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Marking Propositional Focus: A Function of Pre-Subject Modals*

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1. Introduction

Since Ross (1969), a recurrent theme in linguistics has been to overarching analyses to account for the semantic and syntactic characteristics of modality bearing items. Chinese *nengyuan zhu-dongci* 'modal auxiliary,' such as *yinggai* 'should' and *keyi* 'can' (henceforth modals) are typically located between a subject and its predicate (henceforth post-subject modals), just like modals in English; unlike English, some Chinese modals occur before the subject of a sentence (henceforth pre-subject modals). The existing research of syntax of Chinese modals all assume or argue for the External Merge of modals (base-generation) and that the two above mentioned modal positions in Chinese are associated with each other through some versions of optional subject raising (e.g., Lin and Tang 1995, Tsai 2010, 2015, Lin 2011, 2012, Chou 2013). In the light of the state of the art, the present paper argues, firstly, that data about pre-subject modals in Chinese in fact favor a different structural explanation. I will argue that instead of optional subject raising, sentences with pre-subject modals should be derived by modal raising. Second, I propose that such modal raising is constrained by information packaging. That is, I will show that pre-subject modals are derived by moving from their canonical position to CP, focus-marking the whole proposition.

Some Chinese modals can express more than one type of modal interpretation (Li and Thompson 1981:182-183). For example, the words *yinggai* (in (1) below) and *keyi* (in (2)) each express two different types of modal interpretation; thus, the interpretation of *yinggai* can be either epistemic as in (1a) or deontic as in (1b), and the interpretation of *keyi* can be either deontic as in (2a) or dynamic as in (2b).⁸

- (1) *Zhangsan yinggai shuijiao le.*
 Zhangsan should sleep SFP
 a. 'It is a necessary assumption that Zhangsan is asleep.' → Epistemic
 b. 'It is required that Zhangsan be in bed.' → Deontic
- (2) *Zhangsan keyi changge.*
 Zhangsan can sing
 a. 'It is allowed for Zhangsan to sing.' → Deontic
 b. 'Zhangsan is able to sing.' → Dynamic

A similar multiplicity of meanings is also found in English modals, e.g., (3) and (4).

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⁸ The following abbreviations are used in the glosses of examples for specific linguistic items: Foc, focus; Op, operator; CL, classifier; PERF, perfective aspect; PROG, progressive aspect; SFP, sentence final particle; Q-PART, interrogative particles; PAST, past tense; EMP, emphatic marker in the cleft construction; INF, infinitive; and all capitals indicates that the word expresses the focus.

- (3) John must be in bed.
 a. It is a necessary assumption that John is in bed. → Epistemic
 b. It is required that John be in bed. → Deontic
- (4) John can sing.
 a. It is allowed for John to sing. → Deontic
 b. John is able to sing. → Dynamic

An interesting fact is that unlike English, some Chinese modals sometimes precede the subject of a sentence. In one of the early Chinese grammar manuals, Lü 1980[1999] listed most of such pre-subject modals under the category, *zhu-dong* 'auxiliary'.⁹ Some examples of such pre-subject modal sentences are shown in (5) (glosses and translation added by the author):

- (5) a. *yinggai* 'should': expressing external estimation of situations.
Dajia-de shiqing, yinggai dajia ban.
 everyone's matter should everyone handle
 'As it is a matter concerning everyone, everyone should [make efforts to] handle it.'
- b. *dei* 'must, have to': expressing circumstantial, factual necessity.
Bie.ren qu bu xing. Dei ni qin.zi qu.
 Other.person go not allow must you person.self go
 'It can't be done by proxy. You must go there in person.'
- c. *keyi* 'can': expressing possibility.
Keyi ta qu, ye keyi ni qu.
 can s/he go, also can you go
 'It is possible that he goes, [and] it is also possible that you go.'

⁹ One exception is *keneng* 'may, possible, possibly'. The categorial status of *keneng* is controversial. Some studies support that *keneng* is an adverb/adjective because *keneng* can occur before a subject, and can be modified by degree adverbs like *hen* 'very' (e.g., Pan and Paul 2014; cf. Li 1990). However, this view cannot be conclusive. As it is discussed in this paper, some typical modals can also occur before a subject. Besides, in addition to *keneng*, some modals (like *keyi* 'can', *ken* 'be willing to', see Lü 1980[1999]: 338), and verbs (like *xihuan* 'like', *xiangshou* 'enjoy') in Chinese can be modified by degree adverbs. These facts suggest that *keneng* may have categorial possibilities other than simply being an adverb/adjective. Notice that several other studies in fact assume that *keneng* is one of the typical modals behaving like *yinggai* 'should' and *keyi* 'can' (e.g., Lin and Tang 1995, Huang *et al.* 2009:106, 109). Exploring the issue of the categorial status of modal expressions like *keneng*, I conducted a context-independent sentence judgment task (n=96 native speakers of Chinese) about the capability of such modal expressions to license VP ellipsis. Sentences in (i) below are examples of *keneng* 'may, possible, possibly' and *dagai* 'probably'. The result of this experiment showed that the acceptability of *keneng* 'may' and VP ellipsis (e.g., (ia)) varies among speakers (12% fully acceptable, 39.6% acceptable, 33.3% marginal, and 15.6% unacceptable), but 51.6% of the rating fell on the acceptable side. However, if *dagai* 'probably' was used to license VP ellipsis (e.g., (ib)), 69.8% of the participants indicated that it was unacceptable (25% as marginal, and no response for fully acceptable).

- (i) a. Zhangsan *keneng* [_{VPi} canjia guo bisai], Lisi ye *keneng* [_{VPi} e] .
 Zhangsan may join EXP game Lisi also might
 'Zhangsan may have joined the game, and Lisi may have, too.'
- b. Zhangsan *dagai* [_{VPi} canjia guo bisai], Lisi ye *dagai* [_{VPi} e] .
 Zhangsan probably join EXP game Lisi also probably
 'Zhangsan probably has joined the game and Lisi probably has, too.'

This result shows that despite speaker variation with respect to its modal status, *keneng* still behaves quite differently from adverbs like *dagai* 'probably', which was judged to be unable to license VP ellipsis. Zhang (1997) argues that modal expressions that cannot license VP ellipsis are adverbs, and those can (both epistemic and root) are modal auxiliaries. Based on Zhang's analysis and results from the experiment, I tend to contend that *keneng* can function as an epistemic modal at least in some constructions, although I do not deny the fact that it can serve as an adjective or a sentential adverb in other structures. Due to its multiplicity of categorial status, *keneng* will not be used in examples in the course of discussion.

