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On the Successive Use of Modal Verbs 可能 and 應該 in Mandarin

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On the Successive Use of Modal Verbs 可能 and 應該 in Mandarin

Introduction

Modality concerns the status of a proposition that describes an event. (Palmer, 2001) In different languages, modality materializes itself through various syntactic categories, including suffixes, particles, inflections and modal verbs, etc. (Palmer, 2001)

In English, we have modal verbs like *shall, should, can*, etc. In Mandarin, modality could also be realized through the use of modal verbs, like *yinggai, neng, hui*, etc. In previous studies, ten criteria have been proposed to define modal verbs in Mandarin.¹ A prominent feature of Chinese modal verbs is that, while modal verbs in languages like English shall be used independently, Mandarin allows the successive use of modal verbs. (Y. R. Chao, 1968) For instance,

明天	可能	會	下雨
Tomorrow	may	will	rain

Perhaps tomorrow may rain.

In the above example, 可能 and 會 meet the ten criteria with no words in between. It thus serves as an example showing the successive use of modal verbs.

In the current study, we would focus on the collocations formed by two modal verbs in Mandarin, namely 可能 and 應該.

可能 is a monosemous modal verb expressing epistemic possibility.

他	當時	可能	態度	不	好
he	at that time	might	attitude	not	good

His attitude might be not good at that time.

¹ Zhou (2014) has generalized from the previous studies and listed ten criteria for defining modals verbs. For example, they can act as an answer for questions, can replace “X” in “X 不 X” yes-no question patterns, etc.

應該 has two modalities.

他們	應該	很	有	實力
they	should	very	have	power

They should be very capable.

教學	應該	從	實際	事物	開始
education	should	from	real	object	start

Education should start from real objects.

In the former example, 應該 expresses a modality similar to epistemic possibility. In the latter one, a modality similar to deontic necessity is shown. Though there remains some controversies on the modality of 應該, the above two modalities would be the base of our discussion at the present stage. The modality of 應該, however, would be reviewed as an important topic in later discussion.

In people's daily use of Mandarin, both 應該可能 and 可能應該 are found. There are four possible combinations of 應該 and 可能 as follows²,

- i. 應該₁ *epistemic possibility* + 可能 *epistemic possibility*
- ii. 應該₂ *deontic necessity* + 可能 *epistemic possibility*
- iii. 可能 *epistemic possibility* + 應該₁ *epistemic possibility*
- iv. 可能 *epistemic possibility* + 應該₂ *deontic necessity*

² In this paper, 應該₁ represents 應該 with the modality of epistemic possibility. 應該₂ represent 應該 with the modality of deontic necessity. As 可能 only have one modality, 可能 represent 可能 with the modality of epistemic possibility.

Literature Review

Many scholars have researched on the topic. They adapted different methodologies and approaches, with different conclusions made. Some conflicting results are observed.

Authors (year)	Methodology	Pattern/ Hypothesis	應該 ₁ + 可能	應該 ₂ + 可能	可能 + 應該 ₁	可能 + 應該 ₂
Ma Qingzhu (1988)	Empirical finding and theoretical analysis	可能 must precede 應該	×	×	N. A	✓
Peng Lizhen (2005)	Empirical finding	Among different bases: Epi>Deo>Dyn Within Epi base: Subjective> Objective	✓ (Strength difference)	N. A	✓	✓
Xu Jingning (2008)	Theoretical analysis		×	N. A	×	✓
Zhou Ying (2014)	Corpus analysis		✓	N. A	✓	N. A (Limited data)
T.-H. Jonah Lin (2012)	Theoretical analysis	Syntactic rules	✓	×	×	✓
Cui Jingjing (2008)	Theoretical analysis		✓	×	✓	✓

Wang Zhenlai (2013)	Theoretical analysis	The proximity principle and the information quantity principle	×	×	N. A	N. A
Wu Yunli (2018)	Corpus assisted Theoretical analysis	Strength and Perspectives of the modal verbs: Modal verbs having the same perspective cannot co-occur	×	×	×	×

Table 1. Summary of literature reviews

Ma Qingzhu (1988) uses empirical and syntactic analysis to generalize the rules guiding the successive use of modal verb. He divides modal verbs into six categories, 可能 is classified as Type 1 ‘verbs expressing possibility-A’, while 應該 is Type 2 ‘verbs expressing necessity’. He suggests that modal verbs of Type 1 should precede Type 2. Therefore, only condition iv is possible.

