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Analysis of *Hen* and Gradable Adjectives in Mandarin Chinese

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Abstract

In Mandarin Chinese, gradable adjectives map the properties of the arguments into abstract representations. The intensifiers can modify gradable adjectives. *Hen*, an intensifier, is widely used in Mandarin Chinese. There are plenty of the gradable adjectives, but it is difficult to build a distinctive standard. Mandarin Chinese lacks the standard methods to evaluate whether an adjective is a gradable adjective.

This thesis introduces two tests for the distinctive standard, including the *hen* test and the comparison test. The *hen* test is to test whether *hen* can modify an adjective. The comparison test is to test whether an adjective can be used in a comparative form. If one adjective has at least one hit in one test, it means that the evaluated adjective can pass this test. This thesis argues that all gradable adjectives have to pass the two tests. The center for Chinese linguistics corpus CCL (2016) is used to identify the gradable adjectives in Mandarin Chinese. If an adjective has at least one hit in the query result of each test, the corresponding adjective can be treated as a gradable adjective.

The analysis of the gradable adjectives is controversial in Mandarin. The problem is data evidence of the gradable adjectives. Most of the previous analyses argued that the bare gradable adjectives as main predicates are not allowed. It is indeed allowed in Mandarin in the data collection, when the argument is known to the speaker and the listener. Those analyses had been built based on the ungrammatical bare gradable adjectives.

In order to build an analysis for the gradable adjectives and *hen*, this thesis proposes two puzzles. The two puzzles include the puzzle of the bare gradable adjectives as main predicates and the reading puzzle. This thesis finds that the bare gradable adjectives as main predicates exist in Mandarin Chinese. They are allowed in Mandarin when the argument is specific. The reading puzzle is that the bare gradable adjectives are the positive reading or the comparative reading. The reading of the gradable adjectives is controversial, because the gradable adjectives can express the same meaning with the positive form or the explicit comparative form. The reading of the gradable adjectives is positive if there is no explicit comparison. The comparative reading should have an explicit comparative morphology or an explicit comparative context.

This thesis proposes that gradable adjectives as main predicates require specific arguments in Mandarin Chinese. If the argument is unspecific, the bare gradable adjective as main predicate will be ungrammatical. A degree phrase, DegP, is used to build an analysis for the gradable adjectives and *hen*, where the bare gradable adjectives have covert degree morphology. Based on the specific argument and DegP, this thesis has built an analysis for *hen* and the gradable adjectives in Mandarin. This analysis manages to address the sentences with bare gradable adjectives and the sentences with *hen* and gradable adjectives. In combination with the movement, this analysis is able to address the sentence where *de* as a complement marker is preceded by a gradable adjective and is followed by *hen*.

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Chapter 1

Introduction

1.1 Background

The intensifiers, such as *hen* ("very"), are widely used in Mandarin Chinese. *Hen* can modify adjectives. Song and Zhang (2012) pointed out that *hen* was even used as one of distinctive standards between verbs and adjectives, where adjectives had been defined as morphemes which can be modified by *hen*.

However, all adjectives cannot be modified by *hen* in Mandarin Chinese. The adjectives, which are modified by intensifiers, are gradable adjectives in most cases. The gradable adjectives will map the property of their arguments into a degree-based dimension. A gradable adjective can be defined as the degree represented by the adjective more or less than a standard value. For example, the coffee is expensive, when the price is more than $10 in some cities. That semantic meaning is the positive reading, where the comparative form is not used. By contrast, the comparative reading has a comparative form.

(1) a. The coffee in Rome is expensive. (Kennedy, 2007, p. 2)

b. The coffee in Rome is cheaper than that in Chicago.

c. The coffee in Rome is cheap for that in Chicago.

In English, there are morphological changes for these two readings. In order to explain the difference between them, three examples are listed as below. The positive reading consists of *be* and a gradable adjective as main predicate, such as (1a) which is from Kennedy (2007). The comparative reading includes the gradable adjective in comparative form, such as (1b).

The difference between the positive reading and comparative reading is that the positive reading has an implicit comparison without the comparative form. In example (1a), the coffee is expensive in Rome, when the price is more than a specific value, say $10. This specific value is sometimes subjective, which is only meaningful to the speaker. The comparative reading of example (1b) can be converted to the positive reading, as shown in example (1c). Although the coffee in Rome is cheaper than that in Chicago, both of them are still expensive. It also shows that the bare gradable adjectives are allowed in English in example (1a).

In comparison with the gradable adjectives in English, there are no inflectional affixes used for gradable adjectives in Mandarin Chinese. This results in the difficulty of detecting which reading is used, when bare gradable adjectives are used. However, it is important to figure out the reading of the gradable adjectives in order to build a correct analysis for the gradable adjectives in Mandarin.

The problems will introduce two puzzles by this difference in Mandarin Chinese, described as follows.

(2) a. The bare gradable adjectives puzzle

Are bare gradable adjectives grammatical as main predicates?

b. The reading puzzle

Do the bare gradable adjectives have a positive reading or a comparative reading?

In order to address the two puzzles, the gradable adjective, *gao* ("tall") is taken as an example in Mandarin. A bare gradable adjective form is given in example (3), where *gao* is the main predicate and *Zhangsan* is a person's name as a nominal phrase.

(3) *张三　　高。

Zhangsan gao.

Zhangsan tall

"Zhangsan is tall. / Zhangsan is taller."

It is widely accepted that example (3) is ungrammatical in Mandarin Chinese. As a result, the answer to "the bare gradable adjectives puzzle" which is given in (2a) is no. However, the problem is whether example (3) can provide evidence for puzzle (2a). In other words, no bare gradable adjectives as main predicates are allowed in Mandarin. Most of the previous analyses argued against the bare gradable adjectives as main predicates in Mandarin Chinese, such as Niu (2016), Zhang (2015), Grano (2012) and Grano (2008).

Another problem is called "the reading puzzle" in this thesis. It is claimed that the translation is controversial, because of a lack of morphological coding in Mandarin. The translation can be the positive reading, where *Zhangsan* is tall, or the comparative reading, where *Zhangsan* is taller. A lot of the previous analyses have used example (3) to argue in favour of gradable adjectives in Mandarin Chinese. However, most of them believed that the semantic meaning of example (3) should be the comparative reading, such as Niu (2016), Zhang (2015), Grano (2012) and Grano (2008). They argued that the semantic meaning of example (3) is in comparison with another person who is known in the context. By contrast, the gradable adjectives with the intensifier should be the positive reading.

(4) 张三　　很　高。

Zhangsan hen gao.

Zhangsan very tall

"Zhangsan is very tall."

When the intensifier *hen* is added into the position before *gao* in example (3), the sentence becomes grammatical by all previous analyses, given in example (4). The positive reading is used in the translation by all analyses.

It is widely accepted that example (4) has a positive reading, but the meaning of example (3) is a comparative reading. The reasons for the reading choice are not discussed well in the

previous analyses. Based on the ungrammatical example (3) and the grammatical example (4), Grano (2008) and Grano (2012) argued that the gradable adjectives like *gao* must co-occur with overt degree morphology, such as *hen* in Mandarin Chinese. The positive reading is only allowed in some limited cases, such as interrogative sentences.

Dong (2005) even believed that *hen* was the critical element for fixing example (3). Dong (2005) argued that the intensifier must be analyzed as an aspect marker for the gradable adjectives in stand-alone sentences. However, if the intensifier is an aspect marker, it will induce that all intensifiers are aspect markers.

Based on the above examples, it can be noticed that *gao* or *hen gao* are fuzzy in Mandarin Chinese. So it is interesting to figure out the analysis of *hen* in Mandarin Chinese.

The critical point is whether bare gradable adjectives as main predicates are allowed, based on the ungrammatical example (3). This thesis argued that the bare gradable adjectives as main predicates are allowed in Mandarin Chinese. There is a grammatical sentence with a monosyllabic adjective *gui* ("expensive") in Mandarin Chinese, shown in example (5). As a result, example (3) cannot be used as evidence against bare gradable adjectives in Mandarin.

(5) 那 本 书 贵。 (Ross and Ma, 2006, p. 56)
na ben shu gui.
that CL book expensive
"That book is expensive."

Example (5) and (3) are bare gradable adjectives as main predicates. The difference between (5) and (3) is that a particular determiner *na* ("that") and a classifier *ben* precede *shu* ("book") in example (5). This type of the sentences with bare gradable adjectives is not discussed in the previous analyses. The failure discussing this structure will lead to an incomplete conclusion.

Why is example (5) grammatical in comparison with the ungrammatical example (3)? To explain this, it is necessary to revisit the fundamental facts and understand the semantic differences between them. A new analysis should be built for *hen* and gradable adjectives in Mandarin Chinese so that the bare gradable adjectives are addressed in Mandarin.

1.2 Distinctive methods of nominals, verbs and adjectives in Mandarin

Mandarin Chinese has very little inflectional morphology. It results in difficulty to determine what part of speech words belong to. This section will introduce some common methods to distinguish nominals, verbs and adjectives.

1.2.1 Distinctive method of nominals

Nominals in Mandarin Chinese can usually be modified by a *number* + *classifier* structure. Example (6) and example (7) are given, where all nominals in examples are bold in this section. In example (6), *yi ge* is a number with a measure word, which precedes the nominal *xuesheng* ("student"). The word will be a nominal when it can be modified by the structure of number + classifier.

(6) 一 个 **学生**
yi ge **xuesheng**
one CL student
"one student"

(7) 三 本 **书**
san ben **shu**
three CL book
"three books"

The negative adverb *bu* ("not") and the intensifier *hen* ("very") cannot modify nominals. In example (8), *bu* modifies *ren* ("person"), and in example (9), *zhuozi* ("table") is modified by *hen*. So both examples are ungrammatical.

(8) *不 人
bu **ren**
NEG person
"not person"

(9) *很 桌子
hen **zhuozi**
very table
"very table"

The syntactic functionality of nominals is usually a subject or an object in a sentence, such as example (10). In this sentence, *Beijing* is the subject and *shoudu* ("capital") is the object. Normally, nominals cannot be predicates in Mandarin Chinese, and then nominals cannot take objects.

(10) 北京 是 中国 的 **首都**。
beijing shi zhongguo de **shoudu**.
Beijing is China ATTR capital
"Beijing is the capital of China."

1.2.2 Distinctive method of verbs

Verbs can be negated by the negative adverb *bu* (不). In example (11), *bu* modifies the verb *zhidao* ("know"). All verbs in examples are bold in this section.

(11) 我 不 **知道**。
wo bu **zhidao**.
I NEG know
"I don't know."

Generally speaking, most verbs cannot be modified by the intensifier *hen*. In example (12), *hen* comes before the verb *kan* ("read"), it is ungrammatical. *Hen* can only modify verbs that

express mental activity, such as *xihuan* ("like") in example (13), and some modal verbs, like *yuanyi* ("would") in example (14).

(12) *很 **看** 书
hen **kan** shu
very read book
"very read books"

(13) 她 很 **喜欢** 小 动物。
ta hen **xihuan** xiao dongwu.
she very like little animal
"She likes little animals very much."

(14) 我 很 **愿意** **帮** 你。
wo hen **yuanyi bang** ni.
I very would help you
"I really would like to help you."

The syntactic functionality of verbs is predicate. Most Chinese verbs are transitive, that means many verbs can take objects. *Mai* ("buy") is a transitive verb in example (15), it precedes the object *jiaju* ("furniture").

(15) 买 家具
mai jiaju
buy furniture
"buy furnitures"

Aspect particles can be used after many verbs, except modal verbs and adjectival verbs. Three common Chinese aspect markers are *le* (了), *zhe* (着), and *guo* (过). *Le* expresses an action which has been finished. *Zhe* indicates a continuous state. *Guo* expresses a past experience.

(16) 她 **吃** 了 一 个 苹果。

ta **chi** le yi ge pingguo.

she eat ASP one CL apple

"She has eaten an apple."

(17) 他 **看** 着 你。

ta **kan** zhe ni.

he look ASP you

"He is looking at you."

(18) 我 **去** 过 中国。

wo **qu** guo zhongguo

I go ASP China

"I have been to China."

1.2.3 Distinctive method of adjectives

Adjectives can be modified by adverbs. In example (19), the negative adverb *bu* precedes the adjective *qiguai* ("strange"). All adjectives in examples are bold in this section.

(19) 这 不 **奇怪**。

zhe bu **qiguai**.

this not strange

"This is not strange."

By contrast with verbs, most gradable adjectives can be modified by the adverb of degree *hen*, such as example (20), the intensifier *hen* modifies the adjective *hao* ("good"). Since most adjectives are gradable adjectives, the intensifier *hen* can be used to test whether a word is an adjective in general.

(20) 很　好

hen **hao**

very good

"very good"

The syntactic functionality of adjectives is usually an attribute or a predicate. In example (21), the adjective *kuaile* ("happy") is the attribute of *nvhai* ("girl"). In Mandarin Chinese, adjectives can function as predicates. In example (22), the adjective *haokan* ("beautiful") is the predicate. In adjective-predicate sentences, all predicate adjectives cannot take objects, and they cannot be followed by aspect markers, too.

(21) 快乐　的　　女孩

kuaile de　　nvhai

happy ATTR girl

"a happy girl"

(22) 这　朵　花　　好看。

zhe duo hua　**haokan**

this CL　flower beautiful

"This flower is beautiful"

1.2.4 Multi-category words

Mandarin has some multi-category words. This introduces more difficulty of distinguishing their syntactic functionalities. However, they are still able to be determined with the above distinctive methods. Three examples (23), (24) and (25) from the center for Chinese linguistics corpus CCL (2016) are listed as below. The Chinese words "trouble(noun)", "trouble(verb)" and "troublesome" are bold. In example (23), the word *mafan* (麻烦) is modified by the *NUM* + *CL* structure and acts as the object, then we can reach a conclusion that *mafan* is a nominal in this sentence. In example (24), *mafan* is a predicate and takes an object *ni* ("you"). So *mafan* is a

verb. In example (25), *mafan* is modified by the intensifier *hen* ("very"), and functions as an attribute in the sentence. These indicate that *mafan* is an adjective.

(23) 这 其实 是 一 个 **麻烦**。
zhe qishi shi yi ge **mafan**.
this actually is one CL trouble
"This is actually a trouble."

(24) 能否 **麻烦** 你 去 当地 图书馆 详细 查 一下?
nengfou **mafan** ni qu dangdi tushuguan xiangxi cha yixia.
whether trouble you go local library carefully check a moment
"May I trouble you to go to the local library and have a check?"

(25) 这 是 (一) 个 很 **麻烦** 的 问题。
zhe shi (yi) ge hen **mafan** de ren .
this is (one) CL very troublesome ATTR problem
"This is a very troublesome problem."

1.2.5 Summary

Based on the above discussion, the grammatical features can be listed in table 1.1. The syntactic functionality can help to distinguish nominals, verbs and adjectives if the sentences are known to be correct. However, several tests can be used to test words which are unknown to the speaker. The tests include combining with the negative word, combining with the intensifier or taking objects.

In Table 1.1, *most No*, which appears in Row 3 and Column Verb, means that *hen* can only modify verbs that express mental activity and some modal verbs. *Most Yes*, which appears in Row 3 and Column Adjective, means that *hen* can modify gradable adjectives, most adjectives are gradable adjectives in Mandarin Chinese. *Most Yes*, which appears in Row 4 and Column Verb, means that only transitive verbs can take objects, most verbs are transitive in Mandarin

Number	Grammatical Features	nominal	verb	adjective
1	can be modified by NUM + CL	Yes	No	No
2	can be negated by *bu*	No	Yes	Yes
3	can be modified by *hen*	No	most No	most Yes
4	can take object	No	most Yes	No
5	can connect with ASP	No	most Yes	No
6	the syntactic functionality	subject, object	predicate	attribute, predicate

Table 1.1: Grammatical Features of Mandarin nominal, verb and adjective

Chinese. *Most Yes*, which appears in Row 5 and Column Verb, means that Chinese verbs can connect with aspect markers, except modal verbs and adjectival verbs.

Since Mandarin Chinese is a non-inflectional language, it is difficult to classify nominals, verbs and adjectives. A distinction must be made among them. This table shows several features which have to be combined together to distinguish parts of speech. Gradable adjectives are part of adjectives, and it is more challenge to build a distinctive method to differentiate them. This thesis will find an effective distinctive standard to classify gradable adjectives.

1.3 Structure of the thesis

This thesis is structured as follows. The second chapter describes the previous analyses for *hen* on gradable adjectives. Chapter 3 introduces the previous methodologies of gradable adjectives and proposes a distinctive standard of gradable adjectives in Mandarin Chinese. The distinctive standard includes the two tests: the *hen* test and the comparison test. Chapter 4 compares the usage frequency of the intensifiers in Mandarin Chinese. This chapter also collects all gradable adjectives, based on the two distinctive standard tests in Chapter 3. The result of the data collection is discussed. Chapter 5 then discusses the fundamental problem in the previous analyses. This discussion results in the argument of the gradable adjective should be specific in Mandarin Chinese. An alternative analysis of *hen* in Mandarin Chinese is proposed. Finally, Chapter 6 presents the conclusion and future work of this thesis.

Chapter 2

Previous studies on the gradable adjective modifiers

2.1 Review of *hen* in Mandarin Chinese

2.1.1 Analysis of Niu (2016)

Niu (2016) proposed a $Pred_{[+FOC]}$ analysis which was inspired from focus interpretation and alternative semantics in Rooth (1992). The different focus positioning will have a big influence on the semantic meaning of a sentence. Example (26a) means that the only person Tom introduced Bill to is Sue, but the meaning of (26b) is that the only person Tom introduced to Sue is Bill.

(26) a. Tom only introduced Bill to $[Sue]_F$.