Data like (5) show an interesting aspect of modality and syntax. In the semantic literature, modality can generally be categorized into three major semantic types: *epistemic* modality, which expresses a speaker's knowledge and judgment; *deontic* modality, which denotes permission, obligation, or rules that serve to identify situations that have a higher priority than others; and *dynamic* modality, which denotes volition, ability or circumstantial modality (see Portner 2009 for an overview). Concerning Chinese data, among the three major types of modal interpretations, only modals of epistemic or deontic readings may occur before a subject (e.g., (5)), and modals of dynamic modality (such as *ken* 'be willing to', *gan* 'dare', *yao* 'want' related to personal willingness, volition and ability) cannot. This difference can be made clearer with ambiguous modals, like *keyi* 'can'. The sentence in (6) is modified from (2). In (2), the post-subject modal can express either a deontic reading, or a dynamic reading. However, when the modal *keyi* 'can' occurs before the subject as in (6), only the deontic reading survives.¹⁰

- (6) *Keyi* *Zhangsan* *change* (, *Lisi* *tiaowu*)
 can Zhangsan sing Lisi dance
 a. 'It is allowed for Zhangsan to sing (, Lisi to dance).' → Deontic
 b. *'Zhangsan is able to sing.' → Dynamic

To the best of my knowledge, few studies have investigated sentences similar to (5) and (6). The most popular analysis has been the proposal in Lin and Tang (1995). They postulate that raising and control types of modals both involve a biclausal structure are shown in (7).¹¹ This hypothesis is widely assumed in the generative literature (see Huang et al. 2009, Lin 2011, 2012, Chou 2013, cf. McCawley 1992). The Control-type modals proposed by Lin and Tang (1995) (such as *gan* 'dare' and *nenggou* 'can'), which are referred to as deontic modals in Lin and Tang (1995), behave differently from deontic modals expressing obligation and permission; in the semantic literature, the former belongs to the category referred to as dynamic modals, so I change the modality label of their structure (7b) to 'dynamic' for clarity. For the purpose of this study, closer attention will be paid to their raising analysis, i.e., (7a)

- (7) a. Raising modal (= epistemic and deontic modals)
 [TP Zhangsan_i yinggai [CP [TP t_i chi-guo fan le]]]].
 Zhangsan should eat-EXP rice SFP
 'Zhangsan should have eaten his meal.'
 b. Control modal (= dynamic modals)
 [TP Zhangsan_i nenggou [CP [TP PRO_i chi fan]]]].
 Zhangsan can eat rice
 'Zhangsan can eat his meal.'

Following Lin and Tang (1995), pre-subject modal sentences like those in (5) and (6) and the typical modalized sentences, such as (1) and (2) are related to certain versions of optional subject raising (e.g., Lin and Tang 1995, Lin 2011, 2013, Chou 2013; a partially different analysis is provided by Tsai 2010, 2015, which will be discussed in the next section). In this paper, however,

¹⁰ One natural explanation for the contrast between dynamic modals that cannot occur before a subject and epistemic/deontic modals that can may pertain to the type of modality rather than the syntax is that dynamic modals do not express interpretation at the level of propositions while epistemic/deontic modals do (Palmer 2001). Because of the scope of this study, I leave this issue for future research.

¹¹ Although raising and control structures are proposed for Chinese modals by Lin and Tang (1995), the authors do not indicate what they assume to be the typical Chinese raising and control verbs in their study.

I would like to show that a different analysis should be considered in order to account for pre-subject modal sentences. That is, an modal raising analysis, as shown in (8).

(8) [_{FocusP} modal_i Focus_Op [_{TP-Focus} Subject t_i ...]]

Because of the similarity between the data for the typical use of English and Chinese modals, I assume that the canonical position of Chinese modals (between a subject and its predicate) is within TP, which is in accordance with the traditional view of modals as a functional category (Tang 1990, Ernst 1994, Cinque 1999, Tsai 2008, cf. Chomsky 1957, Roberts 1985).¹² Pre-subject modals are then derived by moving from their canonical position in TP to the Focus Phrase in the split CP domain (cf. Rizzi 1997). I will argue that the base-generated, externally-merged modals in a biclausal structure like (7a) is not tenable.

Before I present the proposed analysis, I would like to point out that sentences like (5c) (repeated below) need not be treated as counter examples to the current modal-raising proposal.

- (5) c. *Keyi ta qu, ye keyi ni qu.*
 can s/he go, also can you go
 'It is possible for him to go, [and] it is also possible for you to go.'

If one adopts the view that Chinese modals are lexical verbs, and that the adverb *ye* 'also' is a VP adverb, sentences like (5c) seemed to suggest that pre-subject modals remain in the TP domain, a direct contradiction of the current proposal. However, in addition to modifying the main predicate, *ye* 'also' in Chinese also modifies constituents larger than a TP. The examples in (9) show that *ye* 'also' can conjoin two constituents larger than main predicates (glosses and translation added by the author). According to Lü (1980[1999]: 586), both *xingkuai* 'fortunately' and *xinghao* 'luckily' are sentential adverbs occurring before the subject of a sentence. Therefore, sentences like (9a) (from the *CCL corpus*, Zhan et al. 2003) imply that *ye* 'also' conjoins two constituents at least of the size of a TP structure. As in (9b), the first conjunct of *ye* 'also' contains an aboutness topic (*na chang huo* 'that fire'), and the second, a derived topic (*jing ling* 'fire alarm'), suggesting that both conjuncts of *ye* are structures larger than a standard TP structure. In other words, sentences like (5c) do not directly inform us about either the structural position or the category of pre-subject modals.

- (9) a. [*Xingkuai ta shun.shou ba men suo.shang, dang-le zidan*],
 fortunately he by.the.way ba door lock.up shield-PERF bullet
ye [xingkuai ta jiling shanduo, zidan cong ta
 also fortunately he cleverly dodge bullet from his
shen.bian fei-le guoqu].
 body.side fly-PERF away
 'Fortunately, he locked the door, which shielded him against a bullet; also, fortunately, he cleverly dodged the bullet, so it just passed by without hurting him.'

¹² The choice of a specific categorial assumption of modals does not affect the interpretation of the data or the analysis presented in the current study.

- b. [Na-chang-huo, [xingkui xiaofang-dui lai-de zao], ye [xinghao
 that-CL-fire fortunately fire.fighter come-DE early also luckily
 jing.ling, Xiaoming an-de ji.shi] !
 fire.alarm Xiaoming press-DE in.time
 'During that fire, fortunately the fire fighter came early, and also luckily Xiaoming pressed
 the fire alarm in time!'

Second, post-subject modals are much more commonly used¹³ and accepted, especially when sentences are presented without context. Nonetheless, native speakers exhibit a sharp distinction when choosing between sentences with the two different modal positions in specific contexts. Consider a scenario in which two people, A and B, are chatting in B's house. Speaker A hears the doorbell ring and asks B about it (10A). If speaker B wants to answer with a sentence containing a modal, the answer (10B) with a pre-subject modal is felicitous, although the sentence in (10B') containing a modal in a typically more common post-subject position is not.

- (10) A: Zenme le?
 what/how SFP
 'What happened?'
 B: YinggaiZhangsan mai pisa huilai-le.
 should Zhangsan buy pizza return-PERF
 'It should be the case that Zhangsan have bought a pizza and returned home.'
 B': #Zhangsan yinggai mai pisa huilai-le.
 Zhangsan should buy pizza return-PERF
 'Zhangsan should have bought a pizza and returned home.'

The sentence (10B) answers *What happened?*, indicating its propositional focus status (i.e., Lambrecht's 1994 sentence (thetic) focus, LaPolla 1995). The pre-subject modal *yinggai* 'should' in (10B) is used to assert the epistemic modality on a proposition, i.e., speaker B's epistemic judgment that after hearing the doorbell ring, 'Zhangsan should have bought a pizza and returned home now' is what the speaker believes to be the most likely explanation and is relevant to the common ground (cf. Stalnaker 1978). However, the speaker does not have to know exactly whether Zhangsan really is arriving at home with a pizza at the time he speaks.¹⁴

¹³ While it should be noted that corpus results are often limited by the domain of data that have been collected, I have checked the markedness of pre-subject modals by a corpus search. In the CCL corpus, Zhan et al. 2003), among 277,786 retrieved sentences containing *keyi* 'can', 5,922 sentences have *keyi* at the matrix sentence-initial position. Among 92,099 retrieved sentences containing *yinggai* 'should', 2,549 sentences have *yinggai* at the matrix sentence-initial position.