Peng Lizhen (2005), Xu Jingning (2008) and Zhou Ying (2014) propose that among different bases, epistemic modal verbs precede deontic ones and then dynamic ones. Within epistemic base, subjective modal verbs precede objective ones. However, as they adopt different methods, i.e. Peng relies on the empirical findings, Xu conducts theoretical analysis and Zhou looks into the data from corpora, different conclusions are drawn. Peng thinks that except condition ii, the other three are possible. Xu suggests that only condition iv. is acceptable. Zhou (2014) finds that only condition i and iii exist in the corpora.

T. H. Jonah Lin, Cui Jingjing and Li Baiwen discuss the issue from syntactic perspectives. T. H. Jonah Lin (2012) focuses on the finiteness property of modal verbs, Cui Jingjing and Li Baiwen (2008) focus on the syntactic positions of modal verbs. According to

T. H. Jonah Lin, only condition i and iv exist. Cui Jingjing and Li Baiwen (2008) hold the view that condition iii is also possible.

Wang Zhenlai (2013) explores the successive use of modal verbs in Mandarin according to the proximity principle and the information quantity principle. Wang suggests that condition i and ii are invalid. The other two conditions are not mentioned.

Wu Yunli (2018) bases her study on corpus analysis and naturalness tests. She considers both the force and perspectives of the modal verbs. She proposed that the perspectives of 應該 and 可能 are the same. Modal verbs with the same perspective cannot co-occur. Therefore, the four combinations are impossible.

From the previous studies, a shared view is that 應該₂ *deontic necessity* should not precede 可能 *epistemic possibility*. However, the acceptability and rules guiding the other three combinations remain controversial. Our research question centers on the actual use of 應該可能 and 可能應該 in Mandarin Chinese and their acceptability among native speakers. The study also extends to the modality base and force of different combinations.

Hypothesis

Our hypotheses are, first, for the successive use of modal verbs 應該 and 可能, four possible combinations exist. Second, the surface scoping may determine the modality of the modal verb combinations. The modal verb which is the closest to the main verb may scope over the predicate directly, exerting fundamental influence on the base and force of the whole combination. Modal verbs at more distant positions would have comparatively weakened influence.

Methodology

Two major corpora of modern Chinese, PKU-CCL Corpus and Academic Sinica Balanced Corpus of Modern Chinese are reviewed first, so as to find naturally-arose sentences containing the studied collocations. A total of 6 sentences containing 應該可能 and 14 sentences containing 可能應該 are collected. Fragmented sentences, sentences containing more than two modal verbs and sentences in which the tested modal verbs are not functioning as verbs are filtered. Finally, four sentences containing 應該可能 and 11 sentences containing 可能應該 are eligible for further analysis.

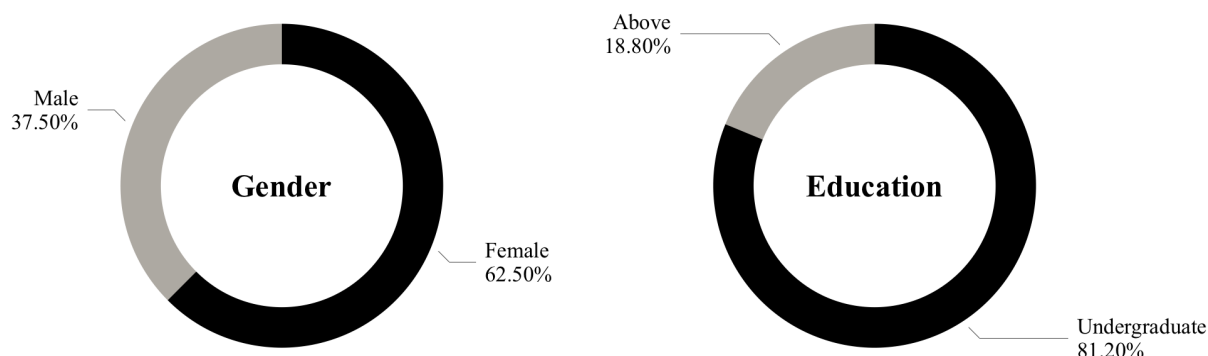
Preliminary analysis is conducted on the fifteen sentences collected. Among the four possible collocations of 應該 and 可能, three collocations appear, namely i. 應該₁ + 可能; iii. 可能 + 應該₁ and iv. 可能 + 應該₂. As no corpus stores all the possible usage of language, we reserve our opinion on the existence of condition ii. 應該₂ + 可能.

