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中文否定詞「不」與「沒」之第一語言習得

First Language Acquisition of *Bu* and *Mei*

in Mandarin Chinese

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摘要

本研究旨在探討以中文為母語之兒童對於否定詞「不」和「沒」詮釋的發展。本研究主要包含兩階段的詮釋測驗，兩個測驗皆為接受度測驗：第一階段測驗兒童對於「不」和「沒」在單一否定句及雙重否定句與不同動詞搭配時的接受程度之差異；第二階段觀察語境對於兒童詮釋「不」和「沒」在單一否定句及雙重否定句之影響。兩測驗皆探討年齡效應。研究對象包含實驗組的七十二位兒童，依其就讀年級分為四組：幼兒園大班、小學二年級、四年級、六年級，每組各十八位，以及對照組的成人十八位。

研究結果顯示，對於「不」和「沒」與動詞的搭配，以及否定及雙重否定之習得隨著年齡增長，接受度逐漸與成人趨向一致。在動詞搭配上，對於兒童而言，動作動詞與「不」和「沒」搭配的接受度最高。幼兒園及二年級兒童尚未具備成人母語者的動詞與否定詞搭配之能力，但四年級兒童已可正確搭配動詞與否定詞「不」和「沒」，與成人組相同，皆對於「不」與有界動詞和「沒」與無界動詞的搭配度有較高的接受度。關於單一否定句及雙重否定句，只有六年級兒童，因已進入形式運思期，與成人組相同，皆對於「不」於單一否定句及「沒」於雙重否定具有較高的接受度，較能進行邏輯及抽象思考。最後，語境效應本研究中呈現正面效應，受試者在提供語境的測驗時，對否定句子的接受度普遍皆有提高。

關鍵詞：否定句、「不」、「沒」、動詞類別、第一語言習得

ABSTRACT

The present study aims at investigating children's acceptability of *bu* and *mei* in negative sentences. Two tasks were designed to elicit the subjects' interpretations. In the first task, the children's acceptability rates of *bu* and *mei* in negatives in isolation were obtained, and in the second task, context was provided to examine whether it would increase children's acceptability rates of negatives. Age differences were also taken into consideration in the two tasks. A total of seventy-two child subjects were recruited from an elementary school in New Taipei City and they were further divided into four experimental groups (i.e., the kindergartners, Grade 2, Grade 4 and Grade 6). In addition, eighteen adults were recruited as the control group.

The results showed there were age differences in the acquisition of *bu* and *mei* in negative sentences. It was found that the kindergartners and Grade 2 did not show an adult-like tendency of preference for *bu* and *mei* with verb types. However, Grade 4 started to show the adult-like tendency, and they all preferred *bu* to occur with atelic verbs, *mei* to accompany telic verbs. As for *bu* and *mei* in single and double negative sentences, the results indicated that our subjects had a stronger adult-like preference for *bu* and *mei* in negatives when they reached Grade 6, a stage where they could do logical reasoning. Finally, the subjects' acceptability rates increased when context was provided.

Keywords: negatives, *bu*, *mei*, verb types, first language acquisition

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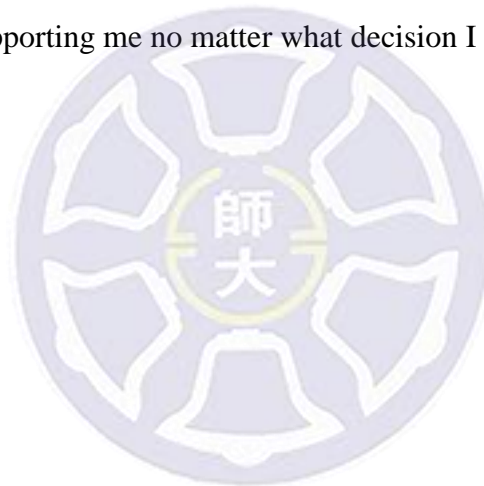


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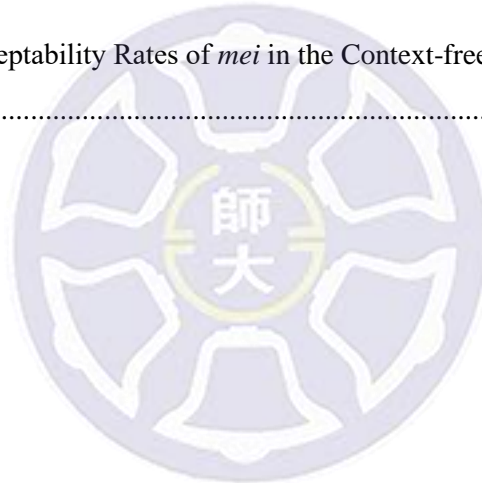


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Chapter One

Introduction

1.1 Motivation

A negative sentence expression is very common in every language use since negation is a basic concept in logic (Nordmeyer and Frank 2013, Zhou et al. 2014b). It is used to reverse the truth value of a statement. To make it clear, consider sentence (1).

- (1) Xiaohua bu chi haixian.
Xiaohua not eat seafood
'Xiaohua doesn't eat seafood.'

The verb phrase *chi haixian* 'eat seafood' is in the scope of the negator *bu* 'not'; therefore, *bu* denies the positive feature of *chi haixian* and results in a negative meaning. A negator not only can take a scope of a verb, it also can take a scope over non-verbal elements like adverbials and manner expressions (Ernst 1995, Jackendoff 1969). Thus, the scope of a negator determines the meaning of sentences (Ernst 1995, Jackendoff 1969). As for double negative sentences, the first negator takes scope over the second negator, as in (2).

- (2) Xiaohua bu hui bu lai.
Xiaohua not will not come
'Xiaohua will come.'

In (2), the second negator *bu* denies the verb phrase *bu lai* 'not come' and generates an affirmative meaning.

Carpenter *et al.* (1999) claim that negative forms take more time to process than affirmative forms. In the acquisition of a language, it is essential to know the relationship between language forms and their corresponding meanings. This relationship is related to iconic quantity; Iconic quantity¹, which states that the length and complexity of an expression influence the complexity of cognitive perspective (Homain 1983, Sun 2011). Therefore, double negative sentences are less preferred than positive sentences. From a pragmatic perspective, previous research claims that a double negative is still used to express a positive meaning but it makes the positive meaning weaker than an affirmative sentence.

Children's acquisition of single negatives and double negatives has been discussed in previous studies (Jou 1988, Zhou *et al.* 2014a, 2014b). One of the popular issues in first language acquisition is age. The development of negation has been studied by previous researchers (Bloom 1970, Pea 1980, Nordmeyer & Frank 2013). Pea (1980) found that English-native children, as early as 12 month-olds, produced negative expressions for nonexistence and rejection². However, children were found to have difficulty with negative terms such as *less* when they were 4 years old (Klatzky, Clark & Macken 1973). Jou (1988) and Zhou *et al.* (2014b) explored an age effect on Chinese children's acquisition of double negatives; nevertheless, they were not in agreement on when children acquire double

¹ Iconic quality is one of the concepts of iconicity, which includes iconic quality, iconic sequencing and iconic proximity.

² Children might express nonexistence by saying "no more juice," and convey rejection by saying "no go outside" (Bloom 1970, Pea 1980).

negative sentences.

In addition to the age issue, Zhou et al. (2014a) investigated single negative sentences consisting of different lexical aspectual clauses of verbs, mainly following Vendler (1957), who classified verbs into four types: state, activity, achievement and accomplishment. The properties and examples of the four verb types are exhibited as in Table 1-1.

Table 1-1 A Classification of Verb Types (Vendler 1957)

Verb Types	Properties	Examples
State	-endpoint, +durative, -dynamic	love, know, believe
Activity	- endpoint, +durative, +dynamic	run, swim, pull something
Achievement	+ endpoint, -durative, +dynamic	win, recognize, reach, die
Accomplishment	+ endpoint, +durative, +dynamic	paint a picture, build a house

Although Zhou et al. (2014a) discussed lexical aspect with single negatives, they did not investigate single negative sentences with activity verbs, such as *Wo bu/mei chi yao* ‘I didn’t/wouldn’t take the medicine.’ Moreover, the influence of verb types on double negatives was not discussed.

Rumain (1988) discussed how English-speaking subjects processed negative sentences and found that two cues (i.e., an article cue³ and a position cue⁴) helped the subjects process negatives. It is possible that some clues may be helpful for the comprehension of single

³ An article cue means that a definite article and an indefinite article in a negative sentence help the subjects determine which element is negated (i.e., ‘Mary is not washing the car.’). Since ‘the car’ is a definite noun, which is not new information, it is taken outside the focus of the negation. Thus, this sentence may be interpreted as ‘Mary is not washing the car; she is waxing the car.’

⁴ A position cue means negators may negate different elements due to its position (i.e., ‘N₁ Neg V N₂’) Neg probably negates V, N₂, or VN₂.

negatives and double negatives in Mandarin Chinese. Some empirical studies considered context as an important clue for acquisition (i.e., de Villiers & Flusberg 1975, Romain 1988, Glenberg et al. 1999, Zhou *et al.* 2014b). For instance, deVilliers and Flusberg found that negatives were not difficult for English children to process after providing them with contexts. Therefore, the present study has taken context into account.

The present study has also explored children's first language acquisition of *bu* and *mei*, in Mandarin Chinese and at what age they would acquire single negatives and double negatives. In order to fill the gap of previous research, the effects of context, verb types and age have been considered in this study. The aims of the present study are as follows. The first aim is to examine at what age children acquire single negative sentences and double negative sentences in Mandarin Chinese, and at what age they are aware of the relation between verb types and negators. The second is to discuss whether complexity of single negative sentences and double negative sentences will influence children's comprehension and whether context is helpful to determine meanings of single negatives and double negatives.

1.2 Research Questions

Based on the aforementioned discussion, the research questions of the present study are as follows:

1. Can Chinese children distinguish aspectual clauses of verbs with *bu* from those with *mei*?

2. Are Chinese children aware that the compatibility of negators and lexical aspect in double negatives is different from that in single negatives?
3. Can the comprehension of single negative sentences and double negative sentences be enhanced when appropriate contexts are provided?
4. At what age do children interpret negative sentences and double negative sentences as adults do?

1.3 Significance of the Study

Single negatives and double negatives in Mandarin Chinese have drawn numerous attentions and have been analyzed from both theoretical and empirical perspectives (Teng 1974, Jou 1988, Rumain 1988, Li & Thompson 1981, Fan & Xiao 2010, Sun 2011, Zhou et al. 2014a, 2014b). Even though theoretical issues concerning single negatives and double negatives have been widely discussed, few studies have investigated the relation between negators and verb types in double negative sentences.

Children may adopt some methods to figure out the meanings of single negatives and double negatives and to judge whether the collocation of negators and verb types is possible. A contextual cue may be one of the methods they employ. However, there is a limitation of previous studies (Zhou et al. 2014a, 2014b). Context provided in the tasks was lengthy and the child subjects had processing difficulty due to limited working memory capacity.

To sum up, the present study will investigate the relation between negators and verb

types in both single negatives and double negatives. Additionally, this study explores whether context can help children comprehend the meanings of single negatives and double negatives, and better recognize the collocation of verb types and negators.

1.4 Organization of the Thesis

This thesis is organized as follows. Chapter Two reviews some theoretical studies, including syntactic and semantic properties of single negatives and double negatives. Empirical studies on first language acquisition of single negative sentences and double negative sentences are also reviewed in this chapter. Chapter Three presents the research design of the present study, including the background of the subjects, the procedure of experiments, and the expected findings. Chapter Four reports the results and the analysis of the children's acquisition of *bu* and *mei* in negative sentences. Finally, Chapter Five provides the major findings of the present study and some suggestions for future research.

Chapter Two

Literature Review

In this chapter, some theoretical studies and empirical studies of single negative sentences and double negative sentences are explored. Section 2.1 reviews characteristics of Chinese negators *bu* and *mei*, syntactic features of single negatives and semantic properties of double negatives. In Section 2.2, studies of first language acquisition of double negative sentences and single negative sentences are discussed. Finally, a summary of this chapter is provided in Section 2.3.

2.1 Theoretical Studies of Single Negation and Double Negation

Negative sentences are commonly used in every language (Li and Thompson 1989). When two negators occur in a sentence, they cancel the negative meanings of each other and generate an affirmative meaning. There are many negators in Mandarin Chinese whose scope determines the interpretation of sentences. Some previous studies on semantic features and syntactic structures of *bu* and *mei* (Teng 1974, Li and Thompson 1989) are reviewed since the two negators are most frequently used in Mandarin Chinese. In addition, the characteristics of double negative sentences are also reviewed in this chapter (Fan and Xiao 2010, Sun 2011).

2.1.1 Teng (1974)

Teng (1974) focuses on single negative sentences and further investigates the scope of negators in Mandarin Chinese. The difference between sentence negation and constituent negation can be distinguished by a position of a negation. For example, a negator can be placed on the left, as shown in (1a), or on the right of a modal or an adverb, as shown in (1b).

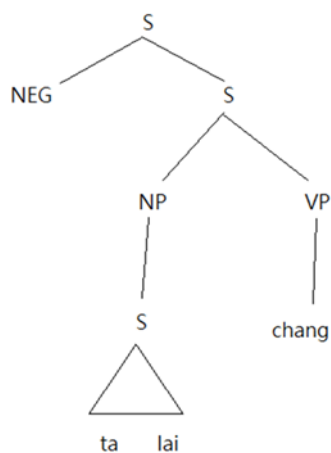
- (1) a. Ta bu chang lai.
 s/he not often come
 'He doesn't come often.'
 b. Ta chang bu lai.
 s/he often not come
 'Often he doesn't come.'

(Teng 1974:132)

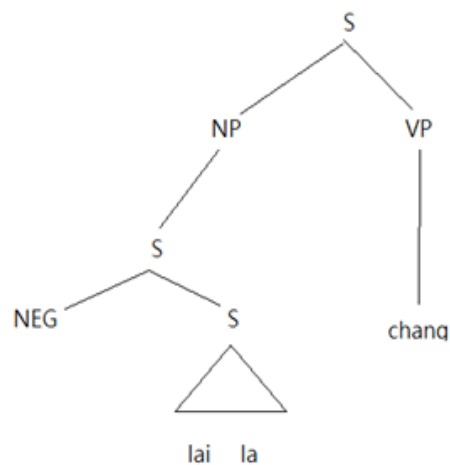
The negator in (1a) does not actually negate the verbal element, but it negates the entire S.

The tree structures of (1a) and (1b), cited from Teng (1974: 133-134) are illustrated below.

(2a)



(2b)



In (2a), NEG immediately c-commands¹ *chang* ‘often,’ while the NEG in (2b) does not. The negator in (2b) negates the embedded S. Teng argues that two transformational rules are operated: NEG-lowering and predicate-lowering. NEG lowers to the left of the lower VP; therefore, it forms *bu chang* ‘not often’ in (2a) and *bu lai la* ‘not come’ in (2b). After this step, the predicate-lowering rule lowers the highest VP to combine with the embedded verb phrase. Then, *bu chang lai* in (2a) and *chang bu lai* in (2b) are generated. Sometimes, NEG-raising occurs when the NEG in the surface form is the higher predicate, as in (3).

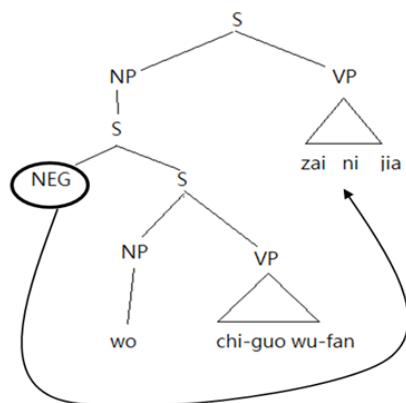
- (3) Wo jiu-shi mei zai ni jia chi-guo wu-fan.
 I certainly not in you home eat-Asp lunch
 a. ‘I have eaten lunch at other people’s house, but not at yours.’
 b. ‘I have eaten other meals in your house, but not lunch.’

(Teng 1974:139)

Two interpretations can be derived from (3). First, it means “I have eaten lunch at other people’s house, but not at yours.” Second, it can also be interpreted as “I have eaten other meals at your house, but not lunch.” Teng mentions that when NEG is raised to the higher VP and lower to the locative predicate, the second interpretation can be derived, as illustrated in (4), which is taken from Teng (1974:139).

¹ The term c-command was first seen in the dissertation of Reinhart (1976). The definition is shown as follows: A c-commands B if (1) the first branching node which dominates A also dominates B, and (2) A doesn’t dominate B and B doesn’t dominate A.

(4)



Moreover, negators can be dominated by or dominate a modal at the same time to form a double negative sentence, as in (5).

(5) Ta bu hui bu shuo.
s/he not have not speak
'It won't be the case that he won't talk.'

(Teng 1974: 135)

To sum up, Teng claims that the scope of negation influences the interpretation of negative sentences. However, he only focuses on structures of single negative sentences. The structures and the transformational rules of double negative sentences are not discussed in his study.

2.1.2 Li and Thompson (1981)

Li and Thompson (1981) investigate meanings and functions of negators in Mandarin Chinese, which consists of four frequently used negative forms: *bu*, *mei*, *bie*, and *meiyou*. The most common negative form is *bu*, as in (6).

