A Study on English-speaking Learners' Acquisition of Three Chinese Modal Auxiliary Verbs: NENG, HUI ,And KEYI

A STUDY ON ENGLISH-SPEAKING LEARNERS' ACQUISITION OF THREE CHINESE MODAL AUXILIARY VERBS: NENG, HUI, AND KEYI

A Thesis Presented

by

ANQI LI

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ABSTRACT

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This study aims to investigate the acquisition of three Chinese modal auxiliary verbs: NENG, HUI, and KEYI by English-speaking learners who study Chinese as a foreign language and attempts to examine the following issues. 1) Are English-speaking learners able to distinguish the semantic difference between NENG, HUI and KEYI and realize their corresponding syntactic constraints? Does leaner's acquisition of these three auxiliary verbs increase with the improvement of their Chinese proficiency level? Can these three auxiliary verbs be mastered completely by English-speaking leaners? 2) What is the acquisition order when they are learning NENG, HUI and KEYI? Furthermore, what is the acquisition order of the multiple semantic meanings within one single Chinese modal auxiliary verb? 3)What is the relationship between English-speaking learners' comprehension and production, in regard to their performance on learning these three auxiliary verbs? 4) what pedagogical implication does this study reveal?

This research is composed of a comprehension test and production analysis. A questionnaire is designed to test English-speaking learners' comprehension of NENG, HUI

and KEYI, including fourteen multiple choices questions. In addition, 275 essays from the participants are collected anonymously as production database to be analyzed.

In total, 90 English-speaking learners who enrolled in Chinese courses at University of Massachusetts Amherst in Spring 2019 were participated, and they were divided into three experimental groups: beginning level, intermediate level, and advanced level. 60 native Chinese speakers were also invited into this research, served as a control group.

The result in this research shows that 1) English-speaking leaners' acquisition of NENG, HUI and KEYI do not always increase with the improvement of their Chinese proficiency level. Both HUI and KEYI present the same trend, which rises rapidly and significantly after experiencing a relatively flat stage, while the development of NENG is shown by U-shape learning curve. 2) For English-speaking learners, the acquisition order is(from the easiest to hardest): HUI > KEYI > NENG. 3) English-speaking learners' production of NENG, HUI, and KEYI is not always parallel to their comprehension. Also, some implications for teaching NENG, HUI and KEYI are discussed in this thesis.

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INTRODUCTION

The extensive studies reveal that modality is difficult for both first and second language learners to master (Bloor & Bloor, 1991; Holmes, 1988). The reasons for the well-observed phenomenon are two-fold. To begin with, many modal verbs are polysemous, that is, they can simultaneously convey different clusters of meanings. Take the Chinese modal verb HUI for example, it can express a range of different meanings: ability, disposition, futurity, generic modality and epistemic modality (Tsai, 2015). On the other hand, an interesting fact is that above-mentioned modal meaning can be expressed by many different modal verbs.

NENG, HUI, and KEYI, the three Chinese modal auxiliary verbs investigated in this study, are difficult or both Chinese learners and instructors. Each of them implies multiple semantic meanings, and meanwhile, one same semantic meaning could be expressed by multiple Chinese modal auxiliary verbs.

The present study will examine English-speaking learners' acquisition of NENG, HUI, and KEYI, by testing their comprehension and analyzing their writing production. This thesis includes seven chapters. To give a literature review, Chapter Two presents related studies in China and in the United States from two aspects: the definition of modal auxiliary verbs and the acquisition of Chinese modal auxiliary verbs. Chapter Three aims to show the learning difficulties of Chinese modal auxiliary verbs from the semantic and syntactic perspectives. It illustrates the various meanings of each Chinese modal auxiliary

verb by the array of several semantic components, classifies the various semantic items into different groups according to the Modality type. One the basis of that, a comparative study between English modal verbs and NENG, HUI, and KEYI is carried out. Chapter four proposes the research questions and focuses on the design of the research where experimental settings, including participants, questionnaire design, and the methodology of production analysis, are introduced. Chapter Five discusses the questionnaire results in more detail and makes corresponding analysis. Chapter Six analyzes learners' production by summarizing the usage of NENG, HUI, and KEYI. And the last chapter gives a summary, and proposes the pedagogical implications.

CHAPTER 2

LITERATURE REVIEW

2.1 The definition of modal auxiliary verbs

In the most cases, modal verb and auxiliary verb are synonyms in Chinese linguistics. YR Chao (1996) points out that *zhudongci* 助动词 (auxiliary verb) could also be called *Qingtai zhudongci* (modal auxiliary verb), because it expresses the modality of the following verb. Yingzhe Li (1990) also agrees that, 助动词(auxiliary verb) could be called as *Qingtai dongci 情态动词*(modal verb), because mostly it is used to express the modality of the following verb, such as allowance, ability and duty. And some scholars also adopt the term modal auxiliary verb referring to this kind of verbs (Tsang, Guo), so does this study. This study will define modal auxiliary verb in terms of semantics and syntax by analyzing the two key morphemes, which are 'modal' and 'auxiliary'.

2.1.1 modality and modal verbs— semantic analysis

It has come to be recognized in recent years that modality is a valid cross-language grammatical category. It is a category that is closely associated with tense and aspect in that all three categories are categories of the clause. In notional terms all three are, in some way, concerned with the event or situation that is reported by the utterance. Tense, rather obviously, is concerned with the time of the event, while aspect is concerned with the nature of the event, particularly in terms of its "internal temporal constituency" (Comrie,1976). Modality is concerned with the status of the proposition that describes the event (Palmer, 2001).

The study of modality is a major area of concern for modern logicians. They trace its origin back to Aristotelian philosophy (Tsang,1981). The central elements of modal logic are the notions of necessary and possible. These two universal notions are interrelated and their relations can be represented as:

a. If p is necessarily true then it is impossible for p to be not true.

b. If p is possibly true then it is not necessary for p to be not true.

Von Wright (1957) claims that modal logic can be separated into four areas. They are: a. the Alethic modes which deal with the truth conditions. b. the Epistemic modes which have to do with knowledge. c. the Deontic modes which concern obligations, permission and forbiddance, and lastly d. the Existential modes which deal with the modes of existence.

Of the four branches of modalities, the Epistemic modes and the Deontic modes have been of greater significance to linguistics working on modality. Epistemic modality is a type of modality which characterizes a particular state of knowledge with respect to empirical facts. This term has been adopted by linguistics to denote linguistic markers which are representations of the speaker's judgment of the probability of occurrence. It represents the speaker's assessment of the probability of what he is saying, or to the extent to which he regards it as self-evident (Hadley, 1970).

Since epistemic modality is the expression of the speaker's assessment of the probability of the occurrence of a situation, one can alter the assessment according to the likelihood. Horn (1970) claims that the epistemic sense of what is possible to occur contrasts with what is certain to occur. These two concepts, possible and certain, which

occupy the two poles of an epistemic scale with an intermediate point taken up by what is considered ‘probable’ or ‘likely’. An epistemic scale thus constructed will be:

Certain— (at least)(probable/likely) –(at least) possible

Horn’s epistemic scale

An equivalent to Horn’s epistemic scale has been constructed by Halliday (1970):

Possible—virtually certain – certain

Halliday’s modal scalar representation of the likelihood of the occurrence has been attempted by linguistics. Chuang and Timberlake suggest four modal scalar rankings for English modal auxiliaries ranging from weakly possible to necessary. The examples are presented below:

Weakly possible	Strong possible	probable	necessary
might	may	should	must

In Mandarin Chinese we can also find modal auxiliary verbs such as the following adverbials which express different degree of commitment to the certainty of a situation.

There is a possibility	Very possible	certainly
有可能 youkeneng	很可能 henkeneng	一定 Yiding

The presence of the scalar expression of epistemic modality in languages reveals the fundamental importance of the role it plays in communication whereby the speaker enters personally into the communication process by disclosing his personal assessment of the situation through the use of modal elements in the interpersonal phase of linguistic communication (Tsang, 1981). In this study, HUI_2, $NENG_4$ and $KEYI_4$ have been categorized into epistemic modality. The following chapter will provide more illustrations.

Another modality that received a great deal of attention in linguistics is Deontic modality. Stated briefly, deontic modals deal with obligations, permissions and forbiddances. These modalities characterize norms of action which can be implicit conventions or already explicit existing norms (Wunderlich,1979).

Lyons(1977) summarizes three following differences to distinguish deontic modality from epistemic modality:

a. Epistemic necessity has to do with the truth of the proposition; deontic modality is concerned with the necessity or possibility of acts performed by morally responsible agents. Furthermore, deontic modality is not a proposition which describes the act itself but which describes the state of affairs that will be obtained if the 'act' in questing is performed.
b. There is an intrinsic connection between deontic modality and futurity.
c. Deontic necessity typically proceeds or derives from some source or cause. The source or cause may include moral, legal or even physical necessity.

There has been a long term debate among linguists about the classification of the modality, and previous scholars classify the modality in terms of various points of view, and then adopt various terms. For the purpose of clarifying the classification of the modality and comprehending the terms, the table is provided below, which compares a few representative classifications.

classification / scholars	Modality A	Modality B	The subcategory of Modality B
Tsang (1981)	Epistemic Modality	Deontic Modality	Deontic
			Dynamic
Coates (1983)	Epistemic Modality	Root Modality	
Halliday (1994)	Modalization (= Modality)	Modulation	Inclination
			Obligation
Palmar (2001)	Propositional Modality	Event Modality	Dynamic

			Deontic
This study	Epistemic Modality	Root Modality	Dynamic
			Deontic

Table 1 the summary of historical classifications about modality

This study would classify three Chinese modal auxiliary verbs NENG, HUI, and KEYI mainly based on Coates's prompt and also combined with Palmar's theory, which means the modality is classified into Epistemic Modality and Root Modality (Non-Epistemic Modality), in the meantime, the latter one involving Dynamic Modality and Deontic Modality. To be more specifically, in this study, Epistemic Modality is concerned with the speaker's assumptions or assessment of possibilities and, in most cases, it indicates the speaker's confidence (or lack of confidence) in the truth of proposition expressed (Coates, 1983). Root Modality could be recognized as Non-Epistemic modality, which includes dynamic modality and deontic modality. Both deontic modality and dynamic modality refer to events that are not actualized, events that have not taken place but are merely potential. The difference between deontic and dynamic modality is that with dynamic modality the conditioning factors are external to the person indicated as the subject (that he is permitted, ordered, etc., to act), whereas with deontic modality they are internal (that he is able, willing, etc., to act) (Palmer, 2001).

After clarifying the notion and classification of modality, this study categorize NENG, HUI, and KEYI into different modal categories according to the modal implication it carries, see the table below. Apparently, among the three Chinese auxiliary verbs, each of them carries more than one modal meaning, and sometimes they are overlapped. Perhaps this is the reason why the three modal auxiliary verbs are so confusing and tricky, and also explains why it is so hard for learners to completely master.

Root Modality				Epistemic Modality	
Deontic		Dynamic		necessity	Possibility
Ability or skill	Will or promise	permission	Condition Or usage		
HUI_V $NENG_1$ $KEYI_1$	HUI_1	$NENG_3$ $KEYI_3$	$NENG_2$ $KEYI_2$	HUI_2	$NENG_4$ $KEYI_4$

Table 2 the modality category of NENG, HUI and KEYI

In order to facilitating comprehending and analyzing, each modal auxiliary verb is dismantled into smaller entries, on the basis of semantic meaning it implies and the modality it is classified. HUI is dismantled into three semantic meanings, NENG is dismantled into four, and KEYI is four. The following chapter would provide more elaboration.

2.1.2 Auxiliary verbs — syntactic analysis

There are not a lot of studies investigate modality among all of Chinese linguistic works, but the first study about modal auxiliary verbs could be traced back to the systematical grammatical book Mashiwentong 马氏文通 (Ma's Grammar, 1898), written by the linguist Jianzhong Ma. He states that the words like KE 可, ZU 足, NENG 能 and DEI 得, do not directly indicate the action, but express the potential tendency of the action, so there must be a verb following them, and that is why this kind of words is called *zhudongci* 助动词 (auxiliary verb).

The term '*zhudongci*' 助动词(auxiliary verb) is widely used in Chinese grammars. As a general rule, a set of forms in a language constitute a grammatical category if it can be shown that those forms share a set of distributional properties not possessed by any other set of forms. Accordingly, the category 'auxiliary verb' must be established for Mandarin on the basis of a set of distributional properties that distinguish its members form verbs and adverbs.

Li and Thompson's (1989) theory is widely recognized by Chinese linguists. There are two related properties that auxiliary verbs share with verbs:

(1) An auxiliary verb may occur as the A element in A-not-A questions:
他会不会游泳？
ta hui bu hui youyong
Can he swim?
(2) An auxiliary verb may be negated
他不会游泳。
ta buhui youyong
He cannot swim.

However, auxiliary verbs differ from verbs, with respect to the following six properties, according to Li and Thompson:

(1) An auxiliary verb must co-occur with a verb like sentence 1a. In contrast, in sentence 1b, there is no verb following hui, the sentence is incomplete and can be used only in a context in which a verb representing what he can do is understood. For example, it could be a reply for the question '他会说中文吗？'.

1. a. 他会说中文。
ta hui shuo zhongwen
Can he speak Chinese?
b.他会。
ta hui
He can.

(2) An auxiliary verb does not take aspect marker. For example, sentence 2a and 2b are ungrammatical. However, the auxiliary verb could co-occur with the sentence-final particle le, which indicates the change of status, like sentence 2b.

2. a. *他能了游泳。
ta neng le youyong
b.*他在会游泳。
a zai hui youyong
c.他能游泳了。
ta neng youyong le
He can swim now.

