Sentence-final particles at the vP phase edge

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I propose that the low class of Sentence-Final Particles (SFPs) in Mandarin Chinese (sentence-final le, éryi, láizhe...) are head-final heads in the extended vP periphery, rather than in the CP domain as previously analyzed, substantiating a prediction made by Hsieh & Sybesma (2011). Evidence for the proposal comes from the semantic scope of sentence-final éryi and le with respect to negation and modals. Consequences for the syntax of Chinese SFPs and for the Final-over-Final-Constraint (FOFC) are discussed.

1. Introduction

The syntactic status of Sentence-Final Particles (SFPs) in Mandarin Chinese has long been an area of active debate in Chinese linguistics. SFPs have been analyzed as C0 heads (Lee, 1986; a.o.) which are linearized on the right. However, given the rigidly head-initial character of Mandarin clause structure (Huang, 1982; a.o.), the sentence-final position of these items is conspicuous.

In this paper I propose that a subset of Mandarin SFPs are in the extended vP periphery, rather than in the CP periphery as commonly assumed. Specifically, this involves the “low” class of SFPs, including sentence-final le, éryi, and láizhe. Unlike other SFPs, which are clause-typing (Force) and Attitude markers that clearly correspond to CP-peripheral heads cross-linguistically, the low class includes aspectual and focus-sensitive operators. I present data from the literature that shows that sentence-final le and éryi ‘only’ takes scope below the high negation búshì, and le scopes below certain modals. This data from the compositional semantic scope of these low SFPs is incompatible with the assumption that they are in the extended CP periphery.

In a final section, I discuss important consequences of this work for the theory of the Final-over-Final Constraint (FOFC; Holmberg, 2000; Biberauer et al 2008, 2009), a proposed universal constraint on structure-building, and I show how my proposal for the low class of SFPs substantiates a prediction made by Hsieh & Sybesma (2011).

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2. Background on Mandarin Chinese SFPs

SFPs in Mandarin have traditionally been organized into three classes (Chao, 1968; Hu, 1981; Zhu, 1982; a.o.). Descriptively, I will refer to these classes here as SFP₁, SFP₂, and SFP₃. The items within each class are in complementary distribution with one another, and the relative word order between these classes is fixed: SFP₁ < SFP₂ < SFP₃. I refer the reader to Paul (2014) and references therein for demonstrations of these basic distributional facts.¹

The table in (1), based on Paul (2014), gives some representative members for each class:

<table>
<thead>
<tr>
<th>SFP₁</th>
<th>SFP₂: clause-type</th>
<th>SFP₃: attitude</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>le</em> currently relevant state</td>
<td><em>ma</em> interrogative</td>
<td><em>ou</em> warning</td>
</tr>
<tr>
<td><em>láizhe</em> prior knowledge</td>
<td><em>ba</em> imperative</td>
<td>*(y)*a astonishment</td>
</tr>
<tr>
<td><em>éryì</em> only</td>
<td><em>ne</em> follow-up question</td>
<td><em>ne</em> exaggeration</td>
</tr>
</tbody>
</table>

Among these three classes, SFP₂ has received both the earliest and the widest attention. Theoretically, Lee (1986) first proposed that the sentence-final *ma* is an interrogative clause-typing C head and Tang (1988) and Cheng (1991) extend this claim to other SFP₂. Paul (2014) analyzes all Mandarin SFPs as head-final heads, and proposes that each class of SFP corresponds to a distinct head in a split CP system, following the work of Rizzi (1997) and others. She proposes that SFP₁ occupies a head in the split CP called “Clow,” SFP₂ realizes Force, and SFP₃ realizes Attitude.²

(2) Paul’s (2014) proposal for Mandarin SFPs in a three-layer split CP:

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SFP₁  SFP₂  SFP₃
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There are a number of clues that SFP₁ differs categorically from SFP₂ and SFP₃. First, the items in SFP₂ and SFP₃ each seem to form a natural class: SFP₂ includes primarily clause-typing markers, and items in SFP₃ express speaker attitude. Both of these functions are cross-linguistically commonly realized by heads in the extended CP domain (Rizzi, 1997; a.o.). In contrast, the items in SFP₁ resist a unified semantic