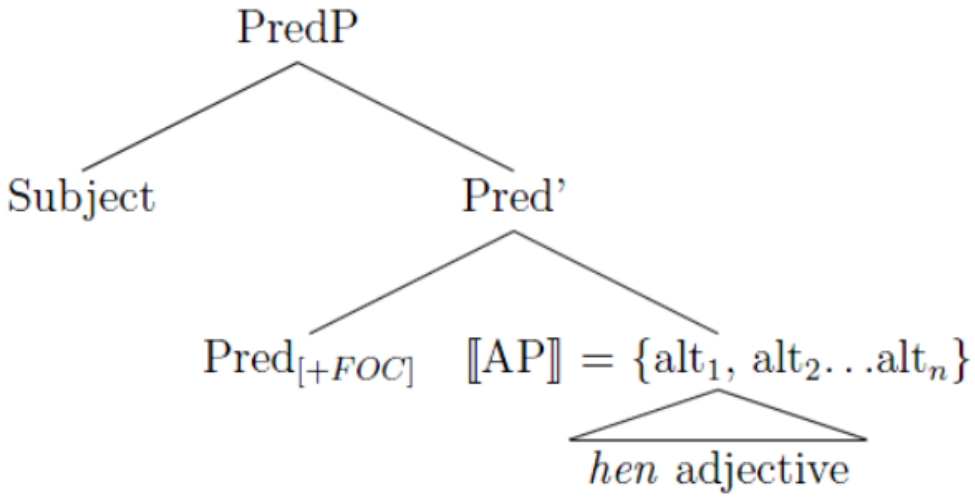
b. Tom only introduced $[Bill]_F$ to [Sue].

Niu (2016) argued that this focus interpretation can be also applied in the analysis of gradable adjective modifier in Mandarin Chinese. Niu (2016)'s analysis introduced a predicate phrase, where adjectives had to be headed by predicates in Mandarin, because they are not predicative.

Some morphemes, such as the intensifier, will be the function to create contrastive pairs for alternative propositions.

Niu (2016)'s analysis is described in (27), where the Pred has a [+*FOC*] feature. The Pred head has to check the [+*FOC*] feature with a set of alternative options which can be from elements such as *hen*, negative markers and question particles. For example, the negative sentence which is shown in (28) can be applied in this analysis. Two alternatives are *Zhangsan* is tall, *Zhangsan* is not tall.

(27) (Niu, 2016, p. 99)



(28) 张三　　不　高。
Zhangsan bu gao.
Zhangsan not tall
"Zhangsan is not tall."

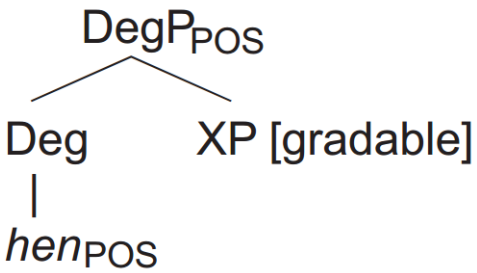
However, Niu (2016) argued that the sentences with bare gradable adjectives cannot be the positive reading. The degree morphology is not similar to focus interpretation and alternative semantics. The focus positioning is not involved in these kinds of sentences. In a few cases of spoken Mandarin Chinese, the focus can be applied, such as *Zhangsan gao*$_F$, where *gao* ("tall") is focused.

Another problem is how to build the alternative collection for gradable adjectives. The building mechanism is not addressed in Niu (2016). Example (28) built the alternative collection based on the predicate *gao*. If the collection is based on the subject, such as *Zhangsan* and *Lisi*, the size of the collection becomes larger. It is unclear to how to choose the correct one from the collection.

2.1.2 Analysis of Zhang (2015)

Zhang (2015) proposed that *hen* is a projection of the functional Deg ("degree"). *Hen* is not a modifier but heads the functional projection DegP. DegP has to select a gradable phrase (an adjective phrase or a stative verbal phrase). The analysis of Zhang (2015) is described in (29).

(29) (Zhang, 2015, p. 20)



This analysis assumed that *hen* is functioned as a POS marker which an element takes a gradable adjective as its argument and returns a set of individuals with property from the adjective. POS in DegP$_{pos}$ stands for a positive form. This POS marker is only allowed in the positive form. One piece of evidence for this analysis is that there are some similar patterns to other categories when they undergo the ellipsis, where the second sentence with *ye shi* ("also") is elliptical.

(30) 张三 喜欢 文学， 李四 也 是。 (Zhang, 2015, p. 21)
Zhangsan xihuan wenxue, Lisi ye shi.
Zhangsan like literature Lisi also be
"Zhangsan likes literature, and so does Lisi."

(31) 张三 的 脸 雪白， 李四 的 脸 也 是。(Zhang, 2015, p. 21)
Zhangsan de lian xuebai, Lisi de lian ye shi.
Zhangsan POSS face snow-white, Lisi POSS face also be
"Zhangsan's face is snow-white, and so is Lisi's."

(32) 张三 很 高，李四 也 是。(Zhang, 2015, p. 21)
Zhangsan hen gao, Lisi ye shi.
Zhangsan very tall Lisi also be
"Zhangsan is very tall, and so is Lisi."

This ellipsis is shown in examples (30), (31) and (32). Example (30) is VP ellipsis, and example (31) is AP ellipsis. This pattern also applies to DegP ellipsis.

This analysis did not address bare gradable adjectives. The evidence for *hen* with adjectives in nominal-exclusive position is unclear. Zhang (2015) used example (33) as evidence, where *chengshi* was translated as the adjective "honest" in the paper.

(33) 我 把 很 诚实 当做 一 种 美德。(Zhang, 2015, p. 22)
wo ba (*hen) chengshi dangzuo yi zhong meide.
I BA very honest regard-as one CL virtue
"I regard being honest as a virtue."

In order to understand example (33), *ba* (把)-sentence in Mandarin Chinese is introduced here. *Ba* construction is also called disposal construction. It expresses that a subject does something to the object, and it emphasizes the object in semantic meaning. The word *ba* is a preposition in *ba* construction. The preposition phrase, which is composed of *ba* and a nominal preceding the verb, functions as an adverbial modifier in the verb-predicate sentence of *ba*.

The basic pattern of *ba*-sentence is as below:

subject + *ba* + N + V + another element (aspect marker, complement marker, noun and etc.)

Example (34) is a standard *ba*-sentence from Liu et al. (2001), the object *zixingche* ("bicycle") is a nominal phrase.

(34) 昨天 他 **把** 自行车 丢 了。 (Liu et al., 2001, p. 731)
zuotian ta **ba** zixingche diu le.
yesterday he BA bicycle lose PERF
"He has lost his bicycle yesterday."

In *ba* construction, the subject is usually the agent of the action. The nominal is specific. Most of the verbs and the nominals after *ba* have verb-object relationship, *ba* places objects before verbs. The V must be a transitive verb which can normally govern the N. There are two examples from Qitong Cheng (1982) , example (35) is a *ba*-sentence and example (36) is a declarative sentence with S-V-O word order.

(35) 你 把 窗户 关 上。(Qitong Cheng, 1982, p. 14)
ni ba chuanghu guan shang.
you BA window close CM
"You close the window."

(36) 你 关 上 窗户。(Qitong Cheng, 1982, p. 14)
ni guan shang chuanghu.
you close CM window
"You close the window."

In English, there is not a construction which is exactly matching *ba*-sentence. The translation of example (35) and (36) are the same in English version, but their deep structures are different. In example (35), *ba* is used before *chuanghu* ("window"), the object *window* is focused. In other words, the entity *window* which undergoes the action *close* is certain, what the subject has to close is the window, not the door or other things. By contrast, example (36) only expresses an action.

In example (33), the construction of *ba...dangzuo* (把.....当做) is used to express the meaning of treating something as something in Mandarin Chinese. Two similar examples from Zhu and Gao (2013) are as below. The structure of *ba...dangzuo* is bold.

(37) 他 **把** 父母 的 话 **当做** 耳旁风。(Zhu and Gao, 2013, p. 305)
ta **ba** fumu de hua **dangzuo** erpangfeng.
he BA parents POSS word treat as water off a duck's back
"He pays no attention to his parents' words."

(38) 小心 他们 **把** 你 **当做** 替罪羊。(Zhu and Gao, 2013, p. 305)
xiaoxin tamen **ba** ni **dangzuo** tizuiyang.
be careful they BA you treat as scapegoat
"Be careful or they will make you a scapegoat."

Chengshi (诚实) is a multi-category word in Mandarin Chinese. Three examples (39), (40) and (41) from the center for Chinese linguistics corpus CCL (2016) are listed as below. The Chinese words "honesty", "honest" and "honestly" are bold.

Based on the distinctive methods in section 1.2, in example (39), the word *chengshi* (诚实) is modified by the *NUM* + *CL* structure and acts as the object, then we can reach a conclusion that *chengshi* is a nominal in this sentence. In example (40), the intensifier *hen* ("very") precedes *chengshi*, and *chengshi* doesn't take an object or express any actions, so *chengshi* is an adjective. In example (41), *chengshi* modifies the verb *dai* ("treat"), it is an adverb.

(39) 在 心灵 当中 寻找 一 种 **诚实**。
zai xinling dangzhong xunzhao yi zhong **chengshi**.
in soul among look for one CL honesty
"Look for a kind of honesty in the soul."

(40) 每 个 人 都 很 **诚实**。
mei ge ren dou hen **chengshi**.
every CL person all very honest
"Everyone is very honest."

(41) 我 一生 都 会 **诚实** 待 人。
wo yisheng dou hui **chengshi** dai ren .
I lifetime always will honestly treat people
"I will honestly treat people throughout my life."

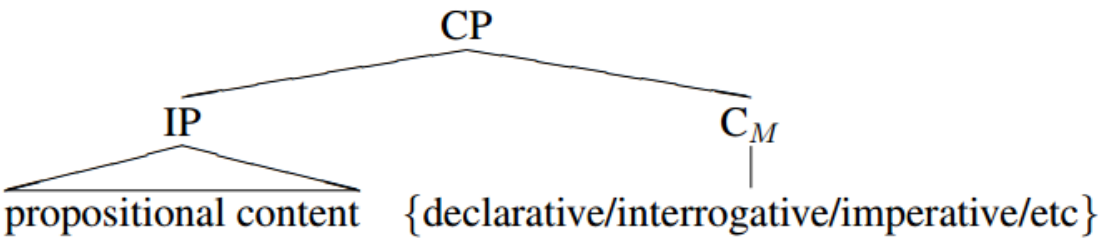
However, in *ba* construction, *ba* precedes the nominal, so *chengshi* in example (33) should be a noun *honesty* when it is headed by *ba*. A nominal phrase cannot usually be modified by *hen*. As a result, example (33) is ungrammatical, because *hen* is not allowed to modify nominals, not because of the analysis in Zhang (2015) that the adjective phrase *very honest* stands in the nominal-exclusive position.

2.1.3 Analysis of Grano (2008) and Grano (2012)

Grano (2008) argued that bare gradable adjectives are not allowed for a positive reading in Mandarin. An intensifier is required for a positive reading of gradable adjectives only when the adjective is the entire predicate of a matrix-level or declarative clause. In other words, gradable adjectives must co-occur with overt degree morphology for a positive reading in some conditions in Mandarin.

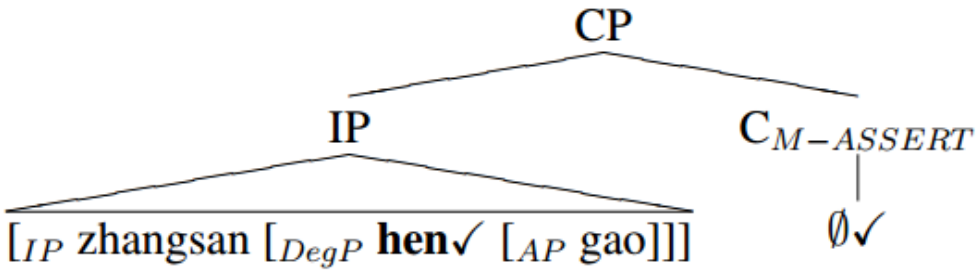
In order to address this, Mandarin Assertion Principle was proposed in Grano (2008), where $C_{M-ASSERT}$ is phonologically null. $C_{M(atrix)}$ must head A (matrix-level) sentence (CP), which is described in (42). $C_{M(atrix)}$ denotes for a family of complementizers. It includes $C_{M-Question}$ and $C_{M-ASSERT}$. $C_{M-Question}$ heads interrogative sentences and $C_{M-ASSERT}$ precedes declarative sentences.

(42) (Grano, 2008, p. 16)



$C_{M-ASSERT}$ has the uninterpretable feature. The *hen* feature will be checked at CP level. It is described at (43) from (Grano, 2008, p. 18), where a null feature of $C_{M-ASSERT}$ is checked by the degree modifier *hen*.

(43) (Grano, 2008, p. 18)



However, the bare gradable adjectives are allowed in Mandarin Chinese. The analysis of Grano (2008) also fails to address for the sentences with degree and question markers, such as example (44). Example (44) has the intensifier and the question maker at the same time.

(44) 张三 很 高 吗?
Zhangsan hen gao QST?
Zhangsan very tall
"Is Zhangsan very tall?"

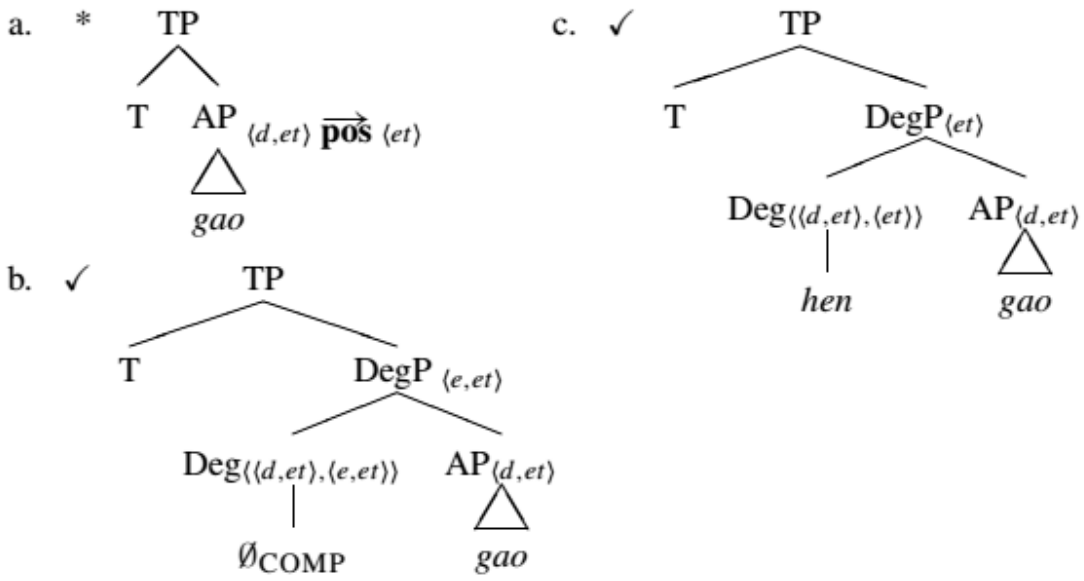
Similar to Grano (2008), Grano (2012) argued that gradable adjectives must co-occur with overt degree morphology for positive reading in some conditions in Mandarin. However, Grano (2012) gave up the $C_{M(atrix)}$ analysis of Grano (2008).

Grano (2012) proposed that these conditions have to include a morpheme that intervenes between T and AP to make positive semantics possible. A comparative interpretation has to be used in the other conditions. Grano (2012) argued that degree adverbs triggered adjectives as verbal categories.

Grano (2012) proposed two principles: the universal markedness principle and the Mandarin Tense-Adjective prohibition. The first principle argues that *hen* provides a positive form

with a covert comparative semantics. In the second constraint, the direct complement to T must either be a verb or a functional morpheme in Mandarin Chinese. This Tense-Adjective Prohibition is used to filter out example (26a). Grano's analysis will refuse the bare gradable adjectives because of the prohibition. The example of *gao* positive reading is ungrammatical in (45a). *Hen* can provide a feature $[V]$ to satisfy the tense requirement ($T[+V]$).

(45) *Gao* Analysis of (Grano, 2012, p. 532)



As a result, the bare gradable adjectives are ungrammatical in this analysis. However, this prohibition is incorrect in Mandarin, where bare gradable adjectives are allowed.

2.1.4 Analysis of Dong (2005)

Dong (2005) argued that degree morphemes must function as an aspect marker for adjectives in stand-alone sentences. This analysis is inspired by special markers in Mandarin Chinese, which are used to indicate the perfective and imperfective aspects, such as *le* and *zai* respectively. Example (46a) uses *le* as the perfective marker, and *zai* is to indicate the imperfective aspect in (46b).

(46) a. 他 去 了 北京。(Dong, 2005, p. 7)
ta qu le Beijing.
he go ASP Beijing
"He went to Beijing."

b. 他 在 听歌。(Dong, 2005, p. 7)
ta zai tingge.
he ASP listen song
"He is/was listening to some songs."

c. 他 的 脸 红 了。(Dong, 2005, p. 7)
ta de lian hong le.
he POSS face red ASP
"His face turns reddish."

Dong (2005) believed that adjectives have some similar properties to verbs in Mandarin Chinese. Adjectives can occur with the perfective marker *le*, shown in (46c). This means that a similar aspect marker exists in adjectival sentences. As a result, *hen* is an aspect marker at the syntax level in Mandarin Chinese. However, it is doubtful to treat degree morphemes as aspect markers. A consequence of this analysis will be that all intensifiers become the aspect markers in Mandarin.

2.1.5 Analysis of Liu (2010)

Liu (2010) argued that adjectives in Mandarin Chinese have positive morphemes which have two forms, including a covert one and an overt one with the intensifier like *hen*. Example (47a) is ungrammatical in Liu (2010), while example (47b) with the intensifier *feichang* is grammatical.

