

Does the Williams Cycle apply to Mandarin Chinese?

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1 Introduction

- As long observed, there is an apparent correlation between the *height* (*landing site*) and *locality domain* of different *movement types* (A vs \bar{A}).
 - Raising to subjects (A-movement) lands on Spec, TP and may cross a non-finite TP (but not a finite CP).
 - *Wh*-movement (\bar{A} -movement) lands on Spec, CP and may cross a finite CP.
 - Traditionally, this correlation is viewed as an A/ \bar{A} distinction and explained by the *Ban on Improper Movement* (see e.g., Chomsky 1973).
- The *Williams Cycle* (WC): The height-locality correlation is encoded directly in the grammar.

(1) The *Williams Cycle* (Williams 1974, 2003, 2013)

Movement to SpecXP cannot proceed from SpecYP or across YP, where Y is higher than X in the functional sequence.

→ Recently, WC effects have received cross-linguistic support, e.g., in Finnish (Poole 2022), Hungarian (Egressy 2025), Georgian (Bondarenko 2024), and Swahili (Meadows 2024), among others.

★ **Our question:** Does the WC apply to Mandarin Chinese?

→ *Yes*: Meadows and Yan (2025) (henceforth **YM25**) argue for WC effects in Mandarin.

(available on <https://ling.auf.net/lingbuzz/008904>)

→ *No*: Mandarin allows *hyperraising* (HR) to subject across a finite CP, a direct counterexample to the WC (Chen 2023, 2025b; Lee and Yip 2024).

→ **Resolution**: Either HR is explained away with extra assumptions (Meadows 2024), or the WC does not apply.

★ **Our claim:** The WC does *not* apply to Mandarin.

→ We reexamine YM25's arguments and argue that the apparent WC effects in Mandarin either reduce to the independently diagnosable distribution of pure [\bar{A}] vs. composite [A/ \bar{A}] probes, or disappear once an independent pragmatic requirement is satisfied.

→ The WC must be *parameterized* and *cannot* be universal.

📍 **Road map:**

§2: Apparent WC effects in Mandarin

§3: Against WC effects in Mandarin

§3.1: Hyperraising

§3.2: Object topicalization and distribution of A/ \bar{A} -probes

§3.3: VP-copy fronting and subject identity

§4: Conclusion

2 Apparent Williams Cycle effects in Mandarin

- YM25 argue for WC effects in Mandarin based on two movement dependencies:

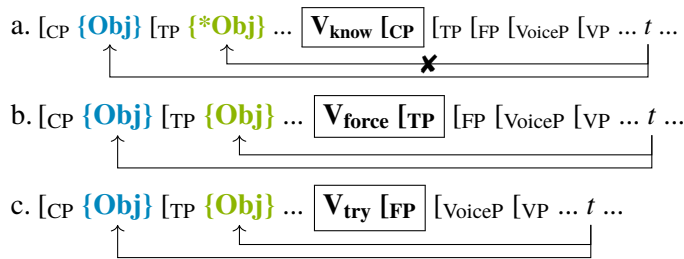
❶ *Object topicalization* (which they call *object shift*)

❷ *VP-copy fronting* (which they call *verb doubling*)

→ Both may target either a **TP/IP-external (high)** or a **TP/IP-internal (low)** position, with the **internal (low)** variant exhibiting *apparent locality restrictions*.

- Specifically, YM25 argue for a systematic height-locality correlation as schematized in (2–3):

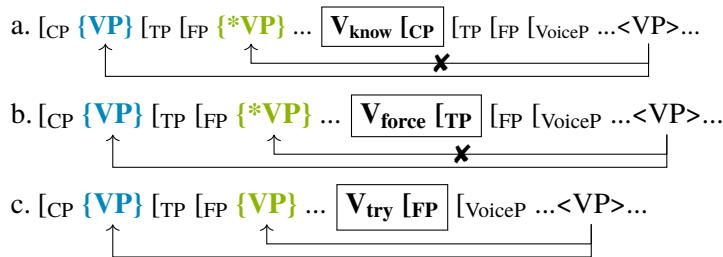
(2) Object topicalization across (a) CP, (b) TP, and (c) FP boundaries



(3) VP-copy fronting across (a) CP, (b) TP, and (c) FP boundaries

(generalization to be challenged)

N.B. Both the fronted and in-situ VPs are spelled out.