(6) Wo bu jide ta.
I not remember him
'I don't remember him/her.'

(Li & Thompson 1981:415)

However, *bu* cannot be used without the modal *yao* 'want' in imperative sentences, such as

(7), whereas only *bie* can be used.

(7) *Bu/ Bie guan men!
not close door
'Don't close the door.'

(Li & Thompson 1981: 416)

The other negative form is *mei*, which is a abbreviation of *meiyou* 'not have.' Since *you* 'have' can be omitted, *mei* contains both negative and existential meanings.

In addition to negative forms, Li and Thompson (1981) discuss the position of negators. Generally speaking, a negator often follows a subject and precedes a verb phrase. Some examples taken from Li and Thompson (1981:417-418) are shown below.

(8) Ta mei (you) kai men.
s/he² not open door
'S/He didn't open the door.'

(9) Ta bu nian shu.
s/he not study book
'S/He wouldn't study.'

Moreover, the most frequent usage of a negator is preceding the auxiliary *neng* 'can.'

However, the reverse position is also acceptable for a negator. To illustrate, examples taken

² In Li and Thompson (1981), *ta* is translated as 3sg.

from Li and Thompson (1981:421) are shown below:

(10) a. Wo bu neng qu.

I not can go

‘I cannot go.’

b. Wo neng bu qu.

I can not go

‘I am allowed not to go.’

Interestingly, the scope of negation is determined by the position of negators, as shown in (10a) and (10b), which are interpreted differently. The meaning of (10a) *Wo bu neng qu* is ‘I cannot go,’ whereas *Wo neng bu qu* can be interpreted as ‘I am allowed not to go.’ Besides discussing the possible positions for the negator, Li and Thompson explore the functions of *bu* and *mei(you)*. They (1981) argue that *bu* denies the existence of the state, while *mei(you)* denies the completion of the action, as shown in the following examples taken from Li and Thompson (1981:422).

(11) a. Ta bu congming.

s/he not intelligent

‘S/He { is }
{ was } not intelligent.’

b. *Ta mei(you) congming.

s/he not intelligent

(11a) and (11b) show that *mei(you)* is incompatible with the stative adjective *congming* ‘intelligent,’ whereas *bu* can co-occur with it.

To sum up, Li and Thompson mention that negators in Mandarin have different meanings. The position of the negator depends on what it negates. In other words, the

element that is negated by the negator will be within the scope of the negator. Nevertheless, Li and Thompson's study has some limitations. First, they only describe the usage of negation, but they did not analyze the syntactic structure of negation in detail. Second, they mention that '*ta mei(you) zai shui jiao*³' is ungrammatical in Mandarin Chinese. However, this sentence is acceptable for some native speakers.

2.1.3 Fan and Xiao (2010)

Fan and Xiao (2010) investigate the derivational process to generate meanings of double negative sentences in different syntactic forms. In general terms, the concept of negation indicates that if the constituents can express negative meanings, they are all negative forms. A double negative sentence is a structure which contains two negative elements. Nevertheless, not all sentences which consist of two negative elements are double negative sentences.

(12) Buyong-de shu juangei meiqian-de haizi.
needless book donate poor children
'We can donate needless books to needy children.' (Fan and Xiao 2010: 78)

(12) is not a double negative sentence since the affirmative meaning does not result from the two negative elements. To avoid this misinterpretation, Fan and Xiao suggest that a double negative sentence should be defined as follows: the affirmative meaning of a double negative structure is derived from one negator negates the negative meaning of the other negator.

³ Li and Thompson (1981) mention that *zai* is a durative-action aspect marker which cannot occur with *mei(you)*. Only *bu* can negate an ongoing activity.

As for the structure of double negative sentences, Fan and Xiao (2010) claim two negations cannot negate the same object in Chinese, as shown in (13):

- (13) Meiyou bu he shui.
 not-have not drink water
 ‘Someone drinks some water.’

(Fan and Xiao 2010: 78)

In (13), *meiyou* ‘not-have’ negates *bu he shui* ‘not drink water,’ not *meiyou bu* ‘not –have not’ negates *heshui* ‘drink water.’ However, when an auxiliary occurs between two negators, as in (14), the derivational process of this sentence is more complicated, as shown in (15).

- (14) *Bu keneng bu lai.*
 not may not come
 ‘It is not a case, I won’t come.’

(Fan and Xiao 2010: 79)

- (15) *Bu[keneng[bu lai]] = bu [bu [yiding lai]] = yiding lai*

Fan and Xiao consider that the interpretation of “*keneng bu + VP*” is equivalent to the negative meaning of “*bu yiding + VP*.” As (15) exhibits, the first *bu* dominates the second *bu*; therefore, two negators cancel each other and generate the affirmative meaning “*yiding lai*”.

The other structure of a double negative sentence begins with *bushi* ‘not’ as in (16a) and (16b), which are taken from Fan and Xiao (2010: 81).

(16) a. Bu shi [wo bu lai].
not beV I not come
'I have come.'

b. [Bu shi wo] bu lai.
not beV I not come
'It was not I that did want to come.'

Bushi in (16a) negates the whole sentence 'wo bu lai', while *bushi* in (16b) functions as a focus marker. This type of double negative structures '*bushi...bu...*' conveys a negative meaning in context-free situations. However, sentences (16a) and (16b) express volition when contexts are provided (e.g. (17a) and (17b)).

(17) a. Ta bushi bu lai, ershi jiali you keren
s/he not not come, but home have guests
'It is not that he won't come, but he has guests at home.'

b. Wo bushi bu zancheng ni qu, shi bu tongyi ni qu
I not not approve you go, beV not agree you go.
'It is not that I don't allow, but I disapprove you to go.'

(Fan and Xiao 2010:81)

To sum up, the affirmative meaning of a double negative sentence is derived through the derivational process, as mentioned in (15) above. Fan and Xiao describe the procedure to generate meanings of double negative sentences. However, no empirical study is presented to support their argument.

2.1.4 Sun (2011)

Sun (2011) analyzes double negative sentences from a cognitive perspective. The grammatical form is related to the semantic structure of language. Sun argues that the concept

of affirmation is not against the concept of negation. There are also some intermediate terms between them as some antonyms do. The intermediate terms between a negative sentence and a positive sentence can be expressed by using a double negative structure. Sun (2011) analyzes double negative sentences based on the theory of iconicity and compares double negative sentences of English and Chinese. To illustrate, consider sentences in (18) and (19), taken from Sun (2011:1444).

(18) a. Yiqie wei renshizhe dou bu-neng bu zhuyi jiaoshoufa de wenti.
every be teacher all not can not attention teaching of problem
'Every teacher should pay attention on the problem of their teaching methods.'

b. Yiqie wei renshizhe dou yao zhuyi jiaoshoufa de
every be teacher all-have attention teaching method of
wenti.
problem
'Every teacher should pay attention on the problem of their teaching methods.'

(19) a. He did not deny that he had made mistakes.

b. He admitted that he had made mistakes.

These examples show that double negative sentences are more positive than affirmative ones semantically, and the former is stronger in tone than the latter. On the other hand, both sentences in (20) express that the speaker has tried to help, but that there is no method available. A double negative sentence is weaker than an affirmative one semantically when it carries an indirect and euphemistic meaning, as shown in (20a-b), which are taken from Sun (2011: 1444).

(20) a. Bushi women bu xiang gei xianqinmen xiaolao,
not we not want give fellowmen service
shizai shi meiyou fazi.
actually be not-have method
'We really want to help fellowmen, but actually there is no method.'

b. Women xiang gei xianqinmen xiaolao,
we want give fellowmen service
shizai shi meiyou fazi.
actually be not-have method
'We really want to help fellowmen, but actually there is no method.'

The other differences between affirmative sentences and double negative sentences are the complexity and length. Based on iconic quantity, a more complicated sentence conveys a stronger meaning. That is, double negative sentences express more affirmative meanings than affirmative sentences do. To sum up, Sun (2011) claims that both affirmative sentences and double negative sentences carry positive meanings; nonetheless, double negative sentences can strengthen the degree of affirmation and it is not redundant in languages. However, no empirical evidence is provided to support that double negative sentences express stronger meanings than affirmative sentences.

2.1.5 A Summary of Theoretical Studies of Single Negation and Double Negation

Previous studies have investigated syntactic features and functions of single negation and double negation in Mandarin Chinese. The scope of negation determines the meanings of negative sentences (Teng 1974, Li & Thompson 1981). For example, if a negator precedes a main verb, the negator negates the affirmative feature of the verb and forms a negative

sentence. In addition to the scope of negation, Li and Thompson (1981) investigate meanings and functions of negators in Mandarin Chinese. Sentences may convey different meanings with different negators. Besides, the interaction between aspects and negators in Mandarin Chinese also varies. *Mei(you)* cannot co-occur with *-le* and *zai*, while *bu* cannot co-occur with *-guo*.

A double negative sentence is also studied by some previous researchers (Sun 2011) who argue that double negative sentences are stronger and more positive than affirmative ones. Moreover, a double negative sentence may carry an indirect and euphemistic meaning as well. Fan and Xiao (2010) investigate the process to generate meanings of double negative sentences in different syntactic forms and suggest that their meanings cannot be determined literally or from the surface form. However, no research has been focused to acquisition of single negatives and double negatives. In the next section, some empirical studies are reviewed.

2.2 Empirical Studies of Single Negation and Double Negation

In this section, four empirical studies of first language acquisition on single and double negative sentences are reviewed. The development of children's acquisition of single negative and double negative sentences in Mandarin and English are presented (Jou, 1988, Romain 1988, Zhou *et al.* 2014a, 2014b).

2.2.1 Jou (1988)

Jou (1988) investigated Chinese children's comprehension of double negation. The aim of his study was twofold: (1) to find out when children can correctly interpret a double negative expression, and (2) to examine the development process of double negation of children.

The participants were divided into eleven age groups, from age 4 to age 14. Each age group consisted of ten subjects, who were asked to act out the actions with dolls according to the sentences they heard. No context was provided to help the participants understand the sentences. The test sentences were further divided into three sets, including affirmative sentences, negative sentences, and double negative sentences. In each set, eight types of transformations were applied: (1) basic, (2) passivization, (3) subject topicalization, (4) object topicalization, (5) embedding, (6) passivization and subject topicalization, (7) embedding and object topicalization and (8) passivization and embedding. Below are examples of double negative passivization, double negative subject topicalization, and double negative object topicalization, which are taken from Jou (1988:470).

(21) Double Negative Passivization:

Huong wawa *meiyou bu* bei lu wawa tuei dau.
red doll doesn't not by green wawa struck down
'It is not that the red doll isn't struck down the green doll.'

(22) Double Negative Subject Topicalization:

Huong wawa, ta *meiyou bu* ba lu wawa tuei dau.
red doll, she doesn't not cause green doll struck down
'It is not that the red doll. She doesn't strike down the green doll.'

(23) Double Negative Object Topicalization:

Huong wawa, lu wawa *meiyou bu* ba ta tui dau
red doll, green doll doesn't not cause her struck down
'It is not that the red doll. The green doll doesn't strike her down.'

The results are as follows. First, it was found that sentence type was one of the effects that influenced children to interpret meanings of sentences. Children's performance on single negatives and double negatives showed great differences. Second, as for the age effect, only double negative structures showed significant differences. The result indicated that the younger subjects misinterpreted double negative structures to be equivalent to single negatives. By contrast, the older subjects interpreted double negative sentences correctly.

Last, the subjects were divided into three groups according to the development of comprehension on double negative sentences. The subjects aged less than 7 years old all considered a double negative sentence to be the same as a single negative sentence. This group of subjects was assigned to Stage 1 in the development of comprehension of double negative sentences. The feature of the participants at Stage 2 was that these children were able to recognize the difference between single negatives and double negatives. However, they could not decode the meanings of double negative sentences. Children, aged 8, achieved Stage 3 which indicated that they could interpret the meaning of a double negative sentence as an affirmative sentence, and mastered the usage of this type of sentence.

To conclude, Jou found that children were capable to differentiate single negative sentences from double negative sentences at a later age. The transition from Stage 1 to Stage 2

revealed that the knowledge of double negative structures began to be constructed. The transition from Stage 2 to Stage 3 indicated that the concept of double negation was well-developed. However, contextual effects are not taken into consideration. Furthermore, the subject pool of each age group was small in Jou's study.

2.2.2 Romain (1988)

Romain (1988) examined how children comprehended negative sentences and argued that there were two factors influencing interpretations of negative sentences. First is the article effect, as shown in (24a) and (24b), taken from Romain (1988: 120).

- (24) a. Ann is not renting the van.
b. Ann is not renting a van.

The negative operator in (24b) focuses on a *van*, which is the new information of the sentence, and (24b) is interpreted as “Ann isn't renting a van; she's renting a car.” The negative operator is applied to *a van*. Nevertheless, sentence (24a) means “Ann isn't renting the van; she owns it”. The negative operator in (24a) negates the truth value of the verb *rent*. The second cue influencing the interpretation of a negative sentence is the position effect. That is, the position of nouns will affect the meaning of sentences. According to Jackendoff (1969), the scope for the negative operator is what follows it. For instance, $N_1 \text{ Neg } N_2 \text{ V}$. The negative operator applies to N_2 , to V or to VN_2 (i.e., if the negator in ‘*Ann is not renting a van*,’ but that applies to VN_2 , the meaning of the sentence might be that *Ann is not renting a*

van; she is doing her income tax.) In terms of these two factors, the aim of her study was to investigate whether children and adults would use some cues to determine which constituent of a sentence that a negative operator focuses on. Also, the development of the knowledge of negation was discussed.

Three experiments were conducted. In Experiment One, 20 children with a mean of 7 years old, 28 children with a mean of 10 years old, and 20 adults were recruited. Sixteen test sentences were presented in four forms, The-a (Active), The-a (Passive), A-the (Active) and A-the (Passive)⁴. These test sentences were read by the experimenter and the subjects only had to choose the suitable picture for the sentence. The result of Experiment One revealed that there was a significant article effect and an age effect. The interaction between age and article indicated that the dependency of article effect increased with age. A position cue was stronger than an article cue for 10-year-olds. The significant difference between 10-year-olds and adults was that 10-year-old children depended more on a position cue to understand meanings of negative sentences while the adults relied more on articles. On the other hand, the difference between 7-year-olds and 10-year-olds was that the former depended less on a position cue.

Experiment Two included the same test sentences as those in Experiment One. The only

⁴ Below are sentence structures used in Romain (1988:124).

(i) The-a (Active): The N1 isn't V-ing a N2 (e.g. The dog isn't carrying a frog.)

(ii) The-a (Passive): The N1 isn't being V-ed by a N2 (e.g. The frog isn't being carried by a dog.)

(iii) A-the (Active): A N1 isn't V-ing the N2 (e.g. A dog isn't carrying the frog.)

(iv) A-the (Passive): A N1 isn't being V-ed by the N2 (e.g. A frog isn't being carried by the dog.)

difference was that these sentences were presented in written form. During the experiment, the subjects first read the sentence and the experimenter then repeated it again. Also, the subjects had to select the better picture from the two. The result of this experiment revealed that the performances of the subjects were not influenced by written and oral presentations. Besides these two experiments, the third experiment was conducted and the participants were asked to describe what scenario they had when they heard a negative sentence. The result showed that both article and position effects were obvious in 10-year-olds. This was same as the results indicated in Experiment One and Experiment Two.

To sum up, Romain (1988) found that there were two significant cues to help understand the meaning of negative sentences: an article cue and a position cue. As for the development of articles and position effects, the result showed that the position effect was found earlier than the article effect. Children aged 10 relied more on position cues while the adults relied more heavily on articles.

Nevertheless, there are some limitations. For example, the average age of the subjects did not include 4 years old, and a contextual effect was not investigated.

2.2.3 Zhou *et al.* (2014a)

Zhou, Crain, and Thornton (2014a) conducted research on Mandarin-speaking children's knowledge of interaction between lexical aspect and negation. There are two negative markers in Mandarin, including *bu* and *mei*. Zhou *et al.* adopted the claim of

previous studies (Li and Thompson 1981, Lü 1980) which mentioned that *Bu* is always utilized to negate habitual or volitional expressions, whereas *mei* always occurs in a completed situation, as shown in (25a) and (25b), taken from Zhou *et al.* (2014a:150).

(25) a. Wo bu chi xilanhua.

I not eat broccoli

‘I don’t eat broccoli/I will not eat broccoli/ I don’t want to eat broccoli.’

b. Wo mei chi xilanhua

I not eat broccoli

‘I didn’t eat broccoli.’

According to Zhou *et al.* (2014a), these two negative markers are related to lexical aspect which is a temporal concept of verbs. And these verbs can be divided into four categories: states, activities, accomplishments and achievements (Vendler 1957). Dynamicity, durativity, and telicity are features to differentiate these four categories. Dynamicity is determined by whether or not the events change denoted by the verb. Durativity refers to the event is lasting for a period of time. Telicity means whether or not there is an endpoint of the event. Both states and activities are durative and atelic, but state verbs are non-dynamic. Sentences (26) and (27) are examples of states and activities respectively, which are cited from Zhou *et al.*(2014a:151).