(3) According to Li and Thompson, an auxiliary verb cannot be modified by intensifiers, such as 很 'very' or 更 'even more'. However, they may over-generalized this rule. Because both of the auxiliary verbs NENG and HUI could be modified by the intensifiers, such as HEN or ZUI. For the sentence 3a and 3b, HEN is used to modify NENG and HUI, resulting in the semantic difference. Sentence 3a means he often tells the jokes and 3b means he is really good at telling the jokes. Sentence 3c are not grammatically correct, because KEYI cannot be modified by intensifier. To be more specific, 很能 emphasizes the frequency of a certain action , and 很会 emphasizes the proficiency level of a skill or a talent.

3. a. 他很能说笑话。
ta hen neng shuo xiaohua
He tells jokes very often.
b. 他很会说笑话。
ta hen hui shuo xiaohua
He is good at telling jokes.
c. *他很可以说笑话。
ta hen keyi shuo xiaohua

(4) An auxiliary verb cannot be nominalized, unless it is used in a context in which speaker and listener acquiescent the omission of the main verb and it will not affect its comprehension.

4. *他是会的。
ta shi hui de

(5) An auxiliary verb cannot occur before the subject.

5. *会他游泳。
hui ta youyong

(6) An auxiliary verb cannot take the object directly (see sentence 6a), however, the situation of HUI is much more complex. HUI could take the object directly and remain comprehensible when it implies owning an ability or skill, however, only limited nominal objects could be applied, such as languages, dances, songs or dishes. Sentence 6b and 6c are intelligible even though the main verb 说 and 做 omit. Therefore, some linguists argued that HUI should be categorized into full verbs when it implies owning an ability or skill. This study take HUI as main verb when it take nominal-object directly, while take HUI as a modal auxiliary verb when it take predicate-object, mark it as HUI_v, and still conserve the discussion of it, since it remains the typical syntactic features of modal auxiliary verb. The later chapter would provide more detailed explanation.

6. a. *他能那本书。
ta neng na ben shu
b.他会英文。
ta hui yingwen
He can speak English.
c.他会糖醋鱼。
ta hui tangcuyu
He can cook the sweet and sour fish.

The characteristics of the modal auxiliary verb prove that they are a unique class. Its syntactic behavior is different from that of adverbs. Although they resemble verbs in some ways, they are definitely not pure verbs. All of the three target modal auxiliary verbs investigated in this study possess the features above.

2.2 previous studies regarding acquisition of Chinese modal auxiliary verbs

Previous content is literature review in terms of the pure linguistics, has defined the classification of modality and clarified the syntactic features of Chinese modal auxiliary verbs. Thus, it pays no attention to the acquisition and is unrelated to SLA. Thus, this subsection will make up for this deficiency and focus on the acquisition of modal auxiliary verbs, started with a concise literature review.

Major (1974) makes an explicit analysis of English modal verbs one by one, which investigates children's acquisition of the positive, negative and interrogative form of English modal verbs and provides valuable descriptive data. However, the purpose of his study is to investigate children's acquisition of modal verbs in their native language and only focused on the syntax instead of modality, which fails to confirm if adults have the same mechanism as children when it comes to learning modal verbs.

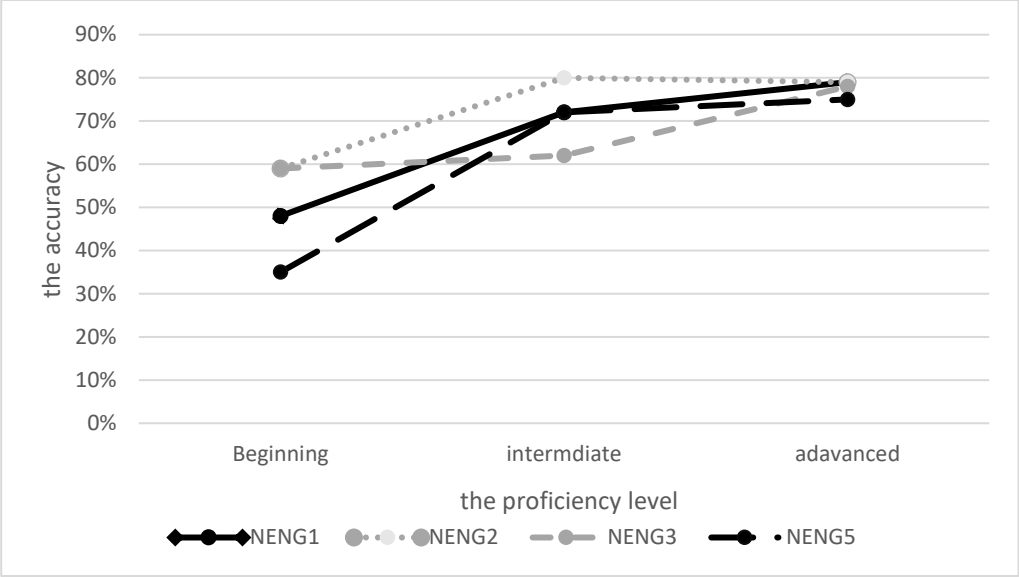
Papafragou (1998) makes progress in that his article combines modality with the investigation of children's acquisition of modal verbs, and found out that children whose native language is English tend to learn root meaning before cognitive meaning.

There are extensive studies concerning the acquisition of Chinese modal auxiliary verbs by English speakers in CFL, yet most of them focus on error analysis. Based on large amount of production materials, Tong (1986) classifies the errors into three categories, namely the misuse, the omission and semantic errors. Wang (2016) addresses the same question by analyzing the learner interlanguage corpus comprised of the learners' writing and categorize the errors into omission, redundancy, word order and misuse, and then gets the conclusion that Interface Hypothesis accounts for it. Sorace(2006) proposes the Interface Hypothesis accounting for the selective impairment

of the L2 learners' knowledge. She argues that structures which require the combination of syntactic component with other grammatical domains are more complex than structures which involve syntactic component alone. More recently, Sorace (2011) established a distinction between internal interfaces and external interfaces. The former are usually acquired with ease, on the other hand, the latter usually imposes great difficulty to the L2 learners. Chen (2002) focuses on NENG and HUI and concludes that the semantic overlapping gives rise to the errors committed by the learners.

Besides of error analysis, two valuable studies should be noticed. Sun (2012) conducts a survey to investigate the foreign students' acquisition order of NENG and test the hypothesis that their acquisition under the negative influence of the native language transfer. First of all, he summarized four semantic meanings of NENG, which approximately correspond with NENG1, NENG2, NENG3 and NENG5 in this study. Secondly, he introduces the participants in his study that their native language is English and they are learning Chinese in China now. After that, the participants are divided into three groups based on their Chinese proficiency level and are asked to complete the survey which is composed of translation (from English to Chinese) and true or false question. The result is shown by the chart below. The result shows that the accuracy of $NENG_2$ is the highest, after is $NENG_1$ and $NENG_3$, while $NENG_5$ receives the lowest accuracy. Therefore, Sun concludes that English speakers' acquisition order of NENG is:

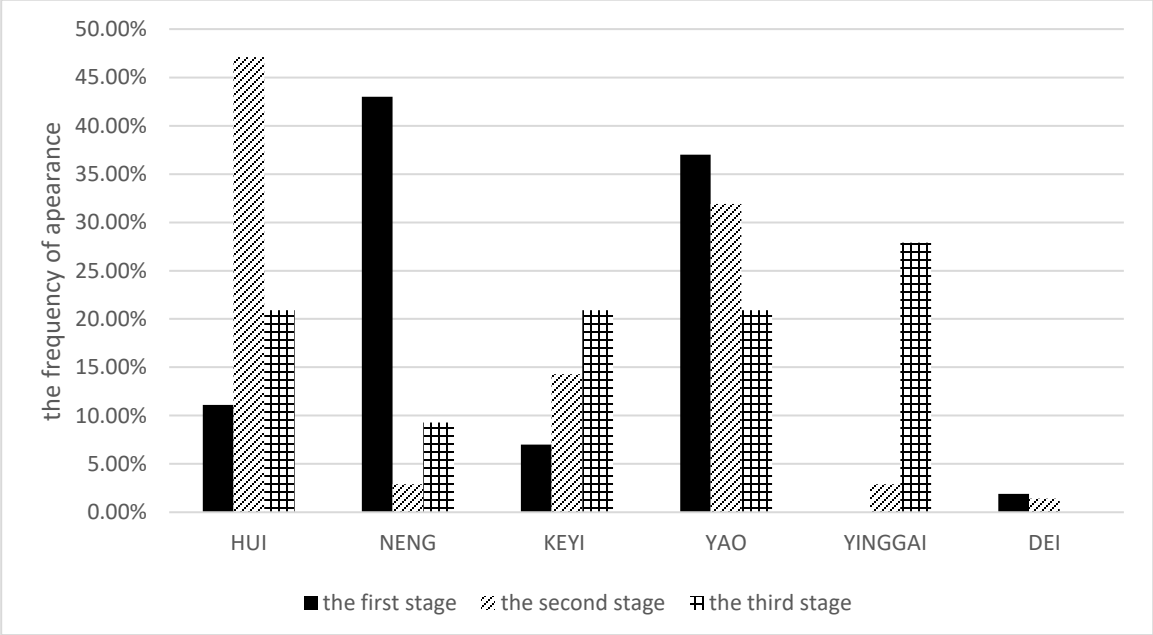
$NENG_2 > NENG_1 > NENG_3 > NENG_5$



Sun's study is significant because it reflects the realization of the scholars in CFL that modal auxiliary verb is a hard task for learners and should be paid more attention to. Also, his study notices the various meanings implied within one single auxiliary modal verb and tries to figure out the acquisition therefrom. Nevertheless, it has to be admitted that there do exist insufficiency in his study. For example, Sun neglects the existence of the epistemic modal $NENG_4$, the one will be fully discussed in the next chapter. Besides, the design of translation task and the calculation of its result are problematic. Sun does not consider the fact that NENG and other modal auxiliary verbs could be interchangeable in many cases, so it is counted into errors as long as the answer do not use NENG, even though the participant uses other modal verbs subsitute for NENG in the answer which remains grammatically correct.

Lai (2016) conducts a longitudinal investigation to probe into modal acquisition of Chinese as a foreign language from multiple perspectives like semantics, syntax and pragmatics. Based on lingusitic analysis, contrastive analysis and error analysis of two English-speaking learners' oral corpus, it statistically reveals the longitudinal process of

modal acqusition. There are six target modals investigated in his study which are NENG, YAO, HUI, DEI, YINGGAI and KEYI, and the quantitative result is converted into the chart below in a more intuitive way.



Even though the chart provides the result of all the six modal auxiliary verbs, this chapter would only focus on discussing related ones, which are NENG, HUI and KEYI. At the first stage, the learners use NENG the most frequently, but when they enter the second stage, the frequency of HUI greatly exceeds NENG, while NENG becomes the lowest. At the third stage, KEYI exceeds both HUI and NENG, receives the highest frequency.

Lai's research definitely sheds light on the future study concerning acquisition of Chinese modal auxiliary verbs, however, because of the small sample, it is not convincing enough to get a genenral conclusion, despite that it provides ample desciptive data. In addition, the longitudinal study also lacks the cross-sectional data collection and comparison. Moreover, even though Lai realizes that one modal verb implies various

semantic meanings, and sometimes they are overlapped and confusing to learners, the result of his study fails to provide related illustration. And these are exacly what this study aims to contributing to.

CHAPTER 3

THE ANALYSIS OF NENG, HUI ,AND KEYI

The previous chapter has analyzed Chinese modal auxiliary verbs in general, in terms of both semantic meanings, which performed by modality, and syntactic features, which the common properties all the Chinese auxiliary verbs share. This chapter would provide more detailed analysis focused on the three target modal auxiliary verbs investigated in this study, which are NENG, HUI and KEYI.

3.1 the semantic and syntactic analysis

Even though NENG, HUI and KEYI are classified into the same category of modality in some cases, as shown in table 2, it does not mean the three modal auxiliary verbs are interchangeable, there is some subtle semantic differences in between. This chapter will dismantle NENG, HUI and KEYI into smaller entries, and then probe into their semantic meanings and syntactic features.

3.1.1 The analysis of HUI

HUI would be the first one to be investigated. A brief summary of the previous study about HUI would be introduced first.

Lǔ (1980) claims that there are three semantic meanings of HUI:

1) When it means knowing how to do or owning the ability of doing something, HUI itself could be the answer. The negation form would be '不会'.

他不但会写歌词，还会作曲。
ta budan hui xie geci, hai hui zuoqu
He cannot only write lyrics, but also compose.
我不会踢足球。

wo buhui ti zuqiu
I can't play soccer.

2) The subject is really good at doing something, and in that case, it could be modified by HEN, ZHEN, and ZUI, etc. but it could not be the answer barely, there must be a main verb follow it. The negation form is also '不会'.

他精打细算，会过日子。
ta jingdaxisuan, hui guorizi
He is careful in reckoning, and he can manage to live quite well.

3) It could also means possible. It usually indicates the possibility of the future, but it could also refers to past or present. The negation form is '不会'.

你一定会成功的。(future)
ni yiding hui chenggong de
You will succeed.
现在他不会在家。(present)
Xianzai ta buhui zaijia
He won't be at home now.
他不会三天没吃饭了吧。(past)
ta buhui santian mei chifan le ba
He won't miss meals for three days, will he?

Liu, Pan and Gu (1983) provide another perspective by extracting two semantic meanings from HUI:

1) It indicates something could be achieved or completed, and it could be applied in both known and unknown situations.

过去，我是不会这样做的。(known situation)
guoqu, wo shi buhui zheyang zuo de
In the past, I would not have done that.
在未来的道路上，一定会遇到许多困难。(unknown situation)
zai weilai de daolu shang, yiding hui yudao xuduo kunnan
In the future, we will encounter many difficulties.

2) HUI could also be used as a full verb, indicates ‘know’ or ‘is able to do’, ‘is good at doing something’.

Xu (1993) divides HUI into two entries based on its semantic attribution.

1) When the semantics of HUI attributes to the subject, it indicates abilities or skills.