Secondly, in the four sentences containing 應該可能, the collocations of 應該可能 are interchangeable with 可能 and 應該₁, which both express epistemic possibility. It's thus presumed that 應該₁ + 可能 is expressing epistemic possibility. Among the 11 sentences containing 可能應該, the collocation also express epistemic possibility in four sentences. The rest 7 sentences express deontic modality with uncertain force.³

After analyzing the data from the corpora, a questionnaire is designed based on sentences collected for further exploration. The survey is conducted in person, to make sure targets react naturally according to their instinct. Participants are firstly invited to justify the naturalness of five sentences. Then six more sentences are presented, inviting participants to justify the modality strength of them. One is expected to answer by the scale of 1-6. 1 is the level most approximate to *possibility*, 6 is the level most approximate to *necessity*.

³ Sentences collected are presented in Appendix I.

Data Description - Questionnaire Results



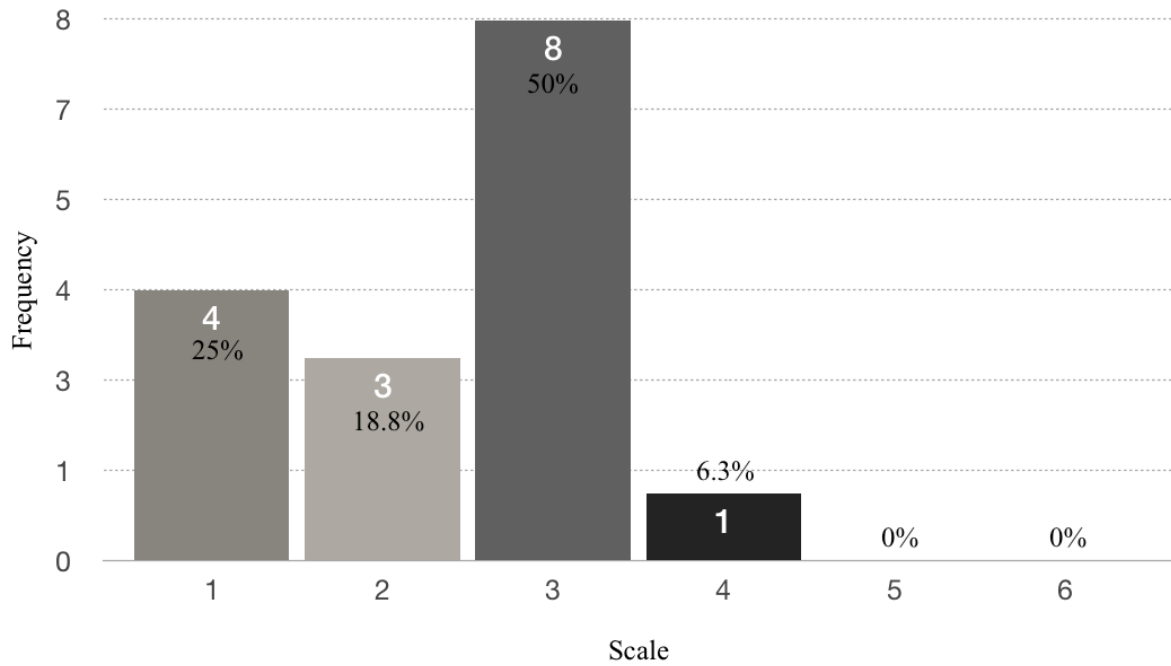
16 Mandarin native speakers, including 10 female and 6 male, ranging from 20 to 53 years-old engaged in the survey. Their education levels are either undergraduate or above.

