Mandarin modals embed clauses: Evidence from focus-sensitive operators

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Introduction

- Long-standing debate in Mandarin: **are modals clause-embedding lexical verbs (*bi-clausal*, (1)), or higher heads in the same clause (*mono-clausal*, (2))?**
- Both (1) and (2) are intended to mean 'Lisi can come.'

(1) *Lisi* [$_{VP}$ [$_{V_{Mod}}$ *keyi*] [$_{TP/CP}$ — *lai*]]. — *Lin (2011, 2012) and Zhang (2019)*
L. can come

(2) *Lisi* [$_{ModP}$ [$_{Mod}$ *keyi*] [$_{vP}$ — *lai*]]. — *Tsai (2015), Yip & Lee (2022), and Erlewine (2017)*
L. can come

- There is evidence for the clause-embedding view drawing on Chappell (2008) and Huang (2018), who analyze *shuo* as a complementizer:

(3) *Lisi keyi* [$_{CP}$ [$_{C}$ ***shuo***] *xian shi-le zai zuo jueding*].
L. can COMP first try-PFV then make decision
'Lisi can first try it and then make a decision.'

This poster

Three arguments based on focus-sensitive operators (Op$_{fs}$) *dou* and *ye* that further show that **deontic modals are clause/CP-embedding** even without *shuo*.

Argument 1: Locality of association with focus-sensitive operators

- **Modals pattern with CP-embedding verbs in blocking association with Op$_{fs}$.**
- Op$_{fs}$ *ye* 'also' and *dou* 'even' allow backward association:

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

- Op$_{fs}$ can associate with very high positions in the clause, at least TopicP:

(5) (*lian*) *haixian*$_F$, *wo* ***dou*** *zhi xihuan chi zhu shu de cai.*
LIAN seafood 1SG even only like eat cook cooked DE dish
'Even for seafood$_F$, I only like to eat cooked dishes.'

- **Proposal:** Op$_{fs}$ covertly move to c-command the associate, contra Erlewine (2014).

Op$_{fs}$ movement

(6) Op$_{fs}$ ... [... XP$_F$ ... — ...] — (Lahiri 1998, Crnič 2014, Liu 2017)

- Op$_{fs}$ cannot associate, and therefore by (6), **move**, across CP boundaries:

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

- Then, (5) and (7) jointly show that Op$_{fs}$ movement is subject to (8):

Op$_{fs}$ can freely move within a CP, but not out of it

(8) ... [**CP** ... Op$_{fs}$ ...] ✗ ✓

Argument 1 continued

- Op$_{fs}$ cannot associate, and therefore by (6), **move**, across deontic modals:

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

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

- Without ad hoc modal-specific locality constraints, the simplest explanation is that...

Modals embed CPs, blocking Op$_{fs}$ movement

(11) ... [... XP$_F$ ... V$_{Mod}$ [**CP** ... Op$_{fs}$ ...]] ✗

Argument 2: Scope of focus-sensitive operators

- **Presuppositions of Op$_{fs}$ project universally and epistemically from the scope of modals, like CP-embedding verbs.**

Universal epistemic presupposition projected from under *xiwang* 'hope'

(12) *Lisi xiwang* [$_{CP}$ *Zhangsan*$_F$ ***ye*** *lai*].
L. hope Z. also come
'Lisi hopes that Zhangsan$_F$ will also come.'
Presupposes: ✓Lisi **believes** someone else will come.
✗Lisi **hopes** someone else will come.

Universal epistemic presupposition projected from under *keyi* 'can'

(13) *Lisi keyi* [*lunwen*$_F$ ***ye*** *mingtian xie*].
L. can paper also tomorrow write
'Lisi is allowed to also write the paper$_F$ tomorrow.'
Presupposes: ✓Lisi is **expected** to write something else tomorrow.
✗Lisi is **allowed** to write something else tomorrow.