¹⁴ Note that in addition to propositional focus, pre-subject modals can have a reading where the subject is focused (instead of the proposition); however, this is not the reading of issue in the current study. This unrelated reading with an emphatic subject is most naturally expressed with an emphatic marker *shi*, as shown in (i) (the square brackets are added to show the scope interpretation, not for constituency). Sentences such as (i) are related to the subject-cleft sentences (e.g., (ii)), a type of constituent focus (narrow focus in Lambrecht 1994, LaPolla 1995). I do not discuss this type of focus interpretation further in the rest of the discussion.

- (i) Yinggai-Epistemic shi Zhangsan wangji qu xuexiao le.
 should EMP Zhangsan forget go school SFP
 'It should be Zhangsan who has forgotten to go to school.'
 (ii) Shi Zhangsan wangji qu xuexiao le.
 EMP Zhangsan forget go school SFP
 'It is Zhangsan who has forgotten to go to school.'

Compared with (10B), the utterance (10B') as a typical modalized statement (with neutral intonation) does not convey this type of propositional assertion.¹⁵ Notice that a common modalized statement like (10B') is felicitous in a different discourse. For example, one can use (10B') to answer a question like *Zhangsan ne?* 'Where is Zhangsan? (or *What about Zhangsan?*), representing a predicate focus (see Lambrecht 1994 for additional discussion on types of wh-focus).

In the following sections, first, I will show that externally merging pre-subject modals predicts ungrammatical sentences; a proposal of modals undergoing internal merge better accounts for the facts. Second, existing proposals exhibit inconsistency while interpreting modal sentences. I will show that the propositional focus reading is only available with pre-subject modals, but not with modals in their canonical position. That is, while assuming that the modality is encoded by post-subject modals (in the TP domain, Huang 1982, 1988, Tang 1990, Ernst 1994, cf. Pollock 1989),¹⁶ I will argue that some modals can undergo raising to the Focus Phrase in CP (cf. Rizzi 1997), marking propositional focus.

The paper is organized as follows. In section 2, I briefly review previous analyses of Chinese modals and show why the current proposal is more tenable. In section 3, I present the proposed analysis. In section 4, new data on focus intervention effects (section 4.1) will show that pre-subject modals are focus operators in CP and are different from the canonical, post-subject modals. New data on the interactions between pre-subject modals and different types of sentence-final particles (section 4.2) will show how the current proposal provides a unified, and systematic explanations to relevant but understudied phenomena. I then briefly conclude this study in section 5.

2. Do Modals Externally Merge before the Subject?

Previous analyses of Chinese epistemic and deontic modals either do not discuss the phenomenon in question or assume that there is no semantic difference between sentences with post-subject modals (e.g., (1-2)) and sentences with pre-subject modals (e.g., (5) and (6)). Among existing proposals, the two modal distributions (pre-subject vs. post-subject) have been argued either as a vacuous structural alteration resulting from optional subject-to-subject raising within TP (Lin and Tang 1995, Lin 2011, 2012; deontic modals in Tsai 2010, 2015), optional topic A-movement within TP (Chou 2013), or optional topicalization of subject from Spec,TP to Spec,CP (Tsai 2010, 2015). These proposals have their own theoretical merits but also result in incorrect predictions.

Assuming null expletives in Chinese can be freely inserted when the subject is not raised to the matrix subject position, Lin and Tang (1995) propose two accounts for the raising type of modals. The first account is that raising modals are optionally subcategorized for a finite or a nonfinite complement, with the subject rising when the complement is nonfinite (e.g., (7a)), and no subject rising when the complement is finite. Based on this account and assuming that Move is costlier than Merge (Chomsky 1995:346), one may predict that the principle of "Merge over

¹⁵ It has been brought to my attention that different epistemic modals in English seem to show different gradients of acceptability in a context similar to (10) (Thomas Grano, p.c.). In the discourse below in (i), putting a stress on *may* and *should* seem to be acceptable, whereas using the stressed modal *must* is not. The acceptability of using the stressed *may* and *should* in this type of context suggests that the conveyance of emphatic uncertainty may not need to presuppose a proposition to be already at issue (a prejacent), which is similar to the use of focused *yinggai* 'should' in the Chinese example in (10). The infelicity of using a stressed *must* in (iB") may be because *must* has universal force and cannot be used to emphasize uncertainty.

(i) A: What happened? (hearing the doorbell ringing)

B: Someone MAY be delivering a pizza. [Putting stress on the modal]

B': Someone SHOULD be delivering a pizza. [Putting stress on the modal]

B": # Someone MUST be delivering a pizza. [Putting stress on the modal]

¹⁶ These studies do not discuss pre-subject modals in Mandarin.

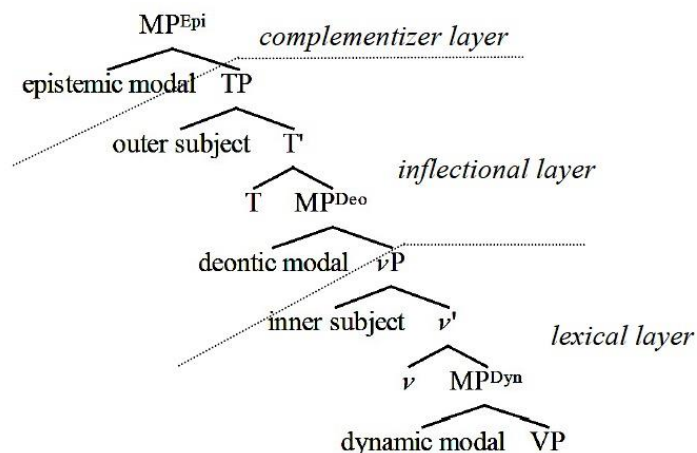
Move” forces Merge toward the exclusion of Move and that (the less commonly used) pre-subject modal would be the only method of deriving Chinese modal sentences, contrary to the facts.

Unlike the general assumptions regarding the term “raising verb”, the second account in Lin and Tang (1995) indicates that the raising type of modals in Chinese is obligatorily subcategorized for a finite complement and that the Infl head of this finite clause optionally assigns the nominative Case. In this account, the subject rises when the embedded finite Infl does not assign a nominative Case, and the subject does not rise when it receives the Case from the embedded finite Infl. Following this biclausal approach of “raising out of the finite clause,” Lin (2011, 2012) and Chou (2013) claim that the subject optionally rises from an embedded finite clause either for special EPP features or for topic features, respectively.¹⁷ Nonetheless, when sentences containing a pre-subject modal are presented in isolation, native speakers may feel that such sentences are uncommon or unnatural. One may wonder why the basic structure where raising modals Merge (Chomsky 2001) at the beginning of a clause is rather uncommon and raising the embedded subject is more commonly preferred. It becomes mysterious especially when we follow the claim in these studies that a null expletive can be freely inserted as the matrix subject and that the embedded TP can optionally assign Case.

Although the assignment of the optional Case may be independently needed for other phenomena (cf. Bošković 2011), new data based on focus intervention effects (see section 4.1) will show that the raising verb approach to epistemic and deontic modals invites incorrect predictions, indicating that modals cannot externally merge at the pre-subject position within TP. Therefore, modals cannot be raising verbs.