→ YM25 assume the functional sequence $C \succ T \succ (M^{Deo}) \succ F \succ \text{Voice} \succ V$, where

(a) **CPs** are taken by ‘**know**’-type verbs;

(b) **TPs** are taken by ‘**force**’-type (effectively object control) verbs;

(c) **FPs** are taken by ‘**try**’-type (effectively subject control) verbs (cf. Huang 2022).

→ **External (high)** object topicalization and VP-copy fronting land within CP and may cross CP.

→ **Internal (low)** object topicalization lands within TP and may cross TP (but not CP).

→ **Internal (low)** VP-copy fronting lands within FP and may cross FP (but not CP or TP).

- To account for (2–3), YM25 assume:

❶ *Level Embedding Approach* (Williams 2003): Embedded and matrix clauses are built in parallel in separate workspaces (and merge later).

❷ *Strict Cycle Condition*: Movement must occur within the cycle in which the relevant phrases are built, with YP built later than XP if Y is higher than X in the functional sequence.

→ **External (high)** object topicalization and VP-copy fronting occur within the CP cycle, built after TP and FP cycles.

→ **Internal (low)** object topicalization occurs within the TP cycle and cannot cross CP, built after the TP cycle.

→ **Internal (low)** VP-copy fronting occurs within the FP cycle and cannot cross CP or TP, built after the FP cycle.

→ **Generally**: Movement from an embedded XP to the matrix XP must occur within the XP cycle and cannot cross YP, if YP is built after XP (i.e., if Y is higher than X in the functional sequence).

3 Against Williams Cycle effects in Mandarin

★ Contra YM25, we argue *against* the existence of Williams Cycle in Chinese. Our counter-arguments are three-fold:

❶ Mandarin Chinese allows hyperraising, which directly contradicts the WC.

... as for the apparent WC effects in (2-3):

❷ We corroborate Chen’s (2023, 2025) analysis that **external (high)** vs. **internal (low)** object topicalization are triggered by *different probes*—pure $[\bar{A}]$ vs. composite $[A/\bar{A}]$ —which have *different distributions*.

→ Under such a view, the generalization in (2) reduces to a single case of improper *composite A/ \bar{A} -movement after \bar{A} -movement* (Longenbaugh 2017; Chen 2023, 2025a), which in turn follows from the Ban on Improper Movement.

❸ We identify a *previously unnoticed pragmatic requirement on VP-copy fronting*: the understood subjects of the fronted and in-situ VPs must be co-referential.

→ Once this *subject identity* requirement is satisfied, the generalization in (3) breaks down.

3.1 Hyperraising in Mandarin Chinese

• Mandarin (as well as Cantonese) allows **hyperraising (HR)**: **A-movement from finite CPs**.

→ Lee and Yip (2024): HR out of CPs taken by raising attitude adverbs (RAVs) encoding indirect evidentiality

→ Chen (2025b): HR out of CPs taken by attitude verbs passivized with *bei*

(4) Hyperraising with raising attitude adverbs

a. Wo tingshuo/ganjue [_{CP} (shuo) **na chang yu** bu hui ting]. (Baseline, transitive AVs)
1SG hearsay/feel.like COMP that CL rain not will stop
‘I heard that/ feel like the rain will not stop.’

b. **Na chang yu** tingshuo/ganjue [_{CP} (shuo) __ bu hui ting]. (Hyperraising, RAVs)
that CL rain hearsay/feel.like COMP not will stop
‘It is heard/felt that the rain will not stop.’ (Adapted from Lee and Yip 2024:1529n5)

