zhang, Wang-xi. 1991. Analysis on the syntactic, semantic and pragmatic features about *ba*-sentence. *Language Teaching and Linguistic Studies*, 1:79-91.

Appendix A: Task Design

Table (i) Test Items Examined in the PP Task

Constraints	Sub-Properties	Target Sentences	Item No.
Referentiality	Definite/Generic	*Mama ka hit pun cheh khioh khilaih.* 'Mother picked up that book.'	Q1
		Muemue tianntiann ka hue tantiau. 'The little sister often throws away flowers.'	Q11
	Indefinite	**Aing ka cit king pangking chit chingkhi a.* 'Aing wiped a room clean.'	Q8
		**Papa ka cit tai chia be tnglai a.* 'Father bought back a bicycle.'	Q15
Omission	3rd person	*Titi oh, cece ka liap.* 'The little brother, the sister pinched him.'	Q4
		Abin, koko ka me. 'Abin, the brother scolded him.'	Q18
Dynamicity	Nonstative	*Papa ka puea kongphua a.* 'Father broke the cup.'	Q2
		Banga ka muemue ting. 'The mosquito stung the little sister.'	Q10
	Stative	**Titi ka mama sionn.* 'The little brother misses Mother.'	Q5
		**Abin ka Aing kahi.* 'Abin likes Aing.'	Q13
Progressive	Atelic	*Mama teh ka muemue phah.* 'Mother is hitting the little sister.'	Q3
		Papa teh ka titi siuli. 'Father is beating the little brother.'	Q12
	Telic	**Mama teh ka toha chit chingkhi.* 'Mother is wiping the desk clean.'	Q6
		**Muemue teh ka png ciahliau.* 'The little sister is eating the rice up.'	Q17
Filler		*Papa teh khun.* 'Father is sleeping.'	Q7
		Titi teh khuann cheh. 'The little brother is reading.'	Q9

	Muemue ciah phongko. 'The little sister ate the apple.'	Q14
	Mama teh lim cui. 'Mother is drinking water.'	Q16
Total		18

Table (ii) Test Items Examined in the GJ Task

Constraints	Sub-Properties	Test Items	Item No.	Ans.
Referentiality	Definite/Generic	*Muemue ka hit liap kama ciahtiau a.* 'The little sister ate that tangerine.'	Q1	O
		Muemue tianntiann ka cheh oopeh tan. 'The little sister often puts books in disorder.'	Q8	O
	Indefinite	**Aing ka cit liau ia chit chingkhi a.* 'Aing wiped a chair clean.'	Q4	X
		**Koko ka cit tai kichia be tnglai a.* 'The brother bought back a motorcycle.'	Q13	X
Omission	3rd person	*Titi oh, cece cang ka liap ne.* 'The little brother, the sister pinched him yesterday.'	Q9	O
		Titi oh, cang koko ka me ne. 'The little brother, the brother scolded him yesterday.'	Q15	O
	1st or 2nd person	**Gua oh, koko e ka phah.* 'The brother will hit me.'	Q2	X
		**Li oh, koko e ka that.* 'The brother will kick you.'	Q20	X
Dynamicity	Nonstative	*Koko ka titi sak.* 'The brother pushed the little brother.'	Q18	O
		Mama ka uann kongphua a. 'Mother broke the bowls.'	Q14	O
	Stative	**Titi ka mama sionn.* 'The little brother misses Mother.'	Q10	X
		**Abin ka Aing kahi.* 'Abin likes Aing.'	Q11	X

Progressive	Atelic	*Cece teh ka titi liap.* 'The sister is tweaking the little brother.'	Q3	O
		Koko teh ka titi siuli. 'The brother is beating the little brother.'	Q16	O
	Telic	**Papa teh ka ia chit chingkhi.* 'Father is wiping the chair clean.'	Q6	X
		**Muemue teh ka cui limliau.* 'The little sister is drinking up the water .'	Q19	X
Filler		**Kaua titi ka.* 'The dog bit the little brother.'	Q7	X
		**Ti pangking niaua khun.* 'The cat is sleeping in the room.'	Q12	X
		Koko teh phah kiu. 'The brother is playing the ball.'	Q17	O
		Titi theh hue ho muemue. 'The little brother gave the flowers to the little sister.'	Q5	O
Totla				20

