Diagnosing modal clause structure with focus-sensitive operators in Mandarin Chinese

Introduction There is a long debate on the nature of the clausal spine in modalized sentences in Mandarin: are modal verbs clause-embedding (bi-clausal, (1), Lin 2011, 2012, Zhang 2019), or are they just heads in the verbal projection of the same clause (mono-clausal, (2), Tsai 2015, Yip & Lee 2022, Erlewine 2017)? Below, both (1) and (2) are intended to mean 'Lisi can come.'

(1) *Lisi* [$_{VP}$ [$_{V}$ *keyi*] [$_{TP/CP}$ — *lai*]]
L. can come

(2) *Lisi* [$_{F/ModP}$ [$_{F/Mod}$ *keyi*] [$_{vP}$ — *lai*]]
L. can come

Following Chappell (2008) and Huang (2018), who suggest that *shuo* is a complementizer, we observe that deontic modals can co-occur with it; this is strong evidence that deontic modals are clause(CP)-embedding:

(3) *Lisi keyi* ***shuo*** *xian shi-le zai zuo jueding.* 'Lisi can first try it and then make a decision.'
L. can COMP first try-PFV then make decision

This abstract provides three diagnostic tests based on focus-sensitive operators (below, Op_{FS}) *dou* and *ye* that further show that deontic modals are clause(CP)-embedding even in the absence of *shuo*. This conclusion speaks to the correctness of Wurmbrand & Lohninger (2020) in proposing that the Implicational Complementation Hierarchy refer to minimal structures: while the semantically defined clause-types (*Event*, *Situation*, *Proposition*) have increasing minimum sizes (*v*P, TP, CP), these are not upper bounds; the *Event*-type clauses commonly assumed for such deontic modals can still be CPs.

Test 1: Locality of association with focus Test 1 concerns locality conditions of association with Op_{FS}; it shows that modals pattern with CP-embedding verbs. (4) means '$Lisi_F$ even/also came,' showing Op_{FS} *ye* 'also' and *dou* 'even' allow backwards association.

(4) *Lisi*$_F$ ***dou*** / ***ye*** *lai-le.*
L. even also come-PFV

(5) Op_{FS} [… XP_F … — …]

Following Lahiri (1998), Crnič (2014), and Liu (2017), I assume that Op_{FS} must covertly move to a position c-commanding the associate (5). (6) shows that Op_{FS} can move to very high positions in the clause, at least above TopicP. *Yu* 'fish' is a base-generated topic, since there is no gap further down in the sentence.

(6) *yu*$_F$*, wo* ***dou*** *zhi chi shushi.*
fish 1SG even only eat cooked.food
'Even for fish$_F$, I only eat cooked food.'

(7) **Lisi*$_F$ *shuo* [$_{CP}$ *Zhangsan* ***dou*** *lai-le*]
L. say Z. even come-PFV
Intended: '$Lisi_F$ even said Zhangsan came.'

Example (7) shows that Op_{FS} is unable to associate, and therefore by (5), move, across CP boundaries. Then, (6) and (7) jointly show that Op_{FS} movement is subject to (8):

(8) Op_{FS} movement is basically unrestricted by height in the smallest containing CP, but cannot escape it.

Examples (9) and (10), meaning '$Lisi_F$ can even come,' show that Op_{FS} are unable to associate across deontic modals. From the assumption in (5), this indicates that Op_{FS} is unable to move across the modal.

(9) *Lisi*$_F$ ***dou keyi*** *lai.*
L. even can come.

(10)**Lisi*$_F$ ***keyi dou*** *lai.*
L. can even come

Thus, deontic modals pattern with CP-embedding verbs in forbidding Op_{FS} movement out of them. Without adding ad hoc modal-specific constraints, the simplest explanation is that modals are also CP-embedding verbs. This way, (8) can directly apply to derive the contrast in (9) and (10).

Test 2: Scope of Op_{FS} A separate but related test concerns the scopal possibility of embedded Op_{FS} w.r.t. deontic modals. Consider (11), which is correctly predicted to be grammatical by Test 1 (both the Op_{FS} and its associate are on the same side of the modal; (8) is not violated).

(11) *Lisi keyi lunwen*$_F$ ***ye*** *mingtian xie.*
L. can paper also tomorrow write
'Lisi is allowed to also write the paper$_F$ tomorrow.'

(12) *Lisi xiwang Zhangsan*$_F$ ***ye*** *lai.*
L. hope Z. also come
'Lisi hopes that Zhangsan$_F$ will also come.'

Example (11) necessarily presupposes the epistemic statement that Lisi is *expected* to write something else tomorrow. The presupposition is derived if we assume that 1) *ye* is interpreted below *keyi*, and that 2) presuppositions project universally and epistemically from under deontic modals in the manner described

in Heim (1992). The reading where *ye* outscopes *keyi*, merely presupposing that Lisi is *allowed* to write something else tomorrow, is unavailable. (11) is infelicitous where only the deontic presupposition is met. Again, modalized sentences pattern with clause-embedding verbs (12). *Ye* must be interpreted under *xiwang* in (12). It is presupposed that Lisi *believes* someone other than Zhangsan will come; it is infelicitous where Lisi only *hopes* someone other than Zhangsan will come.