(5) Hyperraising with passivized attitude adverbs

a. Jingcha renwei/huaiyi/xiangxin [_{CP} (shuo) **Zhangsan** hui mousha Lisi]. (Baseline, active)
police think/suspect/believe COMP Zhangsan will murder Lisi
‘The police thought/suspected/believed that Zhangsan will murder Lisi’

b. **Zhangsan**_i bei (jingcha) renwei/huaiyi/xiangxin [_{CP} (shuo) ___i hui mousha Lisi]. (Hyperraising, passive)
Zhangsan BEI police think/suspect/believe COMP will murder Lisi
Lit. ‘Zhangsan was thought/suspected/believed that (he) will murder Lisi (by the police).’ (Chen 2025b, ex.101, adapted)

• The landing site is on **SpecTP**, and yet a finite CP is crossed.

→ Evidence: the HR-subject may be a *wh*-word and/or a quantifier that resists topicalization, e.g., *henduo* ‘many’ NP and *duoshao* ‘how many’ NP.

→ See Lee and Yip 2024 for other arguments.

(6) {a. ***Henduo ren**/ b. ***duoshao ren**/ c. ^{OK}Zhangsan} ne, __ bu hui lai {a/c. ba./ b. ne?}
Many person how.many person Zhangsan TOP not will come SFP SFP
Int.: ‘Many people/Zhangsan, won’t come. / How many people are such that (they) won’t come?’ (Topicalization)

- (7) a. **Henduo ren** tingshuo/ganjue [_{CP} (shuo) __ bu hui lai]. (Hyperraising with RAVs)
 Many person hearsay/feel COMP not will come
 ‘It is heard/felt that many people will come.’ (Lee and Yip 2024:1548, translated to Mandarin)
- b. **Duoshao ren** bei (jingcha) renwei/huaiyi/xiangxin [_{CP} (shuo) __ hui mousha Lisi]?(Hyperraising with *bei*)
 how.many person BEI police think/suspect/believe COMP will murder Lisi
 ‘How many people are thought/suspected/believed that (they) will murder Lisi (by the police)?’

★ The existence of HR in Mandarin shows that WC effects are **not general** to all the dependencies even within one language. The WC is stipulated only for dependencies that conform to it, raising concerns on circular argumentation.

3.2 Object topicalization and distribution of A/ \bar{A} -probes

- It has long been observed that **external (high)** and **internal (low)** object topicalization exhibit different *locality profiles* (see e.g., Qu 1994; Ting 1995; Shyu 1995; Kuo 2009; Chen 2023, 2025a), as seen in (8).
 - **Internal (low)** object topicalization can only cross non-finite complement clauses (taken by subject and object control verbs), but not a finite CP.
 - **External (high)** object topicalization can cross both non-finite clauses and finite CPs.
 - ▲ This is the *sole* motivation for YM25’s WC-based account.
- (8) a. Topicalization with ‘**know**’-type verbs
 {**Zhe-ben shu_i**} meiyou-ren {***zhe-ben shu_i**} xiangxin/zhidao [_{CP} Lisi hui kan _i].
 this-CL book no-person this-CL book believe/know Lisi will read
 ‘{This book}, no one {*this book}, believes/knows that Lisi will read (it).’
- b. Topicalization with ‘**force**’-type and ‘**try**’-type verbs
 {**Zhe-ben shu_i**} meiyou-ren_j {**zhe-ben shu_i**} dasuan/changshi [PRO_j bipo/mingling Lisi_k [PRO_k kan _i]].
 this-CL book no-person this-CL book plan/try force/order Lisi read
 ‘{This book}, no one {this book}, planned/tried to force/order Lisi to read (it).’
- Importantly, **external (high)** and **internal (low)** object topicalization also exhibit different *A/ \bar{A} -properties* (Chen 2023, 2025a; cf. Qu 1994; Ting 1995; Shyu 1995; Kuo 2009), e.g., (9), with respect to Principle A reconstruction.¹
- (9) **External (high)** and **internal (low)** object topicalization differ in Principle A reconstruction
- a. **Ta-ziji_{i/j}-de erzi** Zhangsan_i dasuan/changshi [PRO_i bipo/mingling Lisi_j [PRO_j ma __ yidun]].
 3SG-self’s son Zhangsan plan/try force/order Lisi scold severely
 ‘His_{i/j} son, Zhangsan_i planned/tried to force/order Lisi_j to scold (him) severely.’
- b. Zhangsan_i **ta-ziji_{i/*j}-de erzi** dasuan/changshi [PRO_i bipo/mingling Lisi_j [PRO_j ma __ yidun]].
 Zhangsan 3SG-self’s son plan/try force/order Lisi scold severely
 ‘Zhangsan_i, his_{i/*j} son, planned/tried to force/order Lisi_j to scold (him) severely.’
- **Internal (low)** object topicalization *does not reconstruct for Principle A*, and more generally exhibits *mixed A/ \bar{A} -properties* associated with *composite A/ \bar{A} -movement*.
 - **External (high)** object topicalization *reconstructs for Principle A*, and more generally exhibits *\bar{A} -properties* associated with *\bar{A} -movement* (and certain mixed A/ \bar{A} -properties *only at intermediate movement steps through successive Spec, VoicePs*; see Chen 2023, 2025a for details).
 - ▲ This is completely overlooked and remains unexplained in YM25’s WC-based account.