Appendix B: Scenarios Used in the PP Task

Type 1: Referentiality constraint on the *ka*-NP

Scenario 1: *Muemue e cheh lak ti leh thookha, mama khuann tioh, tio tui <u>hit pun cheh</u> co siannmih taici?* (definite)

Hint: *khioh khilaih*

Target Sentence: *Mama ka hit pun cheh khioh khilaih.*

'Mother picked up that book.'

Scenario 2: *Muemue ciok thoia hue e, takpai khuanntioh hue, tio tui <u>hue</u> co siannmih taici?* (generic)

Hint: *tantiau*

Target Sentence: *Muemue tianntiann ka hue tantiau.*

'The little sister often throws away flowers.'

Scenario 3: *Aing in tau ciok tua e, laibin u ciok ce king pangking, Aing ciok ai chingkhi e, li khuann, i tui cit king pangking co siannmih taici?* (indefinite)

Hint: *chit chingkhi*

Target Sentence: **Aing ka cit king pangking chit chingkhi a.*

'Aing wiped a room clean.'

Scenario 4: *Kha tah chia tiam u ciok ce tai kha tah chia e, papa chin chai king cit tai, li khuann, papa tui cit tai chia co siannmih taici?* (indefinite)

Hint: *be tnglai*

Target Sentence: **Papa ka cit tai chia be tnglai a.*

'Father bought back a bicycle.'

Type 2: Omission constraint on the *ka*-NP

Scenario 5: *Cang mama boti leh, cece tio khihu titi, li khuann, cece tui i co siannmih taici?* (3rd person)

Hint: *liap*

Target Sentence: *Titi oh, cece ka liap ne.*

.‘The little brother, the sister pinched him.’

Scenario 6: *Abin i bo kuai, koko ciok siukhi e, li khuann, koko tui i co siannmih taici?* (3rd person)

Hint: *me*

Target Sentence: *Abin, koko ka me ne.*

‘Abin, the brother scolded him.’

Type 3: Dynamicity constraint on the *ka*-Verb

Scenario 7: *Puea khng ti toha pin, papa bo siosim long tioh, puea tio an ne, li khuann, papa tui puea co siannmih taici?* (nonstative)

Hint: *kongphua*

Target Sentence: *Papa ka puea kongphua a.*

'Father broke the cup.'

Scenario 8: *Guabin e banga ciok ce e, muemue ching te khoo, li khuann, banga tui muemue co siannmih taici?* (nonstative)

Hint: *ting*

Target Sentence: *Banga ka muemue ting.*

'The mosquito stung the little sister.'

Scenario 9: *Cang titi tnglai, bo khuanntioh mama, tio an ne, li khuann, titi tui mama co siannmih taici?* (stative)

Hint: *sionn*

Target Sentence: **Titi ka mama sionn.*

'The little brother misses Mother.'

Scenario 10: *Aing ciok koocui e, Abin khuanntioh Aing, tio an ne, Abin tui Aing co siannmih taici?* (stative)

Hint: *kahi*

Target Sentence: **Abin ka Aing kahi.*

'Abin likes Aing.'

Type 4: Progressive constraint on the *ka*-verb

Scenario 11: *Kim a jit muemue bo sia kongkho, mama caiiann liauau, ciok siu khi e, li khuann, mama teh tui muemue co siannmih taici?* (atelic)

Hint: *phah*

Target Sentence: *Mama teh ka muemue phah.*

'Mother is hitting the little sister.'