- **Explanation for (13)**: 1. ***ye* is interpreted below *keyi***, and 2. **presuppositions project universally and epistemically** à la Heim (1992).
- (13) is unlike the English mono-clausal *can* construction (14), and like the bi-clausal *allow* construction (15) with embedded *also*:

Existential deontic presupposition for English *can*

(14) Lisi can **also** write their paper$_F$ tomorrow.
Presupposes: ✓Lisi is **allowed** to write something else tomorrow.
✗Lisi is **expected** to write something else tomorrow.

Universal epistemic presupposition projected from under English *allow*

(15) Lisi is allowed to **also** write their paper$_F$ tomorrow.
Presupposes: ✓Lisi is **expected** to write something else tomorrow.
✗Lisi is **allowed** to write something else tomorrow.

Consequence: Modal movement

- If modals embed CPs, then subjects **raise** across them.
- Modal-initialness is the **base** form, casting doubt on modal movement analyses of modal-initialness (Lai & Li 2024, Yip & Lee 2022).

(16) *keyi Zhangsan qu canjia bisai.*
can Z. go take.part contest
'It is allowed that Zhangsan takes part in the contest.'

Argument 3: Distribution of focus-sensitive operators

- **Modals allow Op$_{fs}$ to precede items that they otherwise cannot in the same clause.**
- Op$_{fs}$ *ye* 'also' and *dou* 'even' cannot precede fronted objects (TP-internal topics in Spec,Topic$_{int}$P, Chen 2023).

Spec,Topic$_{int}$P must precede Op$_{fs}$

(17) *Lisi*$_F$ {***lunwen***$_1$ ***ye*** / ****ye*** ***lunwen***$_1$} *xie-le* —$_1$.
L. paper also also paper write-PFV
'Lisi$_F$ also wrote the paper.'

(18) Topic$_{int}$P < Op$_{fs}$ < V

- This is a **clause-internal** ordering constraint; Op$_{fs}$ in the matrix can precede Spec,Topic$_{int}$P in the embedded CP:

Ordering constraint (18) holds within the same CP

(19) *Zhangsan*$_F$ ***ye*** *xiwang* [**CP** *Lisi* ***lunwen***$_1$ *mingtian xie* —$_1$].
Z. also hope L. paper tomorrow write
'Zhangsan$_F$ also hopes that Lisi will write the paper tomorrow.'

(20) [**CP** Op$_{fs}$ < V$_{CP}$ < [**CP** Topic$_{int}$P < V]]

- Modals also allow Op$_{fs}$ above them to precede Spec,Topic$_{int}$P below them.

Spec,Topic$_{int}$P can follow Op$_{fs}$ with modals

(21) *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.'

(22) Op$_{fs}$ < V$_{Mod}$ < Topic$_{int}$P < V

- **Explanation:** Modals also embed CPs.

Modals embed CPs, generating (22), just like (20)

(23) [**CP** Op$_{fs}$ < V$_{Mod}$ < [**CP** Topic$_{int}$P < V]]

- **Correct prediction:** If Op$_{fs}$ and Spec,Topic$_{int}$P on the same side of modal, (18) holds.

Both Spec,Topic$_{int}$P and Op$_{fs}$ outside modal scope

(24) *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.'

(25) [**CP** Topic$_{int}$P < Op$_{fs}$ < V$_{Mod}$ < [**CP** V]]

Both Spec,Topic$_{int}$P and Op$_{fs}$ inside modal scope

(26) *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.'

(27) [**CP** V$_{Mod}$ < [**CP** Topic$_{int}$P < Op$_{fs}$ < V]]

Consequence: Implicational Complementation Hierarchy

- **ICH** (Wurmbrand & Lohninger 2020): semantic clause-types (*Event*, *Situation*, *Proposition*) have increasing *minimum sizes* (vP, TP, CP), but not *upper bound sizes*.
- Deontic modals take complements of semantic type *Event*, but nevertheless employ CPs, constituting evidence for the ICH.

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