(47) a. *这 棵 树 高。 (Liu, 2010, p. 1012)
zhe ke shu gao.
this CL tree tall
"This tree is tall."

b. 这 棵 树 非常 高。(Liu, 2010, p. 1012)
zhe ke shu feichang gao.
this CL tree extremely tall
"This tree is extremely tall."

Liu (2010) introduced a predicate-accessible operator domain for the covert positive morpheme. The structure can be described as $[Op_{[-wh]}...X^0_{[-wh-operator]}[_{DegP}...Deg^0[AP...]]]$, where Deg^0 stands for the covert form. The head X^0 has unchecked feature. The covert positive form only occurs in the *bu* ("not") negation sentence like (48a), the contrastive focus construction like (48b), the question particle *ma* , the conditional, and the epistemic adjectival small clause (Liu, 2010, p. 1049). In example (48a), *bu* has an operator feature checked at the head $NegP$. $NegP$ stands for the negation operator. $FocP$ is introduced for the contrastive focus construction, where *gao* and *ai* are focused in example (48b). $NegP$ and $FocP$ are two different operator domains.

(48) a. [Zhangsan $[_{NegP}$ Op $[[_{Neg}$ bu$_{[+operator]}][_{DegP}$ pos $[_{AP}$ gao]]]]] (Liu, 2010, p. 1040)
Zhangsan not tall
"Zhangsan is not tall"

b. [Zhangsan $[_{FocP}$ Op $[Foc^0{}_{[+operator]}[_{DegP}$ pos $[_{AP}$ gao]]]]], (Liu, 2010, p. 1040)
Zhangsan tall,
"Zhangsan is tall,"
[Lisi $[_{FocP}$ Op $[Foc^0{}_{[+operator]}[_{DegP}$ pos $[_{AP}$ ai]]]]]
Lisi short
"Lisi is short"

However, the premise of the analysis is incorrect, where (47a) is grammatical in Mandarin. In example (48b), the contrastive sentence has no focus. Even if it has the focus, the focus can occur at the arguments including *Zhangsan* and *Lisi*. The analysis has ignored this case.

2.2 Review of *bi* in Mandarin Chinese

2.2.1 Analysis of Lin (2009)

Lin (2009) proposed argument dependence parameters of comparatives across languages. Mandarin Chinese is an argument-dependent language. Chinese comparatives require that a gradable predicate of comparison must have arguments.

(49) 张三 比 李四 用功。
Zhangsan bi Lisi yonggong.
Zhangsan COM Lisi diligent
"Zhangsan is more diligent than Lisi."

(50) *张三 很 用功 比 很 聪明。 (Lin, 2009, p. 17)
Zhangsan hen yonggong bi hen congming.
Zhangsan very diligent COM very clever
"Zhangsan is more diligent than clever."

In contrast, Lin (2009) believed that English is a non-argument-dependent language, because Lin (2009) argued that English comparatives are normally divided into clausal and phrasal comparatives, showed in (51a) and (51b) respectively.

(51) a. John is taller than Mary is (tall). (clausal comparative, (Lin, 2009, p. 2))

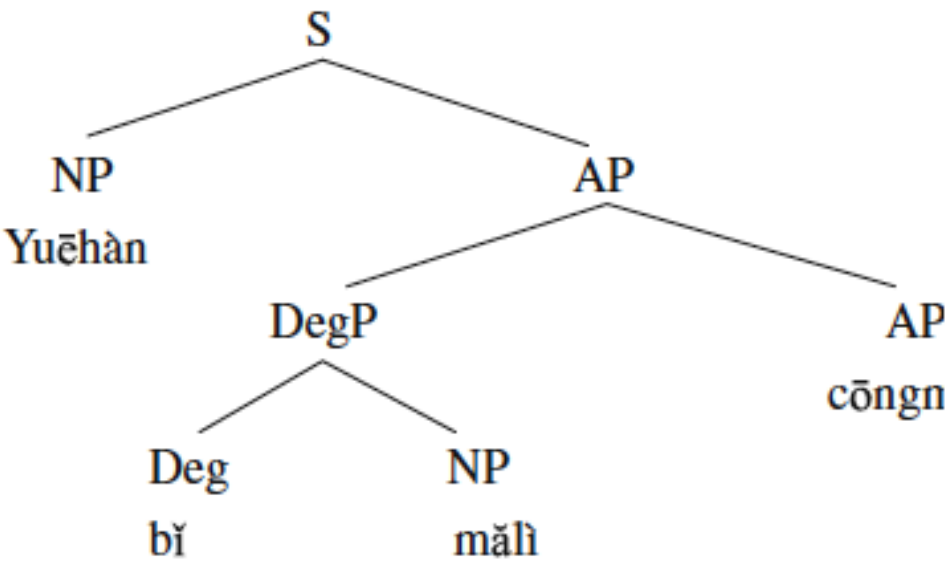
b. John is taller than Mary. (phrasal comparative, (Lin, 2009, p. 2))

However, Lin (2009) argued that the argument is not necessary in English comparatives. In Example (52), reason clauses are allowed to be compared items, where two *because*-clauses are in comparison. Based on this evidence, Lin (2009) concluded that English is a non-argument-dependent language. In Mandarin Chinese, compared constituents have to be the arguments of gradable predicates.

(52) However, this westward movement took place **more because the English were searching for better land than because the population was increasing**. (Lin, 2009, p. 18)

(53) a. 约翰 比 玛丽 聪明。 (Lin, 2009, p. 21)
Yuehan bi Mali congming.
John COM Mary clever
"John is cleverer than Mary."

b. Syntax analysis of (Lin, 2009, p. 21)



Lin (2009) extends the DegP-shell analysis from Xiang (2005). The analysis in Lin (2009) argued that DegP-shell is adjoined to the predicate of comparison. The analysis of example (53a) is shown in (53b), where *bi* is a direct head of DegP.

However, *bi* is a preposition as a comparative morpheme in Mandarin. It should be treated as PP(prepositional phrase) in the syntactic tree. It is incorrect that *bi* preceded Deg in the analysis of Lin (2009). Deg should be a scale of the gradable adjective, such as one meter.

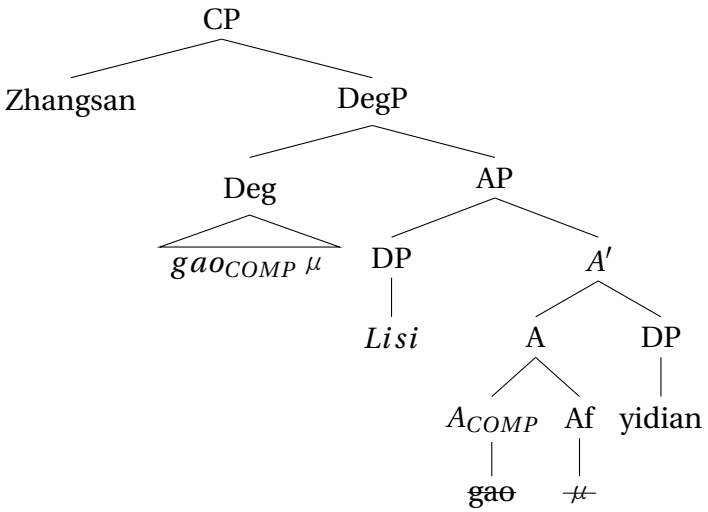
2.2.2 Analysis of Grano and Kennedy (2012)

Grano and Kennedy (2012) argued that there are two comparatives forms in Mandarin Chinese, including the overt comparative morpheme and the covert comparative morpheme. Grano and Kennedy (2012) proposed that covert morpheme μ exists in the analysis of the comparatives, which uses directly a gradable adjective to construct a comparative form instead of the overt morpheme *bi*. This kind of gradable adjectives, such as *gao* ("tall") and *ai* ("short"), can be associated with a measure phrase, shown in (54a). Example (54b) with *bi* has the same meaning as (54a). It is also noted that measure phrases are only allowed after *gao* and *bi*.

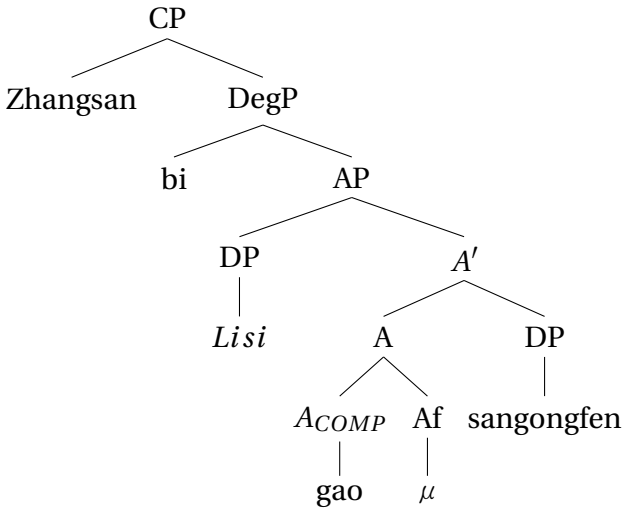
(54) a. 张三 高 李四 一 点。 (Grano and Kennedy, 2012, p. 220)
Zhangsan gao Lisi yi dian.
Zhangsan tall Lisi one dot
"Zhangsan is a little taller than Lisi."

b. 张三 比 李四 高 三 公分。(Grano and Kennedy, 2012, p. 220)
Zhangsan bi Lisi gao san gongfen.
Zhangsan COM Lisi tall three centimeters
"Zhangsan is three centimeters taller than Lisi."

(55) Analysis of (54a)



(56) Analysis of (54b)



In order to account for these covert comparatives, Grano and Kennedy (2012) assumed that the argument of DP needs Case. Grano and Kennedy (2012) also argued that the covert morpheme μ has an ability to value the case on DP. The covert morpheme functions as an affix attached to the adjective and select a measure phrase. The analysis of example (54a) is given in (55), and the analysis of example (54b) is given in (56).

Chapter 3

Relevant methods

3.1 Introduction

In addition to the previous work of *hen*, the related work of the gradable adjectives is also important to build an analysis of *hen*. This chapter will introduce the relevant methodologies of the gradable adjectives. The term "gradable adjective" is used in Kennedy (2007). The gradable adjectives have different labels, such as "scale adjective" in Lin and Peck (2016). This thesis will use the term "gradable adjective" as a common expression. Gradable adjectives stand for the description of properties of things or individuals. The properties, such as height or size, can be mapped into dimensions.

The methodologies are related to the definition of the gradable adjectives and classification of gradable adjectives. This chapter also proposes a distinctive standard of gradable adjectives in Mandarin Chinese. The last section introduces the center for Chinese linguistics corpus CCL (2016) and the challenge of query this corpus for this thesis.

3.2 Definition of gradable adjectives

3.2.1 Gradable adjectives in English

The gradable adjectives in English have been paid attention to by many researchers. One main feature of gradable adjectives is vagueness. Kennedy (2007) argued that vagueness has two characteristics: contextual variability in truth conditions and borderline cases. Contextual variability in truth conditions denotes that the truth of the statement depends on the specific context. Kennedy (2007) has two basic assumptions, given in (57).

(57) a. Gradable adjectives map their arguments onto abstract representations of measurement.

b. A set of degrees totally ordered with respect to some DIMENSION constitutes a SCALE.

These two assumptions describe the arguments modified by gradable adjectives in English according to the dimension decided by the modifier. The dimensions have scales which are in the forms of ordered points or intervals. The dimensions could be without boundary.

Taken the adjective *expensive* as an example, the cost degree of the coffee in Rome is described in (1a) in Chapter 1 and is repeated in (58). The meaning of *expensive* can be understood as a comparative relation between the price of coffee in Rome and the specific price standard of the speaker. The coffee price in Rome is higher than a price standard. Example (58) is an implicit comparison, because the explicit comparative form, such as than, is not used.

(58) The coffee in Rome is expensive. (Kennedy, 2007, P. 2)

3.2.2 Gradable adjectives in Mandarin Chinese

This thesis will share the assumptions about the semantic meaning of gradable adjectives from Kennedy (2007). However, the problem with those assumptions is that some properties represented by gradable adjectives cannot be measured, such as the degree of the adjective *beautiful*.

In contrast with *expensive, beautiful* has no measure tool to evaluate the degree directly. As a result, it is impossible to map the degree of *beautiful* into the scale along the dimension.

The assumptions in this thesis are listed in (59a) and (59b). Gradable adjectives can be defined as a measure function, which maps properties of objects along dimensions. The context is deterministic, where the base point is known, such as a measured value or a compared object.

(59) a. Gradable adjectives map the properties onto abstract representations of degrees in Mandarin Chinese.

b. The context is deterministic.

For example, a person called *Zhangsan* is about 1.75 meters. He is tall in the south of China, but not in the north of China. So the location must be deterministic if the statement is true. Gradable adjectives in Mandarin Chinese also have the feature of the borderline of the properties. The height which is more than 1.8 meters is very tall. But it is difficult to make a decision when the height is about 1.77 meters. The borderline is usually vague.

According to these two assumptions, the gradable adjective *gao* ("tall") is a measure function mapping the height property from the individuals of a given context into a height dimension. The height can be measured so that the degree can be ordered by the height value. When the height is more than the standard height, the height is evaluated as being tall. The standard height varies from context to context.

Degree morphemes introduce a semantics to what degree the given properties is more than the standard point. The intensifier *hen* ("very") will convert the height property into a vague value. *Hen gao* ("very tall") stands for the height more than most of the contextual individuals which are tall.

Although some researchers believe that the status adjectives are also found to be modified by intensifiers, those cases happen over the Internet. They are not accepted by linguists.

3.3 Adjectives classification in Mandarin Chinese

Zhang (2006) classified adjectives in Mandarin Chinese into gradable adjectives, status adjectives and change adjectives. The adjective, *chou* ("stinky"), is taken for example to describe the differences with the examples in (60).

(60) a. 臭 豆腐
chou doufu
stinky beancurd
"stinky beancurd"

b. 很 臭 的 豆腐
hen chou de doufu
very stinky ATTR beancurd
"very stinky beancurd"

c. 臭哄哄 的 豆腐 (Zhang, 2006, p. 15)
chouhonghong de doufu
stinking ATTR beancurd
"stinking beancurd"

d. 臭 了 的 豆腐 (Zhang, 2006, p. 15)
chou le de doufu
stinken PERF ATTR beancurd
"stinken beancurd"

In example (60a), the reason why the adjective *chou* ("stinky") is connected with a kind of food *doufu* ("beancurd") is that *choudoufu* ("stinky beancurd") is a proper noun in Mandarin Chinese. Stinky beancurd is a popular street snack in China which is made of yellow soybeans and marinated in various seasonings. It is famous for the sharp contrast between its strong smelling and good tasting. *Hen* cannot modify *chou* ("stinky") in this example because *chou* is a part of the proper noun *choudoufu*, and a noun cannot be modified by an adverb.

Chou in example (60b-60d) is attributive adjectives, but the functions of them are different. *De* is an attributive particle following the noun modifiers *chou*, *chouhonghong* and *choule* in the three examples. The form of the noun phrase is: modifiers + *de* + noun. Two examples from CCL (2016) are as below:

(61) 美丽 **的** 姑娘
meili **de** guniang
beautiful ATTR girl
"a beautiful girl"

(62) 昂贵 **的** 钻石
anggui **de** zuanshi
expensive ATTR diamond
"an expensive diamond"

In example (60b), *chou* is a gradable adjective which is modified by *hen*. *Chou* with *honghong* in (60c) is a reduplication pattern which can be represented as ABB in Mandarin Chinese. A and B stand for two different characters. *Honghong* in the ABB pattern is to express a status which is caused by the adjective *chou*. Some similar examples are *nao* ("noisy") *honghong*, *re* ("warm") *honghong* and *qi* ("angry") *honghong*. As a result, *honghong* cannot be used and translated separately. The meaning of this pattern, *chouhonghong* is also different from *chou*, where *hen* cannot modify this pattern. In example (60d), *le* is the aspect maker following *chou*. It stands for the completed action *chou* ("stink") and means that the beancurd has gone bad.

Lin and Peck (2016) classified gradable adjectives in Mandarin Chinese into two main classes: open-scale gradable adjectives and closed-scale gradable adjectives. The classification is based on the boundedness feature in gradability. The closed-scale gradable adjectives are classified further into lower-closed-scale adjectives, upper-closed-scale adjectives and totally-closed-scale adjectives. The classification is described in Figure 3.1, where term **scale adjective** is same as term **gradable adjective** in this chapter.