	應該 ₁ <i>epistemic possibility</i>	應該 ₂ <i>deontic necessity</i>	可能 <i>epistemic possibility</i>
應該 ₁ <i>epistemic possibility</i>	/	/	可能 + 應該 ₁ Yes: 81.3% No: 18.8%
應該 ₂ <i>deontic necessity</i>	/	/	可能 + 應該 ₂ Yes: 87.5% No: 12.5%
可能 <i>epistemic possibility</i>	應該 ₁ + 可能 Yes: 68.7% No: 31.3%	應該 ₂ + 可能 Yes: 3.1% No: 96.9%	/

Table 2. A result of sentence-naturalness judgment (part I)

In the first part of the questionnaire, 應該₂ *deontic necessity* + 可能 *epistemic possibility* is unacceptable for nearly all participants. The other three combinations are natural to over 60% of the participants.

到21世紀初期時，應該可能發現像金川鎳礦那樣世界級規模的大礦



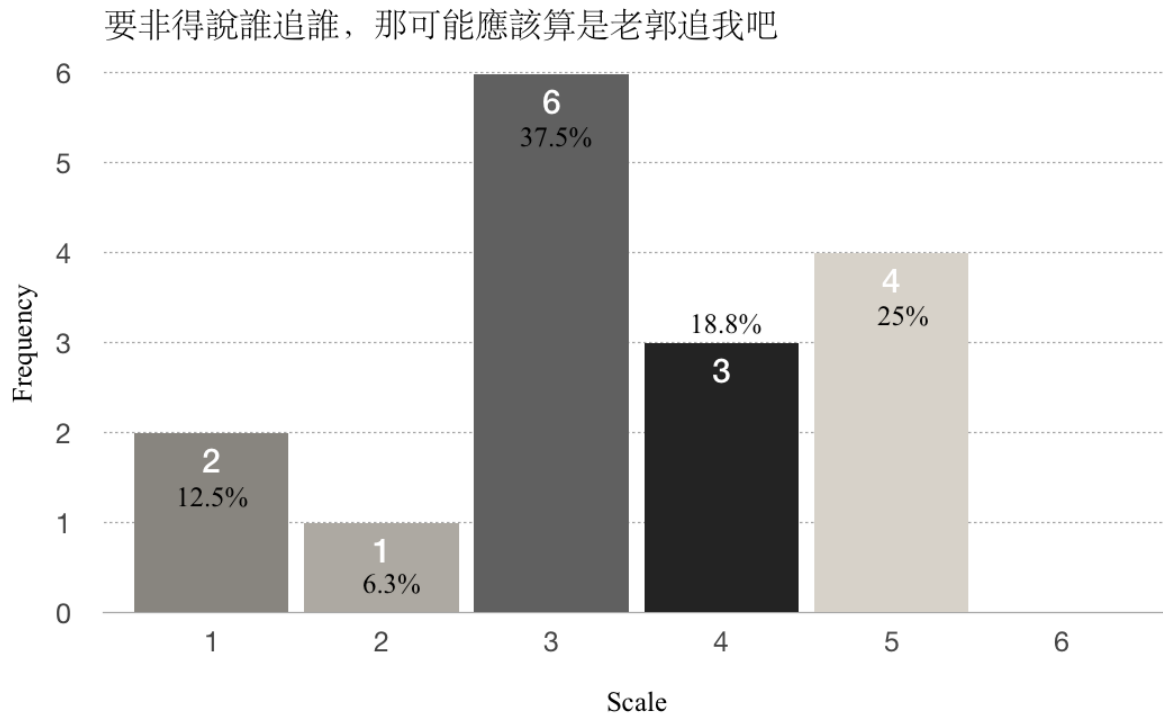
Graph 3: Result of part II Q1

到 21世紀初期 時 應該 可能 發現 像
 Arrive 21 centry ear the time should may discover like

金川鎳礦 那樣 世界級規模 的 大礦
 Jinchuan Nickel Mine like that world-scale adj. suffix big mine

By the time of early 21st century, world-scale big mine light Jinchuan Nickel Mine should perhaps be discovered.