1. Cross-linguistically, there is variation in whether A-movement shows Principle A reconstruction effects. In English, both A-movement and \bar{A} -movement show Principle A reconstruction effects (Belletti and Rizzi 1988; Pesetsky 2013), while in Dutch, only \bar{A} -movement shows Principle A reconstruction effects (see e.g., Neeleman & Van De Koot 2010). Mandarin is unlike English and like Dutch in that only \bar{A} -movement shows Principle A reconstruction effects. See Chen (2023, 2025a) for more discussion.

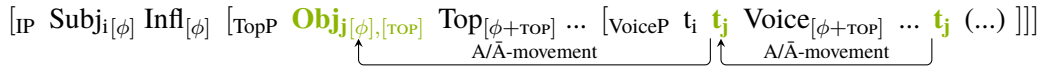
- Other A/ \bar{A} properties (Chen 2025a):

Properties	A	\bar{A}	Dinka, English, Mandarin composite A/ \bar{A} -movement	Mandarin IP-internal topicalization	Mandarin IP-external topicalization
New antecedents for anaphor binding	✓	*	✓	✓	*
No weak crossover	✓	*	✓	✓	*2
No reconstruction for Principle C	✓	*	✓	✓	*
Long-distance crossing c-commanding NPs	*	✓	✓	✓	✓
Long-distance crossing finite CPs	*	✓	✓ (D) * (E, M)	*	✓

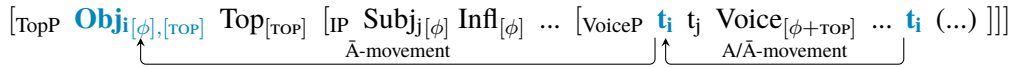
★ **Our view**, corroborating Chen (2023, 2025a)’s analysis: **External (high)** vs. **internal (low)** object topicalization are triggered by *different probes*—pure [\bar{A}] vs. composite [A/ \bar{A}]*—*which have *different distributions* (cf. van Urk 2015; Fong 2019; Lohninger, Kovač, and Wurmbrand 2022; Lohninger 2025 for a featural typology).

→ **Internal (low)** object topicalization is triggered by a *composite probe* [ϕ +TOP] on the **internal (low)** *Top head*, as illustrated in (10a), while **external (high)** object topicalization is triggered by a *pure \bar{A} probe* [TOP] on the **external (high)** *Top head*, as illustrated in (10b).