Scenario 12: *Thautua titi theh muemue e mihkiann, papa khuann tioh, ciok siu khi e, li khuann, papa teh tui titi co siannmih taici?* (atelic)

Hint: *siuli*

Target Sentence: *Papa teh ka titi siuli.*

'Father is beatinging the little brother.'

Scenario 13: *Toha ciok thaiko, mama khuann tioh, tio an ne, li khuann, mama teh tui toha co siannmih taici?* (telic)

Hint: *chit chingkhi*

Target Sentence: **Mama teh ka toha chit chingkhi.*

'Mother is wiping the desk clean.'

Scenario 14: *Muemue paktoo ciok iau, khuann tioh toha ting u png, tio an ne, li khuann, muemue teh tui png co siannmih taici?* (telic)

Hint: *ciahliau*

Target Sentence: **Muemue teh ka png ciahliau.*

'The little sister is eating the rice up.'

Appendix C: Test Items Used in the GJ Task

Type 1: Referentiality constraint on the *ka*-NP

1. Test Item: *Muemue ka hit liap kama ciahtiau a.* (definite)
   'The little sister ate that tangerine.'

2. Test Item: *Muemue tianntiann ka cheh oopeh tan.* (generic)
   'The little sister often puts books in disorder.'

3. Test Item: **Aing ka cit liau ia chit chingkhi a.* (indefinite)
   'Aing wiped a chair clean.'

4. Test Item: **Koko ka cit tai kichia be tnglai a.* (indefinite)
   'The brother bought back a motorcycle.'

Type 2: Omission constraint on the *ka*-NP

5. Test Item: *Titi oh, cece cang ka liap ne.* (3rd person)
   'The little brother, the sister pinched him yesterday.'

6. Test Item: *Titi oh, cang koko ka me ne.* (3rd person)
   'The little brother, the brother scolded him yesterday.'

7. Test Item: **Gua oh, koko e ka phah.* (1st person)
   'The brother will hit me.'

8. Test Item: **Li oh, koko e ka that.* (2nd person)
   'The brother will kick you.'

Type 3: Dynamicity constraint on the *ka*-verb

9. Test Item: *Koko ka titi sak.* (nonstative)
   'The brother pushed the little brother.'

10. Test Item: *Mama ka uann kongphua.* (nonstative)
    'Mother broke the bowls.'

11. Test Item: **Titi ka mama sionn.* (stative)
    'The little brother misses Mother.'

12. Test Item: **Abin ka Aing kahi.* (stative)
    'Abin likes Aing.'

Type 4: Progressive constraint on the *ka*-verb

13. Test Item: *Koko teh ka titi liap.* (atelic)
    'The sister is tweaking the little brother.'

14. Test Item: *Koko teh ka titi siuli.* (atelic)
    'The brother is beating the little brother.'

15. Test Item: **Papa teh ka ia chit chingkhi.* (telic)
    'Father is wiping the chair clean.'

16. Test Item: **Muemue teh ka cui limliau.* (telic)
    'The little sister is drinking up the water .'

Appendix D: Statistic Data

Table (i) Subjects' Correct Responses on the Main Properties of the *ka* Construction (Paired Samples Test; in p-values)

Group			Sig. (2-tailed)
1	Pair 1	Referentiality – Omission	.554
	Pair 2	Referentiality - Dynamicity	.609
	Pair 3	Referentiality - Progressive	.453
	Pair 4	Omission – Dynamicity	.333
	Pair 5	Omission – Progressive	1.000
	Pair 6	Dynamicity – Progressive	.379
2	Pair 1	Referentiality – Omission	.021
	Pair 2	Referentiality - Dynamicity	.106
	Pair 3	Referentiality - Progressive	.038
	Pair 4	Omission – Dynamicity	.001
	Pair 5	Omission – Progressive	.435
	Pair 6	Dynamicity – Progressive	.005
3	Pair 1	Referentiality – Omission	.000
	Pair 2	Referentiality - Dynamicity	.001
	Pair 3	Referentiality - Progressive	.580
	Pair 4	Omission – Dynamicity	.000
	Pair 5	Omission – Progressive	.001
	Pair 6	Dynamicity – Progressive	.001
4	Pair 1	Referentiality – Omission	.003
	Pair 2	Referentiality - Dynamicity	.000
	Pair 3	Referentiality - Progressive	.036
	Pair 4	Omission - Dynamicity	.000
	Pair 5	Omission - Progressive	.029
	Pair 6	Dynamicity - Progressive	.000