鸭子会游泳。(innate ability)
yazi hui youyong
Ducks can swim.
他会弹钢琴。(skill through learning)
ta hui tan gangqin
He can play the piano.

2) When the semantics of HUI attributes to the speaker, it indicates that the speaker is predicting, explaining or conjecturing about an action or an event which could be happened in the future, in the past or from the past to the future, based on the time point ‘now’, then generates four usages accordingly.

[Prediction] 花马上就会开。
hua mashang jiu hui kai
The flowers will blossom soon.
[Forecast] 电线太细，就会发热。
dianxian tai xi, jiu hui fa re
If the wire is too thin, it will get hot.
[Subjunctive] 要不是他们的支持，我们的处境会更艰难。
Yaobushi tamen de zhichi, women de chujing hui geng jiannan
If it were not for their support, our situation would be even more difficult.
[Explain] 你的病之所以会加重，是因为你没有好好休息。
ni de bing zhisuoyi hui jiazhong, shi yinwei ni meiyou haohao xiuxi
Your illness is aggravating because you don't have a good rest.

This study separates three individual semantic meanings from HUI referenced the previous studies. In this study, HUI_V refers to the HUI which indicates owning the ability or skill, HUI_1 refers to the HUI which indicates willingness or promise, and HUI_3 refers to the HUI which indicates speaker’s speculation of the necessity of an event based on

his/her judgement of what happened habitually. The table below clearly and schematically differentiate the three semantic meanings of HUI.

HUI	HUI_v	[Deontic Modality—ability or skill] internal dispositional enablement 我会游泳。 wo hui youyong I can swim.
	HUI_1	[Deontic Modality—will or promise] Internal dispositional enablement 我会好好照顾你的。 wo hui haohao zhaogu ni de I will take good care of you.
	HUI_2	[Epistemic Modality] speaker's speculation of the necessity of an event based on his/her judgement of what happened usually. 油在水里会浮起来。 you zai shui li hui fu qilai Oil floats on the surface of water.

Table 3 the summary of three semantic meanings of HUI

No matter how many semantic meanings they extracted from HUI and what criterion they set, all the previous linguists and scholars admitted the existence of HUI_v, which indicates the ability or skills, so actually it is the semantic core of HUI, where other semantic meanings root in.

However, in regards to which part of speech HUI_v should be categorized, the consensus has not been achieved. Upon the fact that many linguists treat HUI as modal auxiliary verb, Zhou (1996a) and Zheng (2002) claims that it is supposed to be categorized into full verb rather than modal auxiliary verb, based on the few reasons.

First of all, HUI could be used as resultative complement, such as '学会' '练会', while other modal auxiliary verbs cannot. Yet other full verbs share the same syntactic property, like the full verbs '完' and '懂'. Secondly, HUI could not only take predicate-object but also nominal-object, which is not allowed for other modal auxiliary verbs. For

example, ‘他会英文’ are grammatical, while ‘他能英文’ is ungrammatical. Thirdly, the verb which HUI quantifies cannot be modified by adverbs or complements, but meanwhile, NENG could.

*会说好英语。 hui shuo hao yingyu
能说好英语。 neng shuo hao yingyu (He) can speak English very well.
*会不说英语。 hui bushuo yingyu
能不说英语。 neng bushuo yingyu (He) can avoid speaking English.

Fourthly, ‘什么’ or other nouns could replace the predicate which follow HUI.

你会什么？ ni hui shenme What can you do?
人人都会这个。renren dou hui zhege Everyone can do this.
他只会一样。 ta zhi hui yiyang He can do only one thing.

Lastly, HUI could take aspect marker LE and the words of time-quantity on certain occasions.

会跳舞了吗？--会了半年了。
hui tiaowu le ma?—hui le bannian le
Can you dance now? – It has been half a year since I learned how to dance.
会下棋吗？--会一点。
hui xiaqi ma?- hui yidian
Can you play chess? – Only a little.

For the reason that this study aims to investigating the acquisition of Chinese modal auxiliary verbs, the full verb HUI would be excluded, but the modal auxiliary verb HUI_v would still be discussed. A clear criterion has been set up to cut off the full verb HUI and the modal auxiliary verb HUI_v based on their syntactics, even though both HUI and HUI_v share the same semantic meaning which means owning the ability or skill. HUI is categorized into main verb, when it used as a complement, take nominal-object, or take tense marker LE directly. Except previous situations mentioned, HUI_v is still considered

as a modal auxiliary verb since it possess the typical syntactic features. And next, the three semantic meanings of HUI would be analyzed individually.

a. The analysis of the deontic modal HUI_v (own the ability or skill)

The basic and primary use of HUI is the deontic modal HUI_v. It has the exact meaning as its main verb use, namely, 'know how to' or 'owning a skill or ability'. The difference is that the deontic modal HUI_v takes a verb phrase as predicate rather than a noun phrase. As a result, the deontic modal HUI_v has a much wider distribution than the main verb HUI since all the actions that require skills can be expressed by verbs. However, the same constraint still applies. The verb phrases used with HUI must refer to actions that require learned skills. Due to this semantic constraint, 7a is grammatical while 7b is not:

7.a. 我会做家务。
Wo hui zuo jiawu
I know how to do housework.
b.*我会睡觉。
Wo hui shuijiao

Tsang (1981) argues that the factor of 'requirement of learning' is not part of the meaning of HUI_v due to the following counter example:

那个小孩儿生下来头就会动了。
Nage xiaohair sheng xialai tou jiu hui dong le
That child knew how to move his head at birth.

Nevertheless, the requirement of learning is not an absolute measure, but relative to the developmental stage (usually in terms of natural age) of the actor. Thus, moving one's head is a basic functioning feature of most human beings, but for a neonate it is a skill and ability to be learned and practiced over time. For those capabilities that are not acquired by learning at all, HUI cannot be used, as shown in the following example:

*那个小孩儿没生下来就会看见东西。
nage xiaohair mei sheng xialai jiu hui kanjian dongxi

Syntactically, deontic modal HUI_v can be negated by BU, as in 8a, and can be used in questions either with the question marker MA or in the verb-not-verb construction, as in 8b and 8c.

8.a. 我不会游泳。
wo buhui youyong
I can't swim.
b. 你会游泳吗？
ni hui youyong ma
Can you swim?
c.你会不会游泳？
ni hui bu hui youyong

Can you swim?Li and Thompson (1981) claim that the Chinese modal auxiliary verbs cannot be modified by degree intensifies, and the sentence 他很会说话 'He is very eloquent.' is grammatical due to the idiomaticity of the phrase 会说话. But that claim seems to counter the many different verbs that can be used with 很会(see LV (1980:244) for more examples). For example, Li and Thompson claim the following sentences to be ungrammatical:

他很会游泳。
ta hen hui youyong
'He is very good at swimming.'

But actually it is a grammatical sentence, meaning the person not only knows how to swim, but also knows all kinds of styles, and all kinds of tricks, and is a master of them. This sentence is only bad when the speaker intends to interpret it as 'know how to'.

Actually, deontic modal HUI_v can be modified by not only 很 but also other modifiers of degree, such as 特别, 最, 很, and 可, etc. However, when HUI_v is used with those modifiers, its meaning change from 'know how to do' to 'be good at'. Thus, the basic deontic modal HUI_v 'know how to do' refers to the threshold point of possessing the competence in a skill, and the extended deontic modal HUI_v 'be good at' refers to the level of perfection of that competence. As a result, the different modal uses give different interpretations of the same verb phrase, as shown in example 9.

9. a. 这个孩子一生下来就会说话。
zhege haizi yi sheng xialai jiu hui shuohua
This child could speak immediately after he was born.
b. 这个孩子从小就特别会说话。
zhege haizi congxiao jiu tebie hui shuohua
This child has been a master of talking appropriately ever since his childhood.

In sentence 9, the use of the modifier 特别 not only changes the meaning of HUI from 'know how to ' into 'good at', but also changes the meaning of verb phrase 说话 from 'speak' to 'be eloquent' or 'talk appropriately'.

Syntactically, this extended use can be negated as in sentence 10a, meaning 'tend to make a mess in', and it can take question marker MA, but cannot be used in verb-not-verb question form, as shown in 10b and 10c respectively.

10. a. 我最不会说话了。还是你去劝她吧。
wo zui buhui shuo hua le. haishi ni qu quan ta ba
I'm most tongue-tied. It is better you go to persuade her.
b. 他最会说话吗？让他去行吗？
ta zui hui shuohua ma? rang ta qu xing ma?
Is he eloquent? Can we ask him to go (to persuade other person)?
c. *他最会不会说话？让他去行吗？
ta zui hui bu hui shuohua? rang ta qu xing ma?
Is he eloquent? Can we ask him to go (to persuade other person)?

One special use of the 'be good at' meaning occurs when HUI_v is immediately preceded by the word 就. It is more or less an idiomatic use, meaning 'to be good at nothing but' in a pejorative sense, typically used in complaints:

你不好好学习，整天就知道惹麻烦。
ni bu haohao xuexi, zhengtian jiu zhidao re mafan
You don't study hard. You are good at nothing but causing trouble all the time.

HUI_v and $NENG_1$ are the most confusing pair of modal auxiliary verbs, since they two share the same meaning which refers to owning abilities or skills, while are not interchangeable and their usage under different syntactic constraints. The analysis and discussion of their semantic differences and syntactic constraints will be given in the later chapter.

b. The analysis of the deontic modal HUI_1 (will or promise)

This study separates out a semantic meaning HUI_1 from HUI, which is also categorized into deontic modality, but differs from HUI_v. HUI_1 refers to the will of someone to do something, and the negation is BUHUI, refers to someone is unwilling to do something, see example 11a and 11b.

11. a. 他没有再娶，也没有女人会嫁一个酒鬼。
a meiyou zai qu, ye meiyou nvren hui jia yige jiugui
He didn't get married again, nor did a woman would marry an alcoholic.
b. 他选择了去西藏工作，而一般人是不会去那个地方的。
ta xuanze le qu Xizang gongzuo, er yiban ren shi buhui qu nage difang de
He chose to work in Tibet, where ordinary people are unwilling to go.

Even though another modal auxiliary verb YAO is not investigated in this study, it shares plenty of semantic and syntactic similarities with HUI_1, so the comparison between them would help make the definition of HUI_1 clear and explicit. YAO also implies the

will of someone to do something, functions as internal dispositional enablement, and is categorized into deontic modality. Lai (2016) observes that the frequency of HUI_1 is much lower than YAO by comparing the frequency of YAO and HUI_1 in the corpus. And in terms of the pragmatics, the will which HUI1 implies always benefits other person, while the will which YAO implies always benefits the doer or agent of the action in this sentence, and usually the speaker himself.

12. a. 我会好好照顾你的。
wo hui haohao zhaogu ni de
I will take good care of you.
b. 我要先吃饭，我饿了。
wo yao xian chifan, wo e le
I will have a meal first. I'm hungry.

In sentences 12a and 12b, both HUI and YAO mean the will of someone to do something, while HUI benefits the recipient and YAO benefits the agent. In addition, YAO indicates a much more stronger will than HUI_1, also shows more urgent tone, while HUI_1 usually functions as a promise or a commitment.

The difference is originated from their semantic cores. YAO is situation-oriented, reflects that the will of the action after YAO is really urgent, while HUI is result-oriented, expresses the action will happen finally but lack the urgency of time or situation, like a promise.

Moreover, the negation of HUI_1 is BUHUI, while BUXIANG is the negation form for YAO. The negations also show their semantic differences, which is BUHUI indicates someone is unwilling to do something, and BUXIANG indicates someone does not have the will to do something.

Besides of HUI_1 and YAO, $NENG_3$ also indicates the will, yet it is always used in interrogative sentence and functions as request or asking a favor, and received both

internal and external influence. The detailed discussion would be provided in the next section regarding NENG.

c. The analysis of the epistemic modal HUI$_2$

Generally speaking, in linguistics, epistemic modality is the assessment pronounced is taken to be based on the belief of the speaker. The epistemic modal use of HUI has been recognized by many scholars and grammar books under the semantic entry 'possible' or 'likely'. Tsang (1981:66) claims that the epistemic modal use of HUI means 'likely', and the negative form BUHUI means 'likely not'. But in fact, it means 'in all known circumstances the situation represented by the proposition is true/false.'

Wang (1995) claims that HUI indicates a great possibility, and then Zheng (2002) proposes that HUI implies certainty, or almost equals necessity. Thus, upon the situations that are not absolutely certain, the adverbs like 可能，也许 or 大概 would be placed before HUI to weaken its certainty or necessity.

13. a. 我本来以为你昨天会来派对的。
wo benlai yiwei ni zuotian hui lai paidui de
I assumed that you would come to party yesterday, but you didn't.
b. 他不会忘记的，我告诉他好几次了。
ta buhui wangji de, wo gaosu ta hao ji ci le
He will not forgot, since I have told him a few times.
c. 油会浮在水面上。
you hui fu zai shuimian shang
Oil will float on the surface of water.
d. 每次听到这首歌，心里都会很激动。
meici tingdao zhe shou ge, xinli dou hui hen jidong
Every time I heard this song, I will be very excited.

Sentences 13a and 13b implies the necessity based on subjective inference, and sentences 13c and 13d implies the necessity based on habitual sense. Since habitual sense belongs to the scope of non-reality, which means the action does not happen at the time when this speech is conducting, instead, indicates the speaker's assessment of the

probability of the occurrence of a certain situation, it is still counted in modality, and more specifically, epistemic modality.

3.1.2 The analysis of NENG

NENG is perhaps the most developed and complex among the Mandarin modal auxiliary verbs. Its basic meaning is similar to English ‘can’, referring to the agent's abilities to perform the action. It cannot be used as a transitive main verb, and only occasionally is it used as an adjective. Syntactically, it is virtually a pure modal auxiliary. In addition, it is used to cover the widest spectrum of the various senses of modality among all the Mandarin modals. Its uses include the predominant dynamic and deontic modal uses and the epistemic modal use.