(10) a. **Internal (low)** object topicalization as successive-cyclic composite A/ \bar{A} -movement



b. **External (high)** object topicalization via intermediate composite A/ \bar{A} -movement



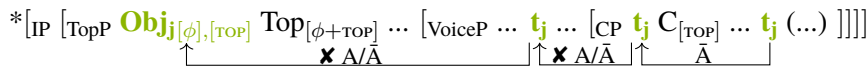
→ The Mandarin *Voice head* hosts both [A] and [\bar{A}] features.

As such, both **internal (low)** and **external (high)** object topicalization can involve intermediate composite A/ \bar{A} movement steps through Spec, VoicePs, associated with mixed A/ \bar{A} -properties.

→ The Mandarin *C head* only hosts pure [\bar{A}] features.

As such, for **internal (low)** object topicalization, cross-CP movement is ruled out due to improper *composite A/ \bar{A} -movement after \bar{A} -movement* (Longenbaugh 2017; Chen 2023, 2025a), which in turn follows from the Ban on Improper Movement, as illustrated in (11), while for **external (high)** object topicalization, the cross-CP movement step is associated with \bar{A} -properties.

(11) Improper composite A/ \bar{A} -movement after \bar{A} -movement



★ What YM25 claims to be WC effects in object topicalization reduce to language-specific distribution of A/ \bar{A} -probes, which can be diagnosed independently, based on A vs. \bar{A} -properties associated with the specific movement steps.

→ Note that one cannot simply augment a correlation between height and A/ \bar{A} -properties with the WC, as Georgian TP-internal *wh*-movement is pure \bar{A} rather than composite A/ \bar{A} (Bondarenko 2024).

★ The A/ \bar{A} properties **cannot** be reduced to WC effects. Composite probes are independently needed, which essentially renders the WC **superfluous** (at least in Mandarin).

2. *Modulo* the height of the pronouns tested. Chen (2025a) observes a difference between pronouns higher and lower than VoiceP, only the latter of which shows the lack of crossover and reconstruction for Principle C. She proposes that IP-external topicalization requires a prior intermediate movement to VoiceP which hosts [A/ \bar{A}] probes, but the second movement to $\text{TopP}_{\text{external}}$ is pure \bar{A} .

3.3 VP-copy fronting and subject identity

- *VP copying* occurs when the same verb takes both a (post-verbal) object and a (second) post-verbal phrase, e.g., a resultative or degree phrase headed by *de* (Gouguet 2006; Cheng 2007; *i.a.*), e.g., (12a).

→ The *VP-copy* (VP1) is an adjunct (see e.g., C.-T. J. Huang 1982, 1992; Cheng 2007).

→ V1 is derived from V2 via *sideward movement* (see e.g., Cheng 2007; cf. Nunes 2004).

- (12) a. Lisi hui [VP₂ [VP₁ **kan zhe-ben shu**] **kan-de** [DEP *de* hen kuai]].
 Lisi will read this-CL book read-DE DEG fast
 ‘Lisi will reading this book read (it) fast.’

- b. {[VP₂ **kan zhe-ben shu**]} Lisi {[VP₂ **kan zhe-ben shu**]} hui [VP₁ *t*_{VP2} **kan-de** [DEP *de* hen kuai]].
 read this-CL book Lisi read this-CL book will read-DE DEG fast
 ‘Lisi reading this book will read (it) fast.’

- (13) VP copying via sideward movement (adapted from Cheng 2007:160)

- a. [VP V [DEP ...]] (Baseline)
 b. [VP V [DEP ...]] V (Sideward movement)
 Copy ↑
 c. [VP₁ V [DEP ...]] [VP₂ V <Merge> DP/bare noun] (Taking objects)
 d. [VP₁ [VP₂ V DP/bare noun] [VP₁ V [DEP ...]]] (Adjunction)
 e. (Subj) [VP₂ V DP/bare noun] (Subj) ... [VP₁ *t*_{VP2} [VP₁ V [DEP ...]]] (Optional: Further movement)
 Move ↑

- YM25 observe that **external (high)** and **internal (low)** VP-copy fronting exhibit different *locality profiles*, as in (14).³

→ **Internal (low)** VP-copy fronting lands on **FP**, and can only cross complement clauses taken by ‘try’-type verbs (claimed to take **FP**), but not those taken by ‘force’-type verbs (claimed to take **TP**) or finite **CPs**.