Table (ii) Subjects' Correct Reponses on the Main Properties of the *ka* Construction (One-way ANOVA)

Scheffe

Dependent Variable	(I) Group	(J) Group	Mean Difference (I-J)	Sig.
Referentiality	1	2	-.13281	.131
		3	-.23438(*)	.001
		4	-.27344(*)	.000
	2	1	.13281	.131
		3	-.10156	.340
		4	-.14063	.099
	3	1	.23438(*)	.001
		2	.10156	.340
		4	-.03906	.917
	4	1	.27344(*)	.000
		2	.14063	.099
		3	.03906	.917
Omission	1	2	-.01042	.998
		3	-.02083	.985
		4	-.12500	.159
	2	1	.01042	.998
		3	-.01042	.998
		4	-.11458	.223
	3	1	.02083	.985
		2	.01042	.998
		4	-.10417	.302
	4	1	.12500	.159
		2	.11458	.223
		3	.10417	.302
Dynamicity	1	2	-.19531(*)	.025
		3	-.35156(*)	.000
		4	-.48438(*)	.000
	2	1	.19531(*)	.025
		3	-.15625	.104
		4	-.28906(*)	.000
	3	1	.35156(*)	.000
		2	.15625	.104
		4	-.13281	.210

	4	1	.48438(*)	.000
		2	.28906(*)	.000
		3	.13281	.210
Progressive	1	2	-.05469	.810
		3	-.25000(*)	.001
		4	-.23438(*)	.001
	2	1	.05469	.810
		3	-.19531(*)	.010
		4	-.17969(*)	.021
	3	1	.25000(*)	.001
		2	.19531(*)	.010
		4	.01563	.994
	4	1	.23438(*)	.001
		2	.17969(*)	.021
		3	-.01563	.994

* The mean difference is significant at the .05 level.

Table (iii) Subjects' Correct Responses on the Sub-Properties of the *ka* Construction (Paired Samples Test; in p-values)

Group			Sig. (2-tailed)
1	Pair 1	DefiniteGeneric – Indefinite	.002
	Pair 2	ThirdPerson – FirstSecondPerson	.041
	Pair 3	Nonstative – Stative	.043
	Pair 4	Atelic – Telic	.054
2	Pair 1	DefiniteGeneric – Indefinite	.000
	Pair 2	ThirdPerson – FirstSecondPerson	.097
	Pair 3	Nonstative – Stative	.000
	Pair 4	Atelic – Telic	.083
3	Pair 1	DefiniteGeneric – Indefinite	.000
	Pair 2	ThirdPerson – FirstSecondPerson	.432
	Pair 3	Nonstative – Stative	.000
	Pair 4	Atelic – Telic	.000
4	Pair 1	DefiniteGeneric – Indefinite	.000
	Pair 2	ThirdPerson – FirstSecondPerson	.011
	Pair 3	Nonstative - Stative	.000
	Pair 4	Atelic – Telic	.000

Table (iv) Subjects' Correct Reponses on the Sub-Properties of the *ka* Construction (One-way ANOVA)