As will be shown later in this section, NENG represents the most complex portion of the domain of modality, i.e., the concept of ‘ability’. This may be due to the many factors that are involved in the actualization of an action — the animate actor's mental and physical power and the characteristics of the object to be acted upon, the prerequisite conditions and circumstances, and the moral, social, and interpersonal forces the actor subscribes to. These factors are so closely related that no clear distinction is needed or even possible among them.

Roughly, this study extracts five semantic meanings from NENG, and the five entries can be classified into the three traditional modal categories respectively. $NENG_1$ and $NENG_5$ are classified into the deontic modality, the previous one refers to the ability or the skill of the actor, while the latter one refers to the will of someone to do something. $NENG_2$ and $NENG_3$ are classified into the dynamic modality. The difference is that $NENG_2$ refers to factor external to the participants in the action that enable or restrain the

actor to perform the action, but $NENG_3$ is considered as 'permitted', referring to the enabling or restrictive forces from authorities. The epistemic modal $NENG_4$, meaning 'possible', referring to possible conclusions based on available evidence. Following will be detailed analysis.

NENG	$NENG_1$	[Deontic Modality—ability or skill] 那个书生肩不能挑手不能提。 nage shushing jian buneng tiao shou buneng ti That scholar cannot carry anything over his shoulder or with his hands.
	$NENG_2$	[Dynamic Modality—circumstantial condition and social convention] 今天气温低，水能结成冰。 jintian qiwen di, shui neng jie cheng bing Today the temperature is so low that could turns water into ice.
	$NENG_3$	[Dynamic Modality—forbiddance from authority or asking for permission] 外面这么冷，你不能穿这么少衣服出门！ waimian zheme leng, ni buneng chuan zheme shao yifu chumen It's so cold outside that you can't go out with those clothes!
	$NENG_4$	[Epistemic Modality—objective possibility] Possible conclusion based on available evidence. 他考上大学了，能不高兴吗？ ta kao shang daxue le, neng bu gaoxing ma He has been admitted to a college, can't he be happy?

Table 4 the summary of four meanings of NENG

a. The analysis of deontic modal $NENG_1$ (own the ability or skill)

$NENG_1$ is the most basic use of NENG. Historically, NENG means 'having the physical strength' (Luo, 1986). In this use, $NENG_1$ refers to the competence of the actor to accomplish an action. It is very similar to another modal auxiliary verb HUI_v (has been discussed in the previous section), but differs from it in that HUI_v only refers to the possession of an ability or a skill. In contrast, $NENG_1$ refers to the ability to actualize the

competence, with the competence assumed. The difference in shown in sentence 14 below.

14. 他会做家具，可是现在手坏了，不能做了。
ta hui zuo jiaju, keshi xianzai shou huai le, buneng zuo le
He knows how to make furniture. But he has broken his hand and can't make it now.

$NENG_1$ is also used to represent the extent of actualization of the action, while HUI_v cannot be used for that purpose, as shown in sentences 15.

15. a. 他一天能写五千字。
ta yitian neng xie wu qian zi
He can write five thousand words a day.
b. *他一天会写五千字。
ta yitian hui xie wu qian zi

Besides the animate agent, $NENG_1$ could be also used to refer to the characteristics of inanimate objects that can perform certain actions independent of any agentive interventions. An example of this utterance is given in sentence 16.

16. 球在地上能滚，方块儿不能滚。
qiu zai di shang neng gun, fangkuair buneng gun
Balls can roll on the ground, but squares can't.

Deontic modal $NENG_1$ also has an extended sense 'a high frequency of X'. The syntactic criterion for this use is that NENG is modified by modifiers of degree, such as HEN, ZHEN, TEBIE, or ZUI. This use is very similar to the special 'good at' use of HUI (has been discussed before). Again, the focus of each form is different. NENG focuses on the actualization of the action and the productivity, while HUI focuses on the possession of the skills. The contrast between NENG and HUI is seen most clearly in this special use, as shown in 17.

17. a. 这个人特别能说，一说就是几个钟头。
zhe ge ren tebie neng shuo, yi shuo jiushi ji ge zhongtou
This person is very talkative. He can talk on and on for several hours.
b. 这个人特别会说，说话很得体。

zhe ge ren tebie hui shuo, shuohua hen deti
This person is eloquent, whatever he says is appropriate.

b. The analysis of the dynamic modal NENG$_2$ (circumstantial condition and social convention)

The dynamic modal NENG$_2$ refers to factors external to the participants in the action that enable (or restrain) the actor to perform the action. These factors include circumstantial conditions(18a), conventional procedures of doing things (without value judgment)(18b), and conventional social norms (with value judgment)(18c).

18. a. 我明天有课，不能跟你们一起去玩儿。
wo mingtian you ke, buneng gen nimen yiqi qu wanr
I have class tomorrow. I cannot play with you.
b.蛋糕能烤，不能炸。
dangao neng kao, buneng zha
Cake can only be baked. They cannot be fried.
c. 我已经十八岁了，能参加选举了。
wo yijing shiba sui le, neng canjia xuanju le
I'm already eighteen years old. I can take part in the election now.

Circumstantial condition and social convention share the common feature of being external to the actor. Therefore, both are classified as dynamic modality and can occur in the sentence construction where both the modal verb and the verb phrase are negated as in sentences 19a and 19b.

19. a. 高速公路堵了，我不能不走市区。
gaosu gonglu du le, wo bu neng bu zou shiqu
The freeway is blocked. I have to go by local.
b．这是法院的判决，我不能不服从。
zhe shi fanyuan de panjue, wo bu neng bu fucong
This is the ruling of the court. I have to obey it.

In contrast, deontic modal NENG$_1$ cannot occur in this double negation structure, since this structure always force an interpretation of imposition from external factors.

c. The analysis of dynamic modal NENG$_3$ (subjective permission)

The dynamic modal NENG$_3$ also refers to factors external to the participants in the action, but different from NENG$_2$, it usually indicates the person (usually speaker) restrains the actor to perform the action, in terms of the authority's personal power. Therefore, NENG$_3$ is subjective and in most cases implies forbidden by using negation BUNENG (sentence 20a) or depending on the negation sense of the whole sentence (sentence 20b).

20. a. 你睡了一天了，不能再睡了！
ni shui le yitian le, buneng zai shui le
You have been sleeping all day. You cannot continue sleeping now.
b.他要是在外面喝酒了，就只能睡客厅。
ta yaoshi zai waimian hejiu le, jiu zhi neng shui keting
If he drinks alcohol outside, he can only sleep in the living room.

Besides, NENG$_3$ could also be used in interrogative sentences, functions as asking for permission, as shown in sentence 21.

21. 我能借一下你的电脑吗？
wo neng jie yixia ni de diannao ma
Can I borrow your computer please?

d. The analysis of epistemic modal NENG$_4$ (objective possibility)

Epistemic modal NENG$_4$ refers to the speaker's judgment with respect to the possibility of the event represented by the verb phrase. This category is marginal because it has limited syntactic distributions. It can only occur as an independent utterance in rhetorical questions with a negative interpretation or in ma questions, as in sentences 22.

22. a. 门锁着，灯关着，他怎么能在屋里呢？
men suo zhe, deng guan zhe, ta zenme neng zai wu li ne
The door is locked and the light is off. How can he be in the room?
b. 这么晚了，你说他还能在办公室吗？
zheme wan le, ni shuo ta hai neng zai bangongshi ma
It's so late now. do you think he can still be in the office now?

Epistemic modal NENG$_4$ can only be used in the positive form in very restricted discourse contexts, i.e., answers to questions containing NENG$_4$ as in 23.

23. A: 门锁着，灯关着，他怎么能在屋里呢？

men suo zhe, deng guan zhe, ta zenme neng zai wu li ne?
The door is locked and the light is off. How can he be in the room?
B: 他当然能了。是他爸把他锁起来的。
ta dangran neng le. shi ta ba ba ta suo qilai de.
Of course he can. His father locked him up.

Although the positive form of epistemic modal NENG$_4$ usually occurs with epistemic adverbs such as DANGRAN ‘certainly’ or KENDING ‘definitely’, NENG$_4$ in sentences such as (23) can only be interpreted as the judgment of the speaker, but not as any of the dynamic or deontic modal meanings.

3.1.3 The analysis of KEYI

KEYI is similar to NENG in that it is both a deontic and a dynamic modal expressing the similar notions of ability, circumstantial condition or social convention and permission as NENG. There are four semantic meanings extracted from KEYI in this study, the first three entries and the first three semantic meanings of NENG are corresponding one by one, while the epistemic modal KEYI$_4$ is unique, which functions as suggestion. The following chapter would explicitly illustrate the four entries one by one.

KEYI	KEYI$_1$	[Deontic Modality—ability or skill] 他可以说三种外语。 ta keyi shuo san zhong waiyu He can speak three foreign languages.
	KEYI$_2$	[Dynamic Modality—circumstantial condition and social convention] 天气热了，可以游泳了。 tianqi re le, keyi youyong le It is hot enough to swim.
	KEYI$_3$	[Dynamic Modality—allowed or ask for permission] 卫生间可以抽烟。 weishengjian keyi chouyan Smoking is allowed in the bathroom.
	KEYI$_4$	[Epistemic Modality—suggestion] 你可以出去散散心。 ni keyi chuqu sansanxin

		You can go outside and take a break.

Table 5 the summary of four meanings of KEYI

a. The analysis of the deontic modal KEYI$_1$ (ability or skill)

KEYI$_1$ is also used to refer to the ability that is not associated with knowledge or training. Thus, it covers a similar range of situations as NENG$_1$(sentence 24a). It differs from NENG$_1$ in that NENG$_1$ emphasizes the existence or possession of the potential/ability, while KEYI$_1$ emphasizes the freedom of restriction by possessing that ability. When KEYI$_1$ is used as a deontic modal, it does not have a negative form, and its negation is expressed by BUNENG (sentence 24b). It also should be noticed that KEYI$_1$ cannot be modified by modifiers of degree, such as HEN, ZHEN, TEBIE, or ZUI, while both NENG$_1$ and HUI$_v$ could, as shown in sentence 24c.

24. a. 他一天可以写五千字。
ta yitian keyi xie wu qian zi
He can write five thousand words a day.
b. *他是美国人，不可以说中文。
ta shi meiguo ren, bu keyi shuo zhongwen
c. *他很可以吃饭。
ta hen keyi chifan

b. The analysis of the dynamic modal KEYI$_2$ (circumstantial condition and social convention)

Semantically, KEYI$_2$ is similar to NENG$_2$, and they are interchangeable in most cases. The only subtle semantic difference is, NENG$_2$ refers to factors external to the participants in the action that enable the actor to perform the action, while KEYI$_2$ means 'the existing social norm or circumstance does not prevent the actor from VP', as shown in sentence 5a. In force dynamics terminology, it means that there is no barrier imposed by the social norm or circumstance that bars the actor from VP.

Syntactically, $KEYI_2$ can also be used in the ma-questions and the A-not-A questions, but cannot be used in the negative structure, as shown in sentence 25b. Its negative meaning is expressed by BUNENG, meaning 'the social norm or circumstance requires the actor not VP'. So metaphorically, the social norm or circumstance takes away from the actor the ability of VP.

25. a. 我已经十八岁了，可以参加选举了。
wo yijing shiba sui le, keyi canjia xuanju le
I'm already eighteen years old. I can take part in the election now.
b.*没有阳光的话，植物不可以进行光合作用。
meiyou yangguang de hua, zhiwu bukeyi jinxing guanghe zuoyong
c. The analysis of the dynamic modal $KEYI_3$ (allowed)

Even though there is no obvious discrepancy between the semantics of $KEYI_3$ and $NENG_3$, and they both function as giving or asking for permission, however, the syntactics of them is various. To be more specifically, they are complementary.

In most cases, $NENG_3$ implies forbidden by using negation BUNENG (sentence 19a) or depending on the negation sense of the whole sentence, while $KEYI_3$ is the complementary positive form of BUNENG, referring to the authority allows the actor perform an action, but sometimes its negation BUKEYI could also be applied when the speaker wants to make the tone stronger and then its meaning would be changed to 'the VP is strictly prohibited'.

26. a. 上课可以用电脑。
shangke keyi yong diannao
It is allowed to use laptop in class.
b. *上课能用电脑。shang ke neng yong diannao
c. 上课不能用电脑。shangke buneng yong diannao
It is not allowed to use laptop in class.
d. 上课不可以用电脑。It is forbidden using laptop in class.

The relation between $NENG_3$ and $KEYI_3$ are revealed clearly in the sentences above. The positive form of NENG3 is not allowed, which makes sentence 26b ungrammatical,

while its corresponding negation 26c is grammatical. Both the positive and negative form of $KEYI_3$ are grammatically correct, yet compared with 26c, the tone of sentence 26d is stronger.

Furthermore, both of $NENG_3$ and $KEYI_3$ could be used in interrogative sentences, not only in MA questions, but also in A-not-A questions, and both indicates asking for permission. Lai (2016) claims that the hierarchy of power and solidarity between the speaker and the listener are different behind the two interrogative forms NENGBUNENG and KEYIBUKEYI. In contrast with nengbuneng 能不能 which implies the almost equal status between the speaker and the listener, keyibukeyi 可以不可以 has a such sense that the subordinate is asking for the permission of superior, which implies the speaker is at a lower hierarchy than the listener, in terms of power or solidarity.

27. 我可以借一下你的电脑吗？
    wo keyi jie yixia ni de diannao ma
    Can I borrow your computer for a moment please?

c. The analysis of the epistemic modal $KEYI_4$

$KEYI_4$ and $NENG_4$ are categorized into epistemic modality, yet $KEYI_4$ differs from $NENG_4$ in that it refers to objective conjecture and usually functions as suggestion, while $NENG_4$ refers to the speaker's judgment with respect to the possibility of the event represented by the verb phrase. Besides, $KEYI_4$ has no negative form, while $NENG_4$ can only occur as an independent utterance in rhetorical questions with a negative interpretation or in information ma questions.