(26) Yuehan hen gaoping.

John very happy

‘John is very happy.’

(27) Zhe-ben shu hen gui.

This-CL book very expensive

‘This book is very expensive.’

The other type of verbs is called accomplishments and they are durative and telic, such as *xie-le* ‘wrote,’ and *hua-le* ‘drew’ (Zhou *et al.* 2014a:151). The difference between accomplishments and the last type, achievement verbs, is that the later type implies a state change of instantaneous events. Achievement verbs are *zhao-dao* ‘find,’ *da-po* ‘break,’ and *kan-jian* ‘see.’ In Mandarin Chinese, *bu* accompanies states and activities, while *mei* occurs with accomplishment, achievement, and activity verbs. Zhou *et al.* focused on children’s knowledge of interaction between negative makers and lexical aspect.

Forty-six Mandarin-speaking children from the kindergarten at Beijing Language and Culture University were recruited. Before the actual test, there were two practice trails. One four years old child was excluded from the actual test because he didn’t respond to the practice test correctly. A two-choice forced-judgment task was conducted. Every participant and two puppets had to listen to a story told by an experimenter. After the story, one puppet produced the statement with *bu*, and the other produced the sentence with *mei*. Only one of puppets produced a grammatical sentence.

In the two-choice forced-judgment task, there were five pairs of sentences with state verbs, and five pairs of sentences with accomplishment or achievement verbs. Below is an example of a typical trail presented in a story.

(28)

A pirate was hunting for treasure in the underwater world. In the beginning, he went to the corals to find if treasure was there. However, he only found some seaweed. Then, he

met a mermaid. He asked the mermaid to tell him where the treasure was in a very rude way. The mermaid got very angry and left. The pirate did not give up and then he climbed up to a big shell, but he found nothing. Therefore, the pirate gave up and left.

(Zhou *et al.* 2014a:153)

Following the story told by an experimenter, puppet A produced (29a) and puppet B produced (29b). Each child was asked to judge which puppet produced a grammatical sentence.

(29) a. Haidao *bu* zhidao baozang zai nail

pirate not know treasure at where

‘The pirate didn’t know where the treasure was.’

b.* Haidao *mei* zhidao baozang zai nail

pirate not know treasure at where

‘The pirate didn’t know where the treasure was.’

(Zhou *et al.* 2014a:153)

The result of this experiment showed that the proportion of correct responses increased with age. As for sentence pairs with state verbs, children aged from 3;5-3;11 responded correctly only 54.29% of the time, while children aged 4;7-5;0 did 72.50% of the time. As for sentences with accomplishments or achievements, the proportion of correct responses of the younger children was still the lowest, whereas children aged between 4;7-5;0 got the highest proportion of correct responses. This finding indicated that Mandarin-speaking children knew the interaction between negation markers and lexical aspect by age 4;7, and they could use it in an adult-like way. Nevertheless, it did not mean that the younger children did not have the knowledge of negation and lexical aspect. They just faced some problems with how negative

markers interact with lexical markers.

Overall, Zhou *et al.* (2014a) investigated the development of children's knowledge of the interaction with lexical aspect and negators. However, negators with activity verbs were not included in the test items and only one task was conducted in their study.

2.2.4 Zhou *et al.* (2014b)

Zhou *et al.* (2014b) investigated children's knowledge of double negation in Mandarin Chinese. The aim of their study was to find out the age at which children could master and utilize double negative structures. They conducted two experiments with plausible contexts. Experiment One was a truth value judgment task, in which thirty children were recruited from the kindergarten at Beijing Language and Culture University, including fifteen children aged from 4;2 to 5;5 and fifteen children aged between 5;6 to 5;10. In the first experiment, two experimenters were involved. One of them had to act out the story with toys, while the other played the role of a puppet as if he were an audience listening to the story. The participants had to judge whether or not the puppet described the story correctly. The materials of the first experiment were constructed by six test trails, including three 'true' scenarios and three 'false' scenarios⁵. Examples of a 'true' scenario and a 'false' scenario are shown in (29) and (30).

(29) The 'true' scenario

⁵ The double negative structure with a true description of the story is called a 'true' scenario, while one with a false description is named as a 'false' scenario.

Today is the little hippo's birthday, and he invited his friends to the party. Garfield, and the little bunny bought a gift before the party. However, Winnie the Pooh was having a toothache, and he might not come to the party. But when the party began, Winnie the Pooh showed up with the present.

(Zhou *et al.* 2014b:340-341)

(30) The 'false' scenario

The little turtle, the little elephant and the little donkey went to look for their moms. Both the little elephant and the little turtle found their moms in the forest. Nevertheless, the little donkey didn't found his mother.

(Zhou *et al.* 2014b:342)

After the story (29), the puppet described what was going on in the story, using the sentence in (31), taken from Zhou *et al.* (2014b: 341).

(31) Mei-you-ren mei qu canjia shengri juhui.
not-have-person not go join birthday party
'Nobody did not go to the birthday party.'
(Meaning: Everybody went to the birthday party.)

(Zhou *et al.* 2014b:341)

After the scenario (30), the puppet described what happened in the story, using the sentence in (32).

(32) Mei-you-ren mei zhaodao mama.
not-have-person not find mother
'Nobody did not find his mother.'

(Zhou *et al.* 2014b:343)

Children who rejected both 'true' and 'false' scenarios showed that they interpreted a double negative structure as equivalent to a single negative structure. That is, they did not have the

concept that two negatives can cancel each other. The result of this experiment showed that children aged between 5;6-5;10 could interpret a double negative structure as equivalent to a positive meaning. Nonetheless, children aged from 4;2 to 5;5 considered a double negative sentence as the same as a single negative structure. To conclude, the child subjects showed knowledge of double negation by age 5;6.

Another question discussed in Zhou *et al.*'s study was to find out when preschool children could apply double negation correctly. In Experiment Two, the participants were divided into two groups: thirteen children aged from 5;6 to 5;11, and thirteen children aged between 6;0 to 6;5. In order to see whether adults could apply double negative structures, fifteen adults were recruited as a control group. Experiment Two was an elicited production task. Like the truth value judgment task, the experimenter acted out the story, and the other played the role of a puppet who listened to the story alongside the subjects. The scenarios were the same as played in the truth judgment task. In this task, the children had to answer some questions from the puppet based on what they saw in the scenario.

- (33) a. Wo kandao xiao hema yaoqing ta-de haopengyou qu
I see little hippo invite his good friend go
canjia shengri juhui.
join birthday party
'In this story, the little hippo invited his good friends to his birthday party.'
- b. Ni neng gaosu wo you-shei mei qu ma?
you can tell me have-who not go Q
'I wonder if there is anyone who did not go.'

(Zhou *et al.* 2014b:348)

The result showed that the 6-year-old children performed double negative sentences as what the adults performed. These children answered the question by using double negative sentences as in (34a) and (34b).

- (34) a. Mei-you yi-ge-ren mei qu.
 not-have one-CL-person not go
 ‘Not even a single person did not go.’
 b. Mei-you-ren mei qu.
 not-have -person not go
 ‘Nobody did not go.’

(Zhou *et al.* 2014b: 349)

However, the 5-year-old children answered the question in alternative ways, as shown in (35a) and (35b).

- (35) a. Dou qu-le
 all go-Asp
 ‘They all did.’
 b. Mei-you
 not-have
 ‘Not have (one).’



(Zhou *et al.* 2014b: 350).

Zhou *et al.* (2014b) revealed that appropriate contexts helped children understand the meanings of double negative sentences in Chinese. They concluded that children aged six had the knowledge of double negation and that they could apply the concept correctly. However, subjects older than 7 years old should also be recruited because Jou (1988) found that children did not acquire the concept of double negation until 8 years old.

2.2.5 A Summary of Empirical Studies of Single Negation and Double Negation

This section is a summary of empirical studies reviewed. The major findings and limitations of these previous studies are displayed in Table 2-1.

Table 2-1 A Summary of the Previous Empirical Studies

Study	Major Findings	Limitations
Jou (1988)	<ul style="list-style-type: none"> ✚ Important stages: <ol style="list-style-type: none"> 1. Interpreting double negative sentences as single negative sentences: less than 7 years old 2. Interpreting double negative sentences as affirmative sentences: 8 years old 	<ol style="list-style-type: none"> 1. Subjects: a small pool of subjects for each group 2. Task: only one task without felicitous contexts provided
Rumain (1988)	<ul style="list-style-type: none"> ✚ Important stages: <ol style="list-style-type: none"> 1. Depending less on position cues: less than 7 years old 2. Depending more on position cues: 10 year old 3. Depending more on article cues: adult controls ✚ Factors affecting interpretations of single negatives: <ol style="list-style-type: none"> 1. Position cues 2. Article cues 	<ol style="list-style-type: none"> 1. Subjects: only older subjects included 2. Tasks: contextual effect not examined
Zhou, Crain, & Thornton (2014a)	<ul style="list-style-type: none"> ✚ Important stage: Acquiring the interaction between negative markers and lexical aspect: Aged 4;7 	<ol style="list-style-type: none"> 1. Subjects: adult controls not recruited 2. Task: a task on negation without activity verbs included
Zhou, Crain, & Thornton (2014b)	<ul style="list-style-type: none"> ✚ Important stages: <ol style="list-style-type: none"> 1. Considering a double negative sentence as a single negative one: Aged 4;2 to 5;5 2. Producing double negative sentences: 5 years old 3. Interpreting a double negative structure as equivalent to a positive meaning: Aged 5;6-5;10 4. Performing adult-like double negative structures: 6 years old ✚ Factor affecting interpretations of double negatives: contextual cues 	<ol style="list-style-type: none"> 1. Subjects: children older than 7 years old not recruited 2. Tasks: contexts are too long

Overall speaking, the age effect was mainly discussed in these studies (Jou 1988, Romain 1988, Zhou *et al.* ,2014a, 2014b). Children aged from 4;2 still considered a double negative sentence as a single negative sentence (Jou 1988, Zhou *et al.* 2014b). They could produce double negative sentences since at the age of 5 and interpreted them as positive sentences from 5;6 (Zhou *et al.* 2014b). However, Jou (1988) found that children could not interpret double negative sentences as affirmative ones until 8 years old. As for the development of single negative sentences, children aged 4;7 acquired the interaction between negative markers and lexical aspects (Zhou *et al.* ,2014a). Interestingly, no matter what first language that children had, they all relied on some cues to help them understand single negatives and double negatives better. As for English-native speakers, children whose age were less than 7 years old relied less on a position cue than 10-year-old children. On the other hand, adults depended more on an article cue (Romain 1988). Mandarin-speaking subjects also required a strategy to interpret double negative sentences as affirmative sentences. In terms of Zhou *et al.* (2014b), felicitous contexts were truly helpful for children to interpret double negative sentences.

Nevertheless, these studies still have some limitations. First, the contextual effect was not investigated in these previous studies (Jou 1988, Romain 1988). Second, Zhou *et al.* (2014a) did not investigate the situations when two negators occur with activity verbs. Last, the variant age group was not recruited in these studies (Romain 1988, Zhou *et al.* 2014a,

2014b) and the subject pool of each age group was small (Jou 1988). Therefore, the present study takes the effect of context, verb types and age into consideration. The participants will be asked to judge whether each test sentence, containing either single negators or double negators, is acceptable with or without contexts. As for the relation between negators and lexical aspect in Mandarin Chinese, the present study examines at what age children acquire the knowledge of semantic differences between “*bu* + activities” and “*mei(you)* + activities”. Also, the age of the subjects in this study will range from 4 years old to 11 years old.

2.3 Summary of Chapter Two

In this chapter, the properties of single negation and double negation are discussed. As mentioned in previous studies, two negators, *bu* and *mei*, in Mandarin Chinese have their semantic features. First, *bu* can only occur with stative and activity verbs; whereas, *mei* can accompany accomplishment, achievement and activity verbs. Second, *bu* is considered as a pure negative marker, while *mei(you)* functions as the denial of completion. Moreover, the scope of negation may determine the meanings of negative sentences. The meaning of a double negative sentence cannot be derived directly from the surface form (Fan and Xiao 2010). It is more complicated than a single negative sentence. A double negative sentence is not only interpreted as an affirmative meaning, but also strengthens the degree of affirmation. Besides four theoretical studies of single negation and double negation, four empirical studies and some limitations of previous studies have been discussed. Based on characteristics of *bu*

and *mei* and the previous empirical studies, the research design of the present study will be introduced in Chapter Three.



Chapter Three

Research Design

In this chapter, the subjects and the research design of the present study are introduced. Section 3.1 introduces the background of the subjects recruited in the formal study. Section 3.2 presents the methods and materials with examples. Section 3.3 describes the research procedures of a pilot study and a formal study. Finally, Section 3.4 summarizes expected findings of the present study.

3.1 Subjects

Some research had investigated children's acquisition of both single negative sentences and double negative sentences (Jou 1988, Romain 1988, Zhou et al. 2014a, 2014b). As for single negatives, children at ages 4-5 were found to acquire the knowledge of the compatibility of lexical aspect and negative markers (Zhou et al., 2014a). As for double negatives, researchers did not reach a consensus on the age issue (Jou 1988, Zhou et al. 2014b). Jou (1988) found that children did not understand the meanings of double negative sentences until they were 8 years old, while Zhou *et al.* (2014b) found that children performed in an adult-like way at the age of 6. Following the assumption of the previous research (Jou 1988, Romain 1988, Zhou et al. 2014a, 2014b), the researcher will recruit subjects from 5 to 12 years old in order to investigate whether children at age 5 have knowledge of lexical aspect and negators and whether children aged 12 are able to interpret

the meaning of double negative sentences as affirmative sentences.

The present study investigated the children's developmental process of *bu* and *mei* in negative sentences; thus, ninety subjects from different ages were recruited. They were further divided into five groups based on age. The participants of Group 1 were preschoolers, Group 2, Group 3 and Group 4 were second grade, fourth grade, and sixth grade students of elementary schools in Taipei City, respectively. Group 5 is an adult group. The backgrounds of subjects are illustrated in detail in Table 3-1.

Table 3-1 Background of Subjects

Group	Age range	Number
Kindergartner	5-6	18
Grade 2	7-8	18
Grade 4	9-10	18
Grade 6	11-12	18
Control	20-21	18

As Table 3.1 shows, each age group consisted of eighteen subjects whose mother tongue is Mandarin Chinese. All the subjects went to school five days a week: the preschoolers had a story-telling time in the morning and before a nap time; the first graders had 23 periods of classes per week; for the third graders, 30 periods per week; for the fifth graders, 33 periods per week. Moreover, the subjects from the elementary school all had language classes: six periods of Mandarin for the first and third graders, while seven periods for the fifth graders. The subjects from the elementary school all had one period of local languages per week. Each period lasted for 40 minutes. The control group was eighteen Mandarin-speaking adults from

college, aged from 20 to 21.

3.2 Methods and Materials

In general, there are two types of approaches to investigating children's acquisition: cross-sectional and longitudinal (Larsen-Freeman & Long 1991). Both approaches have their advantages and disadvantages. A longitudinal study tracks the same subject for a period of time, maybe for many years. One of the advantages of longitudinal studies is that researchers can trace the process of development and get the spontaneous speech (Larsen-Freeman & Long 1991). Researchers can also examine subjects' development and change directly. Nonetheless, the shortcomings of the longitudinal study include a small subject pool, inconvenience, and time-consuming (Larsen-Freeman & Long 1991). The present study aimed to compare competence of the subjects in different age groups regarding single negative sentences and double negative sentences. Children probably will not use double negative sentences to express affirmation, but this does not imply that they have not acquired the concept of double negation. It is because competence is independent of performance (Chomsky 1965). Performance refers to a speaker's actual use, but it does not realize the speaker's innate ability of language. Moreover, the finding obtained from longitudinal studies may not be generalizable to other children (Larsen-Freeman & Long 1991). Therefore, this study will adopt a cross-sectional approach, which collects data in a controlled measurement, to investigate children's acquisition of single negative sentences and double negative

sentences.

There are many types of tasks conducted within cross-sectional approaches, which can be used to collect intuition data and performance data. Previous studies (Jou 1988, Romain 1988, Zhou *et al.* 2014a, 2014b) conducted judgment tasks, interpretation tasks and production tasks to investigate first language acquisition of single negatives and double negatives. One aim of the present study, which emphasized more on the input processing, was to examine whether children acquire the concept of scope of negation in both single negatives and double negatives. Thus, this study will employ a three-point scale acceptability judgment task, which is regarded as an interpretation task, for collecting intuition data.

The present study did not only discuss whether children can interpret *bu* and *mei* in negative sentences, but it also took some factors into account while designing test items. The first factor was verb types. Following Vendler (1957), the researcher classified verbs into four types according to their features, including state (Type 1), activity (Type 2), achievement (Type 3) and accomplishment (Type 4). Comrie (1976) terms these verb types as lexical aspect because they are inherently related to time. The collocation of negative markers is related to lexical aspect (Ernst 1995, Zhou *et al.* 2014a). According to Zhou *et al.* (2014a), *bu* accompanies state verbs and activity verbs, while *mei* occurs with accomplishment, achievement, and activity verbs. The test items of the present study were designed according to eight sentence types with different lexical aspect, and each type were classified into two

sub-types based on numbers of negators.