The open-scale gradable adjectives denote the unlimited boundedness, such as *re* ("hot"), given in (63). *Re* ("hot") has no upper boundedness. The lower-closed-scale adjectives imply

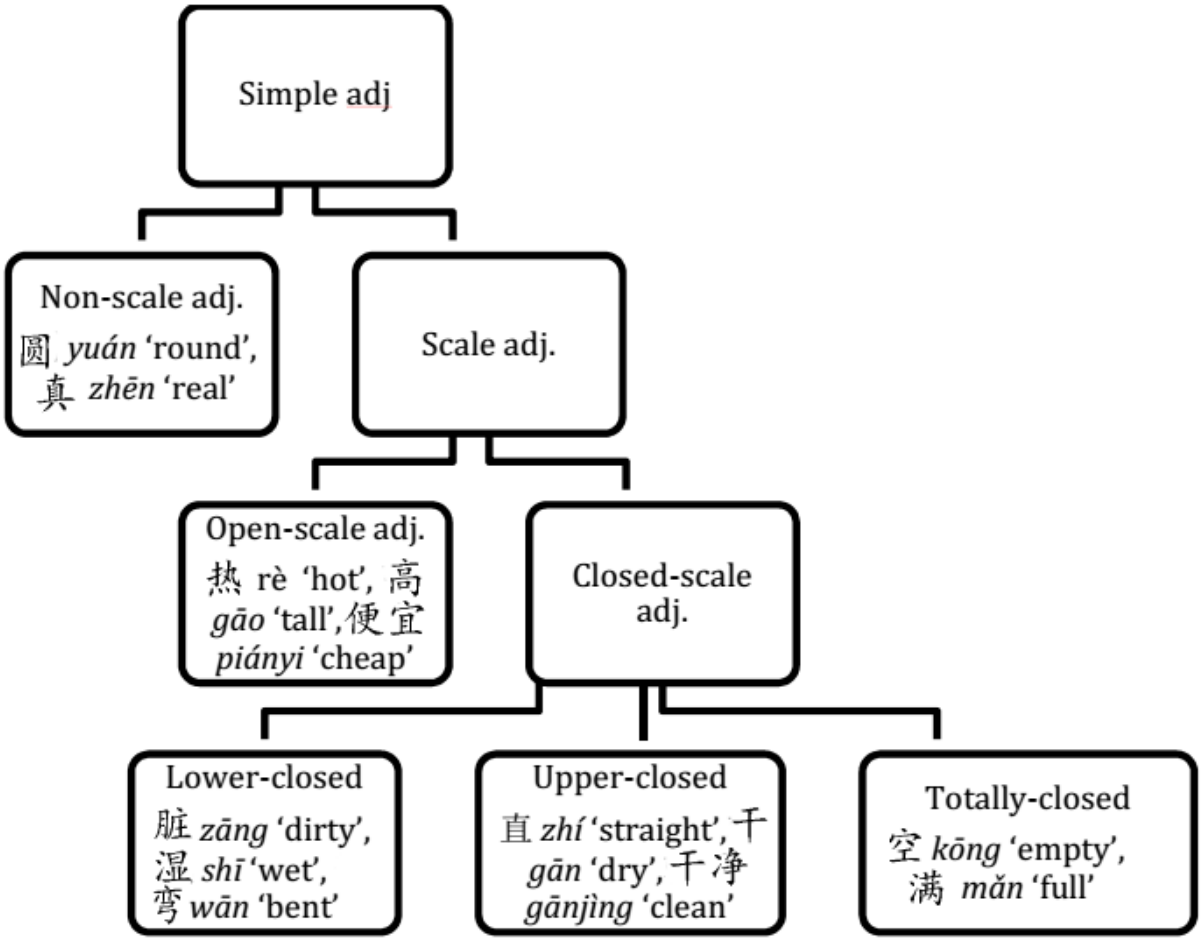


Figure 3.1: Classification of the gradable adjectives in Mandarin (Lin and Peck, 2016, p.18)

the degree range from zero to a non-zero degree on a scale. The upper-closed-scale adjectives denote a degree range from non-maximal to maximal degree on a scale. The totally-closed-scale adjectives stand for maximal degree, such as *kong* ("empty"), given in (64).

(63) 厨房 很 热。(Zheng and Meng, 2003, p. 178)
chufang hen re.
kitchen very hot
"It is very hot in the kitchen."

(64) 屋里 太 空。(Zheng and Meng, 2003, p. 109)

wuli tai kong.

room too empty

"The room is too empty."

3.4 Distinctive standard of gradable adjectives

Adjectives in Mandarin Chinese usually have multiple different meanings. Some of them belong to gradable adjectives, and others are non-gradable adjectives. Consequently, the semantic meanings are very vague. It is difficult to check whether an adjective is a gradable adjective in Mandarin Chinese. So it is important to build some criteria to detect gradable adjectives in Mandarin Chinese. Song and Zhang (2012) pointed out that there was even no distinctive standard for Mandarin adjectives. Multiple distinctive methods have to be combined to identify adjectives. It is also true to build a distinctive standard of gradable adjectives. This thesis introduces two tests for the distinctive standard, including the *hen* test (65a) and the comparison test (65b).

(65) a. the *hen* test

hen + adjective

b. the comparison test

NP1 + *bi* + NP2 + adjectives, *geng* + adjectives, *yue lai yue* + adjectives

Any gradable adjectives in Mandarin Chinese, which can be modified by *hen*, is a necessary condition. The comparison test (65b) is to use an explicit comparison to detect a gradable adjective, because a gradable adjective maps abstract attributes into dimensions. Those adjectives can be preceded by a comparison phrase. Both of the tests will be applied to the Center for Chinese Linguistics Corpus CCL (2016). The adjectives can be identified as gradable adjectives only when they can pass the above two tests in the corpus.

Bi has the highest priority to be used in the comparison test. But some adjectives are very infrequent. There is no result of the query with $NP1 + bi + NP2$ + adjectives. As a result, two

comparative morphemes *geng* ("more") and *yuelaiyue* ("more and more") are also used to evaluate whether adjectives can be gradable adjectives. The two comparative patterns are *geng* + adjectives and *yuelaiyue* + adjectives.

Geng ("more") is an adverb premodifying adjectives. It is used for a comparison to mark a higher property or degree of two persons (or two things) at the same time such as example (66), or one person (or one thing) in different times such as (67). The comparative morpheme *geng* is bold.

(66) 她 能干， 她 (的) 女儿 **更** 能干。 (Zhu and Gao, 2013, p. 349)
ta nenggan, ta de nver **geng** nenggan.
she capable she POSS daught COM capable
"She is capable, her daughter is more capable."

(67) 迎接 **更** 艰巨 的 任务。(Lv, 1999, p. 231)
yingjie **geng** jianju de renwu.
receive COM difficult ATTR task
"Accept more difficult tasks."

Yuelaiyue ("more and more") is treated as an adverbial adjunct in expressing comparison. The comparison form with *yuelaiyue* can only have one subject. It shows the change of some specific person or thing in a certain aspect over time. Two examples from Li and Cheng (2008) are as below. The comparative morpheme *yuelaiyue* is bold.

(68) 这 个 孩子 **越来越** 淘气。 (Li and Cheng, 2008, p. 548)
zhe ge haizi **yuelaiyue** taoqi.
this CL child COM naughty
"The child is getting more naughty."

(69) 我们 的 生活 **越来越** 幸福。 (Li and Cheng, 2008, p. 550)
women de shenghuo **yuelaiyue** xingfu.
we POSS life COM happy
"Our lives are getting happier."

3.5 Methodology of data collection

CCL (2016) has 783,463,175 characters in total, including 581,794,456 modern Mandarin characters and 201,668,719 ancient Mandarin characters. CCL (2016) provides an on-line query service. This thesis will only query the result from the modern Mandarin characters, because the thesis pays attention to the usages of *hen* and adjectives in Modern Mandarin.

Because the large number of Chinese characters in the corpus, CCL (2016) defines a lot of query methods to filter the query results. It is useful to reduce the number of the result. CCL (2016) can support the simple query and the combination query. The simple query includes the nine special operator characters: SPACE, |, $, #, +, -, ~, ! and :.

The operator SPACE stands for the logic relationship, and. For example A SPACE B means that the result will include A and B at the same time. The letters A and B stand for two Chinese characters.

The operator bar (|) stands for the logic relationship, or. For example A | B means that the result will include A or B. Operator SPACE and | can occur many times in query expression. For example, A | B | C | D is a valid expression.

The operator dollar sign ($) will be followed by a number. The number means that the distance between the item before $ and the item after $ is not more than the number. For example, A$5B means that the result must have A and B in order. The character number between A and B must be not more than five. This operator is allowed to occur multiple times and link together, such as, A$5B$4C. This expression means that the result must include A, B and C at the same time. The distance of A and B is not more than five characters, and the distance of B and C is not more than four characters.

The operator hash (#) will be followed by a number. The number means that the distance between the item before # and the item after # is not more than the number. For example, A#5B means that the result must include A and B without the order. The character number between A and B must be not more than five. This operator is also allowed to occur multiple times and link together, such as, A#5B#4C. This expression means that the result must include A, B and

C without order requirement at the same time. The distance of A and B is not more than five characters, and the distance of B and C is not more than four characters.

The operator plus sign (+) will be followed by a number. The number means that the distance between the item before + and the item after + is equal to the number. For example, A+5B means that the result must include A and B in order. The character number between A and B must be equal to five.

The operator minus sign (-) will be followed by a number. The number means that the distance between the item before - and the item after - is equal to the number. For example, A-5B means that the result must include A. B will not occur in five characters at the right side of A.

The operator tilde (~) will be followed by a number. The number means that the distance between the item before ~ and the item after ~ is equal to the number. For example, A~5B means that the result must include A. B will not occur in five characters at the left side of A.

The operator exclamation mark (!) represents that the key following this operator is the main key of this query when multiple query keys co-exist. The display layout of the result will base on the main key. Each result will display the main key in the middle.

The operator colon (:) defines that some filter fields, such as author and title. For example, author: AB stands for the query result from the author, AB.

The combination query expression is made up of simple queries. The simple queries are combined with SPACE. It stands for the logic relationship, AND. The result must satisfy all simple queries.

CCL (2016) also supports to continue a new query from the existing result in order to improve the query accuracy. According to the above introduction of CCL (2016), CCL (2016) can support the lexical query and the query with lexical distance. For example, it is easy to execute the *hen* test. A simple query, *hen* + adjectives, is enough to get the result. If there is any result, the adjectives can pass the *hen* test.

Figure 3.2 shows the query result of the *hen* test, where *hen gao* ("very tall") is used as a simple query. The query key *hen gao* is marked. There are 17435 items of this query results, the

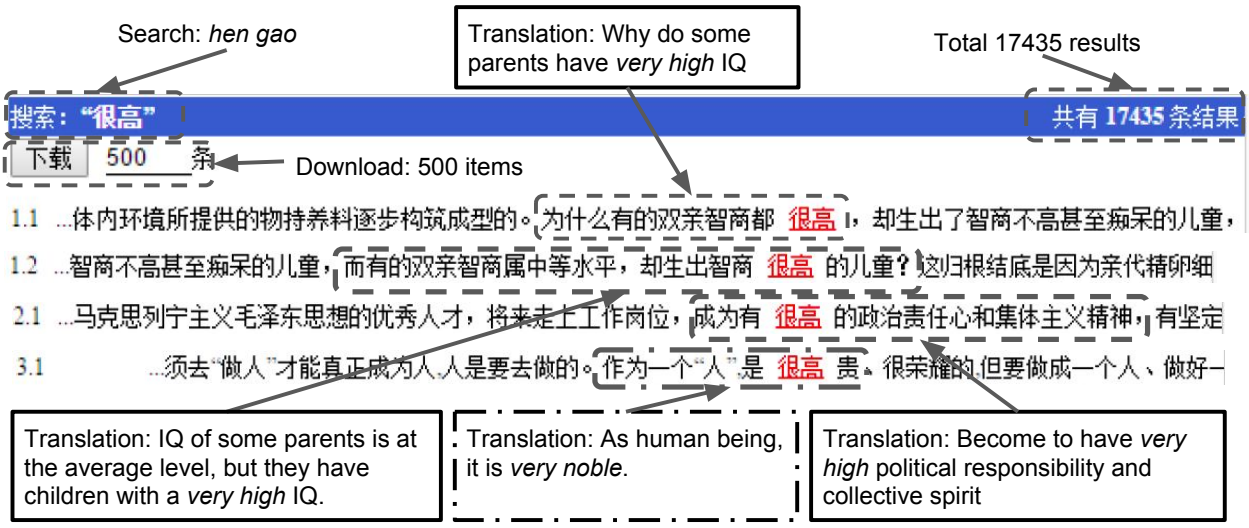


Figure 3.2: Query result of *hen gao*

number is displayed in the right top corner on the top bar. In the query results, there are many false hits, for example *hen gaogui* (很高贵) which means "very noble" in sentence number 3.1. Both the sentence and translation are enclosed by dash-dot line in Figure 3.2. The query cannot identify the occurrence *hen gao* as main predicate, but only to match the two characters *hen* and *gao*. *Gao* is a syllable of *gaogui* ("noble"), and *hen* ("very") modifies the adjective *gaogui*. The reason why the wrong result *hen gaogui* ("very noble") is also a hit, is only because the word *hen* closes to the character *gao*.

In order to reduce the number of the hit result, another key, *chengben* ("cost") is added before *hen gao*. The hit number of the new query is reduced to 85 hits. In that case, the manual intervention is required to choose one of them. From these hits, one is chosen as evidence for the *hen* test. The choice standard is to select the accurate sentence from the formal newspaper, magazine or book as possible as the thesis can.

Figure 3.3 is one possible candidate for the *hen* test. The first line is the reference name of the hit text. In Figure 3.3, the sentence comes from the newspaper in 1994. The current sentence is the sentence which hits the query. The query key *chengben hen gao* is marked in a dashed

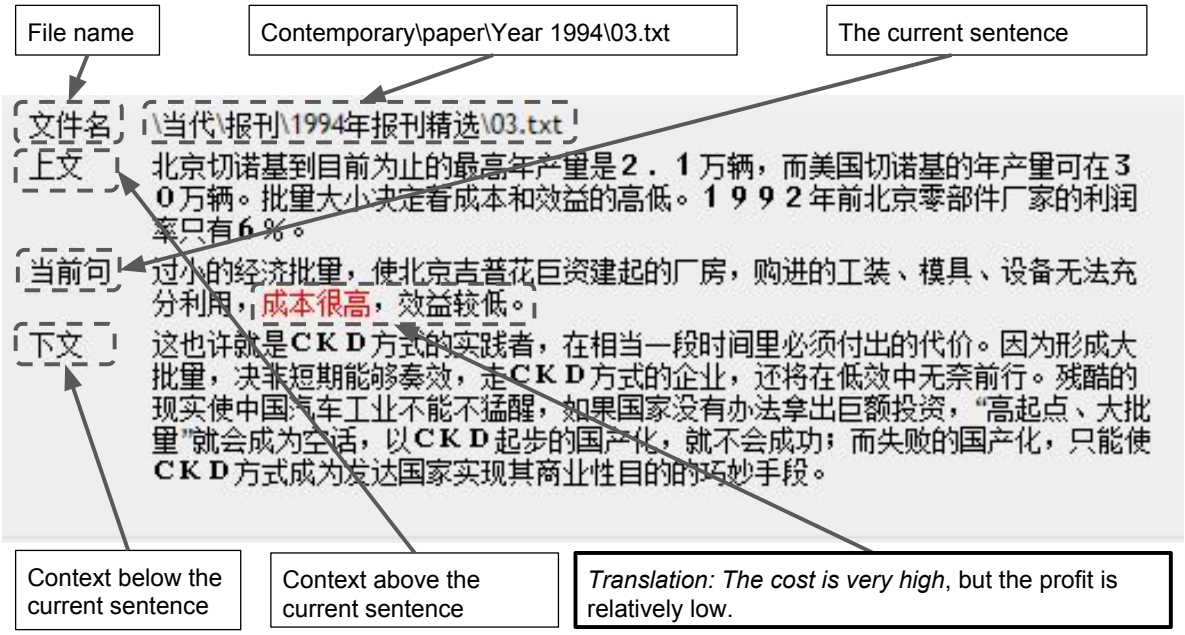


Figure 3.3: One example from query result of *chengben hen gao*

box. The context above the current sentence is the preceding part of the text before the hit. The context below the current sentence is the context after the hit. The related contexts help the users to have a good understanding of the current sentence.

However, it is a challenge to check whether the adjectives can pass the comparison test. The reason is that there is no comparative inflection in Mandarin Chinese and the CCL (2016) corpus does not provide the comparative semantic as well. As a result, it is impossible to query the result accurately where adjectives are predicates with the comparative semantic.

3.6 Summary

It is important to understand the gradable adjectives in Mandarin Chinese. This chapter introduced the definition of the gradable adjectives and adjectives classification. Multiple distinctive methods have to be combined to build a distinctive standard of gradable adjectives. This chapter proposed the two tests, the *hen* test and the comparison test. The corpus is introduced, which is used to check the two tests.

Chapter 4

Data collection

4.1 Introduction

This chapter will compare the frequency of the intensifiers in order to address the importance of *hen* in Mandarin Chinese. Their usage differences are also discussed. This chapter summarizes the usage patterns of *hen*. The chapter will collect the combination patterns of *hen* and gradable adjectives. Finally the gradable adjectives are collected based on the standard in Chapter 3.

4.2 The frequency of the intensifiers

It is widely accepted that *hen* ("very") is an intensifier, which belongs to a category of degree adverbs in Mandarin Chinese. Generally speaking, *hen* can be used to modify adjectives or verbs, where the meaning of *hen* expresses the degree to what the arguments have related properties from adjectives. It is also noticed by some researchers that *hen* can modify nouns as well.

In addition to *hen*, degree morphology in Mandarin Chinese has many morphemes, including 有点 *youdian* ("a little"), 稍 *shao* ("a little"), 稍微 *shaowei* ("a little"), 略微 *lvewei* ("a little"), 比较 *bijiao* ("relatively"), 非常 *feichang* ("very"), 十分 *shifen* ("very"), 更 *geng* ("more"), 最 *zui* ("most"), 顶 *ding* ("extremely"), 极 *ji* ("extremely"), 过于 *guoyu* ("too"), 太 *tai* ("too"), 几乎 *jihu*

("almost"), 尤其 *youqi* ("specially") etc.

Because of many similar degree meanings in Mandarin Chinese, four typical intensifiers are chosen which represent from the highest degree to the lowest degree to make some comparisons in Mandarin Chinese. The four intensifiers are *zui* ("most"), *hen* ("very"), *bijiao* ("relatively") and *shao* ("a little"). Similar to *hen*, all of them can be used as modifiers of adjectives or verbs in Mandarin Chinese. Their difference is the extent of degree. The decreasing order of their degree values is listed in (70).