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¹ The arguments for *éryì* being an item in SFP₁ are in Erlewine (2010).
² It has been argued that head-initial complementizers exist for embedded complement clauses, e.g. *shuō* (Simpson & Wu, 2002; Hsieh & Sybesma, 2011), although this characterization has been contested, for example in Paul (2014) footnote 26. The proposal and arguments presented here do not hinge on the status of these items. But see section 5 below for discussion of the relation of my proposal to the theory of Hsieh & Sybesma (2011).
characterization. Many items in SFP₁ can be characterized primarily as tense or aspect markers, but SFP₁ also includes the focus-sensitive operator éryǐ ‘only’ (Erlewine, 2010).

Second, items in SFP₂ and SFP₃ are only available in root clauses, while SFP₁ is not restricted to root contexts. This contrast is illustrated below in example (3) with the sentence-final ‘only’ éryǐ (SFP₁) and example (4) with the interrogative ma (SFP₂):

(3) **SFP₁ éryǐ ‘only’ can be part of the matrix or embedded clause:**

Wǒ gāosù le yīge háizi tā kěyǐ chī yīge dàngāo éryǐ. (Erlewine, 2012)
I told PRF one child s/he can eat one cake ONLY
✓ ‘I told one child that he can only eat [one cake].’
✓ ‘I only told [one child] that he can eat one cake.’

(4) **Interrogative SFP₂ ma must be interpreted as part of the matrix clause:**

Nǐ bù zhīdào tā lái ma? (Li & Thompson 1981, p. 557)
you NEG know s/he come INTERROGATIVE
✓ ‘Do you not know that s/he’s coming?’
* ‘You don’t know whether or not s/he’s coming.’

In examples (3) and (4), there is an embedded complement clause and a SFP at the end of the utterance. We observe an attachment ambiguity in (3): the sentence-final éryǐ could be attached to the matrix clause, associating with ‘one child;’ or it can be part of the embedded complement clause of ‘tell,’ associating with ‘one cake.’ In contrast, example (4) with sentence-final ma in a similar configuration exhibits no such ambiguity. The interrogative clause-typing ma must be part of the matrix clause, even though the embedding predicate ‘know’ can embed both declarative and interrogative clauses. See Paul (2014) for further discussion of this difference.

A third difference—that SFP₁, but not SFP₂ or SFP₃, interacts scopally with negation and modals—is will form the motivation for the proposal presented in this paper.

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³ Paul (2014) also discusses items that may be analyzed as exclusively non-root SFPs, such as the dehuà of conditional clauses and the particle de in relative clauses and the shi…de “cleft” construction (Paul & Whitman, 2008). I will not discuss such items here.

⁴ Paul (2014) additionally notes that the SFP₁ láizhe, a marker referring to the recent past or a prior state of knowledge, is also incompatible with the high negation méiyǒu. I will not reproduce these arguments here for reasons of space.
3. Proposal

I propose that the items in SFP₁ occupy a head in the extended vP periphery of Mandarin clauses, in contrast to SFP₂ and SFP₃ which are in the extended CP periphery. (See section 5 for discussion of an alternative where SFPs are right-adjoining adverbs.) This proposal is schematized in (5) below. The heads Force and Attitude are heads in a split CP, following Rizzi (1997) and Paul (2014). Due to the lack of a unified characterization of SFP₁—in particular due to the sentence-final ‘only’ éryì being a part of this class—I will refrain from naming the head, labeling it simply SFP₁.

(5) [[ [[ TP ... [SFP₁P vP SFP₁ ] ] Force ] Attitude ] SFP₁ SFP₂ SFP₃]

The proposal is a refinement of Paul’s (2014) proposal, the first comprehensive theory for Mandarin Chinese SFPs which addresses all three classes of SFPs, reviewed above and schematized in (2). The difference is the placement of SFP₁ in a position inside TP, above vP but below the CP domain. This difference is motivated by the scope of operators in SFP₁, which I will present in section 4.