Test 3: Distribution of Op_{FS} Test 3 concerns the ability of deontic modals to allow Op_{FS} to precede items that they otherwise cannot. Observe that *ye* 'also' and *dou* 'even,' which are always pre-verbal, cannot precede fronted objects, which I assume, following Chen (2023), to be TP-internal topics, situated in what I call Spec, $Topic_{int}P$. Both (13) and (14) are intended to mean '$Lisi_F$ also wrote the paper.'

(13) *Lisi*$_F$ ***lunwen***$_1$ ***ye*** *xie-le* —$_1$.
L. paper also write-PFV

(14) **Lisi*$_F$ ***ye*** ***lunwen***$_1$ *xie-le* —$_1$.
L. also paper write-PFV

Then, Spec, $Topic_{int}P$ must be in a higher position than the base (overt) position of Op_{FS}.
This is represented in the sequence in (15): (15) $Topic_{int}P \prec Op_{FS} \prec V$
When modals are involved, however, Op_{FS} can attach to the immediate left of the modals, even above positions originally impossible for attachment. Ignoring the modal, (16) has the sequence in (17):

(16) *Lisi*$_F$ ***ye*** ***keyi*** ***lunwen***$_1$ *mingtian* *xie* —$_1$.
L. also can paper tomorrow write
'$Lisi_F$ is also allowed to write the paper tomorrow.'

(17) $Op_{FS} \prec Topic_{int}P \prec V$

The sequence in (17) is in conflict with (15). This can be easily explained if modals embed complement clauses at least the size of $Topic_{int}P$. For simplicity and in accordance with Test 1, I assume they embed CPs. The sequence in (17) can then be rewritten as (18): (18) $[_{CP}\ Op_{FS} \prec V_{Mod} \prec [_{CP}\ Topic_{int}P \prec V\ ]]$
In each CP in (18), (15) is not violated. An immediate prediction is that as long as the Op_{FS} and $Topic_{int}P$ are not separated by the clausal boundary that the modal induces, they must still obey (15). This prediction is borne out. First, if the object is fronted across the modal, it forms a sequence with Op_{FS} that obeys (15):

(19) *Lisi*$_F$ {***lunwen***$_1$ ***ye*** / ****ye*** ***lunwen***$_1$} *keyi mingtian xie* —$_1$.
L. paper also also paper can tomorrow write
'$Lisi_F$ is also allowed write the paper tomorrow.'

Example (19) illustrates the sequence (20): (20) $[_{CP}\ Topic_{int}P \prec Op_{FS} \prec V_{Mod} \prec [_{CP}\ V\ ]]$
Second, if $Topic_{int}P$ and Op_{FS} are both in the scope of the modal, (15) is also followed:

(21) *Lisi keyi* {***lunwen***$_{1,F}$ ***ye*** / ****ye*** ***lunwen***$_{1,F}$} *mingtian xie* —$_1$.
L. can paper also also paper tomorrow write
'Lisi is allowed to also write the paper$_F$ tomorrow.'

Example (21) illustrates the sequence (22): (22) $[_{CP}\ V_{Mod} \prec [_{CP}\ Topic_{int}P \prec Op_{FS} \prec V\ ]]$
Clearly, both (20) and (22) follow (15). This means that modals essentially 'reset' the clausal projections and therefore the sequence that Op_{FS} and $Topic_{int}P$ follow.

Extension: Epistemic modals The abstract has dealt primarily with deontic modals. The relevant tests can be extended to epistemic modals. However, the tests give contradictory results.

(23) *Lisi*$_F$ ***ye*** ***keneng*** *lai-le.*
L. also may come-PFV
'$Lisi_F$ may also have come.' also > ◇

(24) *Lisi*$_F$ ***keneng*** ***ye*** *lai-le.*
L. may also come-PFV
'$Lisi_F$ may have also come.' ◇ > also

Test 1 shows that epistemic modals are not barriers for focus association, as (24) is grammatical. Test 2 shows that the scope of Op_{FS} w.r.t. epistemic modals is still determined by their surface order, indicating that Op_{FS} cannot move across epistemic modals. Test 3 shows that epistemic modals do allow Op_{FS} to precede fronted objects, indicating a second clausal projection. The easiest way to explain away the odd one out, Test 1, is to assume that 1) epistemic modals are like deontic modals in being CP-embedding verbs, that 2) epistemic modals are raising verbs, and that 3) epistemic modals alone allow reconstruction of raised subjects into the embedded CP, enabling Op_{FS}, which cannot escape the CP, to associate with the reconstructed subject.

This abstract should be considered for the main session. If admitted as a talk/poster, it will be presented in person.

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