28. 你可以休息休息再继续。
    ni keyi xiuxi xiuxi zai jixu
    You can take a break for a while before you continue.

3.2 the comparison between English modal verbs and Chinese modal auxiliary verbs

Chinese modal auxiliary verb and English modal verb are comparable since they both belong to a relatively enclosed cross-language grammar category in terms of semantics and syntax And this kind of comparability interferes learners' comprehension and may

even slow down their acquisition. For English-speaking learners, the negative language transfer from English may impede their acquisition of Chinese, so it is beneficial to make an explicit comparison between them, as shown in table below.

English / Chinese	Might	May	Could	Can	Would	Will
HUI_V			HUI_V	HUI_V		
HUI_1					HUI_1	HUI_1
HUI_2	HUI_2	HUI_2	HUI_2	HUI_2	HUI_2	HUI_2
$NENG_1$			$NENG_1$	$NENG_1$		
$NENG_2$			$NENG_2$	$NENG_2$		
$NENG_3$			$NENG_3$	$NENG_3$		
$NENG_4$			$NENG_4$	$NENG_4$	$NENG_4$	
$KEYI_1$			$KEYI_1$	$KEYI_1$		
$KEYI_2$			$KEYI_2$	$KEYI_2$		
$KEYI_3$		$KEYI_3$	$KEYI_3$	$KEYI_3$		
$KEYI_4$	$KEYI_4$		$KEYI_4$	$KEYI_4$	$KEYI_4$	

Table 6

The corresponding relationship between Chinese and English modal auxiliary verbs

A. may/might

29. a. May I see you?
我可以见见你吗？ ($KEYI_3$)
wo keyi jianjian ni ma
b.You may go now.
你可以走了。 ($KEYI_3$)
ni keyi zou le

As shown in sentences 29, the corresponding relationship between ‘may’ and KEYI3 is relatively stable. Yi (2005) proposes that when ‘may’ is related to permission, it also implies that the hierarchy of power or social status between the listener and speaker. When it is used to ask for permission, it implies the authority of the listener, on the contrary, when it is used to give permissions, it implies the speaker is at a higher social status.

There also is a close correspondence between might and KEYI$_4$ and HUI$_2$. ‘Might’ expresses suggestion in sentence 30, corresponded with KEYI$_4$. In sentence 31, epistemic modal HUI$_2$ referring to inferring the possibility of the event, and since HUI$_2$ implies certainty, or almost equals necessity. Thus, the adverbs keneng 可能 is placed before it to weaken its certainty or necessity.

30. You might consider taking up meditation.
你可以考虑试试冥想。(KEYI4)
ni keyi kaolü shishi minxiang
31. It might rain before evening.
天黑前可能会下雨。 (HUI2)
tianhei qian keneng hui xiayu

B． can/could

a. the ability or the skill

32. You can type, can’t you?
你会打字，对吧？ (HUIv)
ni hui dazi, dui ba?
33. You can type 200 words in a minute, can’t you?
你能/可以一分钟打 200 个字，对吧? (NENG1& KEYI1)
ni neng/keyi yi fenzhong da 200 ge zi, dui ba ?
34. We can make next year a success.
我们可以使明年成为成功的一年。(KEYI1)
women keyi shi mingnian chengwei chenggong de yinian

Can/could means the person or object has the general potentiality to achieve an action or situation because of its own characteristics, so it reflects person’s ability or object’s property (Yi, 2005). In Chinese, HUI$_v$ refers to the ability which requires learning, while NENG$_1$ refers to the innate ability. Differs from them, KEY I$_1$ emphasizes the freedom of restriction by possessing that ability. Syntactically, NENG$_1$ and KEYI$_1$ both could be used to represent the extent of actualization or frequency of the action, while HUI$_v$ cannot.

b. circumstantial condition and social convention

37. cotton can be made into cloth.

棉花能/可以织布。 (NENG2&KEYI2)
mianhua neng/ keyi zhibu

When can/could indicates the external factors, such as circumstantial condition or social convention, enable or restrain the actor to perform an action, both $NENG_2$ and $KEYI_2$ are allowable, yet what should be noticed that the negation of $KEYI_2$ is BUNENG rather than BUKEYI.

c. permission

38. could I get a lift with you into the office tomorrow? (NENG3&KEYI3)
明天我能/可以搭你的车上班吗？
mingtian wo neng/keyi da ni de che shangban ma?
39. you can go now.
你可以走了。 (KEYI3)
ni keyi zou le
40. you can't do that.
你不能那么做. (NENG3)
ni buneng name zuo
41. you can only turn right at this intersection.
这个路口只能右拐。 (NENG3)
zhege lukou zhi neng you guai

Both $NENG_3$ and $KEYI_3$ express permission, and could be used in declarative sentence, function as asking permission. Syntactically, however, $KEYI_3$ is always shown in positive sentence, as shown in sentence 39, and $NENG_3$ is usually performed by its negative form to indicate the sense of forbidden from authority, with an exception that when ZHI occurs before NENG, it could be used in a positive sentence.

d. the judgement of an event

42. she could be hurt, or worse.
她可能会受伤，甚至更糟。(HUI2)
ta keneng hui shoushang, shenzhi geng zao
43. I could force you! I could cut you off!
我可以强迫你！我可以断掉你的供给！ (KEYI4)
wo keyi qiangpo ni! wo keyi duan diao ni de gongji!

Both of HUI_2 and $KEYI_4$ reflect the speaker's judgement or conjecture of the possibility of an event. As shown in sentence 42 and 43 respectively, HUI_2 indicates subjective possibility based on speaker's judgement and $KEYI_4$ indicates objective possibility theoretically.

C．will/would

44.we will hear you out.
我们会听你说完的 。(HUI1)
women hui ting ni shuo wan de
45. you wouldn't disagree with that, would you?
你不会不同意的，对吗 ？(HUI2)
ni buhui bu tongyi de, dui ma？
46. who would do better than him?
谁能超过他？(NENG4)
shei neng chaoguo ta?

HUI_1 refers to the will of someone to do something, and differs from YAO, it is result-oriented, expresses the action will happen finally but lack the urgency of time or situation, like a promise, as shown in sentence 44. HUI_2 implies that in all known circumstances the situation represented by the proposition is true/false, as shown in sentence 45.

$NENG_4$ refers to the speaker's judgment with respect to the possibility of the event represented by the verb phrase. It can only occur as an independent utterance in rhetorical questions with a negative interpretation or in information ma questions (sentences 46).

As what have been explicitly illustrated before, the relationship between English modal verbs and Chinese modal auxiliary verbs are not complete corresponding, instead, it is a one-to-many relationship. One English modal verb can be interpreted by more than one Chinese modal auxiliary verb. Take 'can/could' as an example, all of the three target Chinese modal auxiliary verbs in this study could be used to interpret. It is highly possible

that the ‘one-to-many’ relationship between English modal verbs and Chinese modal auxiliary verbs is a factor which makes leaners so confused about NENG, HUI and KEYI.

CHAPTER 4

CURRENT STUDY

Chapter 3 clarified the definition of the term ‘Chinese modal auxiliary verb’ , provided thoroughly semantic, syntactic and pragmatic analysis about NENG, HUI and KEYI in terms of pure linguistics, and also reviewed the existing related literature. This chapter would emphasize on introducing the main research questions which will be addressed in this study and present how this study is designed.

4.1 research questions

This study aims to answer following research questions:

1) Are English-speaking learners able to distinguish the semantic difference between three auxiliary verbs NENG, HUI and KEYI and realize their corresponding syntactic constraints? Does leaner’s acquisition of these three auxiliary verbs increase with the increase of their Chinese proficiency level? Can these three auxiliary verbs be mastered completely and perfectly by English-speaking leaners?
2) What is the acquisition order for English-speaking learners when they are learning NENG, HUI and KEYI? Furthermore, what is the acquisition order of the multiple semantic meanings within one single Chinese modal auxiliary verb?
3) What is the relationship between English-speaking learners’ comprehension and production, in regard to their performance on learning these three auxiliary verbs?

4.2 study design

For the purpose of thoroughly and minutely understanding English-speaking's acquisition of the three Chinese modal auxiliary verbs, this study would investigate not only the comprehension but also production, and then make a comparison between them to get a comprehensive analysis.

4.2.1 participants

The students enrolled in first year, second year, third year and fourth year Chinese course at the University of Massachusetts Amherst take part in this study. They are required to complete an anonymous questionnaire at the end of the spring semester 2019 in a classroom setting. And also, their journals or essays which are a part of required assignment in Chinese course are collected as their production work to be analyzed.

Participants are divided into three groups, which are beginning level, intermediate level and advanced level, on the basis of their proficiency level. Since the Chinese course they are taking now is decided by the placement test which is used to test their Chinese proficiency before they officially enroll in, thus, in other words, the participants are divided into three groups according to which course they enrolled this semester. Beginning level group includes those who are taking Chinese 246, intermediate level group includes those who are taking Chinese 327 and advanced level group includes the students who are taking Chinese 427 or 527 this semester.

In order to make sure the sample represented typical English-speaking learners, participants whose native language is other than English are excluded from this study, however, those who choose two native languages including English in the background are still counted into discussion. In addition, the participants whose native language is English but have Chinese background, which means some relatives of him/her speak

Mandarin or other Chinese dialects at home, are separated into a subgroup, marked as 'CB'(Chinese Background).

As a result, there are 44 participants in the beginning level group, including 15 in CB subgroup, 30 in intermediate level group, including 12 in CB subgroup, and 16 in advanced level group, including 8 in CB subgroup.

To serve as a control group, 60 native speakers of Mandarin also participated in this study using the same questionnaire. Most of them are currently residing in China and 60 percent of them self-evaluate their English proficiency as beginning level. Therefore, their Mandarin is considered as authentic with little or no influence of English transfer, which could be negligible. However, it should be mentioned that besides Mandarin half of them choose the second dialect, which indicates half of them are multiple-Chinese-dialect speakers.

4.2.2 comprehension test- questionnaire

A questionnaire is designed for the purpose of testing English-speaking learners' comprehension of the three target Chinese auxiliary verbs and if they could realize the existence of the syntactic constraints, including a simple language-learning-related background investigation and eighteen multiple choice questions.

a. Background information

In the former part, the participants are required to fill out their basic background information which only related to their language learning. The first question is to ask what his/her native language is. This question is used to exclude the subjects whose native language is other language rather than English, since this study targeted English speakers as the interviewee and aims to explore whether English transfer would influence their

acquisition of Chinese modal auxiliary verbs. Meanwhile, the questionnaire which the respondent considers himself as the speaker who owns two native languages included English still remains effective, even though there may exist discrepancy between their bilingual proficiencies. As the result, 6 respondents are excluded.

The next three questions aim to understand the participants' Chinese learning experience, including that, which Chinese course they enrolled this semester, if he has the studying aboard experience where Chinese is spoken and how long he have been learning Chinese.

Lastly, the fifth question is to ask if the respondent has a Chinese background, which means if he has Chinese heritage or grown up in a Chinese-speaking family. However, the one who is born in China and adopted by a English-speaking family right before he actually was capable of speaking or mastering a language is not considered into the Chinese background group. The participants who have Chinese background are grouped into 'CB', by the contrast to the other participants who have no Chinese background at each proficiency level group. This design is to test whether the performance of the two groups are similar or not, and then get the conclusion if their Chinese background would make them perform better on comprehension than other learners, and then facilitate them learning three Chinese modal auxiliary verbs.

b. multiple choices questions

In order to answer the research questions proposed in 3.1, and test English-speaking learners' comprehension of NENG, HUI, and KEYI, 14 multiple choices questions are designed. Each question is corresponded with at least one semantic meaning within NENG, HUI, and KEYI, but since these three Chinese modal auxiliary verbs are

interchangeable in many cases (have been fully discussed in chapter 2), in some questions, the grammatical correct answers may be more than one, so the participants are asked to circle all the answer(s) as long as he/she thinks it makes sense. Also, a sample question is provided at the start to make it clear that they are encouraged to choose multiple answers.

In total, there are six questions are designed to test the learners' comprehension of HUI, seven questions for NENG, and five questions for KEYI. In the meantime, since three semantic meanings of NENG and KEYI are overlapped and could be interchanged under certain conditions, there are three questions which support choosing NENG and KEYI simultaneously. Following would be detailed explanation.

Within the six questions designed for HUI, each semantic meaning of HUI is corresponded with two questions. One is positive form, and the other is negative form, on the purpose of testing if the sentence form would influence the learners' comprehension.

1. 他很会聊天，班里的每个人都喜欢跟他聊天。（HUI_v）

2. 他一出生就会笑。（HUI_v）

The two questions above aim to test their comprehension of HUI_v. The first one is designed to test if they realize that 'intensifier+ HUI_v' indicates 'be good at'. And the second one is used to test if they is aware of that HUI_v refers to 'know how to' and the ability or skill it modifies relative to the developmental stage, while NENG and KEYI are different.

3. 那家商店的衣服太贵了，我不会再去了。(HUI_1)

4. 上大学以后，我会好好学习的。(HUI_1)

These two are designed on the purpose of testing their comprehension of HUI_1, which indicates the will of someone to do something. Number three is negation, while number four is positive form.

5. 那个餐馆又贵又难吃，顾客不会去的。(HUI_2)

6. 要是你放太多盐的话，这道菜会特别咸。(HUI_2)

Question 5 and 6 are contrast by their sentence form, yet HUI_2 is the constant, which refers to 'in all known circumstances the situation represented by the proposition is true/false'.

7. 他很能聊天，上课的时候也要跟同学聊天。($NENG_1$)

Question 7 parallels with Question 1, aims to test if the learners realize that 'intensifier+ $NENG_1$' implies 'a high frequency of X'.