This proposal for SFP₁ accords structurally with previous analyses of the SFP₁ le as a head-final head below the CP-domain (Asp for Hsieh, 2001, Grano, 2012; T in Tang, 1998) and Paul & Whitman’s (2008) analysis of the SFP₁ de in the shì...de construction as an Asp head “in a position directly above the base position of the subject (Spec,vP).” It also substantiates a prediction made by Hsieh & Sybesma’s (2011) analysis of SFPs, which I will discuss in section 5.

The heads SFP₁, Force, and Attitude are linearized on the right of their complements, unlike other heads in the clausal spine. Here I will stay agnostic towards how these heads are linearized to the right: these heads may be lexically specified to be head-final, as illustrated in (5), or may alternatively be head-initial but then obligatorily front their complements (Simpson & Wu, 2002; Lin, 2006; Hsieh & Sybesma, 2011; a.o.). I will, however, address the question of why it is these positions in the clause, and only these positions, which allow clausal heads to be linearized to the right. I argue that this follows from a phase-based characterization of the Final-Over-Final Constraint, to be discussed in section 5.

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5 What is important here is that SFP₁ be at the edge of the lower phase in Mandarin clauses. Here I use the common label vP to refer to this lower phase. See footnote 11 and section 5.
4. Motivation

If the items in SFP1 are in the extended CP, we predict that they necessarily scope over all scope-bearing operators in the clause’s TP (6). In contrast, the proposal put forward in section 3, schematized above in (5), makes the prediction that the items in SFP1 will take scope above vP-internal operators (7a), but under operators above vP (7b).

(6) If SFP1s are in CP, we predict scope over all TP-internal operators:
\[ [[TP \ldots Op \ldots] \text{ C}_{\text{low}} = \text{SFP1}} \] \Rightarrow \text{‘SFP1 > Op, *Op > SFP1}

(7) If SFP1s are at vP edge, we predict scope over some and under others:
\[ \begin{align*}
\text {a. } & [[TP \left[ \text{SFP1P}_1 \ldots \text{Op} \ldots \right] \text{ SFP1}_1 \right] ] \Rightarrow \text{‘SFP1 > Op, *Op > SFP1} \\
\text {b. } & [[TP \ldots \text{Op} \ldots \left[ \text{SFP1P}_1 \text{vP} \right] \text{ SFP1}_1 \right] ] \Rightarrow \text{*SFP1 > Op, ‘Op > SFP1}
\end{align*} \]

In the following subsections I will show that SFP1 participates in scope alternations of the form predicted by (7), supporting the current proposal.

4.1. The scope of sentence-final éryi ‘only’

I begin with a discussion of the sentence-final ‘only’ word, éryi. In Erlewine (2010), I showed that éryi is a member of the first class of SFPs: it is in complementary distribution with other items in SFP1 such as sentence-final le and is strictly ordered before the clause-typing (SFP2) and attitude (SFP3) markers. The semantics of ‘only’ is scope-bearing and affects the truth conditions of the utterance (Horn, 1969; a.o.), making it a good item to use to diagnose the structural scope of SFP1. I observed that éryi takes obligatorily wide scope with respect to the negation bù, but takes obligatorily narrow scope with respect to the higher negation búshì:

(8) SFP éryi ‘only’ takes scope above bù but below búshì (Erlewine, 2010):
\[ \begin{align*}
\text {a. } & \text{Wo' bù xihuan chi RŌUBĀOF éryi.} \quad \text{‘éryi > NEG, *NEG > éryi} \\
& \text{I NEG like eat [meat buns]f ONLY} \\
& \text{‘I only don't like to eat [meat buns]f ... I eat everything else.’} \\
& \text{* ‘I don't only like to eat [meat buns]f ... I also eat (some) other things.’} \\
\text {b. } & \text{Wo' búshì xihuan chi RŌUBĀOF éryi.} \quad \text{*éryi > NEG, ‘NEG > éryi} \\
& \text{I NEG’ like eat [meat buns]f ONLY} \\
& \text{* ‘I only don't like to eat [meat buns]f ... I eat everything else.’} \\
& \text{‘I don't only like to eat [meat buns]f ... I also eat (some) other things.’}
\end{align*} \]

The only difference between (8a) and (8b) is the form of the negation chosen: bù and búshì, respectively. The word orders in (8a–b) indicate no difference in the relative structural position of the negation with respect to ‘only.’ Under the view that all SFPs are in the extended CP, éryi taking scope below negation in (8b) is an unexpected syntax-semantics mismatch.
The proposal put forth here for the position of SFP\textsubscript{1} including éryǐ in the extended vP periphery offers a simple solution to the contrast observed in (8). The contrast in (8) is transparently explained by the different structural heights of bù and būshì. The proposed structures for (8a) and (8b) are schematized below in (9). In this way, a fixed position for éryǐ can be adopted and no syntax-semantics mismatch occurs.