The majority of participants rate the force at or below 3. The mean is 2.3, showing that participants regard 應該 ₁ *epistemic possibility* + 可能 *epistemic possibility* with a force more approximate to possibility.



Graph 4: Result of part II Q2

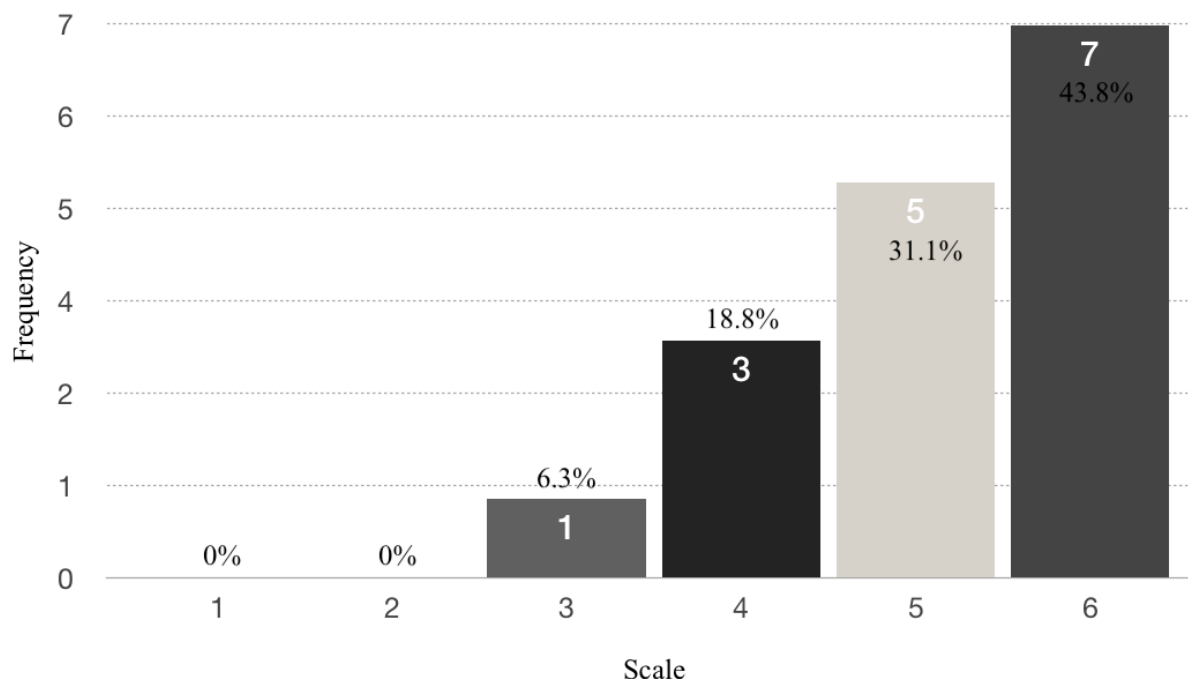
要 非得 說 誰 追 誰 那
 If must say who chase who then

可能 應該 算是 老郭 追 我 吧
 perhaps should be like Lao Kuo chase me SFP

If I must answer who chased after who, then perhaps it should be Lao Kuo chased after me.

Participations' evaluation of the force conveyed by 可能 *epistemic possibility* + 應該 ₁ *epistemic possibility* is more varied, with a mean of 3.3. The combination is perceived with a force between necessity and possibility and slightly leaning to possibility.