→ **External (high)** VP-copy fronting lands on **CP**, and can cross both non-finite clauses (FP/TP) and finite **CPs**.

- (14) a. VP-copy fronting with ‘know’-type verbs

{**Kan zhe-ben shu**} Zhangsan {***kan zhe-ben shu**} xiangxin/zhidao [CP Lisi hui kan-de hen kuai].
 read this-CL book Zhangsan read this-CL book believe/know Lisi will kan-DE DEG fast
 ‘{Reading this book}, Zhangsan {*reading this book} believes/knows that Lisi will read (it) fast.’

- b. VP-copy fronting with ‘force’-type verbs

{**Kan zhe-ben shu**} Zhangsan {***kan zhe-ben shu**} bipo/mingling Lisi [PRO_j kan-de hen kuai].
 read this-CL book Zhangsan read this-CL book force/order Lisi read-DE DEG fast
 ‘{Reading this book}, Zhangsan {*reading this book} forced/ordered Lisi to read (it) fast.’

- c. VP-copy fronting with ‘try’-type verbs

{**Kan zhe-ben shu**} Zhangsan {**kan zhe-ben shu**} dasuan/changshi [PRO_j kan-de hen kuai].
 read this-CL book Zhangsan read this-CL book plan/try read-DE DEG fast
 ‘{Reading this book}, Zhangsan {reading this book} planned/tried to read (it) fast.’

▲ Note that their accounts rely on the assumption that the ‘try’-type verbs take **FPs** (lower than **TP**, ~AspP/vP).

→ C.-T. J. Huang (2022) and He (2024): *dasuan* ‘plan’ takes **minimally** a **TP** (“situation”, Wurmbrand and Lohninger 2023’s Implicational complementation hierarchy) and may accommodate future tense like *yaol/jiang* (N. Huang 2015).

→ Patterning with ‘force’-type verbs like *bipo* ‘force’!

→ Although *changshi* takes an “event” complement and resists *yaol/jiang*, its complement may be **as large as TPs**

→ Allowing semi-complementizer *shuo*, internal topicalization, focus fronting (N. Huang 2018; Liu and Yip 2025)!

3. They do not assume sideward movement, but derive the copying effects from VP movement + partial copy deletion (Meadows and Yan 2023). While this approach is independently problematic with cases where the DEP is a complement rather than adjuncts, one may still implement their WC approach to (13e). Therefore, whether the copying effects are derived by sideward movement or partial copy deletion is immaterial here.

- As it turns out, the meaningful difference between the ‘force’-type and ‘try’-type verbs are **not** the size of complementation, but **whether the controller is a subject or an object**:

→ ‘force’-type: *object control* verbs → matrix subjects and embedded PRO may or may **not** have the same identity

→ ‘try’-type: *subject control* verbs → matrix subjects and embedded PRO have the **same identity**

- Contra YM25, we argue that **internal (low)** VP-copy fronting is not constrained by locality but by *a pragmatic requirement that the understood subjects of the fronted and in-situ VPs must be co-referential*.

→ In (14a-b) with an **internal (low)** VP-copy, the understood subject of the VP-copy is Zhangsan—the matrix subject, while the understood subject of the in-situ VP is Lisi—the embedded subject (PRO, controlled by the matrix object).

→ When the matrix subj. and the embedded subj. PRO are *co-referential* (when the matrix obj. is a reflexive), **internal (low)** VP-copy fronting can cross the complement clause taken by a ‘force’ type (obj. control) verb: (15a)

→ When the matrix and embedded subj. are *co-referential*, **internal** VP-copy fronting can even cross finite CP: (15b)

- (15) a. {**Kan zhe-ben shu**} Zhangsan_i {**kan zhe-ben shu**} bipo/mingling **ta-ziji**_i [PRO_i kan-de hen kuai].
 read this-CL book Zhangsan read this-CL book force/order 3SG-self read-DE DEG fast
 ‘{Reading this book}, Zhangsan {reading this book} forced/ordered himself to read (it) fast.’