(70) *zui* > *hen* > *bijiao* > *shao*
best > very > relatively > a little

Adjective *gao* ("tall") in Mandarin Chinese is taken as an example to compare the differences of the intensifiers in (70). When they are used to modify the height property of *Zhangsan*, the sentences are listed in (71). Adjective *gao* ("tall") means that the height of a person is more than the standard value. This standard value depends on specific contexts. *Zhangsan* has the highest height in example (71a), and he has a relatively lowest height in example (71d). The height of *hen* is more than between 50% and 100% of compared people involved in conversation, if *zui* is treated as 100% of the degree in Mandarin Chinese.

(71) a. 张三 最 高。
Zhangsan zui gao.
Zhangsan most tall
"Zhangsan is tallest."

b. 张三 很 高。
Zhangsan hen gao.
Zhangsan very tall
"Zhangsan is very tall."

c. 张三 比较 高。
Zhangsan bi jiao gao.
Zhangsan relatively tall
"Zhangsan is relatively tall."

d. 张三 稍 高。
Zhangsan shao gao.
Zhangsan a little tall
"Zhangsan is a little tall."

There is a comparative functional word *bi* in Mandarin Chinese. *Hen* has an implicit comparative semantic meaning, however, the comparative meaning of *hen* is not specific, where the comparative people are unknown. The *bi* comparative sentence includes comparative objects.

In order to understand the *hen* occurrence frequency, CCL (2016) is used, which is a corpus with about 783 million Chinese characters in Mandarin Chinese. The words *hen, bi, zui, bijiao, shao* are investigated. The result of token frequency is shown in table 4.1. The table shows that *hen, bi* and *zui* are widely used in Mandarin Chinese. Although the occurrence frequency of *zui* is higher than that of *hen*, the number of occurrence frequency of *hen* is more than that of *bi*. This shows that *hen* is a high frequency word in Mandarin Chinese.

Adverbs	*hen*	*bi*	*zui*	*bijiao*	*shao*
Occurrence	436708	315082	578623	70764	3253

Table 4.1: Token frequency of degree adverbs and *BI*

4.3 Usage patterns of *hen*

In example (72a) and example (72b), *hen* can be in combination with *bu* ("not"). *Bu* precedes *hen*, such as (72b). The semantic meaning of this type is that the height exceeds the base stan-

dard. But the degree of height is less than 50% in the high individuals. *Bu* can also appear after *hen*, such as (72a). However, *bu* ("not") modifies the adjectives instead of *hen*.

(72) a. 很 不 高
hen bu gao
very not tall
"very short"

b. 不 很 高
bu hen gao
not very tall
"not very tall"

Lv (1999) concluded that *hen* can modify adjectives and verbs in Mandarin Chinese. The position patterns of *hen* have three patterns: *hen* + AP, *hen* + VP and *de* + *hen*. *Hen* stands for the high degree in all the patterns. *De* denotes the complement marker in (73c) and indicates degree. The examples are listed in (73) respectively.

(73) a. 张三 很 高。
Zhangsan hen gao
Zhangsan very tall
"Zhangsan is very tall."

b. 张 很 用功。
Zhangsan hen yonggong.
Zhangsan very work hard
"Zhangsan works very hard."

c. 张三 高 得 很。
Zhangsan gao de hen.
Zhangsan tall CM very
"Zhangsan is very tall."

The pattern (*hen* + AP) can function as a predicate (73c), attribute (74a), complement (74b) and adverbial (74c). *De* is a marker before nouns to indicate possession or modification, such as (73c). *De* in (74b) is a complement marker. *De* in (74c) is an adverbial modifier before a verb.

(74) a. 有 个 很 高 的 人。
you ge hen gao de ren.
there is CL very tall ATTR person
"There is a very tall person."

b. 张三 长 得 很 高。
Zhangsan zhang de hen gao.
Zhangsan grow CM very tall
"Zhangsan grows very tall."

c. 张三 很 高兴 地 前进。
Zhangsan hen gaoxing de qianjin.
Zhangsan very happy AM go
"Zhangsan went very happily."

The distribution of *hen* with gradable adjectives is limited to the following constructions in example (75a-75e). Example (75a) is a normal interrogative sentence with *ma* (the question particle), and example (75b) is a yes-no interrogative sentence with a verb-not-verb structure. The measure phrase, 1.7 meters, modifies *gao* in (75c). Example (75d) is a negative sentence, where *gao* is modified by *bu* ("not"). Example (75e) is a contrastive sentence.

(75) a. 张三 高 吗?
Zhangsan gao ma?
Zhangsan tall QST
"Is Zhangsan tall?"

b. 张三 高 不 高?
Zhangsan gao bu gao?
Zhangsan tall NEG tall
"Is Zhangsan tall?"

c. 张三 一 米 七 高。
Zhangsan yi mi qi gao.
Zhangsan one meter seven tall
"Zhangsan is 1.7-meter tall."

d. 张三 不 高。
Zhangsan bu gao.
Zhangsan NEG tall
"Zhangsan is not tall."

e. 张三 高，李四 矮。
Zhangsan gao, Lisi ai.
Zhangsan tall Lisi short
"Zhangsan is tall, while Lisi is short."

4.4 Evaluate Gradable adjectives with two tests

In order to investigate adjectives in Mandarin Chinese systematically, Zheng and Meng (2003) collected the adjectives commonly used in Mandarin Chinese. The number of the adjectives is 1067 in total. This thesis has applied the two criteria to all of them in order to evaluate whether they are gradable adjectives.

What the thesis expected is that adjectives have to be main predicates in the two tests. However, the corpus cannot support query with this. In order to reduce the false hits in the query result, the query will filter some keywords as many as possible. For example, when *bi* ("in comparison with") is used in the comparison test, *bijiao* ("relatively") and *bisai* ("compete") will be filtered with additional query pattern A-1B. The query methodology is described in section 3.5.

The result shows that there are 842 adjectives which can be classified as gradable adjectives. These gradable adjectives can be subclassified as monosyllabic gradable adjectives and bisyllabic gradable adjectives. The number of monosyllabic gradable adjectives is 139 which can pass the *hen* test and the comparison test in the CCL (2016) corpus, in comparison with 149 adjectives only passing the *hen* test.

The 139 monosyllabic gradable adjectives are listed in Table 4.2. Each unit consists of Chinese word, phonetic transcription and English translation.

矮 *ai* (short)	暗 *an* (dark)	白 *bai* (white)	薄 *bao* (thin)
笨 *ben* (stupid)	扁 *bian* (flat)	惨 *can* (miserable)	差 *cha* (poor)
馋 *chan* (gluttonous)	长 *zhang* (long)	沉 *chen* (heavy)	迟 *chi* (late)
丑 *chou* (ugly)	臭 *chou* (smelly)	蠢 *chun* (foolish)	次 *ci* (inferior)
粗 *cu* (thick)	脆 *cui* (crisp)	大 *da* (big)	淡 *dan* (light)
刁 *diao* (tricky)	低 *di* (low)	陡 *dou* (steep)	毒 *du* (poisonous)
短 *duan* (short)	钝 *dun* (blunt)	多 *duo* (many)	烦 *fan* (vexed)
肥 *fei* (fat)	浮 *fu* (superficial)	富 *fu* (rich)	干 *gan* (dry)
高 *gao* (high)	怪 *guai* (strange)	光 *guang* (glossy)	广 *guang* (broad)
贵 *gui* (expensive)	好 *hao* (good)	黑 *hei* (black)	横 *heng* (horizontal)
红 *hong* (red)	厚 *hou* (thick)	滑 *hua* (slippery)	坏 *huai* (bad)
急 *ji* (anxious)	挤 *ji* (crowded)	贱 *jian* (humble)	紧 *jin* (tight)
近 *jin* (near)	精 *jing* (excellent)	静 *jing* (quite)	久 *jiu* (long)
旧 *jiu* (old)	倔 *jue* (stubborn)	俊 *jun* (handsome)	空 *kong* (empty)
苦 *ku* (bitter, hard)	快 *kuai* (fast)	宽 *kuan* (wide)	辣 *la* (hot)
蓝 *lan* (blue)	懒 *lan* (lazy)	烂 *lan* (rotten)	老 *lao* (old)
累 *lei* (tired)	冷 *leng* (cold)	凉 *liang* (cool)	亮 *liang* (bright)
灵 *ling* (clever)	绿 *lv* (green)	乱 *luan* (confused)	满 *man* (full)
慢 *man* (slow)	忙 *mang* (busy)	美 *mei* (beautiful)	闷 *men* (bored)
猛 *meng* (fierce)	密 *mi* (dense)	妙 *miao* (ingenious)	难 *nan* (difficult)
嫩 *nen* (tender)	浓 *nong* (thick)	胖 *pang* (fat)	平 *ping* (flat)

破 *po* (broken)	齐 *qi* (neat)	浅 *qian* (shallow)	强 *qiang* (strong)
巧 *qiao* (ingenious)	勤 *qin* (diligent)	轻 *qing* (light)	清 *qing* (clear)
穷 *qiong* (poor)	全 *quan* (complete)	热 *re* (hot)	软 *ruan* (soft)
弱 *ruo* (weak)	涩 *se* (astringent)	傻 *sha* (stupid)	少 *shao* (little)
深 *shen* (deep)	生 *sheng* (unripe)	湿 *shi* (wet)	瘦 *shou* (thin)
熟 *shu* (familiar)	帅 *shuai* (handsome)	松 *song* (loose)	素 *su* (plain)
酸 *suan* (sour)	碎 *sui* (fragmentary)	烫 *tang* (scalding)	疼 *teng* (painful)
甜 *tian* (sweet)	歪 *wai* (oblique)	弯 *wan* (curved)	晚 *wan* (late)
旺 *wang* (prosperous)	稳 *wen* (stable)	稀 *xi* (rare)	细 *xi* (thin)
香 *xiang* (fragrant)	小 *xiao* (small)	新 *xin* (new)	凶 xiong (fierce)
严 *yan* (strict)	艳 *yan* (colourful)	硬 *ying* (hard)	圆 *yuan* (round)
远 *yuan* (far)	匀 *yun* (well-distributed)	脏 *zang* (dirty)	糟 *zao* (in a mess)
早 *zao* (early)	窄 *zhai* (narrow)	正 *zheng* (straight)	直 *zhi* (straight)
重 *zhong* (heavy)	壮 *zhuang* (strong)	准 *zhun* (accurate)	

Table 4.2: Monosyllabic gradable adjectives in Mandarin

Examples (76-90) are evidence for some monosyllabic gradable adjectives. All examples are from CCL (2016). The gradable adjectives are bold in these examples. If one adjective can pass the comparison test, the adjective can map their arguments onto abstract representations of measurement. As a result, two arguments can be compared with the degree represented by the adjective. If an adjective satisfies the comparison test, the adjective can also pass the *hen* test. It must be a gradable adjective.

(76) 他 比 我 **矮**，这 是 一 个 非常 严重 的 事情。
ta bi wo **ai**, zhe shi yi ge feichang yanzhong de shiqing.
he COM I **short** this is one CL very serious ATTR thing
"He is shorter than me, it is a very serious matter."

(77) 她 的 皮肤 比 马 奶 还 **白**。
ta de pifu bi ma nai hai **bai**.
she POSS skin COM horse milk even **white**
"Her skin is even whiter than horse milk."

(78) 她 的 胳膊 比 他 的 腿 还 **粗**。
ta de gebo bi tade tui hai **cu**.
she POSS arm COM he POSS leg even **thick**
"Her arm is even thicker than his leg."

(79) 办法 总 比 困难 **多**。
banfa zong bi kunnan **duo**.
solution always COM difficulty **many**
"There are always more solutions than problems."

(80) 这 座 山 比 那 座 山 **高**。
zhe zuo shan bi na zuo shan **gao**.
this CL mountain COM that CL mountain **tall**
"This mountain is taller than that mountain."

(81) 猪肉 一定要 比 蔬菜 **贵**。
zhurou yidingyao bi shucai **gui**.
pork must COM vegetable **expensive**
"Pork must be more expensive than vegetables."

(82) 这 种 香皂 比 那 种 香皂 **好**。
zhe zhong xiangzao bi na zhong xiangzao **hao**.
this kind soap COM that kind soap **good**
"This kind of soap is better than that kind of soap."

(83) 光子 比 电子 速度 **快**。
guangzi bi dianzi sudu **kuai**.
photon COM electron speed **fast**
"Photons are faster than electrons."

(84) 这 天 夜 里 比 往常 **冷**。
zhe tian ye li bi wangchang **leng**.
this day night in COM usual **cold**
"This night is colder than usual."

(85) 在 家里 妈妈 总是 比 爸爸 **忙**。
zai jiali mama zongshi bi baba **mang**.
at home mother always COM father **busy**
"Mother is always busier than father at home."

(86) 有 人 戏言，找 保姆 比 找 老婆 还 **难**。
you ren xiyan, zhao baomu bi zhao laopo hai **nan**.
there are people joking find nanny COM find wife even **hard**
"People are joking, finding a nanny is even harder than finding a wife."

(87) 一氧化碳 是 无色、 无嗅、 无味 的 气体，比 空气 略 **轻**。
yiyanghuatan shi wuse, wuxiu, wuwei de qiti, bi kongqi lve **qing**.
carbon monoxide is colorless odorless tasteless ATTR gas COM air slightly **light**
"CO is a colorless, odorless, and tasteless gas that is slightly lighter than air."

(88) 我 知道 还 有 许多 人 比 我 更 **穷**。
wo zhidao hai you xuduo ren bi wo geng **qiong**.
I know still have many people COM I more **poor**
"I know there are still many people poorer than me."

(89) 我们 的 生活 比 蜜 **甜**。
women de shenghuo bi mi **tian**.
we POSS life COM honey **sweet**
"Our lives are sweeter than honey."

(90) 老实 讲，我 的 心肠 比 别人 **硬**，从来不 掉 眼泪。
laoshi jiang, wo de xinchang bi bieren **ying**, conglaibu diao yanlei.
honestly speak I POSS heart COM others **hard** never fall tear
"Honestly speaking, my heart is harder than others, (I) never cry."

The bisyllabic gradable adjectives are given in Table 4.3, where 703 adjectives are collected. Each unit consists of Chinese word, phonetic transcription and English translation.

矮小 *aixiao* (undersized)	安定 *anding* (stable)	安静 *anjing* (quiet)
安宁 *anning* (peaceful)	安全 *anquan* (safe)	安稳 *anwen* (safe and steady)
安闲 *anxian* (leisurely)	安心 *anxin* (relieved)	安逸 *anyi* (carefree and comfortable)
暗淡 *andan* (dim)	肮脏 *angzang* (dirty)	昂贵 *anggui* (costly)
昂扬 *angyang* (high-spirited)	傲慢 *aoman* (arrogant)	霸道 *badao* (overbearing)
饱满 *baoman* (full)	宝贵 *baogui* (valuable)	暴躁 *baozao* (irritable)
卑鄙 *beibi* (despicable)	卑贱 *beijian* (mean and low)	悲惨 *beican* (miserable)
悲观 *beiguan* (pessimistic)	悲伤 *beishang* (sad)	悲痛 *beitong* (painfully sad)
奔放 *benfang* (untrammelled)	笨重 *benzhong* (cumbersome)	逼真 *bizhen* (lifelike)
便利 *bianli* (convenient)	憋闷 *biemen* (oppressed)	别扭 *bieniu* (awkward)
薄弱 *boruo* (weak)	残暴 *canbao* (brutal)	残酷 *canku* (cruel)
残忍 *canren* (cruel)	惭愧 *cankui* (ashamed)	惨重 *canzhong* (disastrous)
灿烂 *canlan* (brilliant)	苍白 *cangbai* (pale)	草率 *caoshuai* (careless)
敞亮 *changliang* (light, spacious)	畅通 *changtong* (unimpeded)	潮湿 *chaoshi* (moist)
沉闷 *chenmen* (oppressive)	沉痛 *chentong* (bitter)	沉重 *chenzhong* (heavy)
沉着 *chenzhuo* (composed)	陈旧 *chenjiu* (obsolete)	成熟 *chengshu* (mature)
诚恳 *chengken* (sincere)	诚实 *chengshi* (honest)	吃香 *chixiang* (popular)
迟钝 *chidun* (slow)	迟缓 *chihuan* (sluggish)	充分 *chongfen* (abundant)

充沛 *chongpei* (plentiful)	充实 *chongshi* (substantial)	充足 *chongzu* (adequate)
出色 *chuse* (outstanding)	传神 *chuanshen* (vivid)	纯洁 *chunjie* (pure)
纯净 *chunjing* (clean)	纯真 *chunzhen* (sincere)	纯正 *chunzheng* (unadulterated)
淳朴 *chunpu* (unsophisticated)	慈善 *cishan* (charitable)	慈祥 *cixiang* (kindly)
次要 *ciyao* (secondary)	匆忙 *congmang* (hasty)	聪明 *congming* (intelligent)
从容 *congrong* (leisurely)	粗暴 *cubao* (rough)	粗糙 *cucao* (coarse)
粗鲁 *culu* (rough)	粗心 *cuxin* (careless)	粗野 *cuye* (rough)
粗壮 *cuzhuang* (sturdy)	脆弱 *cuiruo* (fragile)	错误 *cuowu* (erroneous)
大方 *dafang* (generous)	单薄 *danbo* (thin)	单纯 *danchun* (simple)
单调 *dandiao* (monotonous)	淡薄 *danbo* (light)	倒霉 *daomei* (unlucky)
得力 *deli* (competent)	得体 *deti* (appropriate)	低级 *diji* (low)
低劣 *dilie* (inferior)	地道 *didao* (typical)	典型 *dianxing* (typical)
动荡 *dongdang* (turbulent)	动人 *dongren* (touching)	动听 *dongting* (fair-sounding)
毒辣 *dula* (diabolic)	端正 *duanzheng* (regular)	短促 *duancu* (short)
短暂 *duanzan* (brief)	扼要 *eyao* (concise)	恶毒 *edu* (malicious)
恶劣 *elie* (disgusting)	发达 *fada* (developed)	烦闷 *fanmen* (depressed)
烦琐 *fansuo* (tedious)	烦躁 *fanzao* (irritable)	繁华 *fanhua* (flourishing)
繁忙 *fanmang* (busy)	繁茂 *fanmao* (lush)	繁重 *fanzhong* (strenuous)
方便 *fangbian* (convenient)	放肆 *fangsi* (presumptuous)	肥大 *feida* (hypertrophic)
肥沃 *feiwo* (fertile)	分明 *fenming* (clearly distinguished)	愤怒 *fennu* (angry)
丰富 *fengfu* (abundant)	疯狂 *fengkuang* (crazy)	肤浅 *fuqian* (superficial)
浮躁 *fuzao* (impetuous)	腐败 *fubai* (corrupt)	腐朽 *fuxiu* (decadent)
负责 *fuze* (responsible)	复杂 *fuza* (complex)	富饶 *furao* (rich)
富裕 *fuyu* (wealthy)	干脆 *gancui* (straightforward)	干净 *ganjing* (clean)
干燥 *ganzao* (dry)	刚强 *gangqiang* (firm)	高傲 *gao'ao* (arrogant)
高大 *gaoda* (tall and big)	高级 *gaoji* (advanced)	高明 *gaoming* (brilliant)
高兴 *gaoxing* (happy)	工整 *gongzheng* (neat and orderly)	公道 *gongdao* (fair)
公平 *gongping* (fair)	公正 *gongzheng* (impartial)	孤单 *gudan* (alone)
孤独 *gudu* (lonely)	孤立 *guli* (isolated)	孤僻 *gupi* (unsociable, eccentric)
古板 *guban* (conservative)	古怪 *guguai* (eccentric)	古老 *gulao* (ancient)