Type 1 refers to negative sentences consisting of state verbs, which can be divided into two sub-types based on sentence patterns: Type 1-1 and Type 1-2. The difference between these two types is that the former is a single negative, as in (1), and the latter is a double negative, as in (2).

(1) Xiaoji bu/*mei zhidao zhe shou ge.
chick not know this CL song
'The chick doesn't know this song.'

(2) a. Xiaoji buneng bu zhidao zhe shou ge.
chick not can not know this CL song
'The chick has to know this song.'
b. *Mei you ren mei zhidao zhe shou ge.
not-have person not know this CL song
'Everyone knows this song.'

According to previous studies (Li & Thompson 1981, Zhou *et al.* 2014a), *bu* can accompany state while *mei* cannot. *Zhidao* 'know' is a state verb, so it cannot co-occur with *mei* 'not', as shown in (2b) above.

Type 2 refers to negative sentences with activity verbs, which are also partitioned into two sub-types. Type 2-1 is activity verbs in single negatives, while Type 2-2 refers to double negatives containing activity verbs. Both *bu* and *mei* can co-occur with activity verbs in Mandarin Chinese, as shown in (3) and (4).

(3) Xiaotu bu/mei shuijiao.
little rabbit not sleep
'The little rabbit didn't/wouldn't sleep.'

(4) a. Xiaotu bushi bu shuijiao.
little rabbit not-be not sleep
'It is not that the little rabbit would not sleep.'

b. Meiyou ren mei shuijiao.
not-have person not sleep
'Everyone slept.'

Type 3 refers to negative sentences with achievement verbs, which are divided into single negatives (Type 3-1) and double negatives (Type 3-2). Only *mei* can accompany achievement verbs (Zhou *et al.* 2014a), as shown in (5) for a single negative, and (6) for a double negative.

(5) Xiaohua *bu/mei kanjian lushang de shitou.
Xiaohua not see road poss. rock
'Xiaohua didn't see the rock on the street.'

(6) a. Xiaohua bu-shi bu kanjian lushang de shitou.
Xiaohua not-be not see road poss. rock
'It is not the case that Xiaohua didn't see the rock on the street.'

b. Meiyou ren mei kanjian lushang de shitou.
not-have person not see road poss. rock
'No one hasn't seen the rock on the street.'

Type 4 refers to a negative with accomplishments and it consists of two sub-types as well: single negative sentences (Type 4-1), as in (7), and double negative sentences (Type 4-2), as in (8).

(7) Xiaozhu **bu/mei* chi bao.

Piggy not eat full

‘The piggy was not full.’

(8) a. Xiaozhu bu-de-bu chi bao.

Piggy not have to not eat full

‘The piggy has to eat until he is full.’

b. Meiyou ren mei chi bao.

not-have person not eat full

‘Nobody is not full.’

Sentence (7) indicates that *bu* cannot co-occur with accomplishment verbs while *mei* can (Zhou *et al.* 2014a). Interestingly, both *bu* and *mei* can accompany accomplishment verbs in double negative sentences.



In addition to lexical aspect, the other factor which may influence children’s interpretation of a single negative and a double negative is context. Although a contextual effect was discussed in Zhou *et al.* (2014b), few studies have investigated both context and lexical aspect together. Some researchers (Glenberg *et al.* 1999, de Villiers & Flusberg 1975, Zhou *et al.* 2014b) claimed that contexts are helpful for interpretation. Therefore, two acceptability judgment tasks were conducted in the present study: a context-free task and a context-provided task. All in all, eight types of test items were designed according to their acceptability of co-occurring with lexical aspect, as displayed in Table 3-2.

Table 3-2 A Distribution of Test Items in the Two Tasks

Verb Type	Type	No.	Context-free Task	Context-provided Task
Type 1: State	Type 1-1 single negation: bu/mei + state verb	2	Q4, Q10	Q6, Q12
	Type 1-2 double negation: bu...bu/mei...mei + state verb	2	Q2, Q19	Q1, Q10
Type2: Activity	Type 2-1 single negation: bu/ mei + activity verb	2	Q9, Q17	Q5 ,Q15
	Type 2-2 double negation: bu...bu/mei...mei + activity verb	2	Q8, Q18	Q16, Q19
Type 3: achievement	Type 3-1 single negation: bu/mei + achievement verb	2	Q5, Q13	Q9, Q20
	Type 3-2 double negation: bu...bu/mei...mei + achievement verb	2	Q3, Q15	Q2, Q17
Type 4: accomplishment	Type 4-1 single negation: bu/mei + accomplishment verb	2	Q14, Q20	Q4, Q14
	Type 4-2 double negation: bu...bu/mei...mei + accomplishment verb	2	Q7, Q11	Q7, Q11
Fillers		4	Q1, Q6, Q12, Q16	Q8, Q3, Q13, Q18
Total			20	20

In both tasks, a three-point scale of an acceptability judgment task was designed for each type. Table 3-3 is a sample of test items in a context-free acceptability judgment task.

Table 3-3 A Sample of Questions in a Context-free Acceptability Judgment Task

The subject saw:	The subject heard:
<p>Scene 1</p> 	<p>Xiaomao shuo, “<i>xiaozhu bu chi bao.</i>”</p> <p>‘The Kitty said, “The piggy is not full.”’</p>
<p>Scene 2</p> 	<p>“<i>Xiaopengyou, qingwen xiaomao keyi zheyang shuo ma?</i>”</p> <p>‘Little boys and girls, can the kitty say so?’</p>

In a three-scale context-free acceptability judgment task, the subjects heard a single negative or a double negative produced by the kitty that comes from America. After hearing the sentence, the subjects were told to decide which light they would like to tick. Putting a checkmark on the green light meant that the sentence was acceptable in Mandarin Chinese; a checkmark on the yellow light indicated that the sentence was a little strange, but was still acceptable; a checkmark on the red light indicated that the sentence was totally unacceptable.





For a complete version of this task, please refer to Appendix A.

A sample question of a context-provided acceptability task is exemplified in Table 3-4. Similarly, the subjects were asked to put a check according to their acceptability. The only different was that the subjects heard a context before hearing a target test item. For a

completed version of the context-provided acceptability judgment task, please see Appendix

B.

Table 3-4 A Sample of Questions in a Context-provided Acceptability Judgment Task

The subject saw:	The subject heard:
<p>Scene 1</p> 	<p>Xiaozhu yinwei wanshang yao canjia shengri paidui, paidui yao hen duo shiwu, suoyi Xiaozhu zhongwu zhi yao-le yi kou mianbao. ‘The piggy only ate a piece of bread for lunch because he was invited to a birthday party where lots of food was served.’</p>
<p>Scene 2</p> 	<p>Dan pingshi chi hen duo de Xiaozhu, yixiazi jiu jue de duzi e-le. ‘After a while, the piggy felt hungry because he always ate a lot.’</p>
<p>Scene 3</p> 	<p>Suoyi, Xiaomao shuo, “<i>Xiaozhu bu chi bao.</i>” ‘The kitty said, “The piggy is not full.”’</p>
<p>Scene 4</p> 	<p>“<i>Xiaopengyou, qingwen Xiaomao keyi zheyang shuo ma?</i>” ‘Little boys and girls, can the Kitty say so?’</p>

Both tasks were displayed by PowerPoint. The designed scenarios and the test items were presented with related pictures.

3.3 Procedures

3.3.1 Pilot Study

A pilot study was conducted prior to the formal study in order to ensure the validity of the test items. The pilot study was composed of two acceptability judgment tasks: a context-free task and a context-provided task. Each task consisted of 16 items, including 8 questions for single negative sentences and 8 questions for double negative sentences (See Appendices C and D). Totally, 15 subjects participated in the pilot study (3 for each group), including children aged from 4 to 10 and adults. The whole process took approximately 30-40 minutes.

The results of the pilot study are as follows. Regarding the children's acceptability of single negative sentences, the result showed that subjects' ability to distinguish aspectual categories with *bu* from those with *mei* was unstable before 10 years old. In terms of the average scores, the subjects did not perform like the adults until 10 years old. The other finding was that '*bu*+ accomplishment verbs' and '*mei*+ stative verbs' were unacceptable for most of the subjects, except two third graders. Thus, it was found that children, aged 4, had already known *bu* cannot occur with accomplishment verbs and *mei* cannot accompany stative verbs. As for the acquisition of double negative sentences, the result indicated that acceptability of double negative sentences of children at age 10 was still unstable though the children rejected '*bu*...*bu*+ accomplishment verbs' and '*bu*...*mei*+ stative verbs' as the adults

did.

With regard to the contextual effect, it was found that felicitous contexts were beneficial to understand the meaning of double negative sentences as previous studies claim (Ernst 1995, Zhou *et al.* 2014b). The result of the pilot study demonstrated that contexts indeed were helpful for children to understand the meaning of single negative sentences and double negative sentences. Their acceptability increased after context was provided. In general, the children's performances were more adult-like after the age of 8. This result was different from the result of a context-free task. In context-free acceptability task, the children did not perform like adults until 10 years old.

There were some limitations of the pilot study. First, the number of the subjects was small. Second, the fillers were not included in the pilot study; therefore, some subjects might notice what they were being tested, and that they might have biased their normal language use.

3.3.2 Formal Study

In the formal study, the research procedure was similar to that of the pilot study. A consent form, which was provided in Appendix E, was prepared and given to children's parents in advance. The consent form included a brief introduction of the aim of the present study and the tasks their children were to complete. The information of the subjects was kept confidential. The tasks were conducted after the consent forms had been collected.

Both context-free and context-provided tasks were employed, including 8 test items for single negative sentences, 8 for double negative sentences and 4 items as fillers, respectively. In the beginning of the task, clear instruction was given. Subjects were asked to imagine that they were teaching a kitty who comes from America to learn Mandarin. Each test sentence was displayed with a suitable picture. Before the experiment, a training session was employed to make sure the subjects knew what they needed to do in the formal experiment. Rules for a three-point scale were explained in advanced as well. In the experiment, the participants had to judge the acceptability of test sentences they heard. A context-free task was conducted first, and then a context-provided task was given. Each task took the subjects approximately 15-20 minutes to complete.

3.3.3 Scoring

This section briefly explains how the subjects' responses were scored. There was no correct answer for items in both tasks. This study compares the subjects' acceptability of each test item. Each question was on a three-point scale: a red light represented 1 point, a yellow light represented 2 points, and a green light stood for 3 points. The average score of each test item was counted group by group. If the average score was higher than 2, it meant that the single or double negative sentence with a certain verb type was highly acceptable. If the average score was close to 1, it meant that the subjects tended to reject the single negative or double negative sentences with a certain verb type. The average scores of each group were

compared with that of the control group. If the average score was close to that of the control group, it indicated that the subjects had performed in an adult-like way. All the data were entered into the computer and processed by SPSS.

3.4 Summary of Chapter Three

This chapter presents the background of the subjects, the task designs, the procedures and the scoring method of the present study. A total of ninety subjects were recruited: seventy-two children (the kindergartners, Grade 2, Grade 4 and Grade 6) and eighteen adults. The context-free task was conducted first to obtain the subjects' acceptability rates of *bu* and *mei* in negatives in isolation. In the second task, the context-provided task, contexts were provided to investigate whether the acceptability rates would increase or not. The subjects' answers were examined by SPSS to look into children's first language acquisition on *bu* and *mei* in negative sentences.

Chapter Four

Results and Discussion

This chapter reports and discusses the results of the two tasks in the present study. Section 4.1 examines the subjects' preferences for *bu* and *mei* when they occur with different verb types. Section 4.2 discusses the clausality effect on *bu* and *mei*. Section 4.3 addresses whether the subjects' acceptability rates of *bu* and *mei* were influenced by contextual clues. Section 4.4 further explores the age issue of acquisition of *bu* and *mei* in Mandarin Chinese. Finally, a summary of this chapter is presented in Section 4.5.

4.1 Verb Type Effects

The first research question of the present study concerns whether children acquire the compatibility of negators and verb types, which can be classified into states (Type 1), activities (Type 2), achievements (Type 3) and accomplishments (Type 4) (Vendler 1957). These four verb types can further be grouped into telic verbs and atelic verbs according to [\pm endpoint] (Garey, 1957: 106). Section 4.1.1 reports the subjects' acceptability rates of each verb type. Section 4.1.2 further discusses the compatibility of negators with different verb types and the result of the subjects' acceptability rates.

4.1.1 Overall Findings

As can be seen in Figure 4-1, the mean scores show that negators with Type 2 (activities) were more acceptable than those with other types. The tendency of the subjects' acceptability

was Type 2 (M=2.38) > Type 4 (M=1.89) > Type 3 (M=1.85) > Type 1 (M=1.74), indicating that different types of verbs influenced the compatibility of negators and verbs.

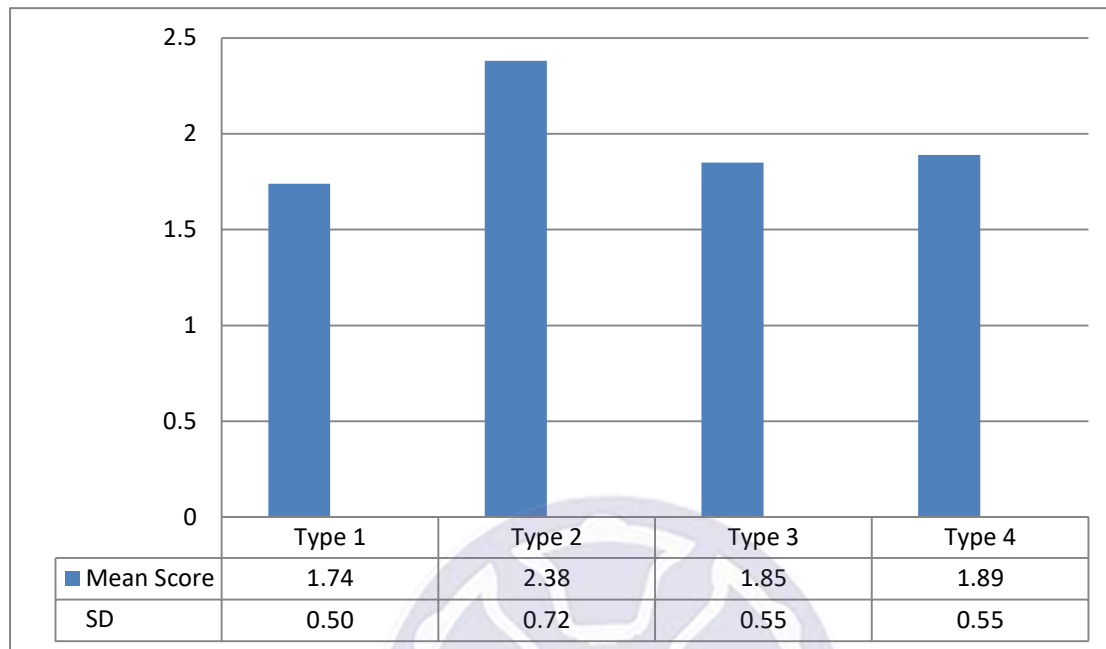


Figure 4-1 Subjects' Overall Acceptability Rates of Negators with Different Verb Types

In order to examine whether the compatibility of *bu* or *mei* and verb types had the same tendency as the subjects' overall acceptability showed, let us take a look at overall acceptability rates of *bu* and *mei* with verb types, as displayed in Table 4-1.

Table 4-1 Subjects' Overall Acceptability Rates of *bu* and *mei* with Different Verb Types

	Type 1		Type 2		Type 3		Type 4	
	M	SD	M	SD	M	SD	M	SD
<i>bu</i>	2.12	0.22	2.51	0.63	1.50	0.15	1.81	0.27
<i>mei</i>	1.35	0.25	2.24	0.56	2.20	0.53	1.97	0.32

As for *bu*, the result showed that Type 2 was more acceptable than other verb types. The overall tendency of verb type preferences for *bu* was Type 2 (M=2.51) > Type 1 (M=2.12) >

Type 4 (M=1.81) > Type 3 (M= 1.50). As for *mei*, the sequence of verb types was Type 2 (M= 2.24)> Type 3 (M= 2.20)> Type 4 (M= 1.97) > Type 1 (M=1.35). Activities were the most preferred verb type for both *bu* and *mei*.

Figure 4-2 presents different age groups' acceptability for *bu* with different verb types.