校醫說，米奇連續三天發低燒，人很萎頓，不吃不喝，又查不出原因，可能應該到市裏的醫院做全面檢查



Graph 5: Result of part II Q3

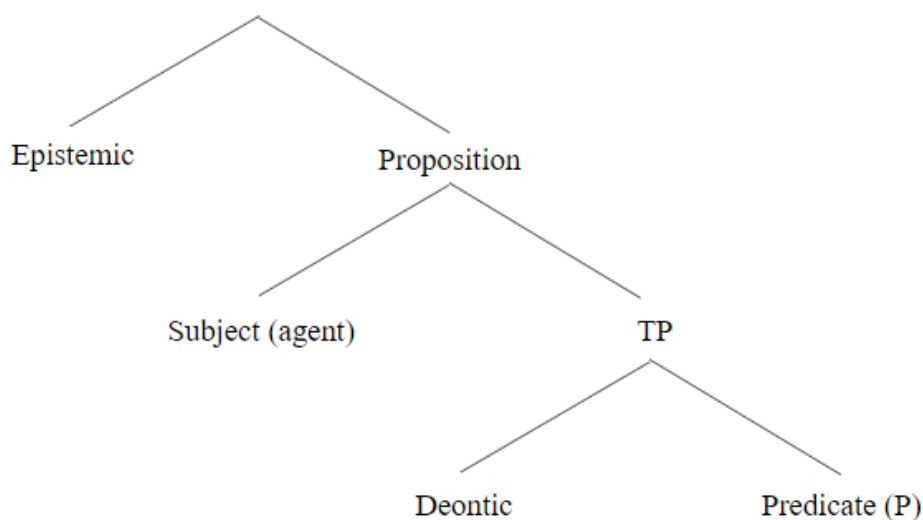
校醫	說	米奇	連續	三	天
The school doctor	said	Micky	continuously	three	days
發低燒	人	很	萎頓	不	吃
have a low grade fever	person	very	listless	no	eat
不 喝	又	查	不出	原因	可能
no drink	as well	check	can not	reason	perhaps
應該	到	市裏的	醫院	做	全面
should	to	urban	hospital	do	thorough
					check

The school doctor said that Micky was having low grade fever for three days continuously, being listless, intaking few food and drink. No cause could be diagnosed, perhaps Micky should be transferred to urban hospital for a thorough check.

Over 93% of the participants rate the force of 可能 *epistemic possibility* + 應該 ² *deontic necessity* above 3, with a mean of 5.1, showing that participants think the combination has a force approximates to necessity.

Data Analysis and Discussion

According to corpus analysis and questionnaire results, among the four possible combinations proposed, condition ii 應該₂ + 可能 is invalid. The unacceptability could find its root in the surface scoping of different modal verbs. Epistemic modality is propositional, expressing the speaker's attitude towards the proposition, deontic modality is related to event, expressing the agent's status with respect to an event. (Nordström, 2010). The scope of epistemic modality is thus wider than deontic modality.



Graph 6. Epistemic modal scopes over deontic modal

In scoping, a wider scope is expected to have the potential of scoping over a narrower scope. A corollary is drawn that epistemic possibility shall precede, and scope over deontic modality. Thus, our first hypothesis needs revision. Only three combinations survive the scoping restriction.

Another finding observed from corpora is that the collocation of 可能 + 應該₂ has a deontic base. This finding conforms to the scoping hierarchy above. 可能 scopes over 應該₂, 應該₂ directly scopes over the main verb phrase, making deontic necessity the fundamental modality in the utterance. Besides the base, the force is also influenced. According to the questionnaire result, the average force evaluation of 可能 + 應該₂ is 5.1, approximates to yet is lower than necessity. The force is determined by 應該₂ yet also mediated by 可能. The

combination thus ends up with a force higher than 可能 *possibility* and close but lower than 應該₂ *necessity*.

Contrary to Wu Yunli's argument (2018) that 應該₁ and 可能 are modals of the same type so they could not co-occur, a third finding is that both 應該₁ + 可能 and 可能 + 應該₁ are possible usages according to corpus analysis and questionnaire Part I. It is suggested that 應該₁ and 可能 are different on their force and base.