固执 *guzhi* (stubborn)	光彩 *guangcai* (glorious)	光滑 *guanghua* (smooth)
光明 *guangming* (bright)	光荣 *guangrong* (honourable)	广泛 *guangfan* (extensive)
广阔 *guangkuo* (broad)	规范 *guifan* (normative)	贵重 *guizhong* (precious)
果断 *guoduan* (decisive)	过分 *guofen* (excessive)	过瘾 *guoyin* (satisfy a craving)
害羞 *haixiu* (shy)	含糊 *hanhu* (vague)	含蓄 *hanxu* (implicit)
寒冷 *hanleng* (cold)	寒心 *hanxin* (bitterly disappointed)	豪放 *haofang* (unconstrained)
豪华 *haohua* (luxury)	好看 *haokan* (good-looking)	好受 *haoshou* (comfortable)
好听 *haoting* (pleasing to the ear)	好奇 *haoqi* (curious)	合法 *hefa* (legitimate)
合理 *heli* (reasonable)	合算 *hesuan* (worthwhile)	和蔼 *he'ai* (kindly)
和睦 *hemu* (amicable)	和平 *heping* (peaceful)	和气 *heqi* (gentle)
和谐 *hexie* (harmonious)	黑暗 *hei'an* (dark)	宏伟 *hongwei* (magnificent)
洪亮 *hongliang* (loud and clear)	厚道 *houdao* (kind and sincere)	糊涂 *hutu* (muddled)
华丽 *huali* (magnificent)	滑稽 *huaji* (funny)	滑溜 *hualiu* (slippery)
欢畅 *huanchang* (delighted)	欢快 *huankuai* (cheerful)	欢喜 *huanxi* (joyful)
缓和 *huanhe* (assuasive)	缓慢 *huanman* (slow)	荒诞 *huangdan* (absurd)
荒凉 *huangliang* (desolate)	荒谬 *huangmiu* (preposterous)	荒唐 *huangtang* (absurd)
慌张 *huangzhang* (panic)	惶恐 *huangkong* (terrified)	灰心 *huixin* (discouraged)
昏暗 *hun'an* (dusky)	混乱 *hunluan* (orderless)	浑浊 *hunzhuo* (turbid)
活泼 *huopo* (lively)	活跃 *huoyue* (active)	豁达 *huoda* (magnanimous)
豁亮 *huoliang* (roomy and bright)	机灵 *jiling* (clever)	机智 *jizhi* (quick-witted)
积极 *jiji* (positive)	激昂 *ji'ang* (impassioned)	激动 *jidong* (exciting)
激烈 *jilie* (intense)	及时 *jishi* (timely)	急促 *jicu* (rapid)
急迫 *jipo* (urgent)	急躁 *jizao* (impatient)	寂静 *jijing* (silent)
寂寞 *jimo* (lonely)	尖锐 *jianrui* (sharp)	坚定 *jianding* (firm)
坚固 *jiangu* (solid)	坚决 *jianjue* (resolute)	坚强 *jianqiang* (staunch)
坚硬 *jianying* (hard)	艰巨 *jianju* (extremely difficult)	艰苦 *jianku* (arduous)
艰难 *jiannan* (difficult)	艰险 *jianxian* (perilous)	艰辛 *jianxin* (hard)
简朴 *jianpu* (unadorned)	简便 *jianbian* (convenient)	简单 *jiandan* (simple)
简短 *jianduan* (brief)	简洁 *jianjie* (succinct)	简练 *jianlian* (terse)
简陋 *jianlou* (simple and crude)	健康 *jiankang* (healthy)	健全 *jianquan* (sound)

健壮 *jianzhuang* (robust)	娇贵 *jiaogui* (delicate)	娇嫩 *jiaonen* (tender and lovely)
娇气 *jiaoqi* (spoiled)	骄傲 *jiao'ao* (proud)	焦急 *jiaoji* (anxious)
狡猾 *jiaohua* (cunning)	狡诈 *jiaozha* (deceitful)	矫健 *jiaojian* (strong and vigorous)
结实 *jieshi* (sturdy)	杰出 *jiechu* (outstanding)	洁白 *jiebai* (spotlessly white)
紧凑 *jincou* (compact)	紧急 *jinji* (urgent)	紧迫 *jinpo* (pressing)
紧张 *jinzhang* (nervous)	谨慎 *jinshen* (cautious)	惊奇 *jingqi* (surprised)
惊险 *jingxian* (thrilling)	惊讶 *jingya* (astonished)	精彩 *jingcai* (wonderful)
精干 *jinggan* (highly capable)	精练 *jinglian* (concise)	精明 *jingming* (astute)
精辟 *jingpi* (incisive)	精巧 *jingqiao* (exquisite)	精确 *jingque* (accurate)
精神 *jingshen* (spirited)	精细 *jingxi* (meticulous)	精心 *jingxin* (aborative)
精致 *jingzhi* (exquisite)	拘谨 *jujin* (overcautious)	拘束 *jushu* (constrained)
具体 *juti* (specific)	倔强 *juejiang* (stubborn)	均匀 *junyun* (well-distributed)
开阔 *kaikuo* (wide)	开朗 *kailang* (open and clear)	开心 *kaixin* (joyful)
坎坷 *kanke* (bumpy)	慷慨 *kangkai* (generous)	苛刻 *keke* (harsh)
科学 *kexue* (scientific)	可爱 *ke'ai* (lovely)	可耻 *kechi* (shameful)
可贵 *kegui* (valuable)	可靠 *kekao* (reliable)	可怜 *kelian* (pityful)
可怕 *kepa* (terrible)	可恶 *kewu* (hateful)	可惜 *kexi* (unfortunately)
可心 *kexin* (satisfying)	刻薄 *kebo* (unkind)	刻苦 *keku* (assiduous)
恳切 *kenqie* (sincere)	空洞 *kongdong* (hollow)	空旷 *kongkuang* (spacious)
空虚 *kongxu* (void)	恐慌 *konghuang* (panic)	枯燥 *kuzao* (uninteresting)
苦闷 *kumen* (depressed)	苦恼 *kunao* (worried)	快活 *kuaihuo* (happy)
快乐 *kuaile* (happy)	宽敞 *kuanchang* (capacious)	宽绰 *kuanchuo* (commodious)
宽广 *kuanguang* (broad)	宽阔 *kuankuo* (wide)	狂妄 *kuangwang* (wildly arrogant)
魁梧 *kuiwu* (big and tall)	困苦 *kunku* (distressful)	困难 *kunnan* (difficult)
阔气 *kuoqi* (lavish)	浪漫 *langman* (romantic)	牢固 *laogu* (firm)
牢靠 *laokao* (dependable)	老实 *laoshi* (honest)	乐观 *leguan* (optimistic)
冷淡 *lengdan* (standoff)	冷静 *lengjing* (calm)	冷漠 *lengmo* (cold and detached)
冷清 *lengqing* (cold and cheerless)	离奇 *liqi* (bizarre)	厉害 *lihai* (ferocious)
利落 *liluo* (neat)	利索 *lisuo* (agile)	凉快 *liangkuai* (pleasantly cool)
亮堂 *liangtang* (bright)	吝啬 *linse* (stingy)	伶俐 *lingli* (quick-witted)

灵便 *lingbian* (agile)	灵活 *linghuo* (nimble)	灵敏 *lingmin* (sensitive)
灵巧 *lingqiao* (dexterous)	灵通 *lingtong* (well-informed)	凌厉 *lingli* (quick and forceful)
凌乱 *lingluan* (messy)	零散 *lingsan* (scattered)	零碎 *lingsui* (scrappy)
流利 *liuli* (fluent)	隆重 *longzhong* (grand)	笼统 *longtong* (general)
落后 *luohou* (backward)	麻烦 *mafan* (troublesome)	麻利 *mali* (dexterous)
马虎 *mahu* (careless)	蛮横 *manheng* (overbearing)	满意 *manyi* (satisfied)
漫长 *manchang* (endless)	茂密 *maomi* (dense)	茂盛 *maosheng* (flourishing)
冒失 *maoshi* (rash)	美观 *meiguan* (beautiful)	美好 *meihao* (fine)
美丽 *meili* (beautiful)	美满 *meiman* (perfectly satisfactory)	美妙 *meimiao* (wonderful)
猛烈 *menglie* (violent)	秘密 *mimi* (secret)	密切 *miqie* (intimate)
勉强 *mianqiang* (reluctantly)	腼腆 *miantian* (bashful)	苗条 *miaotiao* (slim)
渺茫 *miaomang* (uncertain)	渺小 *miaoxiao* (tiny)	民主 *minzhu* (democratic)
敏感 *mingan* (sensitive)	敏捷 *minjie* (agile)	敏锐 *minrui* (keen)
名贵 *minggui* (rare)	明白 *mingbai* (obvious)	明净 *mingjing* (bright and clean)
明朗 *minglang* (clear)	明亮 *mingliang* (bright)	明媚 *mingmei* (bright and beautiful)
明确 *mingque* (explicit)	明显 *mingxian* (obvious)	明智 *mingzhi* (sensible)
模糊 *mohu* (blurred)	耐心 *naixin* (patient)	难过 *nanguo* (sad)
难看 *nankan* (ugly)	难受 *nanshou* (afflictive)	难听 *nanting* (offensive)
泥泞 *nining* (muddy)	年轻 *nianqing* (young)	黏糊 *nianhu* (sticky)
浓厚 *nonghou* (dense)	浓密 *nongmi* (thick)	暖和 *nuanhuo* (warm)
懦弱 *nuoruo* (cowardly)	偶然 *ouran* (accidental)	庞大 *pangda* (huge)
蓬松 *pengsong* (fluffy)	疲惫 *pibei* (exhausted)	疲乏 *pifa* (tired)
疲倦 *pijuan* (fatigued)	疲劳 *pilao* (tired)	僻静 *pijing* (secluded)
偏激 *pianji* (extreme)	偏僻 *pianpi* (remote)	便宜 *pianyi* (cheap)
漂亮 *piaoliang* (beautiful)	贫困 *pinkun* (poor)	贫穷 *pinqiong* (needy)
频繁 *pinfan* (frequent)	平安 *ping'an* (safe and sound)	平常 *pingchang* (usually)
平淡 *pingdan* (dull)	平等 *pingdeng* (equal)	平凡 *pingfan* (common)
平静 *pingjing* (quiet)	平均 *pingjun* (average)	平坦 *pingtan* (smooth)
平稳 *pingwen* (steady)	泼辣 *pola* (shrewish)	迫切 *poqie* (urgent)
破碎 *posui* (broken)	朴实 *pushi* (sincere and honest)	朴素 *pusu* (simple)

普遍 *pubian* (general)	普通 *putong* (ordinary)	凄惨 *qican* (miserable)
凄凉 *qiliang* (dreary)	齐全 *qiquan* (complete)	奇怪 *qiguai* (strange)
奇妙 *qimiao* (marvellous)	崎岖 *qiqu* (rugged)	气愤 *qifen* (indignant)
恰当 *qiadang* (appropriate)	谦虚 *qianxu* (modest)	强大 *qiangda* (powerful)
强烈 *qianglie* (intense)	强盛 *qiangsheng* (prosperous)	强硬 *qiangying* (tough)
强壮 *qiangzhuang* (strong)	憔悴 *qiaocui* (haggard)	巧妙 *qiaomiao* (ingenious)
亲密 *qinmi* (intimate)	亲切 *qinqie* (cordial)	亲热 *qinre* (affectionate)
勤奋 *qinfen* (diligent)	勤快 *qinkuai* (hardworking)	勤劳 *qinlao* (industrious)
轻便 *qingbian* (portable)	轻捷 *qingjie* (light)	轻快 *qingkuai* (brisk)
轻巧 *qingqiao* (dexterous)	轻率 *qingshuai* (rash)	轻松 *qingsong* (relaxed)
轻微 *qingwei* (slight)	轻闲 *qingxian* (leisurely)	轻易 *qingyi* (easy)
清楚 *qingchu* (clear)	清脆 *qingcui* (clear, melodious)	清洁 *qingjie* (clean)
清静 *qingjing* (quiet)	清晰 *qingxi* (distinct)	清闲 *qingxian* (leisurely)
清新 *qingxin* (fresh)	清醒 *qingxing* (sober)	晴朗 *qinglang* (sunny)
穷困 *qiongkun* (destitute)	曲折 *quzhe* (tortuous)	全面 *quanmian* (comprehensive)
缺德 *quede* (wicked)	确切 *queqie* (exact)	确实 *queshi* (indeed)
确凿 *quezuo* (conclusive)	热烈 *relie* (enthusiastic)	热闹 *renao* (lively)
热情 *reqing* (ebullient)	热心 *rexin* (warm-hearted)	仁慈 *renci* (benevolent)
认真 *renzhen* (conscientious)	荣幸 *rongxing* (honoured)	容易 *rongyi* (easy)
融洽 *rongqia* (harmonious)	柔和 *rouhe* (mild)	柔软 *rouruan* (soft)
软弱 *ruanruo* (weak)	锐利 *ruili* (sharp)	弱小 *ruoxiao* (puny)
沙哑 *shaya* (hoarse)	善良 *shanliang* (kind-hearted)	深奥 *shen'ao* (profound)
深沉 *shenchen* (deep)	深厚 *shenhou* (deep)	深刻 *shenke* (profound)
深入 *shenru* (thorough)	深远 *shenyuan* (far-reaching)	深重 *shenzhong* (extremely serious)
神秘 *shenmi* (mysterious)	神奇 *shenqi* (magical)	神圣 *shensheng* (sacred)
慎重 *shenzhong* (cautious)	生动 *shengdong* (vivid)	生硬 *shengying* (stiff)
失常 *shichang* (abnormal)	湿润 *shirun* (moist)	实际 *shiji* (reality)
实在 *shizai* (honest)	适当 *shidang* (appropriate)	适宜 *shiyi* (suitable)
瘦弱 *shouruo* (emaciated)	瘦小 *shouxiao* (thin and small)	舒畅 *shuchang* (happy)
舒服 *shufu* (comfortable)	舒适 *shushi* (cosy)	舒坦 *shutan* (comfortable)

疏远 *shuyuan* (aloof)	熟练 *shulian* (skilled)	衰老 *shuailao* (decrepit)
爽快 *shuangkuai* (frank)	爽朗 *shuanglang* (bright, clear)	顺利 *shunli* (successfully)
松快 *songkuai* (relaxed)	松软 *songruan* (soft)	松散 *songsan* (slack)
松懈 *songxie* (sluggish)	随便 *suibian* (casual)	随和 *suihe* (amiable)
琐碎 *suosui* (trivial)	踏实 *tashi* (dependable)	坦然 *tanran* (calm)
坦率 *tanshuai* (straightforward)	淘气 *taoqi* (naughty)	特殊 *teshu* (special)
天真 *tianzhen* (naive)	甜蜜 *tianmi* (sweet)	调皮 *tiaopi* (mischievous)
贴切 *tieqie* (appropriate)	通畅 *tongchang* (unobstructed)	通顺 *tongshun* (clear and coherent)
通俗 *tongsu* (popular)	痛快 *tongkuai* (delighted)	痛心 *tongxin* (distressed)
透彻 *touche* (thorough)	突出 *tuchu* (prominent)	突然 *turan* (sudden)
颓丧 *tuisang* (dispirited)	妥当 *tuodang* (appropriate)	妥善 *tuoshan* (proper)
完备 *wanbei* (perfect)	完全 *wanquan* (complete)	完整 *wanzheng* (intact)
顽固 *wangu* (obstinate)	顽强 *wanqiang* (indomitable)	旺盛 *wangsheng* (exuberant)
危急 *weiji* (critical)	危险 *weixian* (dangerous)	微妙 *weimiao* (subtle)
微弱 *weiruo* (faint)	微小 *weixiao* (tiny)	伟大 *weida* (great)
委屈 *weiqu* (aggrieved)	委婉 *weiwan* (euphemistic)	温和 *wenhe* (mild)
温暖 *wennuan* (warm)	温柔 *wenrou* (gentle and soft)	温顺 *wenshun* (docile)
文静 *wenjing* (gentle and quiet)	文明 *wenming* (civilized)	稳当 *wendang* (reliable)
稳定 *wending* (stable)	稳固 *wengu* (stable)	稳健 *wenjian* (steady)
稳妥 *wentuo* (reliable)	稳重 *wenzhong* (steady)	窝囊 *wonang* (cowardly)
无耻 *wuchi* (shameless)	无聊 *wuliao* (bored)	希罕 *xihan* (rare)
希奇 *xiqi* (curious)	稀薄 *xibo* (thin)	稀少 *xishao* (few)
稀疏 *xishu* (sparse)	犀利 *xili* (incisive)	系统 *xitong* (systemic)
细嫩 *xinen* (tender)	细腻 *xini* (exquisite)	细微 *xiwei* (slight)
细小 *xixiao* (very small)	细心 *xixin* (careful)	细致 *xizhi* (meticulous)
狭隘 *xia'ai* (narrow)	狭小 *xiaxiao* (narrow and small)	狭窄 *xiazhai* (narrow)
下流 *xialiu* (obscene)	先进 *xianjin* (advanced)	鲜明 *xianming* (bright)
鲜艳 *xianyan* (bright-coloured)	显眼 *xianyan* (conspicuous)	显著 *xianzhu* (remarkable)
险恶 *xian'e* (sinister)	险要 *xianyao* (inaccessible)	现成 *xiancheng* (ready-made)
相似 *xiangsi* (similar)	详尽 *xiangjin* (exhaustive)	详细 *xiangxi* (detailed)