- b. {**Kan zhe-ben shu**} Zhangsan_i {**kan zhe-ben shu**} xiangxin/zhidao [CP **ta**_{i/*j} hui kan-de hen kuai].
 read this-CL book Zhangsan read this-CL book believe/know 3SG will read-DE DEG fast
 ‘{Reading this book}, Zhangsan {reading this book} believes/knows that he will read (it) fast.’

- To achieve subject identity, we suggest that the subject of the fronted VP-copy is a PRO, which must be controlled by the subject of the in-situ VP or a co-referential NP.

Cf. VP fronting: the fronted VP is effectively a **VoiceP**, containing the predicate-internal subject trace (Huang 1993). As such, the reflexive pronoun contained within the fronted VP is always bound by the embedded subject in (16b).

- (16) a. **Ta-ziji**_{i/j} Zhangsan_i xiangxin/zhidao [CP Lisi_j ma-guo _].
 3SG-self Zhangsan believe/know Lisi scold-EXP
 ‘Himself_{i/j}, Zhangsan_i believes/knows that Lisi_j scolded (him_i/himself_j)’

- b. [VoiceP **t**_j **Ma ta-ziji**_{j/*i}] Zhangsan_i xiangxin/zhidao [CP **Lisi**_j bu hui _].
 scold 3SG-self Zhangsan believe/know Lisi NEG will
 ‘Scold himself_{j/*i}, Zhangsan_i believes/knows that Lisi_j will not (do it).’

→ Implication for VP-copy fronting: the fronted VP-copy **contains its own subject**, which we assume to be a PRO:

- (17) a. [VoiceP **PRO**_i **Kan zhe-ben shu**] Zhang_i xiangxin/zhidao [CP **ta**_i hui [VoiceP **t**_i [VP kan-de hen kuai]]].
 read this-CL book Zhang believe/know 3SG will read-DE DEG fast
 ‘Reading this book, Zhang believes/knows that he will read (it) fast.’

- b. Zhang_i [VoiceP **PRO**_i **kan zhe-ben shu**] xiangxin/zhidao [CP **ta**_i hui [VoiceP **t**_i [VP kan-de hen kuai]]].
 Zhang read this-CL book believe/know 3SG will read-DE DEG fast
 ‘Zhang reading this book believes/knows that he will read (it) fast.’

→ The difference between **external (high)** and **internal (low)** VP-copy fronting lies in the reconstruction possibilities from pure [Ā] vs. composite [A/Ā] probes, parallel to **external (high)** and **internal (low)** object topicalization.

- (18) a. [TopP [VoiceP **PRO**_k **V_{embed}-O**]_[φ+TOP] Top_[TOP] [TP Subj_i [VoiceP V_{matrix} [CP/TP **Subj**_k ...[VoiceP **t**_i **V_{embed} deP**]...]

 reconstruction
- b. [TP **Subj**_i [TopP [VoiceP **PRO**_{*k/#i} **V_{embed}-O**]_[φ+TOP] Top_[φ+TOP] [VoiceP V_{matrix} [CP/TP **Subj**_k ...[VoiceP **t**_i **V_{embed} deP**]...]

 control no reconstruction

★ YM25’s conclusion is based on **incomplete generalization**. With subject identity taken into account, VP-copy fronting does not show WC effects at all, and even **falsifies** the WC in Mandarin Chinese.

4 Conclusion

- The apparent WC effects in Mandarin argued by YM25 can either be reduced to distribution of composite probes, or do not stand due to incomplete generalization.
 - This is a welcome result since Mandarin allows hyperraising (A-movement to SpecTP across finite CP).
- ★ The upshot is that the WC must be *parameterized* to individual languages and *cannot* be universal.

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