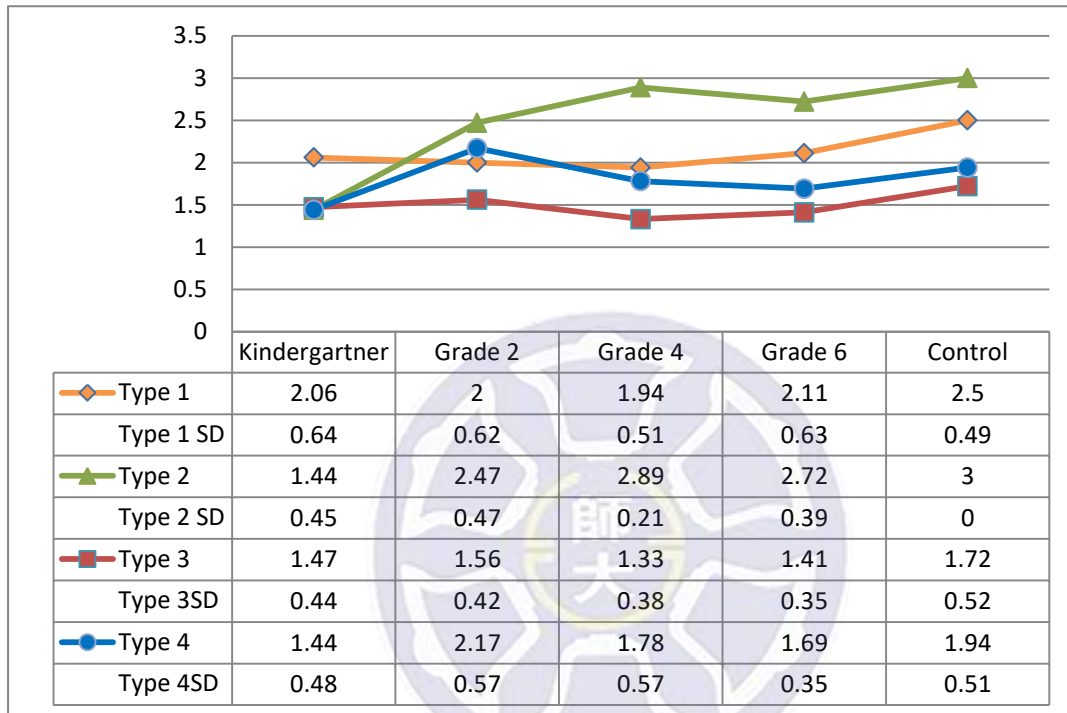


Figure 4-2 Each Group's Acceptability Rating for Verb Types with *bu*

The result showed that Grade 4, Grade 6 and the adult controls had the same tendency of preference for verb types with *bu*: Type 2 > Type 1 > Type 4 > Type 3. Grade 4, Grade 6 and the adult controls were aware that *bu* only can occur with activities, achievements and accomplishments. However, the kindergartners (Type 1 > Type 3 > Type 2 > Type 4) and Grade 2 (Type 2 > Type 4 > Type 1 > Type 3) did not show this tendency. One-way ANOVA showed that their preference for Type 2 ($p < 0.01$) was significantly different from other groups. On the other hand, though the acceptability rates of *bu* with Type 2 for Grade 2 were higher than

those with other types of verbs, significant differences were found in Grade 4, Grade 6 and the adult controls ($p < 0.01$). The results indicated that the kindergartners and Grade 2 had not yet acquired the compatibility of *bu* and verb types.

Figure 4-3 displays each age group's acceptability rates of *mei* with each verb type.

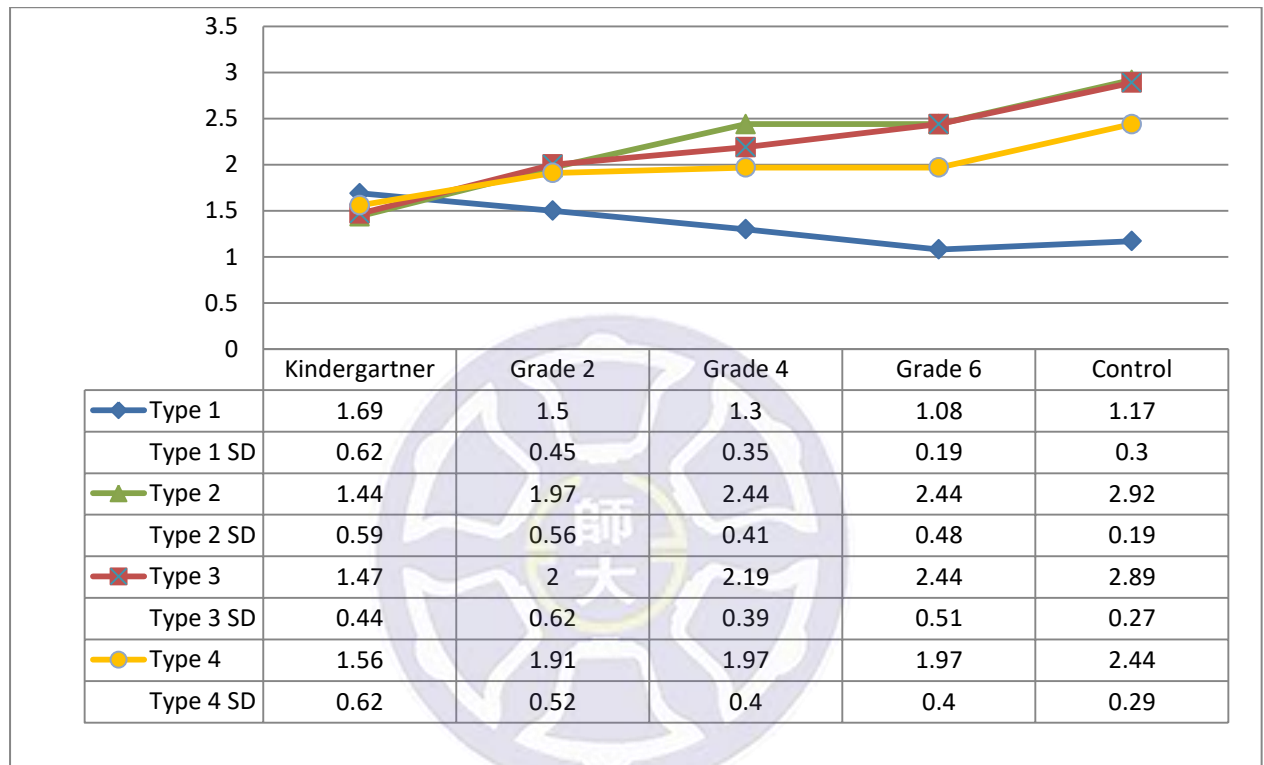


Figure 4-3 Each Group's Acceptability Rating for Verb Types with *mei*

The result indicated that acceptability of Grade 4, Grade 6 and the adult controls showed the same tendency: Type 2 > Type 3 > Type 4 > Type 1. Type 2 with *mei* was more acceptable while Type 1 was the least preferred. As for Grade 2, the acceptability sequence was slightly different from that of the adult controls (Type 3 > Type 2 > Type 4 > Type 1). However, the kindergartners exhibited a totally distinct acceptability sequence: Type 1 > Type 4 > Type 3 > Type 2.

Concerning the between-group comparisons of *mei* with Type 3 and Type 4, which are telic verbs, with the adult controls, the results showed that Grade 2 had a significant different preference for *mei* with Type 3 ($p < 0.01$) and Type 4 ($p < 0.01$). The kindergartners had significantly different preferences for *mei* compared with the adult controls' acceptability rates of *mei* with Type 3 ($p < 0.01$) and Type 4 ($p < 0.01$). Therefore, the kindergartners and Grade 2 had not yet acquired the compatibility of *mei* and verb types, either.

4.1.2 General Discussion

The first research question of the present study investigates whether children can distinguish verb types with *bu* from those with *mei*. According to previous studies (Li & Thompson 1981, Lang 1983, Lin 2003, Zhou *et al.* 2014a), *bu* is a neutral negator, which negates volitional, habitual, and future situations. In contrast, *mei* is a negator used to deny existential meanings and the completion of an event. Zhou (1988) further argues that *mei* is a negator for the factual world or something that needs no mental processing. That is, it only can negate events which have happened or does not imply a personal attitude. In contrast, *bu* negates events which need mediation and do not occur.

States, activities, achievements and accomplishments can be grouped into telic and atelic, as proposed by Garey (1957:106), according to the feature [\pm endpoint]. States and activities are atelic verbs due to the [-endpoint] property, while achievements and accomplishments are telic since they exhibit the [+endpoint] property. When we take a closer look at the properties

of each verb type and the subjects' acceptability rates, we can see that the subjects' acceptability rates of atelic verbs with *bu* were higher than those with *mei*, whereas the acceptability rates of telic verbs with *mei* were higher than those with *bu*. To conclude, the subjects generally preferred atelic verbs with *bu*, in contrast, telic verbs with *mei*. This result can be explained as follows: Atelic verbs are the most acceptable to occur with *bu* because of their [-endpoint] property which indicates that an action is not complete or has not occurred. On the other hand, telic verbs are the most preferred type with *mei* because of their [+endpoint] property that is compatible with the feature of *mei*, which denies the completion (i.e., having an endpoint) of an event. According to the results of the present study, the preferred sequence for *bu* was Type 2> Type 1> Type 4> Type 3 while that for *mei* was Type 2> Type 3> Type 4> Type 1. These tendencies correspond to the compatibility of *bu* and *mei* with verb types.

Our results also revealed that Type 2 was the most acceptable for both *bu* and *mei*. The properties of activities are [-endpoint], [+durative] and [+dynamic]. A sentence with activities can be seen as an event that has occurred or that has not happened due to [+dynamic]. When an action happens, it exists in the real world. Therefore, it can be negated by the negator *mei*. Nevertheless, when an action does not occur, *bu* can be used to deny its volitional meaning. Thus, the meanings of sentences with Type 2 carried by these two negators are different (Li & Thompson 1981, Zhou 1988, Lin 2003).

Our findings showed that Grade 4, Grade 6 and the adult controls had acquired the concept of compatibility of negators and verb types. As for the between-group differences, the results showed that the sequence of verb types for the kindergartners and Grade 2 was distinct from that of the adult controls. To sum up, Type 2 was the most preferred verb type for both *bu* and *mei*. Grade 4 had acquired the knowledge of the compatibility of negators (*bu* and *mei*) and verb types. This result is different from the findings of Zhou *et al.* (2014a), who argued that children acquired the compatibility of negators and verb types at the age of 4;7. This is because both single and double negatives were taken into account. Double negatives are more complicated for the subjects to process, which will be discussed in Section 4.2. Hence, the result of the present study showed that our children acquired the knowledge of compatibility of negators (*bu* and *mei*) and verb types later than the subjects of the previous studies.

4.2 Single Negatives and Double Negatives

The second research question discusses whether children's acceptability rates of *bu* and *mei* are different when they are in single and double negative sentences. Section 4.2.1 reports the subjects' overall acceptability rates of *bu* and *mei* in single and double negatives and each age groups' acceptability rates are shown as well. Section 4.2.2 discusses the results of all age groups' preferences for *bu* and *mei* in negative sentences.

4.2.1 Overall Findings

The overall mean scores of single and double negatives are presented in Figure 4-4. The result showed single negative sentences (M= 2.03) were significantly more acceptable than double negative sentences (M= 1.88) ($p < 0.01$).

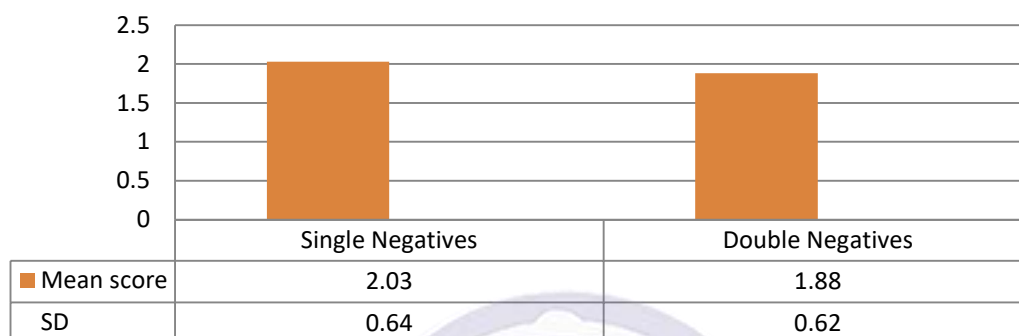


Figure 4-4 Subjects' Overall Acceptability Rates of Single and Double Negatives

In order to examine whether the same tendency can be found when *bu* and *mei* in single and double negatives, let us look at the subjects' overall acceptability rates of *bu* and *mei* in single and double negative sentences as presented in Table 4-2.

Table 4-2 Subjects' Overall Acceptability Rates of *bu* and *mei* in Single and Double Negatives

	Single		Double		<i>p</i> -value
	M	SD	M	SD	
Bu	1.91	0.38	2.06	0.51	0.00**
Mei	2.18	0.48	1.71	0.46	0.00**

As indicated in Table 4-2, the mean score of *bu* in double negatives (M= 2.06) was higher than that in single negatives (M=1.91). In contrast, the mean score of *mei* displayed in the reverse way. In order to closely examine whether each group's preference is as same as all the

subjects', let us turn to Figure 4-5, which displays each group's acceptability rates of *bu* in single and double negatives.

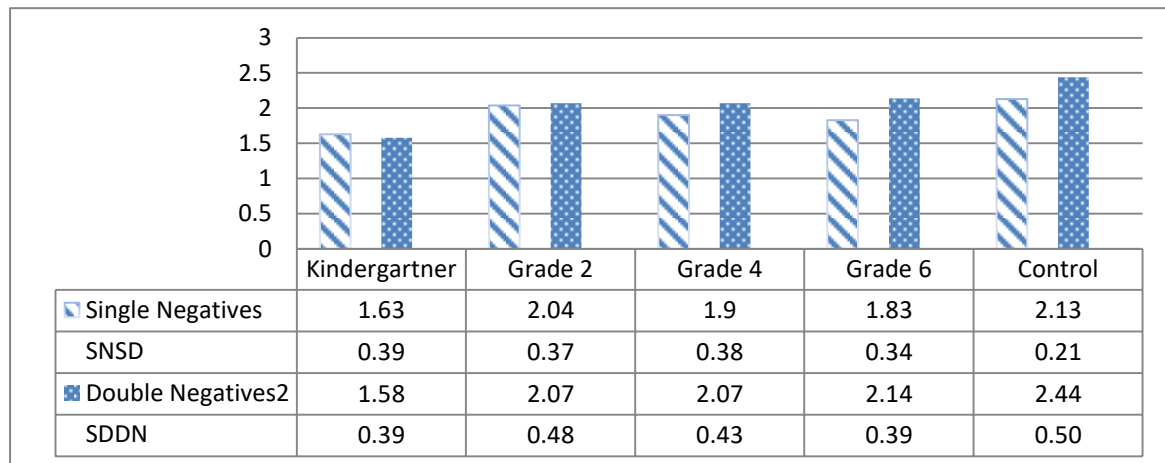


Figure 4-5 Each group's Acceptability Rates of *bu* in Single and Double Negatives

As can be seen in Figure 4-5, *bu* in double negatives received the highest acceptability rates for each group, except for the kindergartners. With regard to the within-group differences, Table 4-3 displays the *p*-values for differences in the acceptability rates of *bu* in single and double negatives.

Table 4-3 The *p*-value for the within-group Differences between the Acceptability Rates of *bu* in Single and Double Negative Sentences

	Kindergartner	Grade 2	Grade 4	Grade 6	Control
T	0.30	-0.22	-1.32	-2.88	-2.44
<i>p</i> -value	0.77	0.83	0.20	0.01*	0.03*

Note: ** indicates the *p*-value is smaller than 0.01 ; * indicates the *p*-value is smaller than 0.05.

A significant difference was found in Grade 6 ($p < 0.05$) and the adult controls ($p < 0.05$). The result indicated that *bu* in double negatives was more preferred by the older group (Grade 6) and the adult controls. The kindergartners, Grade 2 and Grade 4 did not show any significant preferences for *bu* in single and double negative sentences ($p > 0.05$).

Figure 4-6 presents the subject's' acceptability rates of *mei* in single and double negatives.

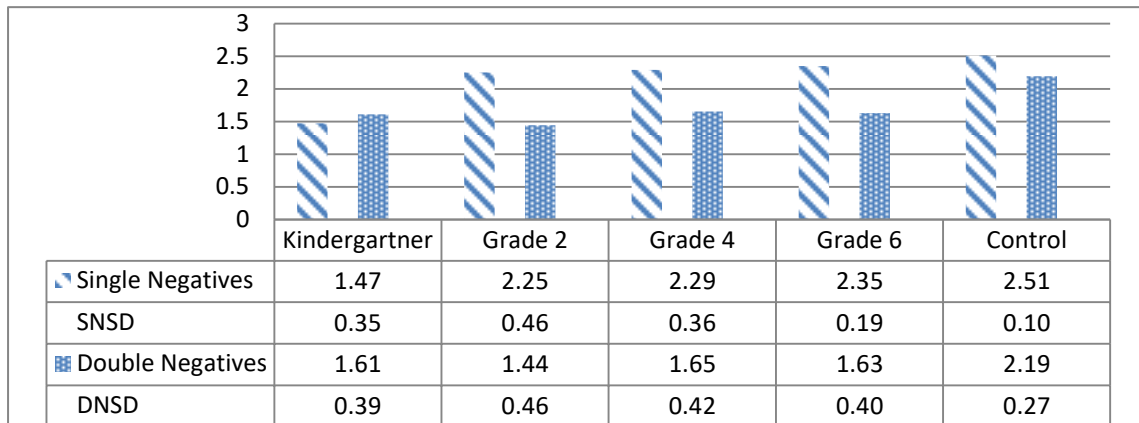


Figure 4-6 Each group's Acceptability Rates of *mei* in Single and Double Negatives

The result shows that *mei* in single negatives was more acceptable than it occurred in double negatives for each group, except for the kindergartners who had reverse preferences. Table 4-4 presents the within-group differences of *mei* in single and double negatives.