應該₁ + 可能 is acceptable because the force of 應該₁ may not be determined dichotomously, i.e. either necessity or possibility. Peng (2005) and Zhou (2014) use the term *large possibility* 蓋然, which is stronger than possibility yet weaker than necessity to express the force of 應該 in epistemic base. 應該₁ concerns more epistemic possible worlds compared to 可能. When two epistemic modal verbs co-occur, the one with stronger force may precede the weaker one.

可能 + 應該₁ is acceptable because 可能 and 應該₁ may belong to different subcategorizations under the epistemic domain. According to Hsieh (2006), there are three subtypes, namely speculative, deductive and assumptive modal verbs under the epistemic domain. 可能 is a speculative modal verb, which expresses the possibility of a proposition, given the speaker's world knowledge, which has few similarities with the actual world. 應該₁ belongs to deductive modal verbs, which expresses the possibility of a proposition, given the speaker's world knowledge, which has much similarities with the actual world. When two epistemic modal verbs co-occur, the one concerning a possible world closer to the speaker's world knowledge may precede the one concerning a possible world similar to the actual world.

Limitation

Due to the time and word limits, the study requires further research. First, data collected from corpora and questionnaire are relatively limited, not representing the whole picture and constraining the accuracy of the results. Second, we only concentrate on semantics-related factors like force, base, etc. in this study. Many other factors, however, might influence the modality perception, including linguistic factors like pragmatics and non-linguistic contexts.

Conclusion

In Mandarin, modal verbs like 可能 and 應該 could be used in sequence. Though there are four possible combinations, not all combinations have semantic support and empirical use. The combinations should firstly follow the scoping hierarchy. Epistemic modal verbs shall precede deontic ones. Second, when two epistemic modal verbs co-occur, there shall be force or base differences in between. Third, the modality of the combination is mainly influenced by the modal verb that directly precedes the main verb. The influence of distant modal verbs is weakened.

Only three combinations could be formed by 可能 and 應該. The first one 應該₁ *epistemic possibility* + 可能 *epistemic possibility* expresses epistemic possibility. The second one 可能 *epistemic possibility* + 應該₁ *epistemic possibility* is also epistemic, but with a force stronger than necessity. The third one 可能 *epistemic possibility* + 應該₂ *deontic necessity* expresses deontic modality, with a force slightly lower than necessity.

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Appendix I – Corpus Data

i. 應該 1 + 可能 [epistemic possibility] + [epistemic possibility]

1. 問題在於要以地質理論為指導，在地質、地球物理、地球化學綜合研究的基礎上，具體地分析具體地區的成礦條件，作出科學的預測。到 21 世紀初期時，應該可能發現像金川鎳礦那樣世界級規模的大礦。
2. 從思想的角度看，他的對“賣火柴的小姐姐”的同情和愛，應該可以發展成對一切受難者的同情和愛；而他對“賣火柴的小姐姐”的幫助的願望，應該可能在生活的熔爐中化為行動的劍——當他逐漸成長以後。
3. 就是通過這些標本的研究，通過一些特征的比較，我們認為它應該可能代表了這個輻鰭魚類跟肉鰭魚類祖先的一個特征。
4. 把所有各種有效的三段論都擺出來，並且把提出來的任何論證都化為三段論的形式，這樣就應該可能避免一切的謬誤了。

iii. 可能 + 應該 1 [epistemic possibility] + [epistemic possibility]

1. 他說：“中國球員有沒有服用興奮劑我不是很清楚，俱樂部的老總可能知道一點，教練可能應該更清楚。
2. 近十年來，我國曾翻譯、出版了大量的蘇聯劇作，不僅數量多，速度也極快，如果讀者大眾也如我一般感到對蘇聯劇作隔膜的話，可能應該是《讀書》這樣的刊物沒有能夠盡到職責。
3. 要非得說誰追誰，那可能應該算是老郭追我吧，其實真的無所謂，當時我就沒把這誰主動當成一回事，兩個人好，肯定是雙向的，所謂兩情相悅，一個“相”字，把什麼都說清楚了。
4. 我現在在想，王國維先生的自殺，雖然在前些天我看另外一個人的文章，在批評，說王國維存於出世，不存於自殺，他怎麼自殺了？我認為王國維可能應該屬於鴛鴦這一類。

iv. 可能 + 應該 2 [epistemic possibility] + [deontic necessity]