响亮 *xiangliang* (loud and clear)	消沉 *xiaochen* (low-spirited)	消极 *xiaoji* (negative)
潇洒 *xiaosa* (casual and elegant)	嚣张 *xiaozhang* (arrogant)	辛苦 *xinku* (hard-working)
辛勤 *xinqin* (industrious)	辛酸 *xinsuan* (sad)	新奇 *xinqi* (novel)
新鲜 *xinxian* (fresh)	新颖 *xinying* (new and original)	兴奋 *xingfen* (excited)
兴旺 *xingwang* (prosperous)	醒目 *xingmu* (marked)	幸福 *xingfu* (happy)
凶残 *xiongcan* (ferocious)	凶恶 *xiong'e* (fierce)	凶狠 *xionghen* (cruel)
凶猛 *xiongmeng* (ferocious)	雄厚 *xionghou* (abundant)	雄伟 *xiongwei* (grand)
雄壮 *xiongzhuang* (majestic)	秀丽 *xiuli* (beautiful)	虚弱 *xuruo* (weak)
虚伪 *xuwei* (hypocritical)	虚心 *xuxin* (modest)	寻常 *xunchang* (common)
迅速 *xunsu* (rapid)	雅致 *yazhi* (elegant)	严格 *yange* (strict)
严峻 *yanjun* (stern)	严厉 *yanli* (severe)	严密 *yanmi* (tight)
严肃 *yansu* (serious)	严重 *yanzhong* (critical)	炎热 *yanre* (scorching)
遥远 *yaoyuan* (distant)	要紧 *yaojin* (important)	野蛮 *yeman* (barbaric)
异常 *yichang* (abnormal)	阴暗 *yin'an* (dark)	阴险 *yinxian* (insidious)
殷勤 *yinqin* (hospitable)	英俊 *yingjun* (handsome)	英勇 *yingyong* (valiant)
庸俗 *yongsu* (vulgar)	勇敢 *yonggan* (brave)	勇猛 *yongmeng* (intrepid)
踊跃 *yongyue* (eagerly)	优美 *youmei* (graceful)	优秀 *youxiu* (excellent)
优越 *youyue* (superior)	忧伤 *youshang* (distressed)	忧郁 *youyu* (melancholy)
幽静 *youjing* (quiet and secluded)	幽默 *youmo* (humorous)	悠久 *youjiu* (long-standing)
油腻 *youni* (greasy)	友好 *youhao* (friendly)	幼稚 *youzhi* (naive)
愉快 *yukuai* (cheerful)	愚蠢 *yuchun* (silly)	愚昧 *yumei* (ignorant)
原始 *yuanshi* (original)	圆滑 *yuanhua* (sophisticated)	圆满 *yuanman* (satisfactory)
匀称 *yunchen* (well-proportioned)	糟糕 *zaogao* (too bad)	扎实 *zhashi* (solid)
着急 *zhaoji* (anxious)	珍贵 *zhengui* (precious)	真诚 *zhencheng* (sincere)
真切 *zhenqie* (vivid)	真实 *zhenshi* (authentic)	真挚 *zhenzhi* (sincere)
镇定 *zhending* (composed)	镇静 *zhenjing* (calm)	整洁 *zhengjie* (tidy)
整齐 *zhengqi* (neat)	正常 *zhengchang* (normal)	正当 *zhengdang* (proper)
正经 *zhengjing* (serious)	正派 *zhengpai* (decent)	正确 *zhengque* (correct)
正式 *zhengshi* (formal)	正直 *zhengzhi* (upright)	直接 *zhijie* (direct)
直爽 *zhishuang* (forthright)	质朴 *zhipu* (simple, unadorned)	忠诚 *zhongcheng* (faithful)

忠厚 *zhonghou* (honest, tolerant)	忠实 *zhongshi* (faithful)	重大 *zhongda* (significant)
重要 *zhongyao* (important)	周到 *zhoudao* (considerate)	周密 *zhoumi* (thorough)
主动 *zhudong* (active)	庄严 *zhuangyan* (solemn)	庄重 *zhuangzhong* (serious)
壮观 *zhuangguan* (sublime)	准确 *zhunque* (accurate)	茁壮 *zhuozhuang* (sturdy)
仔细 *zixi* (careful)	自豪 *zihao* (proud)	自觉 *zijue* (self-conscious)
自然 *ziran* (natural)	自私 *zisi* (selfish)	自由 *ziyou* (free)
自在 *zizai* (comfortable)		

Table 4.3: Bisyllabic gradable adjectives in Mandarin Chinese

Examples (91-105) are evidence for some bisyllabic gradable adjectives. All examples are from CCL (2016). The gradable adjectives are bold in these examples.

(91) 可惜，　　她 比　你 **诚实**　　得 多。
kexi　　ta bi　ni **chengshi** de duo.
unfortunately she COM you **honest**　CM much
"Unfortunately, she is much more honest than you."

(92) 其实，在 爱情 上，　男人　远　比　女人　**浪漫**。
qishi　zai aiqing shang nanren yuan bi　nvren **langman**.
in fact in love　　men　far　COM women **romantic**
"In fact, men are far more romantic than women."

(93) 至少　我 比　他 **乐观**　　一点。
zhishao wo bi　ta **leguan**　yidian.
at least I　COM he **optimistic** a bit
"At least I am a bit more optimistic than him."

(94) 柏林 这会儿 比 上海 还 **凉快**。
bolin zhehuier bi shanghai hai **liangkuai**.
Berlin at this moment COM Shanghai even **cool**
"Berlin is even cooler than Shanghai at this moment."

(95) 未来 只会 比 现在 更 **美好**。
weilai zhihui bi xianzai geng **meihao**.
future certainly COM now more **fine**
"The future will almost certainly be better than the present."

(96) 那 个 上午, 面试者 有 四 人, 都 比 她 **年轻**。
na ge shangwu mianshizhe you si ren dou bi ta **nianqing**.
that CL morning interviewee there are four person all COM she **young**
"There are four interviewees on that morning, all of them are younger than her."

(97) 坐 火车 比 坐 飞机 **便宜**。
zuo huoche bi zuo feiji **pianyi**.
take train COM take plane **cheap**
"It is cheaper to go by train than by air."

(98) 姐姐 比 妹妹 **漂亮**。
jiejie bi meimei **piaoliang**.
elder sister COM younger sister **beautiful**
"The elder sister is more beautiful than the younger sister."

(99) 中国 的 北方 人 比 南方 人 **强壮**。
zhongguo de beifang ren bi nanfang ren **qiangzhuang**.
China ATTR north people COM south people **strong**
"Chinese northerners are stronger than southerners."

(100) 说 比 做 **容易**。
shuo bi zuo **rongyi**.
say COM do **easy**
"It is easier said than done."

(101) 火山 比 冰山 **危险** 多 了。
huoshan bi bingshan **weixian** duo le.
volcano COM iceberg **dangerous** much AUX
"Volcanoes are much more dangerous than icebergs."

(102) 这 意味着 华南 虎 比 大熊猫 更 **稀少**。
zhe yiweizhe huanan hu bi daxiongmao geng **xishao**.
it mean south China tiger COM panda more **rare**
"It means that South China tigers are rarer than pandas"

(103) 这 菜 比 市场 上 的 **新鲜**。
zhe cai bi shichang shang de **xinxian**.
this vegetable COM market on ATTR **fresh**
"The vegetables are more fresh than (the vegetables) on the market."

(104) 小 鹿 崽 的 身体 一 天 比 一 天 **虚弱**。
xiao lu zai de shenti yi tian bi yi tian **xuruo**.
little deer cub POSS health one day COM one day **weak**
"The little deer cub is getting weaker and weaker each day."

(105) 它 的 价值 比 生命 更 **珍贵**。
ta de jiazhi bi shengming geng **zhengui**.
it POSS value COM life more **precious**
"It("its value") is more precious than life."

All adjectives which pass the comparison test must pass the *hen* test. The comparison test stands for the passed adjectives mapping the property into the scale. They should be gradable. However, it is uncertain for the adjectives passing the *hen* test to pass the comparison test. Some adjectives can pass the *hen* test, but fail to pass the comparison test. Table 4.4 shows some examples in order to account for the cause, where the check mark "✓" denotes that the adjectives which are listed in the first column can pass the *hen* test or the comparison test, the cross mark "✕" denotes the adjectives in the list cannot pass the tests represented by the column header. There is a change process between *kong* ("empty") and *man* ("full"). As a result, these properties can be compared. However, there is not a change process between *cuowu* ("wrong") and *zhengque* ("correct"). These properties cannot be compared, because they are absolute points.

Adjectives	the *hen* test	the comparison test
空 *kong* ("empty"), 满 *man* ("full")	✓	✓
冷 *leng* ("cold"), 热 *re* ("hot")	✓	✓
丑 *chou* ("ugly"), 美 *mei* ("beautiful")	✓	✓
干燥 *ganzao* ("dry"), 湿润 *shirun* ("wet")	✓	✓
错误 *cuowu* ("wrong"）, 正确 *zhengque* ("right")	✓	✕

Table 4.4: The comparison of the two tests

4.5 *Hen* modifying noun

(106) 你 就是 现在 这 种 打扮， 很 **中国**， 很 **东方**。
ni jiushi xianzai zhe zhong daban, hen **zhongguo**, hen **dongfang**.
you are now this kind dress up, very **China**, very **orient**
"You are this style now, very Chinese style, very oriental."

Although Lv (1999) argued that *hen* cannot modify the nouns in Mandarin Chinese, an increasing number of nouns are found to be modified by *hen*. *Zhongguo* ("China") and *dongfang* ("orient") are nouns in Mandarin Chinese. Both of them are modified by *hen*. The meaning of *zhongguo* is "Chinese style" in example (106). The noun, *zhongguo*, becomes a gradable adjective when it is modified by *hen*. The noun, *dongfang*, is the same. Although only a few nouns

can be modified by *hen*, the nouns with the *hen* modifier will become gradable adjectives. More examples are given in (107), (108), (109) and (110) which are from CCL (2016).

(107) 中国人 很 **传统**。
zhongguoren hen **chuantong**.
Chinese people very **tradition**
"Chinese people are very traditional."

(108) 她 的 言行举止 都 很 **男人**。
ta de yanxingjuzhi dou hen **nanren**.
she POSS behavior all very **man**
"All her behavior is very masculine."

(109) 那 天 我 确实 很 **青春**， 很 美。
na tian wo queshi hen **qingchun**, hen mei.
that day I really very **youth** very beautiful
"I was really very youthful and beautiful on that day."

(110) 以前 我 是 很 **阿Q** 的， 如果 不是 这样， 我 怎 能 生存 到 现在。
yiqian wo shi hen **Ah Q** de, ruguo bushi zheyang, wo zen neng shengcun dao xianzai.
before I MA very **Ah Q spirit** PART if not so I how can live until now
"I was very Ah Q mentality before. If not so, how can I live until now?"

In example (110), *shi...de* (是.....的) is a common construction in Mandarin Chinese. *Shi* is a modal adverb and *de* is a modal particle. The structure is used to express the speaker's comments, narratives or descriptions on the subject, in order to explain the situation, present the facts and persuade hearers. Two examples from Liu et al. (2001) are as below. The structure of *shi...de* is bold.

(111) 猴子 **是** 很 聪明 **的**。
monkey **shi** hen congming **de**.
Monkeys MA very clever PART
"Monkeys are very clever."

(112) 他们的 文化 生活 **是** 相当 丰富 **的**。
tamende wenhua shenghuo **shi** xiangdang fengfu **de**.
their cultural life MA quite rich PART
"They have a very rich cultural life."

Ah Q is the protagonist of the famous novel ‘‘The True Story of Ah Q’’ which was published originally as serials between 1921-1922. It was written by Lu Xun, the leading figure of modern Chinese literature. *Ah* (阿) is a prefix for nicknames in the south of China. Q is the first letter of the dramatis personae's given name *Quei* marked in Roman alphabet. Many different Chinese words have same pronunciations. *Ah Q* was an illiterate person and almost uneducated, he didn't know which character *Quei* exactly was, so Lu Xun used the first letter of *Quei*—-Q instead of his name.

Ah Q is well known for his "spiritual success" by Chinese people. He was a peasant, but didn't have his own field. He had no fixed work, but liked gambling. He lived in a temple, but dreamed of a wife. *Ah Q* was at the bottom of society and unable to change the status. He bullied the weak and was also afraid of authority. He lacked self confidence and belittled himself. He was numbness and forgetfulness. *Ah Q* became a symbol of people who are blindly optimistic and escape reality. His name is usually modified by degree morphologies, such as *hen*, to describe this kind of personality.

4.6 Summary

This chapter shows that *hen* is widely used in Mandarin Chinese because of the high occurrence frequency of *hen*. The usage patterns of *hen* are also introduced. In order to investigate *hen*

and gradable adjectives in Mandarin Chinese systematically, the *hen* test and the comparison test have been applied in CCL (2016). The result shows that some adjectives can pass the *hen* test, but they cannot pass the comparison test. It is also evidence for the distinctive standard of gradable adjectives. *Hen* is an intensifier modifier. But usage of *hen* can be even wider, because some nouns can also be modified in Mandarin Chinese.

Chapter 5

Analysis

5.1 The puzzle of bare gradable adjectives

There are a fruitful group of researchers who had paid attention to the positive reading of the adjectives with the intensifiers like *hen* in Mandarin Chinese. They tried to build analysis systems for *hen*. However, they all have some shortcomings. The critical problem is that the fundamental characteristics of the gradable adjectives are not figured out. It drives this thesis to revisit the problem from the beginning.

In order to explain this problem, this thesis investigates the *hen* example sentences which have been widely used and discussed in the *hen* analysis. Taken the gradable adjective, *gao* ("tall"), as an example, a person who is called *Zhangsan*, is modified by the adjective *gao*. *Gao* denotes that the height of individuals is more than a given height standard in the positive reading, such as 1.75 meters among Chinese males. This standard value is very subjective, which depends on the specific context or people.

Two typical examples are repeated as (113a) and (113b). Example (113a) is a bare gradable adjective as a predicate, and example (113b) is a gradable adjective with *hen*.

(113) a. 张三　　高。

Zhangsan gao.

Zhangsan tall

"Zhangsan is tall." (the positive reading)
"Zhangsan is taller." (the comparative reading)

b. 张三　　很　高。

Zhangsan hen gao.

Zhangsan very tall

"Zhangsan is very tall."

Example (113b) is widely used as evidence of a grammatical instance where the gradable adjective *gao* occurs with the intensifier *hen*. *Gao* is used as a predicate headed by *hen*. *Hen* modifies *gao* and stands for height degree represented by the subject *Zhangsan*.

Example (113a) is widely used as evidence of an ungrammatical instance, where the bare gradable adjective occurs without *hen*. However, it is controversial whether example (113a) is grammatical without *hen*. What's more, the semantic meaning of example (113a) is also controversial, which can be the positive reading or the comparative reading. The different readings will result in different solutions to the analyses. The problems introduce the two puzzles which are mentioned in Chapter 1. The two puzzles have to be resolved before building an analysis model. Two puzzles are repeated as follows:

(114) The puzzle of bare gradable adjectives

Are bare gradable adjectives grammatical as main predicates?

(115) The reading puzzle

Do the bare gradable adjectives have a positive reading or a comparative reading?

The previous analyses gave different answers to the two puzzles. These answers have been summarized in Table 5.1. In puzzle (114), the check marker "✓" denotes that example (113a) is grammatical, the bare gradable adjective *gao* can be the main predicate. The cross marker "✗"

denotes that the bare gradable adjective *gao* cannot be the main predicate in example (113a). In puzzle (115) where "✓" denotes that example (113a) is positive reading, "✗" denotes (113a) is comparative reading. Table 5.1 shows that example (113a) with the bare gradable adjective is treated as an ungrammatical sentence by most of the previous analyses. Even if the other, such as Zhang (2015), believed that example (113a) is grammatical in Mandarin Chinese, but the translation of (113a) is the explicit comparison "taller" in English. As a result, Zhang (2015) argued that example (113a) should be a comparative reading in Mandarin.

Puzzle	Niu (2016)	Zhang (2015)	Grano (2012)	Liu (2010)	Grano (2008)
The puzzle of bare gradable adjectives	✗	✓	✗	✗	✗
The positive reading	✗	✗	✗	✗	✗

Table 5.1: Answers to the two puzzles in previous analyses

By contrast, example (113b) is accepted as an grammatical sentence by all previous analyses. The positive reading of example (113b) is unquestionable. It shows that the gradable adjectives with the intensifier *hen* can only be the positive reading.