Table 4-4 The *p*-value for the within-group Differences between the Acceptability Rates of *mei* in Single and Double Negative Sentences

	Kindergartner	Grade 2	Grade 4	Grade 6	Control
T	-1.43	5.04	4.92	8.97	4.81
<i>p</i> -value	0.17	0.00**	0.00**	0.00**	0.00**

Note: ** indicates the *p*-value is smaller than 0.01 ; * indicates the *p*-value is smaller than 0.05.

There was a significant difference in Grade 2, Grade 4, Grade 6 and the adult controls ($p < 0.01$). The result implies that *mei* in single negatives was more acceptable for most of the subjects except for the kindergartners, who did not show a significantly preference for *mei* in single and double negative sentences ($p > 0.05$).

4.2.2 General Discussion

There were three major findings in the present study. First, single negatives were found more preferred by the subjects than double negatives, which supports the claim made by the previous researchers (Wason 1959, Jou 1988, Fan & Xiao 2010, Sun 2011, Zhou *et al.* 2014b). According to Wason (1959), and Jou (1988), an affirmative statement is decoded first, and then that statement will be denied by extra mental process to obtain the meaning of a single negative. We can then infer that a double negative is more complex than a single negative, not only from the syntactic perspective, but also from the semantic aspect. As Fan and Xiao (2010) pointed out, a derivational process of a double negative is more complicated. In contrast to single negatives, extra mental processes have to be added twice to interpret double negatives. Therefore, double negative sentences are acquired later than single negatives (Jou 1988, Zhou *et al.* 2014a, 2014b).

Second, it was found in the present study that the acceptability rates of *bu* in single negatives were lower than those in double negatives, while the acceptability rates of *mei* showed a reverse tendency. This result can be explained by the scope of a negator. If we take a second look at the test items of *bu* and *mei* in double negative sentences, we will find that a double negative structure is derived from one negator which denies the negative meaning of the other negator (Fan and Xiao 2010). The scope of the first negator *bu* in a double negative is over the second negator (i.e., *bu*) in IP, as shown in the test item.

(1) [CP[NP Xiaozhu [NegP bu [IP de [NegP bu [VP chi bao.]

= Xiaozhu dei chi bao.

‘The piggy has to eat until he is full.’ (Q11 taken from the context-free task)

The first *bu* in (1) c-commands the second negator; therefore, it denies the meaning of the second negator and generates an affirmative meaning. Since the negative feature is removed, the statement becomes affirmative. In this case, it is the auxiliary in I that is adjacent to *bu*, not the verb. Hence, an auxiliary verb is compatible with verb is no longer an issue to be concerned.

On the other hand, a test item of *mei* in a double negative sentence like (2) shows that the first negator *mei* has scope over a noun phrase and the second negator is also in the scope of the first negator. Thus, two negators remove the negative feature of each other to generate an affirmative meaning, as shown in (2).

(2) [CP[IP[NegP Meiyou [NP ren [NegP mei [VP shuijiao].

not-have person not sleep

‘Everyone has slept.’

(Q8 taken from the context-free task)

However, *mei* in double negatives was less preferred in double negatives than *bu* in double negatives. This can be explained by the distance of the two negators, the negators of *bu-de-bu*¹ are in a short distance, in contrast, those of *meiyou ren mei shuijiao* are in a longer distance. The former has been treated as a chunk by native speakers, while the latter sounds more wordy and awkward to native speakers; hence it is more marked.

¹ The present study only discussed *bu-de-bu* and *bu-neng-bu* though there are still other types of double negatives.

Third, it was found that the subjects overall preferred single negatives to double negatives because the latter is more complicated than the former. Nevertheless, each age group did not show a similar preference for *bu* or *mei* in negative sentences. The result revealed that all age groups, except for the kindergartners, preferred *bu* in double negatives and *mei* in single negatives. It is because that the test items containing *bu* in double negatives in the present study are more like a formulated expression, such as *bu-de-bu* ‘can’t help but’ and *bu-neng-bu* ‘can’t but,’ in which the two *bu*’s are in a short distance . On the other hand, acceptability rates of *mei* in single negatives of Grade 2, Grade 4, Grade 6 and the adult controls were all significantly higher than those for double negatives. This is because that the two *mei*’s in double negatives are in a longer distance, such as *meiyou ren mei* ‘nobody hasn’t’, which is wordy and infrequent (i.e., marked).

However, regarding the within-group differences between the acceptability of *bu* in single negative sentences and double negative sentences, Grade 2 ($p > 0.05$) and Grade 4 ($p > 0.05$) did not significantly prefer *bu* in double negatives as the adult controls did ($p < 0.01$). The present study focuses on the interpretation of negatives so the formulaic chunk is not discussed. This result can be explained by the complexity of double negatives which need mental process twice, resulting in children’s late acquisition of double negatives. According to Piaget (1964), there are four stages of cognitive development. Children aged 2-7 belong to the preoperational stage, which indicates that they do not have the concept of logic. Children

achieve the formal operation stage at the age of 12, which means that children start to acquire abstract concept. This supports our result that Grade 2 and Grade 4 had not yet acquired the abstract concept of double negatives and interpreting the concept needs logic processing. Nonetheless, the finding of the present study was different from the results of previous research (Jou 1988, Zhou *et al.* 2014b). Jou (1988) concerned about whether sentence types influenced children's interpretations of negative sentences. It was found that children at 7 years old still could not decode the meaning of double negatives. In Zhou *et al.* (2014b), the result indicated that children at 5;6 years old could interpret double negative sentences as affirmative ones. Nevertheless, two negators in double negatives of Jou's study were more like a fixed expression (i.e., *ta meiyou bu...*) and the test items in Zhou *et al.*'s study were all in the same pattern '*meiyou ren mei...*' without taking into consideration the compatibility of negators and verb types. The test items in the present study were more challenging than those in the previous studies; thus, our subjects' that performances were different in that it was. Grade 6 started to show a stronger adult-like preference for *bu* and *mei* in negative sentences. And they all significantly preferred *bu* in double negatives and *mei* in single negatives.

4.3 Contextual Effects

The third research question concerns whether the acceptability rates of *bu* and *mei* will increase or not when contexts are provided. Section 4.3.1 compares overall acceptability rates of negative sentences in the context-free task with those in the context-provided task. Section

4.3.2 discusses the results.

4.3.1 Overall Findings

Figure 4-7 displays the mean scores of negative sentences in the context-free and context-provided tasks. It was found that the subjects' overall acceptability rates of negative sentences in the context-provided task (M=2.18) were significantly higher than those in the context-free task (M=1.97) ($p < 0.01$).

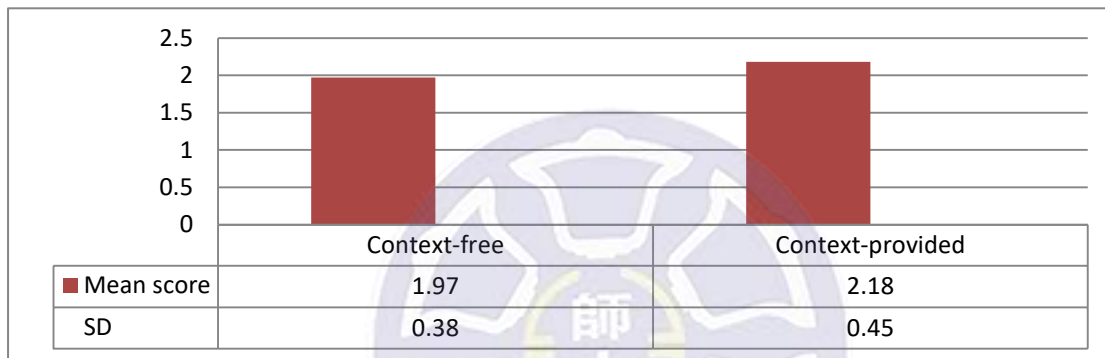


Figure 4-7 Subjects' Acceptability Rates of Negative Sentences in the Context-free and Context-provided Tasks

To see whether the tendency is the same when *bu* and *mei* occur in negative sentences, let us take a look at the subjects' overall acceptability rates of *bu* and *mei* in the the two tasks, as presented in Table 4-5.

Table 4-5 Subjects' Overall Acceptability Rates of *bu* and *mei* in the Context-free and Context-provided Tasks

Task \ Negator	Context-free		Context-provided		<i>p</i> -value
	M	SD	M	SD	
Bu	1.99	0.35	2.19	0.41	0.00*
Mei	1.94	0.37	2.17	0.41	0.00*

Note: ** indicates the *p*-value is smaller than 0.01 ; * indicates the *p*-value is smaller than 0.05.

As can be seen in Table 4-5, the acceptability rates of *bu* and *mei* in the context-provided task ($bu = 2.19$, $mei = 2.17$) were significantly higher than those in the context-free task ($bu = 1.99$, $mei = 1.94$) ($p < 0.01$). Let us take a look at each group's acceptability rates of *bu* and *mei* in the two tasks, which are respectively displayed in Figures 4-8 and 4-9.

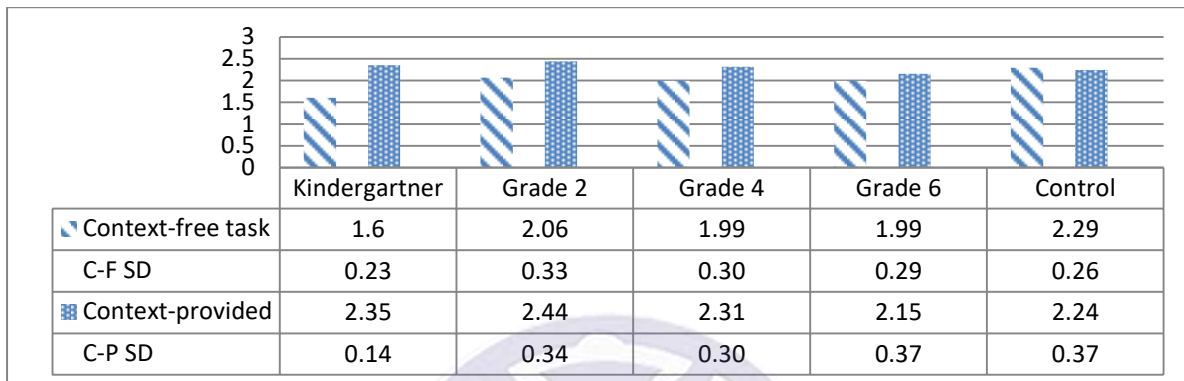


Figure 4-8 Each Group's Acceptability Rates of *bu* in the Context-free and Context-provided Tasks

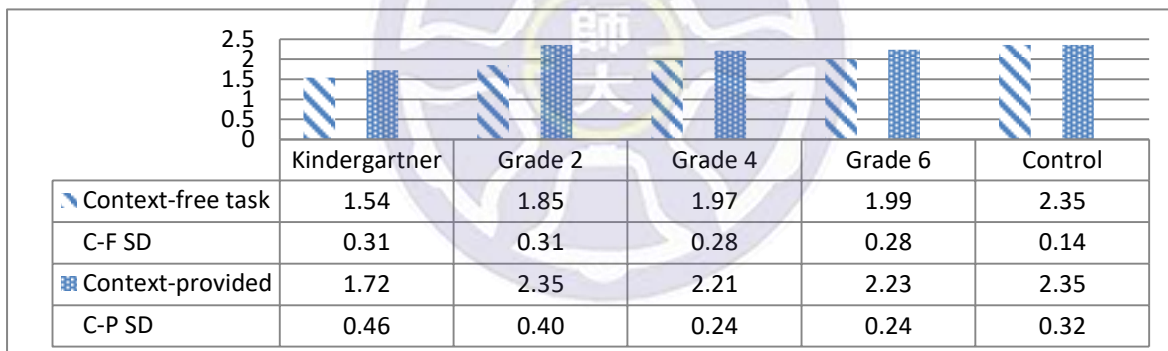


Figure 4-9 Each Group's Acceptability Rates of *mei* in the Context-free and Context-provided Tasks

As shown in Figure 4-8, the adult controls gave slightly higher ratings to *bu* in the context-free task ($M = 2.29$) than to *bu* in the context-provided task ($M = 2.24$). The other age groups also accepted *bu* in the context-provided task more than *bu* in the context-free task (Kindergartners: $M_{cf}^2 = 1.6 < M_{cp} = 2.35$, Grade 2: $M_{cf} = 2.06 < M_{cp} = 2.44$, Grade 4: $M_{cf} = 1.99$

² Cf refers to the context-free task, while cp is for the context-provided task.

$< M_{cp} = 2.31$, Grade 6: $M_{cf} = 1.99 < M_{cp} = 2.15$). In Figure 4-9, the result showed that the acceptability rates of *mei* in the two tasks had the same tendency as those of *bu*. As for the adult controls, the interpretations of *mei* in negatives were not influenced by contextual clues (Control: $M_{cf} = 2.35 = M_{cp} = 2.35$) because they are native speakers and have already had the concept of negatives.

As the acceptability rates of these two negators in the two tasks, the within-group differences are displayed in Table 4-6.

Table 4-6 The *p*-value for the within-group Differences between the Acceptability Rates of *bu* and *mei* in the Context-free and Context-provided Tasks

		Kindergartner	Grade 2	Grade 4	Grade 6	Control
Bu	T	-11.56	-4.54	-2.86	-1.78	0.54
	<i>p</i> -value	0.00**	0.00**	0.01*	0.09	0.59
Mei	T	-1.33	-4.89	-2.58	-3.35	0.07
	<i>p</i> -value	0.20	0.00**	0.01*	0.00**	0.94

Note: ** indicates the *p*-value is smaller than 0.01 ; * indicates the *p*-value is smaller than 0.05.

As for *bu* in negative sentences, a significant difference was found in the kindergartners, Grade 2 and Grade 4. This result indicated that they accepted *bu* in negative sentences in the context-provided task in a significantly higher degree than those in the context-free task (Kindergartner: $p < 0.01$, Grade 2: $p < 0.01$, Grade 4: $p < 0.05$). However, Grade 6 and the adult controls did not significantly show a strong preference for *bu* in the context-provided task, though their acceptability rates of *bu* in the context-provided task were slightly higher than those in the context-free task. As for *mei* in negative sentences, a significant difference

was found in Grade 2, Grade 4 and Grade 6, indicating that, for these subjects, negative sentences with *mei* in the context-provided task were more acceptable than those in the context-free task (Grade 2: $p < 0.01$, Grade 4: $p < 0.05$, Grade 6: $p < 0.01$). However, whether contexts were provided or not, it was not a matter for the kindergartners and the adult controls when interpreting negative sentences with *mei*. It is because that the adult controls had already acquired the concept of negatives. As for the kindergartners, they still had difficulty in interpreting negatives at the sentence level; hence, contexts were not helpful for them.

4.3.2 General Discussion

The contextual effect on the interpretation of negative sentences has been explored by previous researchers (deVilliers & Flusberg 1975, Rumain 1988, Glenberg *et al.* 1999, Zhou *et al.* 2014b). Some researchers found that contextual clues help children interpret sentences, whereas some studies had a different argument. DeVilliers and Flusberg (1975) found that negative sentences were no longer challenging for English-speaking children when contexts were provided. Also, Zhou *et al.* (2014b) found that Mandarin-speaking children did not have significant difficulty in interpreting double negatives when contexts were provided. However, some previous research argued that contextual clues were unreliable. For example, Schatz & Baldwin (1986) conducted an experiment to investigate whether contextual clues could help students infer meanings of unknown words. The result showed that contexts were not reliable

because they did not provide the subjects with enough clues to infer meanings of low frequency words. Besides, contextual clues sometimes could not help students to directly access word recognition (Swinney, 1979).

The findings of the present study indicated that contextual support generally helped to increase the subjects' acceptability rates of *bu* and *mei* in negative sentences. As for Grade 2 and Grade 4, the acceptability rates of *bu* and *mei* in negatives in the context-provided task became higher than those in the context-free task. For the kindergartners, contextual clues only significantly raised the acceptability rates of *bu* in negatives sentences, while Grade 6 accepted *mei* in negatives more than *bu* when contexts were provided. As for the adult controls, there was no significant difference in the preference for *bu* or *mei* in negative sentences in the context-provided task. There are some possible reasons for these results. First, syntactic information may be one of the reasons. As mentioned in Section 4.2.2, test sentences with *mei* are infrequent and marked expressions, in which the two negators are in a longer distance. Hence, the kindergartners, who had difficulty interpreting negatives at the sentence level, still could not accept *mei* in negative sentences even though contexts were provided. Second, as for Grade 2 and Grade 4, who are at the concrete operational stage, could do logical reasoning only by the concrete hints. Appropriate contexts with pictures offer them concrete clues to interpret negative sentences; therefore, contextual clues may increase their acceptability rates. Third, as for Grade 6, the acceptability rates of *mei* in the

context-provided task did not significantly increase because double negatives with two *mei*'s are more like a marked expression for native speakers. Last, since the adult controls had already acquired the concept of negatives, there was no significant influence of contexts. To conclude, contextual clues generally helpful for the subjects and this result are supported by previous research (DeVilliers & Flusberg 1975, Romain 1988, Glenberg *et al.* 1999, Zhou *et al.* 2014b).