Unlike the aforementioned lexical verb approach, Tsai (2010, 2015) argues that modals expressing different types of modality are syntactically realized at different projections in different domains, as shown in (11), in which epistemic modals (MP^{Epi}) are in the CP domain, deontic modals (MP^{Deo}) are in the Infl domain, and dynamic modals (MP^{Dyn}) are under vP .

(11) Tsai’s (2010, 2015) Three-Domain Analysis



This analysis neatly incorporates the traditional functional Infl analysis and the lexical verb analysis for Chinese modals. For the purposes of this study, I am particularly concerned with two claims in this proposal: first, epistemic modals are externally merged in the CP domain; second, the subject preceding a deontic modal is a specific outer subject and the subject following a deontic modal is a nonspecific inner subject (cf. Diesing 1992).

¹⁷ Lin (2011, 2012) and Chou (2013) adopt the biclausal analysis in Lin and Tang (1995) but assume that such raising and control verbs take TP complements rather than CP complements.

'It is allowed to be the case that Zhangsan arrives at 4pm.'

According to Li (1998), a quantity denoting indefinite nonspecific nominals that are not referential can be a subject. For example, the quantity phrase *liang ge ren* 'two people' in (12) is the subject preceding a deontic modal *keyi* 'can'.

- (12) *Liang ge ren keyi ban-de-dong zhe liang che.*
 two CL person can lift-able-move this CL car
 'Two people can be able to lift this car.'

This type of indefinite nonspecific subject casts doubt on Tsai's (2010, 2015) analysis of deontic modals, in which the subject preceding deontic modals should be specific.

Moreover, the different preferences between (10B) and (10B') presented above is surprising under both the raising verb approach and Tsai's analysis of epistemic modals. Either approach proposes that modals are externally merged in a pre-subject position. Nonetheless, native speakers usually prefer sentences similar to (10B') to sentences similar to (10B) (see footnote 6). Discourse data similar to (10) also indicate that when a modal is located at the pre-subject position, a propositional focus can be expressed, whereas sentences similar to (10B') do not express the type of focus interpretation. A natural explanation would be that such pre-subject modals are associated with a focus position while modals in the post-subject positions are not. This difference cannot be captured by analyses relying on optional subject raising, because under such analyses, the same structural position unpredictably exhibits distinctly modal-related interpretations.

Furthermore, there are data that argue against the base-generation of pre-subject modals. It is known that Chinese modals with different types of modality can co-occur in a sentence (13c) and that they can only co-occur in a fixed order (13c vs. 13d).

- (13) a. *Zhangsan yinggai si.dian dao.*
 Zhangsan should 4.o'clock arrive
 'Zhangsan should arrive at 4pm.'
- b. *Zhangsan keyi si.dian dao.*
 Zhangsan may 4.o'clock arrive
 'Zhangsan may arrive at 4pm.'
- c. *Zhangsan yinggai keyi si.dian dao.*
 Zhangsan should may 4.o'clock arrive
 'Zhangsan should be allowed to arrive at 4pm.'
- d. * *Zhangsan keyi yinggai si.dian dao.*
 Zhangsan may may 4.o'clock arrive
 'Zhangsan should be allowed to arrive at 4pm.'

Recall that *yinggai* and *keyi* expressing epistemic/deontic modality can occur at the beginning of a sentence.

- (14) a. *Yinggai Zhangsan si.dian dao.*
 should Zhangsan 4.o'clock arrive
 'It should be the case that Zhangsan arrives at 4pm.'
- b. *Keyi Zhangsan si.dian dao.*
 may Zhangsan 4.o'clock arrive
 'It is allowed to be the case that Zhangsan arrives at 4pm.'

When there are two modals in a sentence (e.g., (13c) repeated below), only the higher modal can occur before the subject (15a), but the lower one cannot (15b).

- (13) c. *Zhangsan yinggai keyi si.dian dao.*
 Zhangsan should may 4.o'clock arrive
 'Zhangsan should be allowed to arrive at 4pm.'
- (15) a. *Yinggai Zhangsan keyi si.dian dao.*
 should Zhangsan may 4.o'clock arrive
 'It should be the case that Zhangsan may arrive at 4pm.'
- b. * *Keyi Zhangsan yinggai si.dian dao.*
 may Zhangsan should 4.o'clock arrive
 'It is allowed to be the case that Zhangsan should arrive at 4pm.'

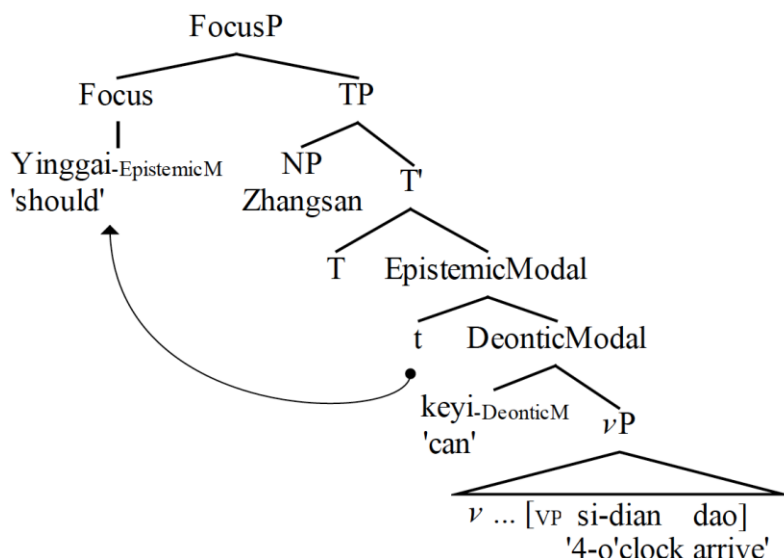
Crucially, if one accepts the view that modals are externally merged at the pre-subject position, and syntax derive post-subject modal sentences through subject raising, the contrast shown in (15) would remain mysterious. In other words, it is not clear what prevents the construal of sentences like (15b). Instead, in the next section, I will elaborate the proposed analysis (8) to show that a proposal of modal raising directly accounts for data like (12-14) as well as the propositional focus indicated by pre-subject modals. I will then present extra pieces of evidence showing that pre-subject and post-subject modals do not exhibit the same syntactic behaviors, which indicates that they are not in the same structural position.

3. Pre-Subject Modal as a Propositional Focus Operator

Here, I first present my proposal, and then describe the type of information structure that pre-subject modals can be involved. I will show that they express assertive force to mark a propositional focus (eitherthetic/sentence focus or *verum* focus).

This paper proposes that pre-subject modals are derived through Internal Merge to the Focus Phrase in the split-CP domain (Rizzi 1997), serving as an operator marking the whole proposition (TP) as focus.

(16) Pre-subject modal internally merged at FocusP



This analysis gains initial support when we consider the restriction presented in section 2 about double modal sentences. That is, the contrast shown in (15) can be explained if we assume that the head movement of *keyi* 'can' to its surface position in (15b) crosses another modal *yinggai* 'should,' which counts as an intervening head (containing the same type of unvalued features) that blocks the head movement (i.e., Head Movement Constraint). In contrast, moving the higher modal *yinggai* 'should' (as in (15a)) does not violate the constraint because there is no feature-relevant intervening head blocking the movement. A proposal similar to the current one about focus head movement may seem to be uncommon at first sight. However, this proposal is not novel. A standard case of modal head movement is the English subject-auxiliary inversion that is found in forming *wh*-questions and *yes/no* questions, which are also focus related (cf. Krifka 2007). Moreover, this head-movement analysis directly accounts for the fact that canonical modalized sentences in Chinese are expressed by post-subject modals (and therefore are more commonly observed), and that pre-subject modals are only acceptable in more restricted contexts (cf. Merge over Move, Chomsky 1995:346), i.e., modals move for focus marking.