(9) **Explaining the contrast in (8):**

\[ [\text{TP} \ldots (\text{būshì} = \text{NEG}') \ldots [ [\text{vP} \ldots (bù = \text{NEG}) \ldots \text{VP}] \text{éryǐ} ] ] \]

a. “… bù ... éryǐ” (8a)  \( \Rightarrow \)  éryǐ > NEG

b. “… būshì ... éryǐ” (8b)  \( \Rightarrow \)  NEG > éryǐ

Independent evidence corroborates the structural positions of bù and būshì in (9). The lower negation bù is adjoined to vP/VP and cliticizes to the verb (Hsieh, 2001, and references therein), and therefore is below the position of éryǐ. In contrast, būshì is structurally higher than vP (Yeh, 1992; a.o.) and, I argue, necessarily above éryǐ.\footnote{Assuming that SFPs are clausal heads, this relationship between būshì and éryǐ is independently necessitated by the Final-over-Final Constraint (FOFC). Assuming that būshì and éryǐ are both within the same Spellout domain (above vP and below CP), FOFC requires that būshì be structurally higher than éryǐ. If the heads were in the other order, éryǐ would form a head-final projection above the head-initial projection headed by būshì or its component shì, in violation of FOFC. See section 5 for more on FOFC.}

That būshì is higher than bù can be straightforwardly observed in clauses with both negations:

(10) Wǒ būshì bù xǐhūan chǐ ròubāo.
    I NEG’ NEG like eat meat buns
    ‘I don’t not like to eat meat buns… I’d just rather have something else.’

It has been independently argued that exclusive operators such as ‘only’ must associate with material in their c-command domain at LF (Tancredi, 1990; Erlewine, to appear). One prediction of this analysis is that éryǐ can only associate with material in vP, and therefore cannot associate with subjects. This prediction is borne out:\footnote{Tang (1998, p. 44ff) makes a similar claim regarding the Cantonese sentence-final ‘only’ zaa3.}

(11) a. ‘Wǒ aì NĪF éryǐ.
    I love [you]\textsubscript{F} ONLY
    ‘I only love [you].’

b. *WǑF aì nǐ éryǐ.
    [I]\textsubscript{F} love you ONLY
    Intended: ‘[I]\textsubscript{F} only love you.’

However, at the NACCL meeting, Jo-Wang Lin pointed out that éryǐ is able to associate with subjects in sentences such as (12) below with the additional pre-subject ‘only’ operator, zhīyǒu:

\[ [\text{TP} \ldots (\text{zhīyǒu}) \ldots [ [\text{vP} \ldots (bù = \text{NEG}) \ldots \text{VP}] \text{éryǐ} ] ] \]

a. “… bù ... éryǐ” (8a)  \( \Rightarrow \)  éryǐ > NEG

b. “… būshì ... éryǐ” (8b)  \( \Rightarrow \)  NEG > éryǐ
(12) ˊ Zhǐ yǒu WǑ ai nǐ éryǐ.
     ONLY exists [I]e love you ONLY
     ‘Only [I]e love you… no one else loves you.’ (cf 11b)

I propose that the zhǐyǒu in (12) involves the addition of another vP layer above
the subject, headed by the existential verb yǒu, thereby hosting a position for éryǐ which
does c-command the subject. It therefore is not a counterexample to the proposal put
forward here for the position of SFP₁, and therefore of éryǐ. Without the higher zhǐyǒu,
subject association with sentence-final éryǐ is not possible, as observed in (11) above.