4.4 Age Differences

Age was an issue widely discussed in research of acquisition. In the present study, we investigated children's first language acquisition of two negators, *bu* and *mei*, in single and double negatives with different verb types. The findings related to the age issue in the acquisition of *bu* and *mei* are demonstrated in Table 4-7.

Table 4-7 Children's Acquisition of *bu* and *mei* in Negative Sentences

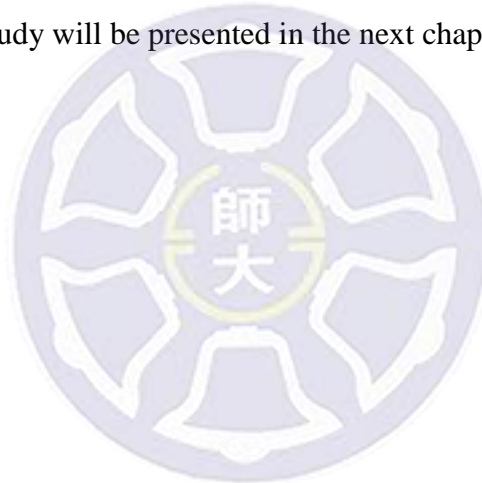
Group	Abilities
Kindergartner	<ul style="list-style-type: none"> ➤ Showing a different tendency of preference from the adult controls for <i>bu</i> and <i>mei</i> with verb types ➤ Showing different preferences for <i>bu</i> and <i>mei</i> in negative sentences ➤ Being insensitive to contextual clues
Grade 2	<ul style="list-style-type: none"> ➤ Showing a different tendency of preference from the adult controls for <i>bu</i> and <i>mei</i> with verb types ➤ Showing preferences for <i>mei</i> in single negatives as the adult controls, but not significantly preferring <i>bu</i> in double negatives as the adult controls ➤ Showing a similar preference for <i>bu</i> and <i>mei</i> in negative sentences when contexts were provided
Grade 4	<ul style="list-style-type: none"> ➤ Showing the same tendency of preference as the adult controls for verb types with <i>bu</i> and <i>mei</i> ➤ Showing preferences for <i>mei</i> in single negatives as the adult controls, but not significantly preferring <i>bu</i> in double negatives as adult controls ➤ Showing a similar preference for <i>bu</i> and <i>mei</i> in negative sentences in context
Grade 6	<ul style="list-style-type: none"> ➤ Showing the same tendency of preference as the adult controls for verb types with <i>bu</i> and <i>mei</i> ➤ Showing a stronger adult-like preference for <i>bu</i> and <i>mei</i> in negative sentences. ➤ Showing a similar preference for <i>bu</i> and <i>mei</i> in negative sentences in context

The kindergartners' interpretations of negative sentences with *bu* and *mei* were not like the adults'. They did not acquire the concept of compatibility of negators and verb types and contextual clues did not increase their acceptability rates of negatives. According to the four stages of cognitive development proposed by Piaget (1964), kindergartners belong to the preoperational stage (2-7 years old), indicating that they do not have the concept of logic. Thus, our kindergartners were not cognitively mature enough to deal with logic. Likewise, Grade 2 did not have the similar tendency of preference for *bu* and *mei* with verb types. They showed a stronger but not adult-like preference for *bu* in double negatives since their acceptability rates of *bu* in double negatives were still higher than those for *mei* in double negatives. On the other hand, Grade 2 did not prefer *mei* to occur double negatives as the adult controls did since they are more wordy and marked than *bu* in double negatives. Thus, it was difficult for Grade 2 to interpret double negatives with *bu* and *mei*. However, the acceptability rates of *bu* and *mei* in negative sentences increased in the context-provided task. This result can be explained by the fact that Grade 2 belonged to the concrete operational stage (7-11 years old), so they can do logical reason by the concrete hints (i.e., context). Grade 4 was also at the same developmental stage as Grade 2. Nevertheless, they started to show the same tendency of preference for verb types with that of the adult controls. Finally, Grade 6 started to show a stronger adult-like preference for these two negators in negative sentences because they were at the formal operation stage (11-16 years old), who can

interpret abstract concepts.

4.5 Summary of Chapter Four

This chapter had presented the results of the two tasks in this study. The data analysis for each research question was included. The between-grow up differences of type effects, causality effects and contextual effects were discussed in this chapter. The fact that double negative sentences were more challenging for the subjects than single negative sentences was found and contextual clues were also discussed. A summary of major findings and the limitations of the present study will be presented in the next chapter.



Chapter Five

Conclusion

The conclusion of the present study is provided in this chapter. Section 5.1 summarizes the major findings of the present study, followed by the limitations of the present study and suggestions for future research in Section 5.2.

5.1 Summary of the Major Findings

The present study investigated children's first language acquisition of *bu* and *mei* in Mandarin Chinese. Several issues were addressed, including type effects, clausality effects, contextual effects, and age effects. The major findings are as follows:

First, it was found that the sequence of verb type preferences for *bu* was different from that of *mei*. The different tendency of preferences for verb types was due to the properties for *bu* and *mei*. The results showed that the preference tendency of *bu* was Type 2 > Type 1 > Type 4 > Type 3, while that of *mei* was Type 2 > Type 3 > Type 4 > Type 1. Type 2, activities, was the most preferred verb to occur with *bu* and *mei*.

Second, double negative sentences were found to be less preferred than single negative sentences. The results showed that the acceptability rates of *mei* in double negatives were lower than those of *bu*. As for *bu*, *bu-de-du* 'cannot help but' and *bu-neng-bu* 'can't but' are formulated expressions and have been treated as a chunk for native speakers. On the other hand, *meiyou ren mei...* 'nobody hasn't...' is a wordy and infrequent expression (i.e., a

marked expression); therefore, double negatives with *mei* were less acceptable for native speakers.

Third, the present study found that contextual clues increased the acceptability rates of negative sentences although not all the subjects showed an adult-like tendency. This result supports the claim of previous research (DeVilliers & Flusberg 1975, Romain 1988, Glenberg *et al.* 1999, Zhou *et al.* 2014b), that context helps subjects interpret sentences.

Finally, the subjects' acceptability rates of *bu* and *mei* in negative sentences and their sensitivities to verb types increased with age. The results of the present study indicated that the kindergartners and Grade 2 showed different preferences for *bu* and *mei* with verb types. However, Grade 4 started to show an adult-like tendency of preference for verb types with *bu* and *mei*. As for acceptability rates of negative sentences, our child subjects were not cognitively mature enough; thus, they were unable to process double negative sentences, which require logical reasoning. The subjects showed a stronger adult-like preference for *bu* and *mei* in negative sentences when they reached Grade 6.

5.2 Limitations of the Present Study and Suggestions for Future Research

Some limitations of the present study are addressed and suggestions for future research are provided in this section.

First of all, the present study only designed two acceptability tasks to investigate children's acceptability rates of negative sentences, in other words, only institutional data

were collected. Nevertheless, we could not look into production data through the acceptability task. If we would like to figure out the differences between intuitional data and production data, future research can examine corpus data or conduct a task to elicit children's production of negatives.

Secondly, the present study did not ask the subjects to evaluate the grammaticality of negative sentences. The low acceptability rate of certain expressions does not guarantee that they are ungrammatical (Otero 1972, Langendoen *et al.* 1973). Hence, the correlation between acceptability and grammaticality of negative sentences can be further investigated by conducting a grammaticality task in the future.

Last, the sentence patterns of negatives in the present study focused on *bu...bu* and *mei...mei*. Other patterns, such as *bu...mei* or *mei...bu*, were not included due to the number of test items. Therefore, these sentence patterns can also be taken into consideration in future research.

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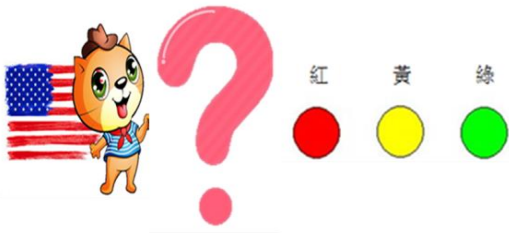
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Appendix A

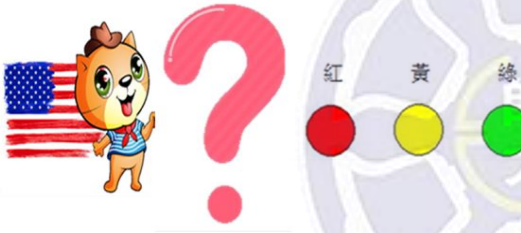
Test items of the Context-free Task in the Formal Study


	<p>來自美國的小貓正在學中文，小朋友聽說你很聰明，可以請你教教小貓嗎？</p>
<p>遊戲說明</p>  <ul style="list-style-type: none"> 紅 ● 覺得這個句子完全不可以，請勾紅燈 黃 ● 覺得好像怪怪的，請勾黃燈 綠 ● 覺得小貓說的句子可以的話，請勾綠燈 	<p>接下來是遊戲說明喔！小朋友，如果你覺得小貓說的句子可以的話，請勾綠燈；如果覺得好像怪怪的，請勾黃燈；如果你覺得這個句子完全不可以，請勾紅燈。</p>
<p>Q1</p> 	<p>小貓說：「小熊的衣服掛在衣架上。」</p>
	<p>小朋友，請問小貓可以這樣說嗎？</p>


<p>Q2</p> 	<p>小貓說：「沒有人沒知道這首歌。」</p>
	<p>小朋友，請問小貓可以這樣說嗎？</p>
<p>Q3</p> 	<p>小貓說：「沒有人沒看見路上的石頭。」</p>
	<p>小朋友，請問小貓可以這樣說嗎？</p>
<p>Q4</p> 	<p>小貓說：「小熊不生氣了。」</p>

	<p>小朋友，請問小貓可以這樣說嗎？</p>
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<p>Q5</p> 	<p>小貓說：「小熊不贏小雞。」</p>
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	<p>小朋友，請問小貓可以這樣說嗎？</p>
--	------------------------

<p>Q6</p> 	<p>小貓說：「小雞看見一隻小貓。」</p>
---	------------------------

	<p>小朋友，請問小貓可以這樣說嗎？</p>
---	------------------------

Q7



小貓說：「沒有人沒學會騎腳踏車。」



小朋友，請問小貓可以這樣說嗎？

Q8

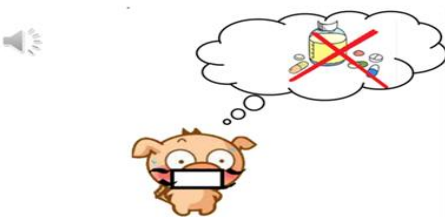


小貓說：「沒有人沒睡覺。」




小朋友，請問小貓可以這樣說嗎？


Q9




小貓說：「小豬不吃藥。」

	<p>小朋友，請問小貓可以這樣說嗎？</p>
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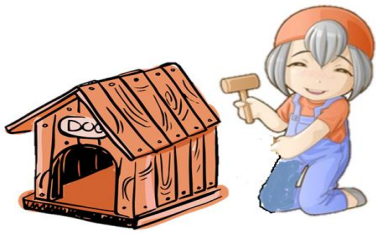
Q10	
	 <p>小貓說：「小雞沒知道這首歌。」</p>

	<p>小朋友，請問小貓可以這樣說嗎？</p>
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Q11	
	 <p>小貓說：「小豬不得不吃飽。」</p>

	<p>小朋友，請問小貓可以這樣說嗎？</p>
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Q12

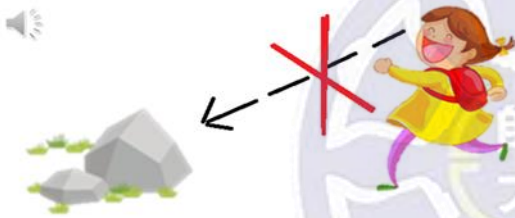


小貓說：「小花做了一個狗屋。」



小朋友，請問小貓可以這樣說嗎？

Q13



小貓說：「小花沒看見路上的石頭。」




小朋友，請問小貓可以這樣說嗎？

Q14




小貓說：「小豬沒學會騎腳踏車。」

	<p>小朋友，請問小貓可以這樣說嗎？</p>
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<p>Q15</p> 	<p>小貓說：「小熊不能不贏小雞。」</p>
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	<p>小朋友，請問小貓可以這樣說嗎？</p>
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<p>Q16</p> 	<p>小貓說：「小熊在游泳。」</p>
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	<p>小朋友，請問小貓可以這樣說嗎？</p>
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<p>Q17</p> 	<p>小貓說：「小兔沒睡覺。」</p>
	<p>小朋友，請問小貓可以這樣說嗎？</p>
<p>Q18</p> 	<p>小貓說：「小豬不得不吃藥。」</p>
	<p>小朋友，請問小貓可以這樣說嗎？</p>
<p>Q19</p> 	<p>小貓說：「小熊不得不生氣。」</p>

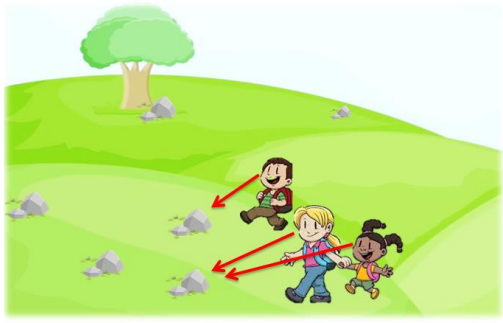
	<p>小朋友，請問小貓可以這樣說嗎？</p>
<p>Q20</p> 	<p>小貓說：「小豬不吃飽。」</p>
	<p>小朋友，請問小貓可以這樣說嗎？</p>

Appendix B

Test items of the Context-provided Task in the Formal Study

	<p>小朋友我知道你是聰明王，現在小貓要挑戰更進階的問題囉!小朋友，你可以幫他看看嗎?</p>
<p>遊戲說明</p> <p>紅  覺得這個句子完全不可以，請勾紅燈</p> <p>黃  覺得好像怪怪的，請勾黃燈</p> <p>綠  覺得小貓說的句子可以的話，請勾綠燈</p> <p><i>You are the best !!</i></p> 	<p>接下來是遊戲說明喔!小朋友，如果你覺得小貓說的句子可以的話，請勾綠燈；如果覺得好像怪怪的，請勾黃燈；如果你覺得這個句子完全不可以，請勾紅燈。</p>
	<p>小貓會先聽到一個小故事，聽完後小貓會用一句話總結，小朋友請你幫小貓看看，他能不能這樣說。</p>
<p>Q1</p> 	<p>小兔不小心弄髒了小熊最喜歡的娃娃。</p>

	<p>但小兔完全不想道歉，還罵小熊為什麼娃娃要亂放，因此，小兔讓小熊很生氣。</p>
	<p>小貓說：「小熊不得不生氣。」</p>
	<p>小朋友，請問小貓可以這樣說嗎？</p>
<p>Q2</p> 	<p>出去玩時，小花、小明和小美很喜歡到處跑來跑去</p>
	<p>今天三個人一起去爬山，路上許多石頭，但他們很小心，都有看見路上的石頭</p>



小貓說：「沒有人沒看見路上的石頭。」



小朋友，請問小貓可以這樣說嗎？

Q3




今天天氣非常好，太陽很大。





小熊因為覺得太熱了，只好到游泳池游泳。




小貓說：「小熊在游泳。」

	<p>小朋友，請問小貓可以這樣說嗎？</p>
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<p>Q4</p> 	<p>星期天，爸爸教小豬騎腳踏車。</p>
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	<p>小豬很努力練習，但怎麼騎都會跌倒，所以放棄學腳踏車。</p>
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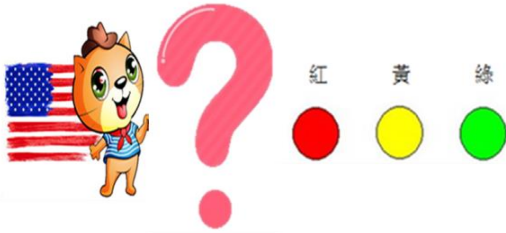
	<p>小貓說：「小豬沒學會騎腳踏車。」</p>
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	<p>小朋友，請問小貓可以這樣說嗎？</p>
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<p style="text-align: center;">Q5</p> 	<p>小兔喜歡唱歌，參加了學校的歌唱比賽。</p>
	<p>明天就是唱歌比賽了，小兔很緊張，小兔整個晚上都醒著，一直練習唱歌到天亮。</p>
	<p>小貓說：「小兔沒睡覺。」</p>
	<p>小朋友，請問小貓可以這樣說嗎？</p>
<p style="text-align: center;">Q6</p> 	<p>小雞平常喜歡聽音樂，但他不聽古典音樂，</p>

		<p>音樂課時，老師播放一首歌曲，問小雞這是甚麼歌，但小雞完全沒有聽過這首歌。</p>
		<p>小貓說：「小雞沒知道這首歌。」</p>
		<p>小朋友，請問小貓可以這樣說嗎？</p>
<p>Q7</p>		<p>星期日，爸爸找小豬一起去爬山。</p>
		<p>爬山需要很多體力，因此平常吃很少的小豬，今天早餐吃很飽。</p>