Now, let us consider what types of propositional focus that pre-subject modals can express. First, consider the example discourse (17). *Keyi* 'can' in speaker B's response shows the assertive force of modality on a proposition that Zhangsan can go buy tickets [for us] tomorrow.

(17) A: *Women xingqitian zhijie zai dianying-yuan pengmian.*

we Sunday directly at movie-theater meet

'Let's meet at the movie theater on Sunday directly.'

B: *Keyi Zhangsan mingtian qu mai piao, ranhou*

can Zhangsan tomorrow go buy ticket then

women xingqitian zhijie zai dianying-yuan pengmian.

we Sunday directly at movie-theater meet

'It is OKAY that Zhangsan goes to buy tickets [for us] tomorrow, [and] then we meet at the movie theater on Sunday directly.'

This example shows that pre-subject modals in Chinese focalize a proposition that is not yet an issue, just like the wide information focus (e.g., *Zenme le?* 'What happened?') shown in the discourse example in (10) (LaPolla 1995; cf. Lambrecht 1994). This type of focus function of modals is different from what stressed modals in English typically convey. In English, putting

stress on a modal usually presupposes a given proposition (a prejacent), and the stressed modal focuses the prejacent.¹⁸ Therefore, a discourse similar to (17), where speaker B puts stress on the modal ‘can’, would be odd in English, as shown in (18).

(18) A: Let’s meet directly at the movie theater on Sunday.

B: # John CAN go buy tickets for us tomorrow, and then we meet directly at the movie theater on Sunday. [Putting stress on the modal ‘can’]¹⁹

However, in a different discourse in which the question of whether ‘tomorrow John can (or cannot) go buy tickets for us’ is at issue, putting extra stress on the modal *can* becomes felicitous, as the discourse example in (19) shows. That is, the stressed modal in (19C) focuses on this polarity to update the speaker’s beliefs.

(19) A: Let’s meet directly at the movie theater on Sunday.

B: Can’t John go buy tickets for us tomorrow? I think he lives close to the movie theater.

C: John CAN go buy tickets for us tomorrow, and then we meet directly at the movie theater on Sunday.

What is interesting is that the same type of discourse shown in (19) is also possible in Chinese. The discourse example (20) shows that after speaker B proposes (20B), speaker C uses (20C) to assert a proposal that Zhangsan can go buy tickets [for us] tomorrow and then we meet at the movie theater on Sunday directly, which is believed to be a better plan that can be carried out. In a case like this, pre-subject modals express the same type of focus that English stressed modal *can* does in (19).

(20) A: *Women xingqitian zhijie zai dianying-yuan pengmian.*
we Sunday directly at movie-theater meet
‘Let’s meet at the movie theater on Sunday directly.’

B: *Zhangsan mingtian bu keyi xian qu mai piao ma? Ta zhu-de bijiao jin.*
Zhangsan tomorrow not can ahead go buy ticket Q-PART he live-De rather close
‘Can’t Zhangsan go to buy tickets [for us] tomorrow? He lives very close.’

¹⁸ Since Höhle (1992), this type of focus has been referred as *verum* focus. *Verum* focus can be expressed by different linguistic devices. For example, in English *verum* focus can be expressed by an extra pitch accent on a finite verb, or a modal auxiliary to focus the polarity, or it can be expressed by a stressed complementizer to focus on the assertive force of the clause. Although *verum* focus often asserts the polarity of a proposition, it has been argued that it does not have to indicate the truth but rather to stop arguments/discussions in certain discourses. Readers may refer to Lohnstein (2016) for more information.

¹⁹ Only partially similar to English stressed modals, adding extra stress to a modal in Chinese emphasizes either the modality itself (similar to English, e.g., (ib)) or the predicate/verb phrase that the modal c-commands (unlike English, e.g., (ii)). I do not discuss these types of (constituent) focus functions of modals further because they are irrelevant to the propositional focus discussed in this paper.

(i) a. Zhangsan KEYI-Focus qu, ye YINGGAI-Focus qu, danshi ta BU HUI-Focus qu.
Zhangsan can go also should go but he not will go
‘Zhangsan can go, and [he] should go, but he won’t go.’

b. John CAN go, and he SHOULD go, but he WON’T.

(ii) Zhangsan [YINGGAI [xian piping Lisi]Focus, ranhou [cai piping Xiaomei]Focus].
Zhangsan should first criticize Lisi then then criticize Xiaomei
‘Zhangsan should criticize Lisi first and then criticize Xiaomei.’

The type of focus reading due to putting stress on modals in Chinese is not of concern in this study.

modals in two types of *yes/no* questions in Chinese, and two other types of sentence-final particles, supporting the CP structural characteristics proposed for pre-subject modals.

4.1 Intervention Effects

Chinese *wh* phrases are known to stay *in situ*, and *wh* features are valued at CP in LF (Huang 1982). The occurrence of post-subject modals does not influence the grammaticality of the construal of a *wh* question, e.g., (22).

- (22) a. Zhangsan xihuan shei ne?
 Zhangsan like who Q-PART
 'Whom does Zhangsan like?'
 b. Zhangsan yinggai xihuan-guo shei ne?
 Zhangsan should like-EXP who Q-PART
 'Who should Zhangsan have liked?'
 c. Zhangsan keyi xihuan shei ne?
 Zhangsan can like who Q-PART
 'Who can Zhangsan like?'

However, when modals occur at the beginning of a *wh* question, this type of sentences becomes ungrammatical.²⁰

- (23) a. *Yinggai Zhangsan xihuan-guo shei ne?
 should Zhangsan like-EXP who Q-PART
 'Lit.: Who, should it be the case that Zhangsan have liked?'
 b. *Keyi Zhangsan xihuan shei?
 can Zhangsan like who
 'Lit.: Who is it allowed for Zhangsan to like?'

Interestingly, the same contrast of grammaticality in the matrix clause of (22b-c) and (23) can be found within an interrogative CP complement. According to Huang (1982), verbs such as *xiangzhidao* 'wonder' take an interrogative CP that licenses *wh* questions therein. The examples below show that with a neutral intonation, typical *wh* questions with clause-internal modals, such as (22b-c), can be embedded under *xiangzhidao* (e.g., (24)), whereas sentences such as (23) cannot (e.g., (25)).

- (24) a. *Lisi xiangzhidao [CP-Q Zhangsan yinggai xihuan-guo shei].*
 Lisi wonder Zhangsan would like-EXP who
 'Lisi wondered whom Zhangsan would have liked.'
 b. *Lisi xiangzhidao [CP-Q Zhangsan keyi xihuan shei].*
 Lisi wonder Zhangsan can like who
 'Lisi wondered whom Zhangsan can like.'
 (25) a. * *Lisi xiangzhidao [CP-Q yinggai Zhangsan xihuan-guo shei].*

²⁰ Applying a specific intonation to parts of constituents in such sentences may improve the acceptability, although this is because they are interpreted as different constructions. For example, if the speaker places an emphasis on the *wh* word (e.g., *shenme* 'what'), the sentence may be conceived as an echo question.