8. 他游泳游得很好，一分钟能/可以游三百米。($NENG_1$ & $KEYI_1$)

Question 8 is used to test if the learners is aware of that the positive forms of $NENG_1$ and $KEYI_1$ are exchangeable, because they both imply the competence of the actor to accomplish an action, and if they realize that HUI cannot be applied in the sentence where complement modifies the main verb to indicate the extent of actualization of the action.

9. 天气暖和了，能/可以游泳了。($NENG_2$ & $KEYI_2$)

10. 我病得很重，明天不能上课了。($NENG_2$)

Question 9 and 10 are used to test the learners' comprehension of $NENG_2$ and $KEYI_2$, which refers to factors external to the participants in the action that enable (or restrain) the actor to perform the action, yet the negation of $KEYI_2$ is BUNENG rather than BUKEYI.

11. 我能/可以走了吗？ ($NENG_3$ & $KEYI_3$)

12. 这个饭馆里可以抽烟。($KEYI_3$)

Question 11 and 12 are designed to test the learners' comprehension of $NENG_3$ and $KEYI_3$, which both functions as asking for permission when they occur in interrogative sentence , while only $KEYI_3$ could be used in positive sense.

13. 你为什么这么高兴?

我要去看 Avengers 了，能不高兴吗？($NENG_4$)

Question 13 aims to understand the learners' comprehension of $NENG_4$, which refers to the speaker's judgment with respect to the possibility of the event represented by the verb phrase, and if they realize the syntactic restraint of $NENG_4$, that it can only occur as an independent utterance in rhetorical questions with a negative interpretation or in information ma questions.

14. 那部电影很有意思，你可以去看看。($KEYI_4$)

The last question is designed to test the learner' comprehension of $KEYI_4$, the one refers to objective conjecture and usually functions as suggestion, which is unique.

4.2.3 the methodology of production analysis

Because all the participants are the students at University of Massachusetts Amherst who enrolled in Chinese course, writing essays or journals (depending on which course he enrolled) in Chinese is a part of the required assignment. For the purpose of investigating English-speaking learners' production of NENG, HUI and KEYI, their essays or journals are collected, and the sentence which is related to the three Chinese modal auxiliary verbs is singled out to be analyzed. Different from traditional error analysis which mainly focus on studying the error type, this study calculate the frequency and accuracy of each semantic meaning of NENG, HUI and KEYI used in their journals or essays and then get the conclusion.

One thing should be mentioned that, since all the essays and journals are collected anonymously, which means the writers are unidentified, and the only known information is which Chinese course he/she is taking, there is no way to distinguish if he/she has Chinese background. Thus, in the production analysis, the participants are grouped into 'beginning level', 'intermediate level' and 'advanced level', cancelled the arrangement of subgroups like 'NCB'(Non-Chinese background) or 'CB' (Chinese background).

In total, 95 essays from beginning level, 127 journals from intermediate level and 75 essays including reading reports from advanced level are collected anonymously as database.

CHAPTER 5

THE RESULT OF COMPREHENSION TEST AND DISCUSSION

In chapter 4, the research methodology was introduced. This chapter will provide the general quantitative data based on calculation of collected questionnaires and then make corresponding detailed analysis and discussion.

5.1 the result of questionnaire

This section takes each question shown in questionnaire as unit, and then illustrates the quantitative results by two tables. The first table (table 4) divides participants into three experimental groups, including beginning, intermediate, advanced level, plus a control group, which is composed of 60 native speakers.

Moreover, in order to see whether Chinese background is a factor to influence English-speaking learners' acquisition of NENG, HUI and KEYI, the second table (table 5) is also provided, which separates each experimental group into two subgroups, marked as NCB (Non-Chinese background) and CB (Chinese background). The size of two subgroups keeps approximately the same in case of negative influence by the wide gap of sample, which has been stated in previous chapter.

	beginning			intermediate			advanced			native speaker		
	HUI	NENG	KEYI	HUI	NENG	KEYI	HUI	NENG	KEYI	HUI	NENG	KEYI
intensifier+HUIV	76.10%	30.69%	10.35%	47.23%	33.34%	26.39%	56.25%	43.75%	25.00%	93.33%	6.66%	0.00%
HUIV	67.48%	32.53%	6.79%	80.56%	15.28%	6.95%	62.50%	37.50%	12.50%	98.33%	13.33%	5.00%
HUI1(negation)	61.03%	35.86%	13.68%	68.06%	33.33%	19.45%	87.50%	18.75%	25.00%	100.00%	0.00%	0.00%
HUI1	76.21%	22.18%	17.01%	88.89%	11.11%	0.00%	93.75%	0.00%	6.25%	100.00%	3.33%	0.00%
HUI2(negation)	65.98%	28.85%	8.62%	72.22%	26.39%	6.95%	100.00%	0.00%	6.25%	96.66%	0.00%	5.00%
HUI2	64.14%	27.24%	13.68%	59.72%	30.56%	9.72%	75.00%	12.50%	12.50%	98.33%	6.66%	1.66%
intensifier+NENG1	62.75%	30.69%	10.21%	61.11%	16.67%	22.23%	50.00%	50.00%	18.75%	15.00%	90.00%	0.00%
NENG1/KEYI 1	62.76%	25.80%	30.35%	37.50%	48.62%	23.61%	12.50%	62.50%	75.00%	0.00%	100.00%	96.66%
NENG2/KEYI2	32.65%	33.80%	57.48%	18.06%	25.00%	72.22%	25.00%	25.00%	81.25%	0.00%	95.00%	98.33%
NENG2(negation)	20.35%	84.72%	21.96%	43.06%	65.28%	12.50%	43.75%	81.25%	25.00%	5.00%	96.66%	30.00%
NENG3/KEYI3	23.91%	52.76%	72.53%	15.28%	26.39%	73.62%	6.25%	50.00%	87.50%	0.00%	91.66%	96.66%
KEYI3	11.84%	32.18%	81.27%	8.34%	31.95%	66.67%	6.25%	31.25%	75.00%	1.66%	36.66%	95.00%
NENG4	39.08%	43.91%	23.80%	37.50%	45.83%	22.22%	12.50%	87.50%	12.50%	0.00%	96.66%	3.33%
KEYI4	57.70%	16.90%	38.97%	43.06%	19.45%	43.06%	18.75%	12.50%	75.00%	0.00%	6.66%	98.33%

table 7
the quantitative result of the questionnaire from three experimental groups and one control group

beginning level						
	NENG		HUI		KEYI	
	CB	NCB	CB	NCB	CB	NCB
intensifier+HUIV	20.00%	41.38%	86.67%	65.52&	0.00%	20.69%
HUIV	13.33%	51.72%	86.67%	48.28%	6.67%	6.90%
HUI1(negation)	20.00%	51.72%	73.77%	48.28%	6.67%	20.69%
HUI1	13.33%	31.03%	80.00%	72.41%	13.33%	20.69%
HUI2(negation)	26.67%	31.03%	73.33%	58.62%	0.00%	17.24%
HUI2	20.00%	34.48%	80.00%	48.28%	6.67%	20.69%
intensifier+NENG1	20.00%	41.38%	73.77%	51.72%	6.67%	13.75%
NENG1/KEYI 1	24.00%	27.59%	690.00%	65.52%	40.00%	20.69%
NENG2/KEYI2	40.00%	27.59%	6.67%	58.62%	66.67%	48.28%
NENG2(negation)	86.67%	82.76%	20.00%	20.69%	26.67%	17.24%
NENG3/KEYI3	40.00%	65.53%	13.00%	34.48%	93.33%	51.72%
KEYI3	33.33%	31.03%	13.33%	10.34%	86.67%	75.86%
NENG4	53.33%	34.48%	33.33&	44.83%	20.00%	27.59%
KEYI4	20.00%	13.79%	53.33%	62.07%	40.00%	37.93%

intermediate level						
	NENG		HUI		KEYI	
	CB	NCB	CB	NCB	CB	NCB
intensifier+HUIV	16.67%	50.00%	66.67%	27.78%	25.00%	27.78%
HUIV	8.33%	22.28%	83.33%	77.78%	8.33%	5.56%
HUI1(negation)	33.33%	33.33%	75.00%	61.11%	16.67%	22.22%
HUI1	0.00%	22.22%	100.00%	77.78%	0.00%	0.00%
HUI2(negation)	8.33%	44.44%	83.33%	61.11%	8.33%	5.56%
HUI2	16.67%	44.44%	75.00%	44.44%	8.33%	11.11%
intensifier+NENG1	0.00%	33.33%	83.33%	38.89%	16.67%	27.78%
NENG1/KEYI 1	41.67%	55.56%	41.67%	33.33%	25.00%	22.22%
NENG2/KEYI2	16.67%	33.33%	8.33%	27.78%	83.33%	61.11%
NENG2(negation)	75.00%	55.56%	41.67%	44.44%	8.33%	16.67%
NENG3/KEYI3	8.33%	44.44%	8.33%	22.22%	91.67%	55,.56%
KEYI3	41.67%	22.22%	16.67%	0.00%	50.00%	83.33%
NENG4	58.33%	33.33%	8.33%	66.67%	33.33%	11.11%
KEYI4	16.67%	22.22%	25.00%	61.11%	58.33%	27.78%

advanced level						
	NENG		HUI		KEYI	
	CB	NCB	CB	NCB	CB	NCB
intensifier+HUIV	62.50%	25.00%	75.00%	37.50%	0.00%	50.00%
HUIV	8.33%	50.00%	83.33%	37.50%	0.00%	25.00%
HUI1(negation)	12.25%	25.00%	100.00%	75.00%	25.00%	25.00%
HUI1	0.00%	0.00%	100.00%	87.50%	0.00%	12.50%
HUI2(negation)	0.00%	0.00%	100.00%	100.00%	0.00%	12.50%
HUI2	12.50%	12.50%	75.00%	75.00%	12.50%	12.50%
intensifier+NENG1	50.00%	50.00%	75.00%	25.00%	0.00%	37.50%
NENG1/KEYI 1	75.00%	50.00%	12.50%	12.50%	100.00%	50.00%
NENG2/KEYI2	50.00%	0.00%	0.00%	50.00%	100.00%	62.50%
NENG2(negation)	100.00%	62.50%	25.00%	62.50%	25.00%	25.00%
NENG3/KEYI3	75.00%	25.00%	0.00%	12.50%	87.50%	87.50%
KEYI3	37.50%	25.00%	0.00%	1250.00%	75.00%	75.00%
NENG4	100.00%	75.00%	0.00%	25.00%	25.00%	0.00%
KEYI4	0.00%	25.00%	12.50%	25.00%	87.50%	62.50%

table 8

the quantitative result of the questionnaire from two subgroups: CB (Chinese background) and NCB (Non-Chinese background)

5.2 the analysis of the result

In order to answer the first and the second research questions proposed in Chapter 3, this section would make a detailed analysis on the basis of quantitative data above.

5.2.1 comparison of HUI, NENG, and KEYI

As what have been clearly explained in Chapter 3, Question1-6 are designed to test learners' comprehension of HUI, Question 7-11 and 13 aim to test NENG, and for KEYI, there are Question 8, 9,11,12 and 14. The table below is created by taking the average accuracy of corresponding questions.

	HUI	NENG	KEYI
beginning level	68.49%	46.04%	50.92%
intermediate level	69.44%	37.50%	52.26%
advanced level	79.17%	61.72%	78.13%
native speaker	97.78%	94.79%	97.29%

Raw data

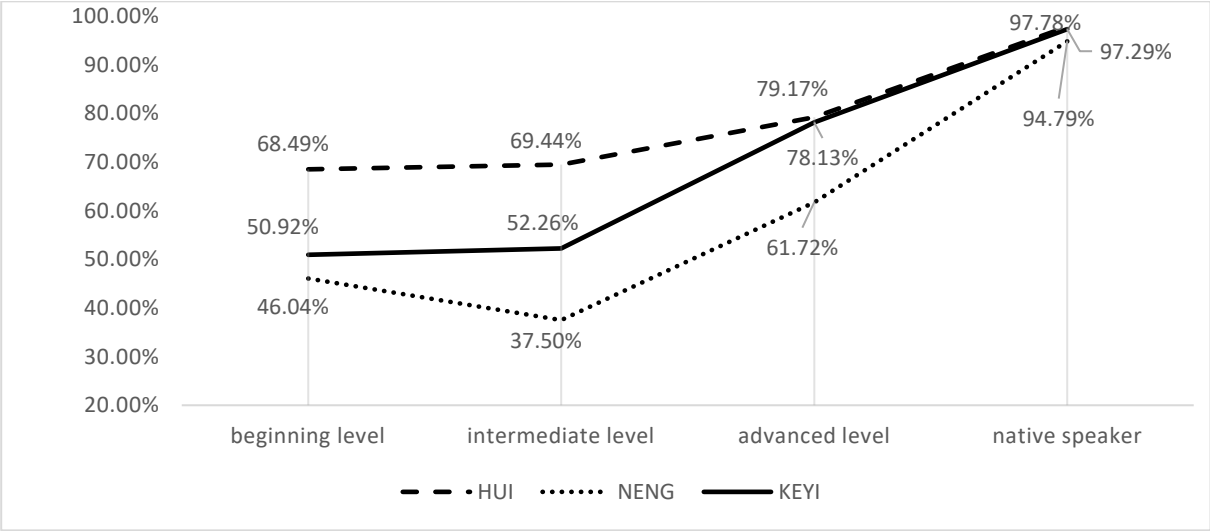


Figure 1

The accuracy rates of NENG, HUI, and KEYI in comprehension test

From the perspective of the three Chinese modal auxiliary verbs, for all participants included three experimental groups and one control group, HUI was always the one which received highest accuracy, and KEYI followed HUI became the second, while NENG was always the lowest. This data proves the order of the acquisition difficulty for all English-speaking learners is the same: HUI< KEYI < NENG. From this, relevant pedagogical method or teaching strategy will be discussed later.