	<p>小貓說：「小豬不得不吃飽。」</p>
	<p>小朋友，請問小貓可以這樣說嗎？</p>
<p>Q8</p> 	<p>爺爺知道小花很喜歡動物，所以生日時，爺爺送給小花一隻小狗。</p>
	<p>小花很開心，想讓小狗有個舒服的地方可以休息。</p>
	<p>小貓說：「小花做了一個狗屋。」</p>

	<p>小朋友，請問小貓可以這樣說嗎？</p>
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<p>Q9</p> 	<p>小花跟著媽媽一起到公園散步，小花在公園看見一隻很可愛的小狗，所以小花一直盯著小狗看。</p>
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	<p>但公園裡有許多石頭，小花不小心被路上的石頭絆倒。</p>
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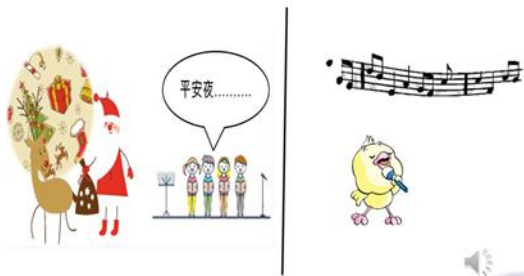
	<p>小貓說：「小花沒看見路上的石頭。」</p>
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	<p>小朋友，請問小貓可以這樣說嗎？</p>
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Q10



小雞參加了學校的合唱團。



下星期是聖誕節，合唱團要練習唱“平安夜”這首歌，因此大家都知道這首歌怎麼唱。



小貓說：「沒有人沒知道這首歌。」




小朋友，請問小貓可以這樣說嗎？

Q11




小花、小明和小美今年要上高中了，爸爸要他們一定要學會騎腳踏車。

	<p>因為學校很遠，爸爸沒辦法載他們去上學。</p>
	<p>小貓說：「沒有人沒學會騎腳踏車。」</p>
	<p>小朋友，請問小貓可以這樣說嗎？</p>
<p>Q12</p> 	<p>小兔不小心弄髒了小熊最喜歡的娃娃，小熊非常生氣。</p>
	<p>但小兔答應會將娃娃洗乾淨後，小熊心情變好了。</p>

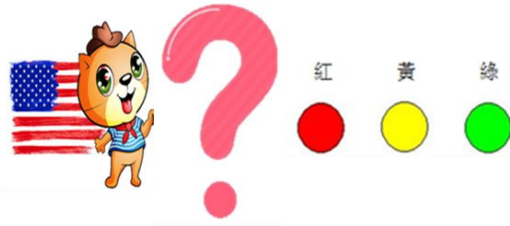
	<p>小貓說：「小熊不生氣了。」</p>
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	<p>小朋友，請問小貓可以這樣說嗎？</p>
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<p>Q13</p> 	<p>星期天，小雞和朋友一起去公園玩耍，在玩溜滑梯時，小雞一直聽到喵喵的叫聲。</p>
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	<p>後來，小雞在草叢裡發現一隻小貓。</p>
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	<p>小貓說：「小雞看見一隻小貓。」</p>
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小朋友，請問小貓可以這樣說嗎？

Q14




小豬因為晚上要參加生日派對，派對有很多食物，所以小豬中午只咬了一口麵包。



但平時都吃很多的小豬，一下子就覺得很餓。



小貓說：「小豬不吃飽。」


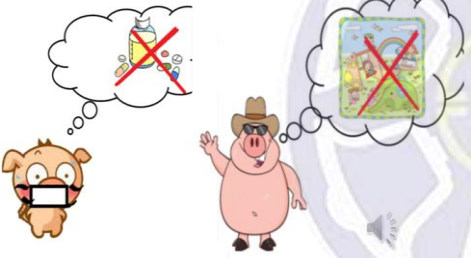




小朋友，請問小貓可以這樣說嗎？

<p style="text-align: center;">Q15</p> 	<p>因為天氣冷，所以小豬感冒了</p>
	<p>爺爺帶小豬去看醫生，買藥回來吃但小豬很怕苦，一直拒絕吃藥。</p>
	<p>小豬說：「小豬不吃藥。」</p>
	<p>小朋友，請問小豬可以這樣說嗎？</p>
<p style="text-align: center;">Q16</p> 	<p>學校的合唱團明天要參加唱歌比賽了，大家必須記得這首歌怎麼唱</p>

	<p>還好大家平常就很認真，不用花整個晚上練習，因此大家很早就上床睡覺了。</p>
	<p>小貓說：「沒有人沒睡覺。」</p>
	<p>小朋友，請問小貓可以這樣說嗎？</p>
<p>Q17</p> 	<p>小熊和小雞要參加學校的跑步比賽。</p>
	<p>爸爸因為感冒不能到學校幫小熊加油，但小熊答應爸爸一定會拿第一名。</p>

	<p>小貓說：「小熊不能不贏小雞。」</p>
	<p>小朋友，請問小貓可以這樣說嗎？</p>
<p>Q18</p> 	<p>小熊忘記帶雨傘到學校，但突然開始下大雨，因此小熊淋雨回家。</p>
	<p>所以小熊的衣服都溼答答了，媽媽看見後，幫小熊將衣服掛在衣架上吹乾。</p>
	<p>小貓說：「小熊的衣服掛在衣架上。」</p>

	<p>小朋友，請問小貓可以這樣說嗎？</p>
<p>Q19</p> 	<p>小豬感冒了，爺爺帶小豬去看醫生，買藥回來吃。</p>
	<p>爺爺說如果沒乖乖吃藥，就不准他出去玩。</p>
	<p>小貓說：「小豬不得不吃藥。」</p>
	<p>小朋友，請問小貓可以這樣說嗎？</p>

Q20



小熊和小雞在比賽跑步，但小熊跑到一半鞋子飛出去了。



小雞趁這個時候衝向終點，結束比賽。



小貓說：「小熊不贏小雞。」



小朋友，請問小貓可以這樣說嗎？

Appendix C

Test items of the Context-freeTask in the Pilot Study




	<p>來自美國的小貓正在學中文，小朋友聽說你很聰明，可以請你教教小貓嗎？</p>
<p style="text-align: center;">遊戲說明</p>  <p>紅 ● 覺得這個句子完全不可以，請勾紅燈 黃 ● 覺得好像怪怪的，請勾黃燈 綠 ● 覺得小貓說的句子可以的話，請勾綠燈</p>	<p>接下來是遊戲說明喔！小朋友，如果你覺得小貓說的句子可以的話，請勾綠燈；如果覺得好像怪怪的，請勾黃燈；如果你覺得這個句子完全不可以，請勾紅燈。</p>
<p style="text-align: center;">Q1</p>	<p>小貓說：「小雞不能沒知道這首歌。」 小朋友，請問小貓可以這樣說嗎？</p>
<p style="text-align: center;">Q2</p>	<p>小貓說：「小花不是沒看見路上的石頭。」 小朋友，請問小貓可以這樣說嗎？</p>
<p style="text-align: center;">Q3</p>	<p>小貓說：「小熊不生氣了。」 小朋友，請問小貓可以這樣說嗎？</p>
<p style="text-align: center;">Q4</p>	<p>小貓說：「小熊不贏小雞。」 小朋友，請問小貓可以這樣說嗎？</p>
<p style="text-align: center;">Q5</p>	<p>小貓說：「小豬不能沒學會騎腳踏車。」 小朋友，請問小貓可以這樣說嗎？</p>
<p style="text-align: center;">Q6</p>	<p>小貓說：「小兔不是沒睡覺。」 小朋友，請問小貓可以這樣說嗎？</p>
<p style="text-align: center;">Q7</p>	<p>小貓說：「小豬不吃藥。」 小朋友，請問小貓可以這樣說嗎？</p>
<p style="text-align: center;">Q8</p>	<p>小貓說：「小雞沒知道這首歌。」 小朋友，請問小貓可以這樣說嗎？</p>
<p style="text-align: center;">Q9</p>	<p>小貓說：「小豬不得不吃飽。」 小朋友，請問小貓可以這樣說嗎？</p>
<p style="text-align: center;">Q10</p>	<p>小貓說：「小花沒看見路上的石頭。」 小朋友，請問小貓可以這樣說嗎？</p>

Q11	小貓說：「小豬沒學會騎腳踏車。」 小朋友，請問小貓可以這樣說嗎?
Q12	小貓說：「小熊不能不贏小雞。」 小朋友，請問小貓可以這樣說嗎?
Q13	小貓說：「小兔沒睡覺。」 小朋友，請問小貓可以這樣說嗎?
Q14	小貓說：「小豬不得不吃藥。」 小朋友，請問小貓可以這樣說嗎?
Q15	小貓說：「小熊不得不生氣。」 小朋友，請問小貓可以這樣說嗎?
Q16	小貓說：「小豬不吃飽。」 小朋友，請問小貓可以這樣說嗎?



Appendix D

Test items of the Context-provided Task in the Pilot Study

	<p>小朋友我知道你是聰明王，現在小貓要挑戰更進階的問題囉！小朋友，你可以幫他看看嗎？</p>
<p style="text-align: center;">遊戲說明</p> <p style="text-align: center;">紅 ● 覺得這句句子完全不可以，請勾紅燈。</p> <p style="text-align: center;">黃 ● 覺得好像怪怪的，請勾黃燈。</p> <p style="text-align: center;">綠 ● 覺得小貓說的句子可以的話，請勾綠燈。</p> <p style="text-align: center;">You are the Smart W!</p> 	<p>接下來是遊戲說明喔！小朋友，如果你覺得小貓說的句子可以的話，請勾綠燈；如果覺得好像怪怪的，請勾黃燈；如果你覺得這個句子完全不可以，請勾紅燈。</p>
	<p>小貓會先聽到一個小故事，聽完後小貓會用一句話總結，小朋友請你幫小貓看看，他能不能這樣說。</p>
<p style="text-align: center;">Q1</p>	<p>1. 小兔不小心弄髒了小熊最喜歡的娃娃</p>
	<p>2. 但小兔完全不想道歉，還罵小熊為什麼娃娃要亂放，因此，小兔讓小熊很生氣。</p>
	<p>3. 小貓說：「小熊不得不生氣。」</p>
	<p>4. 小朋友，請問小貓可以這樣說嗎？</p>
<p style="text-align: center;">Q2</p>	<p>1. 出去玩時，小花很喜歡到處跑來跑去，常常被東西絆到跌倒</p>
	<p>2. 今天和媽媽一起去爬山，路上許多石頭，但小花很小心，因此今天沒有跌倒</p>
	<p>3. 小貓說：「小花不是沒看見路上的石頭。」</p>
	<p>4. 小朋友，請問小貓可以這樣說嗎？</p>

Q3	<p>1. 星期天，爸爸教小豬騎腳踏車，</p> <p>2. 小豬很努力練習，但怎麼騎都會跌倒，小豬覺得很生氣，所以放棄學腳踏車。</p> <p>3. 小貓說：「小豬沒學會騎腳踏車。」</p> <p>4. 小朋友，請問小貓可以這樣說嗎？</p>
Q4	<p>1. 小兔喜歡唱歌，參加了學校的歌唱比賽</p> <p>2. 明天就是唱歌比賽了，小兔很緊張，小兔整個晚上都醒著，一直練習唱歌到天亮。</p> <p>3. 小貓說：「小兔沒睡覺。」</p> <p>4. 小朋友，請問小貓可以這樣說嗎？</p>
Q5	<p>1. 小雞平常喜歡聽音樂，但他不聽古典音樂，</p> <p>2. 音樂課時，老師播放貝多芬的歌曲，問小雞這是甚麼歌，但小雞完全沒有聽過這首歌。</p> <p>3. 小貓說：「小雞沒知道這首歌。」</p> <p>4. 小朋友，請問小貓可以這樣說嗎？</p>
Q6	<p>1. 星期日，爸爸找小豬一起去爬山，</p> <p>2. 爬山需要很多體力，否則很快就累了，因此平常吃很少的小豬，今天早餐吃很飽。</p> <p>3. 小貓說：「小豬不得不吃飽。」</p> <p>4. 小朋友，請問小貓可以這樣說嗎？</p>
Q7	<p>1. 小花跟著媽媽一起到公園散步，小花在公園看見一隻很可愛的小狗，所以小花走路的同時，只顧著看小狗，</p> <p>2. 但公園裡有許多石頭，小花不小心被路上的石頭絆倒。</p> <p>3. 小貓說：「小花沒看見路上的石頭。」</p> <p>4. 小朋友，請問小貓可以這樣說嗎？</p>

Q8	1. 小雞參加了學校的合唱團，
	2. 下星期是聖誕節，合唱團要練習唱“平安夜”這首歌，因此小雞必須知道這首歌怎麼唱。
	3. 小貓說：「小雞不能沒知道這首歌。」
	4. 小朋友，請問小貓可以這樣說嗎？
Q9	1. 小豬今年要上高中了，爸爸要小豬一定要學會騎腳踏車，
	2. 因為學校很遠，爸爸沒辦法載小豬去上學。
	3. 小貓說：「小豬不能沒學會騎腳踏車。」
	4. 小朋友，請問小貓可以這樣說嗎？
Q10	1. 小兔不小心弄髒了小熊最喜歡的娃娃，小熊非常生氣，
	2. 但小兔向小熊說對不起，並答應會將娃娃洗乾淨後，小熊心情變好了
	3. 小貓說：「小熊不生氣了。」
	4. 小朋友，請問小貓可以這樣說嗎？
Q11	1. 小豬因為晚上要參加生日派對，派對有很多食物，所以小豬中午只咬了一口麵包，
	2. 但平時都吃很多的小豬，一下子就覺得很餓。
	3. 小貓說：「小豬不吃飽。」
	4. 小朋友，請問小貓可以這樣說嗎？
Q12	1. 因為天氣冷，所以小豬感冒了
	2. 爺爺帶小豬去看醫生，買藥回來吃但小豬很怕苦，一直拒絕吃藥。
	3. 小貓說：「小豬不吃藥。」
	4. 小朋友，請問小貓可以這樣說嗎？

Q13	1. 小兔參加了學校的合唱團，明天要參加唱歌比賽了， 小兔必須記得這首歌怎麼唱，
	2. 還好小兔平常就很認真，不用花整個晚上練習，因此小兔很早就上床睡覺了。
	3. 小貓說：「小兔不是沒睡覺。」
	4. 小朋友，請問小貓可以這樣說嗎？
Q14	1. 小熊和小雞要參加學校的跑步比賽，
	2. 爸爸因為感冒不能到學校幫小熊加油，但小熊答應爸爸一定會拿第一名。
	3. 小貓說：「小熊不能不贏小雞。」
	4. 小朋友，請問小貓可以這樣說嗎？
Q15	1. 小豬感冒了，爺爺帶小豬去看醫生，買藥回來吃，
	2. 爺爺說如果沒乖乖吃藥，就不准他出去玩。
	3. 小貓說：「小豬不得不吃藥。」
	4. 小朋友，請問小貓可以這樣說嗎？
Q16	1. 小熊和小雞在比賽跑步，但小熊跑到一半鞋子飛出去了，
	2. 小雞趁這個時候衝向終點，結束比賽。
	3. 小貓說：「小熊不贏小雞。」
	4. 小朋友，請問小貓可以這樣說嗎？

Appendix E

Consent Form

親愛的家長，您好：

這是一份關於語言研究的同意書，為研究兒童母語發展情況，希望 貴子弟協助回答問題，本研究目的在了解兒童對於(1)否定詞與動詞搭配的了解(2)雙重否定句之句意的理解。研究過程將在兒童就讀的熟悉校園內進行，一切以不影響學生上課權益為原則。研究共包含兩部份，皆為勾選題，會以預錄故事的方式，搭配播放電腦圖片，讓小朋友回答問題。

第一個測驗中，小朋友會聽到中文句子，小朋友需判斷所聽到的句子合中文語法的程度。第二個測驗中，小朋友會先聽到中文的故事，根據故事判斷最後所聽到的句子合中文語法的程度，所有答案皆無對錯，小朋友僅須依直覺作答。講解及實驗時間共需約 30 分鐘，作答完畢後，會贈送小朋友一份小禮物，謝謝小朋友的參與。研究結束後，若 貴家長或教師想了解小朋友之任務表現，亦可提供數據並加以說明，供教學參考。

本研究結果只供學術研究使用，任何關於小朋友的個人資訊絕不對外公開，所有答題資訊僅供本研究使用並會嚴加保密。

本研究之進行，亟需 貴家長的支持，希望能徵得您的同意，讓孩子參與研究，在此獻上最誠摯的感謝！

敬祝

萬事順心

國立臺灣師範大學英語系研究所語言組

研究生:陳淑芬 敬上

指導教授:陳純音 教授

日期:民國 106 年 10 月

本人同意我的孩子_____進行此份研究計畫。於研究過程中，本人有權知道研究發現，若因孩童適應不佳，本人有權利終止孩童配合研究進行。

孩童姓名: _____

孩童性別: 男 / 女 (請圈選)

孩童出生年月: 民國_____年_____月

同意

不同意

家長簽名: _____