- Lisi wonder would Zhangsan like-EXP who
 'Lisi wondered who Zhangsan WOULD have liked.'
- b.* Lisi *xiangzhidao* [_{CP-Q} *keyi* Zhangsan *xihuan shei*].
 Lisi wonder can Zhangsan like who
 'Lisi wondered who Zhangsan CAN like.'

The above comparison of the clause-initial and clause-internal modals interacting with *wh* questions shows that such phrases would not be clarified if the modals were raising verbs and modal constructions allowed an optional subject for subject raising (e.g., Lin and Tang 1995, Lin 2011, 2012, Chou 2013) or an optional topicalization (e.g., Chou 2013, Tsai 2015). That is, the above comparison leads us to ask why *wh* phrases are not compatible with modals in a structure before the alleged subject-to-subject raising occurs (e.g., (23), (25)) but become acceptable after such raising.

This set of data also challenges Tsai's (2010, 2015) analysis of epistemic and deontic modals. In light of Tsai's arguments, one may wonder why the alleged outer subject (preceding a deontic modal) and the topic (preceding an epistemic modal) can co-occur with an *in situ wh* expression (e.g., (22b-c) and (24)); whereas the same outer subject (following an epistemic modal and presumably preceding a deontic modal) and inner subject (following a deontic modal) cannot (e.g., (23) and (25)).

In the current analysis, the pre-subject modals are operators in the CP domain that focus-mark the entire sentence (the proposition). When a *wh* phrase is independent of the intended propositional focus marked by the pre-subject modal, the sentence is expected to be ungrammatical, because of the intervention effects of focus along the lines of Beck (1996, 2006), and Kim (2002) as defined in (26).²¹

(26) Intervention Effect:

"An intervention effect" arises when a *wh* question contains a focus item valued in the scope of the *wh* question operator.

*[Q_{Op} ... Focus_{Op} [_Φ ... XP_{Focus} ... *wh* ...]]



For example, Korean *wh* phrases stay *in situ* (e.g., *nuku* 'who' in (27a)); when another argument (the subject *Minsu*) is marked with a focus operator *-man* 'only', the sentence becomes ungrammatical, as in (27b). The ungrammaticality of (27b) has been argued to result from the intervention effect, where a *wh* phrase *in situ* cannot be c-commanded by a focus operator as schematized in (27) above.

- (27) a. *Minsu-num nuku-lûl po-ass-ni?* (Korean, Beck and Kim, 1997)
 Minsu-TOP who-ACC see-PAST-Q
 'Whom did Minsu see?'
- b.* *Minsu-man nuku-lûl po-ass-ni?*
 Minsu-only who-ACC see-PAST-Q
 'Whom did only Minsu see?'

The intervention effects of focus can be remedied when the *wh* phrase is moved out of the evaluation domain of a focus or a quantificational phrase (e.g., Hoji, 1985; Beck and Kim,


²¹ As indicated in footnote 7, in addition to the propositional focus, pre-subject modals (like cleft-*shi*) can mark subject focus. Due to this type of focus function, *wh*-subjects are compatible with pre-subject modals, unlike *wh*-objects that incur intervention effects as discussed in this section.

1997; Takahashi, 1990; Tanaka, 1997; Tomioka, 2007). This is exemplified by the contrast between (27b) and (28), where the sentence is improved after the *wh* phrase *nuku-lûl* ‘who-ACC’ is preposed to be outside of the valuation domain of the focused subject *Minsu-man* ‘Minsu-only’.

- (28) *Nuku-lûl Minsu-man po-ass-ni?* (Korean, Beck and Kim, 1997)
 who-ACC Minsu-only see-PAST-Q
 ‘Who did only Minsu see?’

This type of intervention effect is observed in Chinese as well (cf. Kim 2002, Yang 2012). The example in (29) shows that, in addition to the question of the *wh* object *shenme-dongxi* ‘what-thing’, the subject focus only-*Zhangsan* occurs in the same sentence, and the sentence is ungrammatical because of the type of intervention effect of focus (as schematized in (30)).

- (29) * [_{Focus} *Zhiyou Zhangsan*] *mai shenme-dongxi?*
 only Zhangsan buy what-thing
 ‘Only Zhangsan who bought what?’


- (30) * [_{Q_{Op}} *Focus_{Op}* [_{only-Focus} ... *wh* ...]]
- 

Similar to the Korean examples, the acceptability of sentences such as (29) is greatly improved after the *wh* phrase leaves the valuation domain of the focus phrase, as in (31).

- (31) *Shenme-dongxi, zhiyou Zhangsan mai?*
 what only Zhangsan buy
 ‘What is the thing that only Zhangsan bought?’

In the current analysis, the ungrammaticality of sentences such as (23a) (repeated below) can be accounted for in the same way. That is, pre-subject modals that focus-mark the proposition (i.e., TP-*verum_focus* in (32)) and the *wh* phrase (as a distinct, unrelated quantificational element) are located within the valuation domain of focus.

- (23) a. **Yinggai Zhangsan xihuan-guo shei ne?*
 would Zhangsan like-EXP who Q-PART
 ‘Who WOULD Zhangsan have liked?’

- (32) * [_{Q_{Op}} *Yinggai_{Op}* ... [_{TP-*verum_Focus*} ... *wh* ...]]
- 

In turn, sentences such as (23a) can be predicted to improve greatly after the *wh* phrase leaves the evaluation domain of the focus operator. This prediction is borne out (e.g., (33)), which is similar to other examples of the intervention effects of focus.

- (33) *Shei, yinggai Zhangsan xihuan-guo ne?*
 who would Zhangsan like-EXP Q-PART
 ‘Who is it that Zhangsan WOULD have liked?’

The above examples indicate that pre-subject modals interact with *wh* questions in a similar manner to other focus elements with *wh* questions, thus confirming that pre-subject modals are focus operators. A cautious reader may then wonder what type of interaction may be found between *wh* questions and the left-peripheral modals in other types of embedded clauses.

According to Huang (1982), verbs such as *juede* ‘think’ are subcategorized for a declarative CP that cannot license *wh* questions therein (compared with verbs such as *xiangzhidao* ‘wonder’); therefore, the embedded *wh* phrases are interpreted in the matrix clause, as shown in (34).

- (34) *Lisi juede* [_{CP} *Zhangsan yinggai mai shenme-dongxi*?]
 Lisi think Zhangsan should buy what
 ‘What does Lisi think that Zhangsan should buy?’

Interestingly, ungrammatical sentences containing pre-subject modals and *wh* phrases, such as those in (23), become more acceptable when they are embedded in verbs such as *juede* ‘think.’ For example, in a scenario where everyone is assigned by Lisi to buy something, if one is wondering about the purchase that Lisi has assigned to Zhangsan, one can ask the question in (35).

- (35) ?*Lisi juede* [_{CP} *yinggai Zhangsan mai shenme-dongxi*?]
 Lisi think should Zhangsan buy what
 ‘What does Lisi think that Zhangsan SHOULD buy?’

Phenomena similar to (35) have been reported in the intervention effects literature; that is, in some languages (e.g., Japanese and Korean), the intervention effects found in *wh* questions containing intervening quantifiers may be cancelled or weakened within embedded declarative clauses (see Tomioka 2007). An example is shown in (36).