In addition, another observation based on the trend of three curve lines is that, the process of learning NENG obviously fits in U-shape, which means that the learners may regress somehow when they enter the intermediate level, but after getting through this period, the development became significant. HUI and KEYI are in the same case, that they did not experience palpable retrogression, because the intermediate level group got the almost same accuracy as beginning level group did, which means their acquisition remains stable. And after it, the learners made great progress when they entered advanced level.

5.2.2 comparison of three semantic meanings of HUI

Question 1 and 2 are designed to test the participants' comprehension of HUI_V, Question 3 and 4 are for HUI_1, and Question 5 and 6 are for HUI_2. This section calculates accuracy of each semantic meaning of HUI, and the make an analysis.

	HUI	HUI_V	HUI_1	HUI_2
beginning level	68.49%	71.79%	68.62%	65.06%
intermediate level	69.44%	63.89%	78.47%	65.97%
advanced level	79.17%	59.38%	90.63%	87.50%
native speaker	97.78%	95.83%	100.00%	97.50%

Raw data

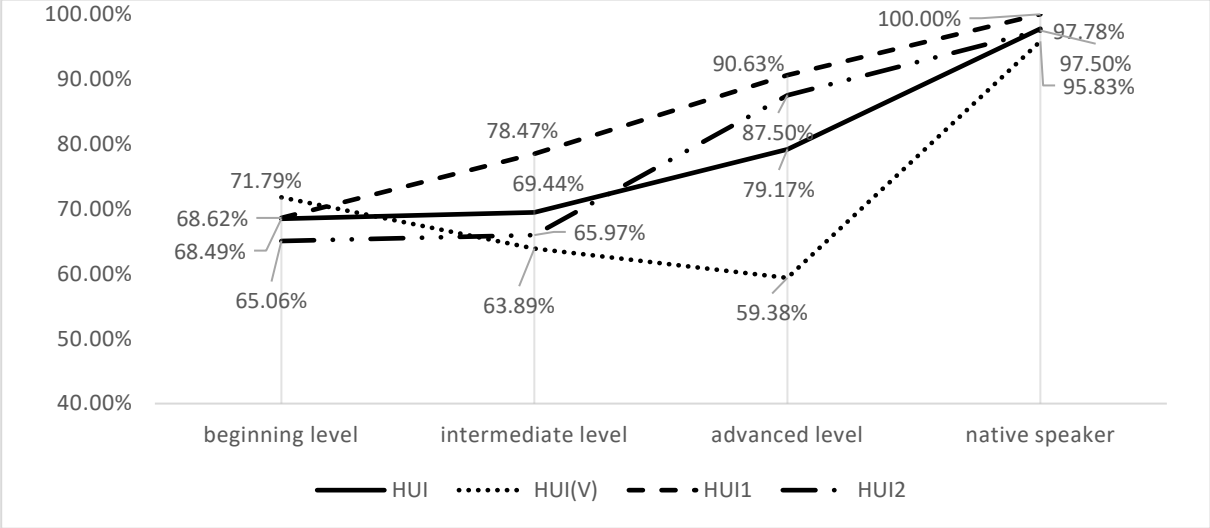


Figure 2
The accuracy rates of three semantic meanings of HUI in comprehension test

For beginning level group, they had the best performance on HUI_V, and after it is HUI_1 and HUI_2. However, for the intermediate level group, HUI_1 and HUI_2 exceeded HUI_V became the highest and the second, while HUI_V received the lowest accuracy. The gap became even more wider according to the performance of advanced level group. Both HUI_1 and HUI_2 received the accuracy above 85%, yet HUI_V only got 59.38%, which is an unforeseen circumstance.

Compared with that the line of HUI_1 keeps upward, the line of HUI_V shows that the learners' comprehension of HUI_V declines with the promotion of their proficiency level. Meanwhile, the process of learning HUI_2 fits in U-shape with a relatively gentle lowest point at intermediate stage and a tendency of instant ascent after it until reached the peak at advanced level.

5.2.3 comparison of four semantic meanings of NENG

There are six questions designed for testing learners' comprehension of four semantic meanings within NENG. And this section aims to analyze each semantic meaning of NENG in detail.

	NENG	NENG1	NENG2	NENG3	NENG4
beginning level	46.04%	28.24%	59.26%	52.76%	43.91%
intermediate level	37.50%	32.64%	45.14%	26.39%	45.83%
advanced level	61.72%	56.25%	53.13%	50.00%	87.50%
native speaker	94.79%	95.00%	95.83%	91.66%	96.66%

Raw data

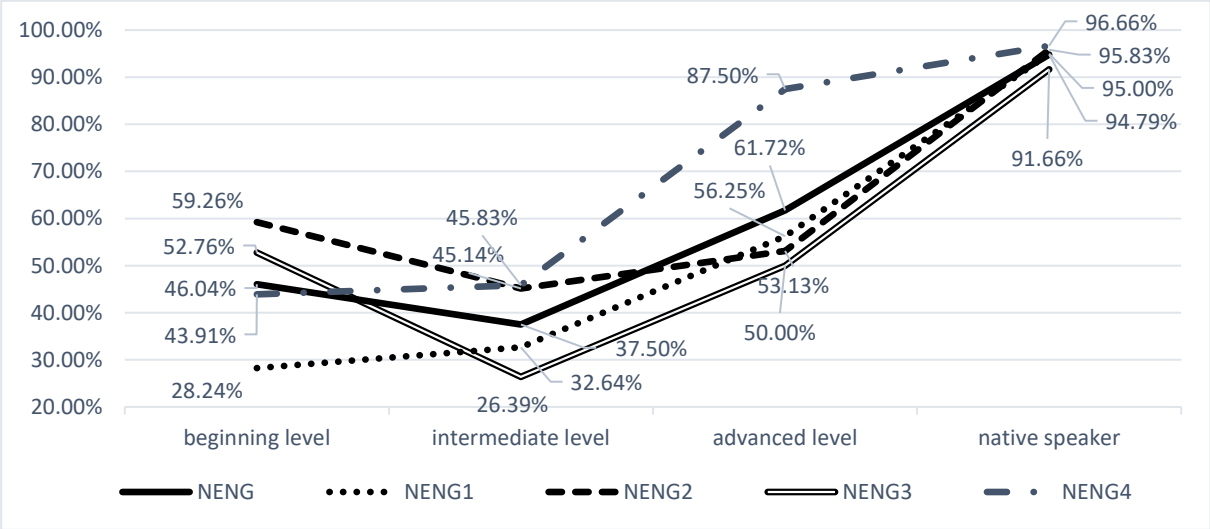


Figure 3

The accuracy rates of four semantic meanings of NENG in comprehension test

Beginning group got the highest accuracy on $NENG_2$, after it are $NENG_3$ and $NENG_4$, while $NENG_1$ received 28.24%, which is less than half of the accuracy of $NENG_2$. For intermediate level group, $NENG_4$ and $NENG_2$ received the highest accuracy,

yet the latter is a little bit lower that the former. $NENG_1$ exceeds $NENG_3$, while $NENG_3$ falls into the last one. In view of advanced group's performance, $NENG_4$ is the best, and then are $NENG_1$, $NENG_2$ and $NENG_3$.

The accuracy of both $NENG_1$ and $NENG_4$ increases with the promotion of English-speaking learners' proficiency. On the contrary, the learning of $NENG_2$ and $NENG_3$ reveals U-shape. The advanced level group performed even worse than the beginning level group.

5.2.4 comparison of four semantic meanings of KEYI

For the purpose of testing participants' comprehension of KEYI, five questions are designed, which corresponding to its four semantic meanings.

	KEYI	$KEYI_1$	$KEYI_2$	$KEYI_3$	$KEYI_4$
beginning level	50.92%	30.35%	57.48%	76.90%	38.97%
intermediate level	52.26%	23.61%	72.22%	70.14%	43.06%
advanced level	78.13%	75.00%	81.25%	81.25%	75.00%
native speaker	97.29%	96.66%	98.33%	95.83%	98.33%

Raw data

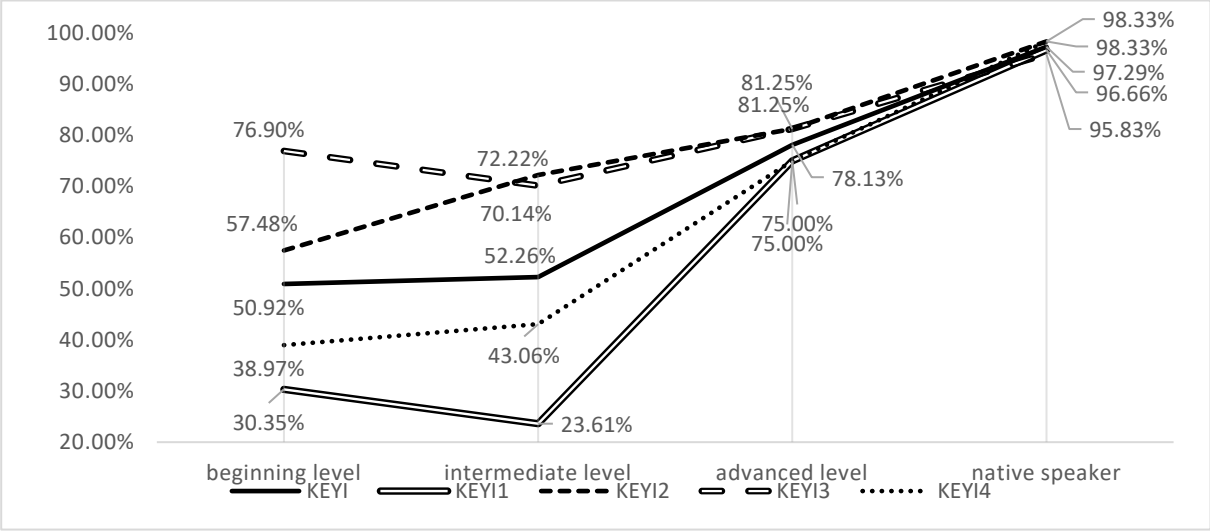


Figure 4

The accuracy rates of four semantic meanings of KEYI in comprehension test

For all three experimental groups, the order of accuracy is the same, represented by $KEYI_3$ >$KEYI_2$> $KEYI_4$ >$KEYI_1$, with a tiny exception that $KEYI_2$ exceeds $KEYI_3$ a little in intermediate level group.

Moreover, the accuracy of $KEYI_2$ and $KEYI_4$ keeps going up along with improvement of learners' proficiency level, while $KEYI_1$and $KEYI_3$ show the similar tendency of U-shape with the lowest point is at intermediate level.

5.3 other discussion

From the result of the questionnaire, subgroup CB perform better than NCB on ten questions (Question 1,2,3,4,5,6,8,10,13,14), no matter which Chinese proficiency level group they belong to. To some extent, it may prove that it is easier for the learners who have Chinese background to acquire NENG, HUI, and KEYI.

Compared with 'intensifier +HUI_V', the accuracy of 'intensifier +$NENG_1$' is much lower. The result reflects that the instructors should pay more attention on introducing the collocation 'intensifier +$NENG_1$' and its syntactic constraint in class.

CHAPTER 6

THE ANALYSIS OF PRODUCTION

As what has been explained clearly in Chapter 4, 95 essays from beginning level, 127 journals from intermediate level and 75 essays including reading reports from advanced level are collected anonymously as database. This chapter would analyze their essays by calculating the frequency of NENG, HUI and KEYI have been correctly used in their writing, also involving all semantic meanings of each one, and then comprehensively investigate English-speaking learners' production in regard to NENG, HUI and KEYI.

6.1 the analysis based on three category- NENG, HUI, and KEYI

First of all, there are total 256 sentences containing NENG, HUI, and KEYI which are correctly used picked out from the essays written by beginning level group, 130 sentences from intermediate level and 211 sentences from advanced level group. Afterwards those sentences are classified into the three categories and 11 subcategories. The chart is provided to facilitate directly observing the trend.

	HUI	NENG	KEYI	total
beginning	151	32	73	256
intermediate	56	9	65	130
advanced	101	58	52	211

Raw data

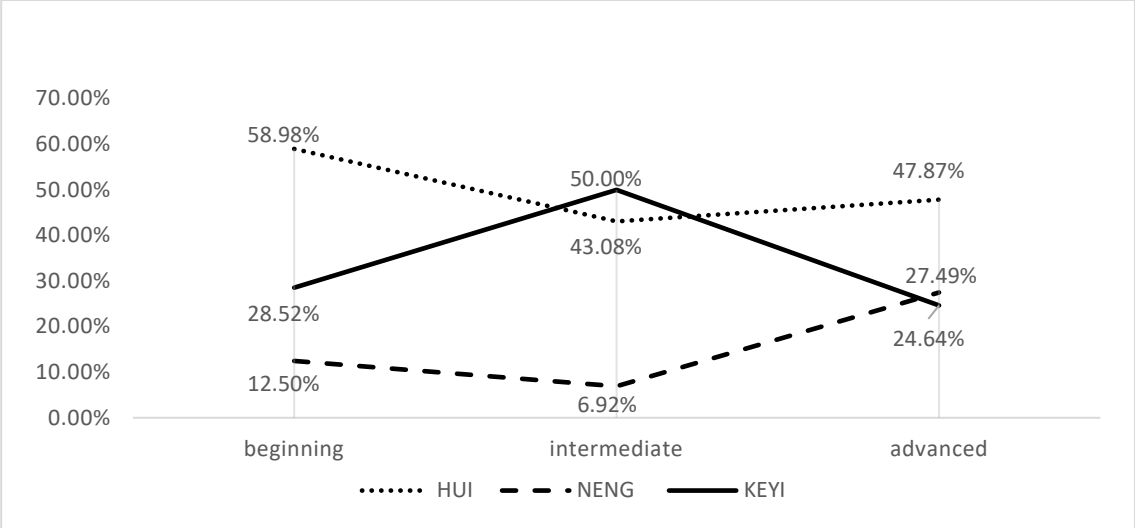


Figure 5

The frequency of NENG, HUI ,and KEYI used in writing production

As shown in the table above, beginning level group use HUI the most, after it is KEYI, and NENG occurs least. For intermediate level group, they prefer using KEYI the most, and then is HUI, while the frequency of NENG still remains the lowest. Advanced level learners tend to use HUI the most, in the meantime, there is not much difference between NENG and KEYI.