Scheffe

Dependent Variable	(I) Group	(J) Group	Mean Difference (I-J)	Sig.
DefiniteGeneric	1	2	-.23438(*)	.006
		3	-.37500(*)	.000
		4	-.42188(*)	.000
	2	1	.23438(*)	.006
		3	-.14063	.190
		4	-.18750(*)	.041
	3	1	.37500(*)	.000
		2	.14063	.190
		4	-.04688	.908
	4	1	.42188(*)	.000
		2	.18750(*)	.041
		3	.04688	.908
Indefinite	1	2	-.12500	.174
		3	-.14063	.101
		4	-.20313(*)	.006
	2	1	.12500	.174
		3	-.01563	.994
		4	-.07813	.575
	3	1	.14063	.101
		2	.01563	.994
		4	-.06250	.734
	4	1	.20313(*)	.006
		2	.07813	.575
		3	.06250	.734
ThirdPerson	1	2	-.03125	.976
		3	.06250	.844
		4	.04688	.926
	2	1	.03125	.976
		3	.09375	.606
		4	.07813	.733
	3	1	-.06250	.844
		2	-.09375	.606
		4	-.01563	.997

	4	1	-.04688	.926
		2	-.07813	.733
		3	.01563	.997
FirstSecondPerson	1	2	-.03125	.995
		3	.18750	.479
		4	.46875(*)	.003
	2	1	.03125	.995
		3	.21875	.340
		4	.50000(*)	.001
	3	1	-.18750	.479
		2	-.21875	.340
		4	.28125	.142
	4	1	-.46875(*)	.003
		2	-.50000(*)	.001
		3	-.28125	.142
Nonstative	1	2	-.21875	.088
		3	-.26563(*)	.024
		4	-.31250(*)	.005
	2	1	.21875	.088
		3	-.04688	.957
		4	-.09375	.739
	3	1	.26563(*)	.024
		2	.04688	.957
		4	-.04688	.957
	4	1	.31250(*)	.005
		2	.09375	.739
		3	.04688	.957
Stative	1	2	.01563	.993
		3	.21875(*)	.002
		4	.37500(*)	.000
	2	1	-.01563	.993
		3	.20313(*)	.004
		4	.35938(*)	.000
	3	1	-.21875(*)	.002
		2	-.20313(*)	.004
		4	.15625(*)	.043
	4	1	-.37500(*)	.000
		2	-.35938(*)	.000

		3	-.15625(*)	.043
Atelic	1	2	-.12500	.386
		3	-.20313	.053
		4	-.07813	.752
	2	1	.12500	.386
		3	-.07813	.752
		4	.04688	.933
	3	1	.20313	.053
		2	.07813	.752
		4	.12500	.386
	4	1	.07813	.752
		2	-.04688	.933
		3	-.12500	.386
Telic	1	2	-.07813	.692
		3	.06250	.817
		4	.12500	.301
	2	1	.07813	.692
		3	.14063	.204
		4	.20313(*)	.026
	3	1	-.06250	.817
		2	-.14063	.204
		4	.06250	.817
	4	1	-.12500	.301
		2	-.20313(*)	.026
		3	-.06250	.817

Table (v) Subjects' Correct Responses in the Two Tasks (Paired Samples Test; in p-values)

Group			Sig. (2-tailed)
1	Pair 1	GJReferentiality - PPReferentiality	.158
	Pair 2	GJOmission - PPOmission	.000
	Pair 3	GJDynamicity – PPDynamicity	.289
	Pair 4	GJProgressive – PPProgressive	.000
2	Pair 1	GJReferentiality - PPReferentiality	.523
	Pair 2	GJOmission – PPOmission	.000
	Pair 3	GJDynamicity - PPDynamicity	.036
	Pair 4	GJProgressive - PPProgressive	.441
3	Pair 1	GJReferentiality - PPReferentiality	.003
	Pair 2	GJOmission - PPOmission	.000
	Pair 3	GJDynamicity – PPDynamicity	.497
	Pair 4	GJProgressive – PPProgressive	.191
4	Pair 1	GJReferentiality - PPReferentiality	.000
	Pair 2	GJOmission – PPOmission	.000
	Pair 3	GJDynamicity - PPDynamicity	.014
	Pair 4	GJProgressive - PPProgressive	.004