1. 我們可能應該把相關的廠商組合在一起，這取決於一個生產者是否能在其他廠商要價變化後輕易地將資源轉向後者生產的產品上。

2. 用新觀念看是人才，用老觀念看就未必是人才。用新觀念看應該馬上使用、大膽使用的幹部，用老觀念看就**可能應該**等一等、放一放、看一看。這樣，怎麼能保證我們的幹部隊伍朝氣蓬勃，充滿活力呢？可見，選賢任能，非革論資排輩的命不可。
3. 校醫說，米奇連續三天發低燒，人很萎頓，不吃不喝，又查不出原因，**可能應該**到市裏的醫院做全面檢查。
4. 關於家庭暴力的問題我想目前大家**可能應該**看到，在我們媒體中間是一個比引起大家關注的問題。
5. 膚色**可能應該**概括在前面的標題下，但是把它單獨出來專門討論一下似乎更好。顯然，黑人在選擇職業方面並未與白人處於同一地位上。
6. 這篇文章認為，基於許多理由，包括沃勒斯坦本人提到的這種長周期，我們**可能應該**把世界體系的起源追溯到更早的時代（Frank 1990a）。
7. 如回應林萬億認為，針對單親多數回流娘家的情況，我們**可能應該**對娘家提供協助；對於約四成的男性單親問題，也不應該忽視。

Appendix II - Questionnaire sample

Questionnaire for Putonghua Speakers

The current questionnaire is part of a survey conducted by students majoring linguistics in City University of Hong Kong. The survey is for academic purpose, with an aim to test the usage of Putonghua among native speakers. Your answers would be analysed through the process. Concerning the privacy issue, all information collected would be removed once the research is completed. We hereby would like to get your consent before moving on. If you would like to participate in the research, please kindly sign your name.

(Signature)

Gender:

Age:

Education Level:

Date of Survey:

PART I

In the coming section, you would hear seven sentences in Putonghua. Please answer whether the expressions are natural according to your **instinct**.

Natural	Unnatural	
		如果孩子鼓起勇氣求助，家長應該仔細聆聽。
		金庸小說可能是目前雅俗共賞，讀者最廣泛的非白話性文章。
		他是老師，他應該可能教好學生。
		中國球員有沒有服用興奮劑我不是很清楚，教練可能應該更清楚。
		它應該可能代表了這個輻鰭魚類跟肉鰭魚類祖先的一個特征。
		今天聽說會下雨，你應該可能帶傘。
		我們可能應該把相關的廠商組合在一起，這取決於一個生產者是否能在其他廠商要價變化後輕易地將資源轉向後者生產的產品上。

PART II

In the coming section, you would hear three sentences in Putonghua. Please listen carefully and rank the strength of likelihood of the sentences. Number 1 to 6 are expected as possible answers in evaluating the scale. Among the six numbers, **1 expresses the likelihood of being possible**, **6 expresses the likelihood of being necessary**. 2-5 are intermediate levels expressing non-polarized likelihood.

1	2	3	4	5	6	
						到 21 世紀初期時，應該可能發現像金川鎳礦那樣世界級規模的大礦。
						要非得說誰追誰，那可能應該算是老郭追我吧
						校醫說，米奇連續三天發低燒，人很萎頓，不吃不喝，又查不出原因，可能應該到市裡的醫院做全面檢查。

—————*Thank you for your participation!*—————

We declare that we have read and understood CityU's Rules on Academic Honesty, and that our paper contains no plagiarized material and is solely our own work. We are aware of the fact that should our paper be found to contain plagiarized material or to have been written in part or whole by someone else, this will entail serious consequences including an F mark for the course.

We are aware that submitting the same or a revised paper in two separate courses without the instructors' explicit consent will result in similar consequences.

Signatures & SIDs: _____

Date: _____