The problem of the bare gradable adjectives is whether the intensifier *hen* makes example (113b) grammatical. Dong (2005) believed that *hen* is an unique reason to make it grammatical so that he treated *hen* as an aspect marker. However, there are several ways to make example (113a) grammatical, when additional information is provided. For example, a specific height (1.7 meters) is given in (116).

(116) 张三　　高　一　米　　七。
Zhangsan gao yi mi qi.
Zhangsan tall one meter seven
"Zhangsan is 1.7 meters tall."

More grammatical examples have been listed in Chapter 4. They are repeated in (117a-117e).

(117) a. 张三　　高　吗?

Zhangsan gao ma?

Zhangsan tall QST

"Is Zhangsan tall?"

b. 张三　　高　不　高?

Zhangsan gao bu gao?

Zhangsan tall NEG tall

"Is Zhangsan tall?"

c. 张三　　一　米　七　高。

Zhangsan yi mi qi gao.

Zhangsan one meter seven tall

"Zhangsan is 1.7-meter tall."

d. 张三　　不　高。

Zhangsan bu gao.

Zhangsan NEG tall

"Zhangsan is not tall."

e. 张三　　高，李四 矮。

Zhangsan gao, Lisi ai.

Zhangsan tall Lisi short

"Zhangsan is tall, while Lisi is short."

Although example (113a) is ungrammatical without any context, it becomes grammatical in Mandarin Chinese when it is the answer to the interrogative sentence (who is taller?).

The example is repeated in (118). It is noticed that this semantic translation is the comparative reading with an explicit comparison "taller" because the context is a comparison between *Zhangsan* and *Lisi* who are two persons.

(118) 张三 和 李四, 谁 高? 张三 高。

Zhangsan he Lisi, shui gao? Zhangsan gao.

Zhangsan and Lisi who tall Zhangsan tall

"Zhangsan and Lisi, who is taller? Zhangsan is taller."

Similar to example (118), example (113a) can be an answer to a normal interrogative sentence, given in example (119). In contrast with (118), example (119) is without comparative context.

(119) 张三 高 吗? 张三 高。

Zhangsan gao ma? Zhangsan gao.

Zhangsan tall QST Zhangsan tall

"Is Zhangsan tall? Zhangsan is tall."

What is missing here is that example (113a) becomes grammatical when it has more information in different contexts, such as when an interrogative sentence appears before it. As a result, the intensifier is not the critical information to make example (113a) grammatical. The argument, *Zhangsan*, has to be revisited, where example (118) and example (119) imply that a person called *Zhangsan* is specific.

The name of *Zhangsan* could be any person in Mandarin Chinese. There are some names which are used to convey average persons. Similar examples such as *Lisi*, *Wangwu* and *Zhaoliu*. *Zhang*, *Li*, *Wang* and *Zhao* are four common Chinese family names, *san*, *si*, *wu* and *liu* mean three, four, five and six. The four names are Chinese idiomatic expressions when we want to say "someone". *Zhangsan* can also be a specific person who is unknown to the reader but known to the speaker and listener. The argument is *Zhangsan* in example (113a) without any context, where *Zhangsan* stands for an unknown and unspecified person in Mandarin. The information is not enough to make the reader to think of *Zhangsan* as a specific person. The gradable adjective *gao* needs a context to determine the standard function. As a result, the argument should be specific at least. *Zhangsan* cannot satisfy the specific requirement. As a result, when a listener receives (113a), the listener will continue to wait for some more information from the speaker.

Although example (113a) can be the answer in example (118) and (119), the readings are the positive reading and the comparative reading respectively. It shows that the reading depends on the context in Mandarin. However, the positive reading is preferred when there is no comparative context.

The reading has to be comparative in Mandarin Chinese when an explicit comparative morpheme such as *bi* ("in comparison with") is used. In example (120), a comparative phrase *bi Lisi* is added before *gao* and precedes it. This sentence is grammatical as a comparative reading.

(120) 张三　　比　李四 高。
Zhangsan bi　Lisi　gao.
Zhangsan COM Lisi　tall
"Zhangsan is taller than Lisi."

The bare gradable adjectives can occur in Mandarin Chinese, which is ignored by the previous analyses. By contrast, Grano (2008) and Niu (2016) argued that gradable adjectives must co-occur with degree morphology. This conclusion is inconsistent with the above discussion so that their analyses would be incomplete.

The example (5) in Chapter 1 is repeated in (121) which *shu* ("book") is preceded by *na* ("that"). It means that the speaker knows which book is mentioned and how much it costs in the context of this sentence. Similar to gradable adjectives in English, example (121) is translated without the comparative reading. The reason why example (121) is grammatical is that the book (*shu*) is modified by the determiner (*na*). The argument of the gradable adjective is specific.

(121) 那　本　书　　贵。 (Ross and Ma, 2006, p. 56)
na　ben shu　gui.
that CL　book expensive
"That book is expensive."

Example (122) is a Chinese idiom without the intensifier. The historical background of the idiom is in Jin dynasty(265-420). Luoyang was the capital of China during that period. A famous

litterateur and poet whose name was Zuo Si wrote a great article "Fu on the Three Capitals". It became very popular. Many rich and higher educated people living the capital wanted to read it. Since the printing press had not been invented at that time, they bought paper and transcribed it. This caused the price of the paper rising in Luoyang. Based on the context, the argument *zhi* ("paper") which was sold in Luoyang is specific.

(122) 洛阳　　纸　　贵
Luoyang zhi　　gui
Luoyang paper expensive
"The paper in Luoyang is expensive."

Example (121) and (122) provide evidence for the gradable adjectives as main predicates without any intensifiers. As a result, the bare gradable adjective is indeed allowed in Mandarin Chinese, which cannot be captured in the other analyses. This fact is listed in (123) as the principle of gradable adjective.

(123) The principle of gradable adjective

The gradable adjectives can occur without the intensifier.

If the argument is a specific person, the surface, which is similar to example (113a), should be grammatical. An example is given in (124) from the corpus of CCL (2016). *Chairman Mao* is well-known in China so that the argument is specific in example (124). The gradable adjective *hao* ("good") can modify the argument *Maozhuxi* ("Chairman Mao").

(124) 毛　主席　　好。
Mao zhuxi　　hao.
Mao chairman good
"Chairman Mao is good."

Comparing example (113a) and example (124), it provides evidence for the specific context in the usage of gradable adjectives. Both examples are composed of NP and gradable adjectives.

The only difference is that the NP is specific in example (124). That results in the principle of the gradable adjective, given in (125). The deterministic nominal phrase will trigger the specific context.

(125) The principle of gradable adjective

The argument of the gradable adjective should be specific in Mandarin Chinese.

In summary, it is not true that gradable adjectives must co-occur with overt degree morphology. If the context lacks an explicit comparative semantic meaning and the gradable adjectives are modified by degree morphology, the sentences are translated without the explicit comparative form. If the gradable adjectives are not modified by the comparative morphology, the reading of the sentences depends on the context. However, the reading prefers the positive reading.

5.2 Evidence for specific arguments

The principle of specific arguments is introduced by the comparison with bare gradable adjectives in Mandarin. It is still unknown whether it can be applied to all examples in (117). This section will discuss each example in (117).

The general interrogative sentences, example (117a) and example (117b), ask the listener whether the person called *Zhangsan* is tall. The speaker believes that the listener knows *Zhangsan* and give the answer. So *Zhangsan* is a specific person in this context.

Example (117c) is the numerical sentence, whether *Zhangsan* has a very specific height. It also stands for this person is specific in this context. It is impossible for *Zhangsan* to represent someone unknown. It has a same meaning in example (117d) which is a negative sentence.

Example (117e) is a contrastive sentence. The speaker is supposed to know two persons, *Zhangsan* and *Lisi*. In this case, two persons are also specific. This sentence focuses on the comparison between two clauses. No comparative morphology is used so that both clauses have the positive reading.

5.3 Analysis of *hen* and gradable adjectives

Another critical problem is why *hen* can make (113b) grammatical. How does *hen* satisfy the requirement of the specific argument? Although *Zhangsan* is an unknown person, but he becomes a specific person, who is known by the speaker and listener. This will result in the principle of *hen*, where *hen* can trigger a specific argument in the sentence. This principle is described in (126).

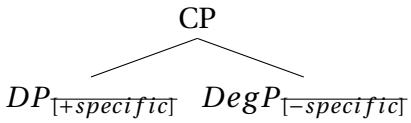
(126) The principle of *hen*

Hen triggers the specific argument.

However, *Zhangsan* is a special expression for someone in Mandarin. It cannot trigger the specific argument if it stands alone with a gradable adjective, such as example (113a). As a result, it fails to satisfy a specific argument and is ungrammatical.

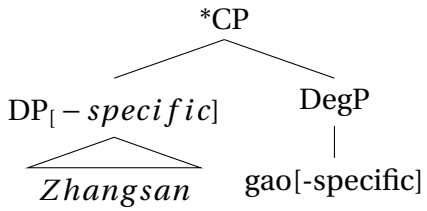
This thesis assumes that gradable adjectives in Mandarin will project extended functional structure. The functional structure is preceded by degree morphology (Kennedy (2007)). As a result, a Degree Phrase, DegP, is used during the adjectival projection in Mandarin. In combination with the specific argument, the analysis of gradable adjective can be summarized as follows.

(127) Analysis of gradable adjective



When grabable adjectives is a main predicate, the subject has to be specific. DP has a $[+specific]$ feature in order to satisfy it in that case. The analysis of gradable adjectives is given in (127). In (127), DegP has an uninterpretable feature, $[-specific]$, which can be checked by a specific argument with $[+specific]$. The examples in (128), (129) and (130) will get the following analyses after the analysis (127) has been applied to them.

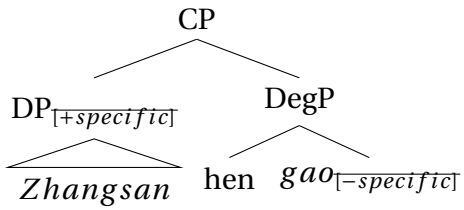
(128) Analysis of (113a) when the argument is not specific



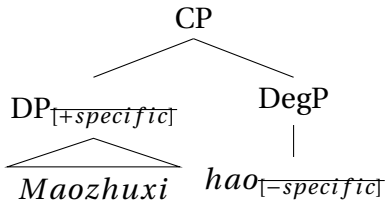
Example (113a) is ungrammatical when the argument is not specific. Analysis (128) is given when *Zhangsan* is not specific. Because the argument cannot provide a $[+specific]$ feature, DegP fails to check $[-specific]$. The analysis can account for the bare gradable adjectives with a non-specific argument.

By contrast, *Zhangsan* is specific in example (113b), because of the principle of *hen*. So the uninterpretable feature of DegP will be checked, given in (129).

(129) Analysis of (113b)



(130) Analysis of (124)



Similar to example (113b), *Chairman Mao* is well-known in China so that the argument is specific. *Maozhuxi* has a specific feature. As a result, the the uninterpretable feature of DegP will be checked. Its analysis is given in (130).

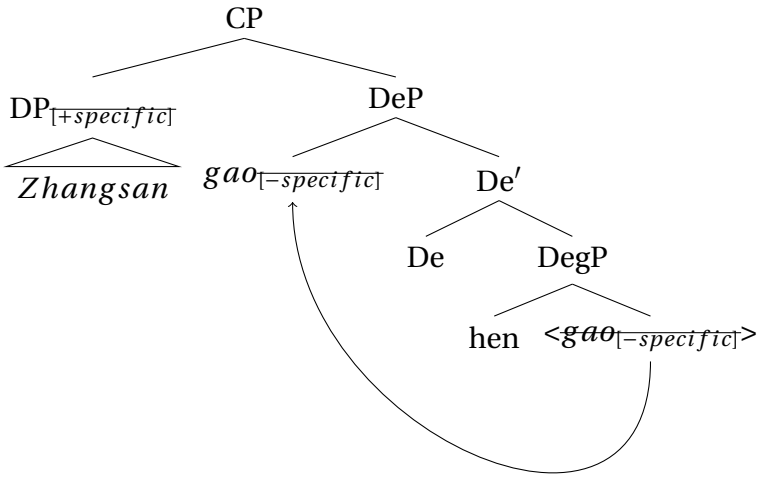
5.4 Analysis of *hen* and *de*

De as a complement marker can combine with *hen* in Mandarin Chinese. An example is given in (73c). It is repeated in (131), where *de* is preceded by *gao* and is followed by *hen*. In comparison with example (113b), *hen* is after *gao*. But the meaning of example (131) is almost same as example (113b). Example (131) has a focus on the degree intensifier, *hen*.

(131) 张三 高 得 很。
Zhangsan gao de hen.
Zhangsan tall CM very
"Zhangsan is very tall."

This thesis assumes that the gradable adjective, *gao*, undergoes a movement when *de* is used in the sentences. So a *de* phrase (DeP) is introduced for this movement. The gradable adjective will undergo the movement. The analysis of example (131) is given in (132).

(132) Analysis of (131)



In analysis (132), DP has a [+*specific*] feature because of the principle of *hen*. DeP triggers a movement for grabable adjective *gao*. After *Gao* undergoes a movement, the uninterpretable feature can be checked.

5.5 Summary

This chapter argues that the gradable adjectives can occur without the intensifiers. This has been ignored by most of the previous researcher. The arguments of the gradable adjectives should be specific in Mandarin Chinese. The evidence is provided in this chapter. As a result, this chapter proposes the analysis of *hen* in Mandarin Chinese, where *hen* triggers a specific argument. Based on this analysis, the gradable adjectives can be accounted for in Mandarin Chinese.

Chapter 6

Conclusion and future work

The intensifier *hen* is a high frequency word in Mandarin Chinese. *Hen* can modify gradable adjectives which map the properties of the arguments into abstract representations. The representations can be evaluated by a scale. The context of a gradable adjective implies the standard value in the positive reading.

Although there are plenty of the gradable adjectives, it is still difficult to build a distinctive standard. Mandarin Chinese also lacks the standard methods to evaluate whether an adjective is a gradable adjective. This thesis introduces two tests for the distinctive standard: the *hen* test and the comparison test. The *hen* test is to check whether an adjective can be modified by *hen*. The comparison test is to check whether an adjective can be used in the comparative form. This thesis argues that all gradable adjectives have to pass the two tests. If one adjective has at least one result in one test, it means that the evaluated adjective can pass this test. The CCL (2016) corpus was used to apply the two tests in order to identify the gradable adjectives in Mandarin Chinese. If an adjective passes the two tests in the corpus, the corresponding adjective can be identified as a gradable adjective.

The analysis of the gradable adjectives is controversial in Mandarin. The fundamental problem is data evidence of the gradable adjectives. Most of the previous analyses argued that the bare gradable adjectives as main predicates are not allowed. It is indeed allowed in Mandarin in the data collection, when the argument is known to the speaker and the listener. In the previous

analyses, *Zhangsan gao* is treated as ungrammatical, but it can be an answer to a normal interrogative sentence. It means those analyses had been built based on the bare gradable adjectives as ungrammatical evidence. As a result, those analyses fail to address gradable adjectives if the bare gradable adjectives are grammatical.

This thesis revisits two typical examples, *Zhangsan gao* and *Zhangsan hen gao*. It argues that the two puzzles have to be answered before building an analysis for the gradable adjectives and *hen*. The two puzzles include the puzzle of the bare gradable adjectives as main predicates and the reading puzzle.

The thesis finds that the bare gradable adjectives as main predicates exist in Mandarin Chinese. They are allowed in Mandarin when the argument is specific. When *Zhangsan gao* is an answer to a question, it is grammatical. In that case, *Zhangsan* is specific to the speaker. Even if the bare gradable adjectives as predicates are accepted by the previous analyses, they argued that the bare gradable adjectives should be the comparative reading.

The reading puzzle is that the bare gradable adjectives are the positive reading or the comparative reading. The reading of the gradable adjectives is controversial, because the gradable adjectives can express the same meaning with the positive form or the explicit comparative morphology. However, the bare gradable adjectives perfer to the positive reading in Mandarin Chinese. The reading of the gradable adjectives is positive if there is no explicit comparison. The comparative reading should have an explicit comparative morphology or an explicit comparative context.

This thesis proposes that gradable adjectives as main predicate require specific arguments in Mandarin Chinese. If the argument is unspecific, the bare gradable adjective as main predicate will be ungrammatical. A degree phrase, DegP, is used to build an analysis for the gradable adjectives and *hen*, where the bare gradable adjectives have covert degree morphology. Based on the specific argument and DegP, this thesis has built an analysis for *hen* and the gradable adjectives in Mandarin. This analysis can address the sentences with bare gradable adjectives and the sentences with *hen* and gradable adjectives. This thesis argues that *de* as a complement marker will introduce a focus. The gradable adjective will undergo the movement. A *de* phrase

is used to account for it.

The future work will continue to do some research on the intensifier, *hen*. This thesis found that the number of the adjectives passing the *hen* test is more than the number of the adjectives passing the comparison test. As a result, *hen*, as an intensifier, not only modifies the gradable adjectives. *Hen* has a more widely usage in Mandarin Chinese. This thesis also notices that *hen* can modify some nouns in Mandarin Chinese. Those have to be addressed in the further research.

Appendix A

List of Abbreviations

AM adverb marker

AP adjective phrase

ASP aspect marker

ATTR attributive particle

AUX auxiliary word

BA marker of the *ba* construction

CL classifier

CM complement marker

COM comparative morpheme

COMPL complementizer

CP complement phrase

D determiner

DP determiner phrase

FOC focus

IP inflectional phrase

MA modal adverb

N nominal

NEG negative morpheme

NUM number

QST question particle

PART particle

PERF perfective

PL plural

POS positive form

POSS possessive particle

PROG progressive

V verb

VP verb phrase

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