There is an inverse U-shape curve between the production of KEYI and the promotion of proficiency level, which means among all of the three experimental groups, the appearance of KEYI reaches the summit in the intermediate level group, but it is much lower in beginning and advanced level groups. In addition, even though both NENG and HUI fit in U-shape, the production of HUI is much higher than NENG. And also, the production of NENG from advanced level group exceeds the beginning level group, while advanced level group produce HUI less than beginning level group.

6.2 the analysis based on eleven subcategories -smaller semantic meanings

In order to simplify understanding, the raw data is transcribed into a bar chart, which is also marked with the number, which indicates how much percent the appearance of one semantic meaning occupies within all of the production one single experimental group made.

	HUI_v	HUI_1	HUI_2	$NENG_1$	$NENG_2$	$NENG_3$	$NENG_4$	$KEYI_1$	$KEYI_2$	$KEYI_3$	$KEYI_4$	total
beginning	10	0	141	1	31	0	0	4	45	3	21	256
intermediate	1	5	50	1	4	4	0	4	39	6	16	130
advanced	0	6	95	19	38	1	0	14	25	10	3	211

Raw data

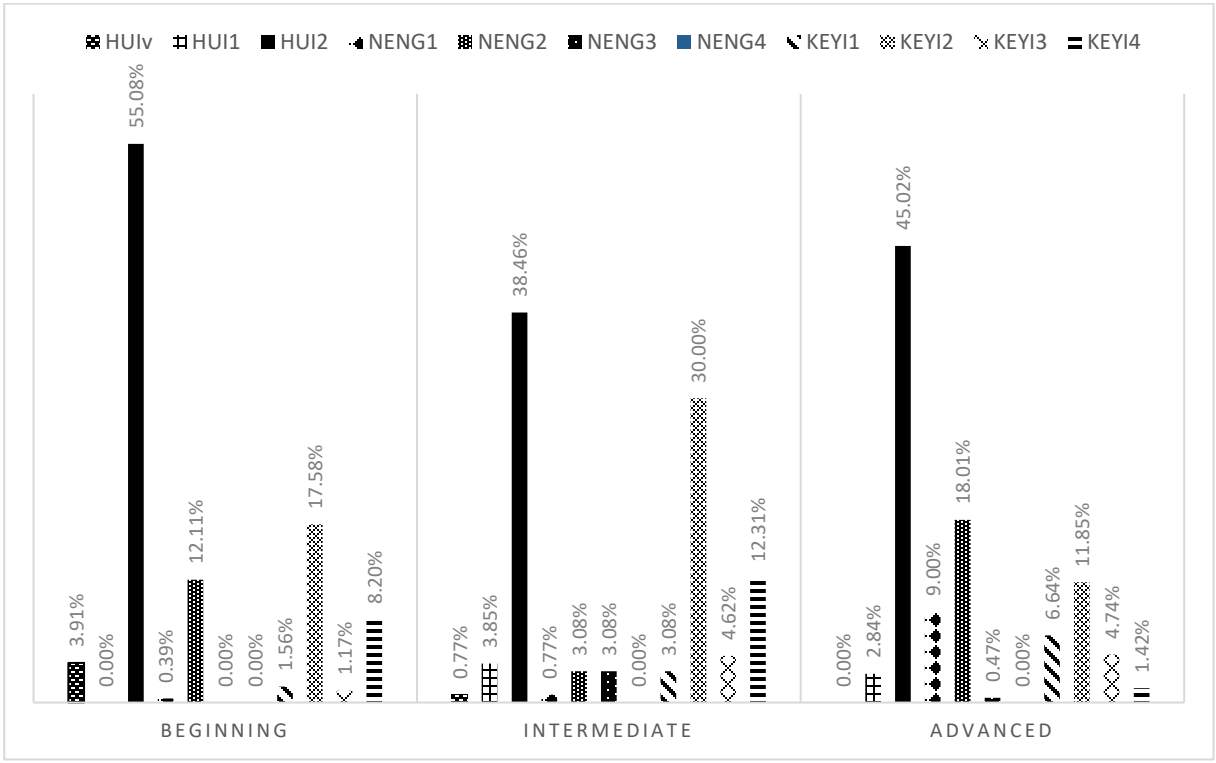


Figure 6

The frequency of eleven semantic meanings used in writing production

The top five semantic meaning which beginning level group used in their writings are : HUI_2 > $KEYI_2$ >$NENG_2$ > $KEYI_4$ > HUI_1. The top five in intermediate group are: HUI_2 > $KEYI_2$ > $KEYI_4$ > $KEYI_3$ > HUI_1. For advanced level group, the top five are: HUI_2 > $NENG_2$ > $KEYI_2$ > $NENG_1$ > $KEYI_1$.

From the figure above, obviously, HUI_2 appears the most often in writings and $NENG_4$ never appears. The production of $NENG_1$ and $KEYI_1$ increases with the promotion of Chinese proficiency level, while HUI_V goes in opposite direction. Also, both HUI_2 and $NENG_2$ fit in U-shape development, yet the development of HUI_1, $NENG_3$, $KEYI_2$, $KEYI_3$, and $KEYI_4$ are shown by inversed U-shape.

6.3 other discussion

Combined with the result of comprehension test, this study observes that HUI not only achieved the highest accuracy in comprehension test, but also received the highest frequency in learners' writing production (except intermediate level group), while KEYI was always the lowest one in two tables.

There are maybe two reasons could explain this phenomenon. Firstly, textbook transfer may effect leaners' acquisition of NENG, HUI, and KEYI. Take the textbook used at UMass-- Integrated Chinese for example, HUI appears twice as a grammar point, however, NENG and KEYI each only occurs once.

Secondly, from table 3, this study clearly illustrates the corresponding relationship between Chinese modal auxiliary verbs 'NENG, HUI, KEYI' and English modal verbs 'might/may/could/can/would/will'. Obviously, the semantics of HUI could correspond with all the six English modal verbs. This may influence learners prefer to choose and use HUI when they are not so sure or hesitate.

CHAPTER 7

CONCLUSION

7.1 summary of the study

This study carried out a questionnaire in order to analyze English-speaking learners' comprehension of three Chinese modal auxiliary verbs: NENG, HUI, and KEYI. Based on data analysis, the first finding is that the acquisition order of English-speaking learners is HUI > KEYI > NENG, when they are learning these three Chinese modal auxiliary verbs. It is also found that English-speaking learners' acquisition of NENG, HUI, and KEYI does not always increase with the promotion of their Chinese language proficiency.

This study also analyzed the usage of NENG, HUI, and KEYI in learners' writing production. And the result proves that English-speaking learners' production of NENG, HUI, and KEYI is not parallel to their comprehension.

7.2 the answers to research questions

(1) English-speaking learners are able to distinguish the semantic difference between three auxiliary verbs NENG, HUI and KEYI and realize its corresponding syntactic constraints, proved by the fact that the accuracy of all the three modal auxiliary verbs reaches above 50% finally.

Moreover, English-speaking leaners' acquisition of these three auxiliary verbs do not always increase with the promotion of their Chinese proficiency level. Both HUI and KEYI present the same trend, which rises rapidly and significantly after experiencing a relatively flat stage, while the development of NENG is shown by U-shape learning curve.

Also, it has to be admitted that there is a gap between advanced level English-speaking leaners and Chinese native speakers in regard to their performance on comprehension test. Thus, NENG, HUI, and KEYI are proved to be a tough task for all English-speaking leaners and hard to be mastered perfectly.

(2) For English-speaking learners, the acquisition order is(from the easiest to hardest):

HUI > KEYI > NENG

More specifically, the acquisition order of multiple semantic meanings within one modal auxiliary verb is:

HUI: $HUI_V > HUI_1 > HUI_2$

NENG: $NENG_2 > NENG_3 > NENG_4 > NENG_1$

KEYI: $KEYI_3 > KEYI_2 > KEYI_4 > KEYI_1$

(3) English-speaking learners' production of NENG, HUI, and KEYI is not parallel to their comprehension. Beginning level learners' performance on comprehension test accords with their production, presents the same order: HUI > KEYI > NENG. Yet in the production analysis of intermediate level group, KEYI exceeds HUI become the top one. However, when it comes to advanced level group, KEYI drops to the lowest one and is outnumbered by NENG, while HUI regained its top position.

7.3 limitations of the study and future studies

This study focused on investigating English-speaking learners' acquisition of NENG, HUI, and KEYI. Consequently, the results only apply to Chinese learners whose first language is English. In order to see if the results apply to all Chinese language learners, and to provide a better understanding of the acquisition of NENG, HUI, and

KEYI and the transfer effects from other languages, Chinese learners from different native language backgrounds should be similar tested in the future.

Moreover, compared with production analysis, this study put more efforts on testing learners' comprehension of NENG, HUI, and KEYI. A more detailed experiment that is relevant to production test, is really encouraged in the future to reveal more insightful understanding and make more valuable suggestions.

Furthermore, more Chinese modal auxiliary verbs should be studied. In the present study, only three single Chinese modal auxiliary verbs were included, however, there are more of them are extremely confusing and hard to be mastered for English-speaking learners, which causes difficulty.

Last but not least, further research could be carried out on teaching methodology. A comparison of controlled and uncontrolled group of learners, applying different teaching methods, could identify and test the pedagogical implications. Looking forward to new pedagogical method being introduced in the future.

CHAPTER 8

PEDAGOGICAL IMPLICATION

The result of this study has shown that Chinese modal auxiliary verbs: NENG, HUI, and KEYI are problematic for English-speaking learners. Hence, it is essential for teachers and educators to discuss effective teaching methods.

In order to facilitate the acquisition of NENG, HUI, and KEYI by English-speaking learners of Chinese, Chinese instructors should explicitly explain the multiple semantic meanings within them, emphasize the corresponding syntactic constraints and clarify that Chinese modal auxiliary verbs 'NENG, HUI, KEYI' are not absolutely parallel to English modal verbs 'can/could/will/would/may/might'.

Also, the acquisition order concluded in this study should be used for reference, when NENG, HUI, and KEYI are being introduced. And the instructor should often review and make adjustment to promote the reappearance of the difficult ones, in order to achieving the best teaching effect.

Aimed at encouraging learners to make more practice and produce more, the design of creative activities is required. Translation task is suitable and effective for all learners to help them distinguish the subtle semantic difference and promote their language sensibility, while the production of long paragraph or discourse are required for intermediate and advanced level learners, which demands of an appropriate writing assignment.

In addition, it should be noticed that Chinese background learners perform better than non-Chinese background learners on the comprehension test of NENG, HUI, and

KEYI. Thus, if possible, Chinese instructor should separate them to teach and adjust the teaching material and schedule accordingly.

APPENDIX

THE QUESTIONNAIRE

This questionnaire is designed for the Master's thesis of the researcher to investigate the acquisition of Chinese modal auxiliary verbs. Please answer the questions below carefully and honestly. Your responses will be kept strictly confidential and anonymous, and will be only used for the purpose of this research. Really appreciate your participation!

Background information (for English-speaking learners)

1. What is your native language?

   ☐English ☐ Other language _____

2. Which Chinese course are you taking this semester?

   ☐ 246 ☐327 ☐427 ☐527

3. Which Chinese courses have you taken at UMass or other places? _____

4. Have you ever studied aboard in China or in other country where Chinese is spoken?

   ☐ Yes ☐ No

   If yes, please fill in the following:

   Place (or country) _____ Chinese dialect used there_____

   Length of stay_____ years and _____months

5. Do you have a Chinese background? (Chinese heritage or grown up in a Chinese speaking family)

   ☐ Yes ☐ No

   If yes, please fill in the following:

the relationship between the person(s) who speaks Chinese with you and you:

_____

what dialect(s) are you using: _____ How well you speak that dialect: _____

6. How many months or years have you been learning Chinese? _____

Background information (for native speakers)

1. Have you ever lived or studied aboard where other foreign language is spoken?

☐ Yes ☐ No

If yes, please fill in the following blanks:

Place (or country) _____ Language used there_____

Length of stay_____ years and _____months

2. Which dialect(s) do you speak _____

3. How do you evaluate your English proficiency?

☐ very good, nearly native level ☐ good ☐fair ☐Poor

Multiple choices：

Please circle all the answer(s) as long as you think it makes sense. Please note, in some questions, there may be more than one choice.

Sample: 他_____说三种语言。

A．能 B. 会 C. 可以

1. 他很____聊天，班里的每个人都喜欢跟他聊天。

   A. 能　B. 会　C. 可以

2. 他一出生就____笑。

   A. 能　B. 会　C. 可以

3. 那家商店的衣服太贵了，我不____再去了。

   A. 能　B. 会　C. 可以

4. 上大学以后，我____好好学习的。

   A. 能　B. 会　C. 可以

5. 那个餐馆又贵又难吃，顾客不____去的。

   A. 能　B. 会　C. 可以

6. 要是你放太多盐的话，这道菜____特别咸。

   A. 能　B. 会　C. 可以

7. 他很____聊天，上课的时候也要跟同学聊天。

   A. 能　B. 会　C. 可以

8. 他游泳游得很好，一分钟____游三百米。

   A. 能　B. 会　C. 可以

9. 天气暖和了，____游泳了。

A. 能　B. 会　C. 可以

10. 我病得很重，明天不____上课了。

A. 能　B. 会　C. 可以

11. 我____走了吗?

A. 能　B. 会　C. 可以

12. 这个饭馆里____抽烟。

A. 能　B. 会　C. 可以

13. 你为什么这么高兴?

我要去看 Avengers 了，____不高兴吗?

A. 能　B. 会　C. 可以

14. 那部电影很有意思，你____去看看。

A. 能　B. 会　C. 可以

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