- (36) a. ??*Daremo-ga nani-o yon-da-no.* (Japanese, Tomioka 2007:2571)
 everyone-NONwhat-ACC read-PAST-Q
 ‘What did everyone read?’
 b. *Kimi-wa* [_{CP} *daremo-ga nani-o yon-da-to*] *omotteiru-no?*
 you-TOP everyone-NOM what-ACC read-PAST-COMP think-Q
 ‘What do you think everyone read?’

From the current analysis, it follows that the clause-initial quantificational operator (e.g., *yinggai* in (35), cf. *daremo-ga* ‘everyone’ in (36b)) does not intervene in the valuation of *wh* phrases because the valuations of *wh* features and the quantificational operator are not in the same phase, i.e., matrix CP vs. embedded CP (cf. multiple Spell-Out, Uriagereka 1999, Chomsky 2000).²² However, intervention effects occur when the valuation of both types of quantificational elements (e.g., quantifier/focus and *wh*) occur within the same phase, e.g., within the same matrix clause, and in the same embedded interrogative CP.

The data presented here indicate that the phenomenon under discussion cannot be accounted for by optional subject raising and modals cannot be raising verbs. Instead, the structural restrictions of modals and their associated phenomena can be accounted for straightforwardly if one accepts the current proposal that pre-subject modals are a propositional focus operator in CP (and canonical post-subject modals are in TP). In the next section, data about sentence-final particles will be presented in further support of the idea that pre-subject modals (a) mark propositional focus (are compatible with structures of propositional focus, e.g.,

²² The specific analysis of this phenomenon is not of concern here. However, in the literature, it has been proposed that such *wh* questions may either undergo covert phrasal movement or feature movement to the intended valuation domain, and these changes may be because of the proper mapping of syntax and information structure or featural competition, which is why the seemingly intervening focus operator does not incur ungrammaticality. Readers may refer to Tomioka (2007) and Yang (2012) for more information.

yes/no questions), and (b) are located in the split-CP domain, as they show scope interaction with different types of sentence-final particles.

4.2 Sentence-Final Particles

Traditionally, sentence-final particles (SFPs) have been categorized into three classes (Chao 1986, Zhu 1982, Li and Thompson 1981, Paul 2014; see Paul 2015 for a review), and when they co-occur, their order is fixed. Some examples are listed in (37);.

(37) The three classes of sentence-final particles: SFP1 < SFP2 < SFP3

SFP1: *le* (currently relevant state), *ne*₁ (continued state)

SFP2: *ba*₁ (indirect imperative), *ma* (interrogative), *ba*₂ (soliciting agreement), *ne*₂ (contrastive/*wh*-interrogative)

SFP3: *ou* (warning), (*y*)*a* (astonishment), *ne*₃ (exaggeration)

For present purposes, we will focus on the interactions of pre-subject modals with SFP1-*le* and some in the category of SFP2 (i.e., *ba*₁, *ma*, and *ba*₂). The former will serve as an extra piece of evidence supporting to the idea that pre-subject modals and post-subject modals are not in the same domain. Then, the discussion about SFP2 will highlight the compatibility of propositional focus operators (i.e., pre-subject modals) and two types of yes/no questions in Chinese.

The structural status of the class, SFP1, is more controversial. For example, Paul (2014) analyzes SFP1 as the lowest C head, similar to Fin in Rizzi's (1997) split-CP hypothesis. Erlewine (2017) argues that *le* sits in a deeper clausal-internal position (above *vP* but below the subject).²³ With respect to *ne*, Constant (2011:22) argues that SFP1-*ne* and SFP2-*ne* can be distinguished in terms of their positions with respect to the question-tag *meiyou* 'have or not have.'

(38) SFP1-*ne* before question-tag

<i>Yaoshi dai-zhe</i>	(<i>ne</i>)	<i>meiyou</i>	(<i>*ne</i>)?
key carry-DUR	NE1	NEG	NE1

'(Are you carrying) the keys or not?'

(39) SFP2-*ne* after question-tag

<i>Zhangsan</i>	<i>qu-guo</i>	<i>Riben</i>	<i>Ni</i>	<i>qu-guo</i>	(<i>*ne</i>)	<i>meiyou</i>	(<i>ne</i>)?
Zhangsan	go-EXP	Japan	you	go-EXP	NE2	NEG	NE2

'Zhangsan has been to Japan. Have you been there or not?'

The distribution of SFP-*le* is similar to *ne*₁. The sentence in (40) shows that SFP-*le* has to precede the question-tag *meiyou* 'have or not' (Li and Thompson 1981).

(40)	<i>Zhangsan</i>	<i>kashi</i>	<i>zuo</i>	<i>wanfan</i>	(<i>le</i>)	<i>meiyou</i>	(<i>*le</i>)?
	Zhangsan	start	make	dinner	SFP1-LE	NEG	SFP1-LE

'Has Zhangsan started making the dinner or not?'

Following Zhu (1982), various scholars have reported that Mandarin SFP-*le* interacts with temporal-related items in terms of scope. We can see that epistemic modals (marked as Ep) scope over SFP1-*le*. For example, the sentence in (41a) expresses that it should be the case that Zhangsan has started making the dinner. As for deontic modals, it has been reported that it often

²³ Notice that the clause-final particle *le* should not be confused with the homophonous verb-final aspect *le*, which is not relevant here.

scope under SFP-*le*. For example, the sentence in (41b) expresses that it is now the case that Zhangsan can go to the USA (though he was not yet allowed to do so earlier on) (see also Lin 2011).

- (41) a. *Zhangsan yinggai^{Ep} [kaishi zuo wanfan le]. (yinggai > le)*
 Zhangsan should start make dinner SFP₁-LE
 'Zhangsan should have started making the dinner.'
 b. *[Zhangsan keyi^{P_e} chufa qu Meiguo] le. (keyi < le)*
 Zhangsan can depart go USA SFP₁-LE
 'Zhangsan can depart for the USA.'

Interestingly, pre-subject modals scope over SFP-*le* (e.g., unlike post-subject deontic modals in (41b)). For example, a pre-subject epistemic modal expresses an extra assertive force of modality in (42) emphasizing that *Zhangsan* should have been in the state of starting to make the dinner. With respect to the pre-subject deontic modals, let us consider a different scenario. In (43), some friends are worried about *Zhangsan*'s first time traveling to the USA alone, because *Zhangsan* does not speak English. Friend A is very surprised that *Zhangsan* has already left for the US, and asks (43A). Friend B could respond with (43B), to assert that it is OK for *Zhangsan* to have gone on the trip to the US already, given that the trip has been well planned.

- (42) *Yinggai^{Ep} [Zhangsan kaishi zuo wanfan le]. (yinggai > le)*
 should Zhangsan start make dinner SFP₁-LE
 'It should be the case that Zhangsan have started making the dinner.'

- (43) A: *Zhangsan xiang chufa qu Meiguo le ma?*
 Zhangsan first depart go USA SFP₁-LE Q
 'Has Zhangsan departed for the US?'
 B: *Keyi^{P_e} [Zhangsan xiang chufa qu Meiguo le]. (keyi > le)*
 can Zhangsan first depart go USA SFP₁-LE
 (Wo zai Meiguo de pengyou hui qu jie ta.)
 my at USA de friend will go pick.up him
 'It is allowed and OK that Zhangsan has departed for the US. (My friends in the US will pick him up.)'

In other words, while deontic modals in the post-subject position may scope over or under the SFP-*le*, pre-subject modals (both epistemic and deontic types) scope over the SFP-*le*, suggesting that pre-subject modals are structurally higher than SFP-*le* (and therefore, the class of SFP₁). If the proposal is on the right track, one may then predict that SFP₂ representing Force always scopes over pre-subject modals, assuming with Rizzi (1997) that Force dominates FocusP in the split-CP domain. The prediction is borne out. The following examples show that SFP₂-*ba₁* (marking an indirect comment or an indirect imperative suggestion) always scopes over pre-subject modals, a scope relation different from that with SFP₁-*le*. In (44a) the speaker makes a strong conjecture that it is asserted that *Zhangsan* should have already been awake. In (44b), the speaker may wish to express a suggestion that it is indeed permissive that both the speaker and the hearer can go out and have fun.

- (44) a. *[Yinggai^{Ep} [Zhangsan zaojiu qi-chuang le]] ba! (yinggai < ba₁)*
 should Zhangsan already up-bed SFP₁-LE SFP₂-BA₁
 'Zhangsan SHOULD have already been awake!'

- b. [*Keyi*^{De} [*women* *yiqi* *chu-qu-wan*]] *ba!* (*keyi* < *ba*₁)
 can we together go-out-play SFP₂-BA₁
 'We CAN go out and have fun together!'

Thus far, the facts about the interaction of SFPs and modals that have been presented in this paper have been compatible with the proposal that pre-subject modals head FocusP in split-CP such that they scope over lower SFP₁, and that they are interpreted in the scope of SFP₂. Before I conclude this section, I would like discuss two types of *yes/no* questions in Chinese.

The SFP-*ma* categorized as SFP₂ in is usually referred to as a *yes/no* question marker. Under the current proposal and based on the facts about SFP₂-*ba*₁ presented above, one may predict that SFP₂-*ma* would be similar to SFP₂-*ba*₁ by scoping over pre-subject modals.

- (45) a. *Zhangsan* *yinggai*^{Ep} *yijing* *dao* *Meiguo* *le* *ma?*
 Zhangsan should already arrive USA SFP₁-LE SFP₂-MA
 'Should Zhangsan have already arrived in the USA?'
 b. *Zhangsan* *keyi*^{De} *xianzai* *chufa* *qu* *Meiguo* *ma?*
 Zhangsan can now depart go USA SFP₂-MA
 'Can Zhangsan depart for the USA now?'

While pre-subject deontic modals are compatible with this type of *yes/no* questions, however, some pre-subject epistemic modals are not, as shown in (46).

- (46) a. ?**Yinggai*^{Ep} *Zhangsan* *yijing* *dao* *Meiguo* *le* *ma?*
 should Zhangsan already arrive USA SFP₁-LE SFP₂-MA
 'Should it be the case that Zhangsan have already arrived in the USA?'
 b. *Keyi*^{De} *Zhangsan* *xianzai* *chufa* *qu* *Meiguo* *ma?*
 can Zhangsan now depart go USA SFP₂-MA
 'Can it be the case that Zhangsan has departed for the USA?'

However, the degraded acceptability of the sentence in (46a) may be caused by a conflict between, on the one hand, the assertion of epistemic judgment that the pre-subject *yinggai* 'should' expresses, and, on the other, the propositional questions. I claim that the degraded judgment in sentences like (46a) is not due to the structural or focus-featural competition between *yes/no* questions and pre-subject modals. First, sentences like (46b) with deontic modals are acceptable. Second, when the realis denoting adverb *yijing* 'already' is changed to other irrealis adverbs, like *mingtian* 'tomorrow', the acceptability of such sentences is improved.

- (47)? *Yinggai*^{Ep} *Zhangsan* *mingtian* *dao* *Meiguo* *ma?*
 should Zhangsan tomorrow arrive USA SFP₂-MA
 'Should it be the case that Zhangsan arrives in the USA tomorrow?'

Moreover, it should also be noted that the Chinese language has another type of *yes/no* question, marked by SFP₂-*ba*₂, which Li and Thompson (1981:307) describe as "soliciting agreement". When a *yes/no* question is marked by this SFP₂-*ba*₂ (e.g., (48)), the listener is expected to confirm the proposition presented in the question.

- (48) a. *Zhangsan* *yijing* *dao* *Meiguo* *le* *ba?*
 Zhangsan already arrive USA SFP₁-LE SFP₂-BA₂
 'Zhangsan has already arrived in the USA, correct?'

- b. *Zhangsan xianzai chufa qu Meiguo ba?*
 Zhangsan now depart go USA SFP₂-BA₂
 'Zhangsan is departing for the US now, correct?'

Interestingly, this type of *yes/no* questions is readily compatible with both epistemic and deontic modals in the pre-subject position, and the SFP₂-ba₂ scopes over the pre-subject modal, as shown in (49). One simple and natural explanation would be that the semantic function of soliciting agreement that *yes/no* questions with SFP₂-ba₂ expresses is compatible with the intended propositional assertive focus marked by pre-subject modals, and the combination of the two results in a propositional focus unit (cf. Bianchi and Cruschina 2016).

- (49) a. [*Yinggai*^{Ep} *Zhangsan yijing dao Meiguo le* *ba?* (*yinggai* < ba₂)
 should Zhangsan already arrive USA SFP₁-LE SFP₂-BA₂
 'Zhangsan SHOULD have already arrived in the USA, correct?'
 b. [*Keyi*^{De} *Zhangsan xianzai chufa qu Meiguo* *ba ?* (*keyi* < ba₂)
 can Zhangsan now depart go USA SFP₂-BA₂
 'Zhangsan CAN depart for the US, correct?'

In sum, the current proposal of pre-subject modals represents a better account of various phenomena than previous studies have been able to provide, and this account naturally explains a wider range of data that previous studies had not considered.

5. Concluding Remarks

In this study, I examined the interpretations and structural characteristics of Mandarin epistemic and deontic modals, such as *yinggai* 'should' and *keyi* 'can', occurring in the pre-subject position. I argued that sentences with pre-subject and post-subject modals should not be treated as involving free word order alternations resulting from an optional topicalization or an optional subject raising (e.g., Lin and Tang 1995, Lin 2011, 2012, Chou 2013, and Tsai 2010, 2015). The new evidence presented in this study indicated that previous analyses have led to incorrect and inconsistent predictions and cannot provide a consistent explanation for facts concerning the syntax and information packaging expressed by modals at different positions.

Instead, this work has shown that pre-subject modals are better analyzed as undergoing internal merge to the Focus Phrase in CP. This proposal avoids unexpected and contradictory predictions drawn from previous analyses and naturally accounts for a wider range of phenomena, such as the distribution of indefinite subjects, the interpretation of propositional focus, the intervention effects of focus, and the compatibility of pre-subject modals with other propositional foci (such as broad *wh*-questions, and *yes/no* questions).

This study has three theoretical implications. First, this work demonstrated that the change in word order in Chinese is not simply because of an optional or free derivation in syntax but is required by syntactic computations to express specific information packaging, which is evident by their interaction with other quantificational elements. Second, the analysis shows that the features of the information structure are active in a narrow syntax (cf. Miyagawa 2010). Thus, syntax in addition to semantics is relevant when accounting for the discourse configuration (cf. Lechner 2006, Homer 2010, Szabolcsi 2011). Third, Mandarin Chinese as a language typologically very different from Germanic and Romance languages has been demonstrated in this study as another example of the split-CP à la Rizzi (1997) and of the interaction between syntax and information structure.

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