4.2. The scope of sentence-final le

Similar evidence comes from the scope of sentence-final le, which is often
referred to as a Currently Relevant State marker following Li & Thompson (1981) and is
one of the best-studied items in SFP₁.⁸ As with sentence-final éryǐ, we will see that le
takes scope above operators in the vP domain, but below scope-bearing operators higher
in the clause. This is unexpected under the view that all SFP₁ are in the CP periphery but
is predicted by the proposal that SFP₁, unlike higher SFPs, are in the extended vP
periphery.

There are a variety of proposals for characterizing the semantic contribution of
sentence-final le. Here for concreteness I will follow the proposal of Soh & Gao (2006),
which is also elaborated on in Soh (2009):

(13)  Semantics for sentence-final le (Soh & Gao, 2006; extended in Soh, 2009):
      Given a proposition p:
      Asserts:  p is true; and
      Presupposes:  there is “an immediate past event or state” where p is false.

      Consider a basic example with le in (14), below. The sentence asserts that the
      speaker now likes papaya. In addition, the sentence-final le contributes the presupposition
      that the speaker did not like papaya at an immediately prior point.

      (14)  Wǒ xīhūan mùguā le. (Soh & Gao, 2006)
           I like papaya LE
      Asserts: ‘I (now) like papaya.’
      Presupposes: ‘I did not like papaya in the immediate past.’

⁸ Tradition dictates that at this point a footnote state that this sentence-final le is distinct from the
verbal suffix le. In all examples here, le is placed after a postverbal object to avoid this confound.
With this basic semantic description in mind, we now turn to a contrast observed in Soh & Gao (2006) regarding the interpretation of sentence-final le with respect to high and low negation. Examples (15a) and (15b) below differ only in the choice of negation used, leading to a subtle difference in interpretation: the two express identical assertions but carry different presuppositions. Note that in terms of linear order, the sentences are identical in terms of the relative position of negation and sentence-final le.

(15) **SFP le takes scope above bú but below búshì (Soh & Gao, 2006):**

a. Tā bù xiǎng jiā le.  
   *le > NEG, *NEG > le*  
   s/he NEG miss home LE  
   **Asserts:** ‘S/he does not miss home now.’  
   **Presupposes:** ‘S/he did miss home before.’

b. Tā búshì xiǎng jiā le.  
   *le > NEG, ‘NEG > le*  
   s/he NEG miss home LE  
   **Asserts:** ‘S/he does not miss home now.’  
   **Presupposes:** ‘S/he did not miss home before.’

Soh & Gao (2006) argue that the difference between (15a) and (15b) should be thought of as a difference in scope between negation and le. In example (15a), le takes scope over negation, and therefore we yield the presupposition that “s/he does not miss home” was false in the immediate past, i.e. that s/he did miss home in the immediate past. In contrast, in example (15b), negation takes scope over le. The presupposition introduced by le therefore is that “s/he did miss home” was false in the immediate past, i.e. that s/he did not miss home in the immediate past. This presupposition will then project through the higher negation. These assertions and presuppositions can be computed compositionally as follows:

(16) **Semantic interpretations of (15), based on (13):**

a. $[(15a)] = LE(p)$, where $p = \text{NEG}(‘s/he misses home’)$.  
   **Asserts:** $p$ is true now $\Leftrightarrow$ s/he does not miss home now  
   **Presupposes:** in the immediate past, $p$ was false $\Leftrightarrow$ s/he did miss home immediately before

b. $[(15b)] = \text{NEG}(LE(p))$, where $p = ‘s/he misses home’$.  
   **Asserts:** $\text{NEG}(p$ is true now) $\Leftrightarrow$ s/he does not miss home now  
   **Presupposes:** in the immediate past, $p$ was false $\Leftrightarrow$ s/he did not miss home immediately before

The contrast between the presuppositions in (15) shows us that sentence-final le must take scope above the lower negation bú but below the higher negation búshì, and
parallels the contrast observed with éryì in the previous section. These scope relations are predicted by the proposal put forward here, where SFP₁ including le occupies a position in the extended vP periphery, necessarily above the lower negation bù but below the higher negation bùshì. In contrast, if le were in the CP periphery, we predict it to take scope over both forms of negation.

(17) Explaining the contrast in (15):
[TP … (bùshì = NEG’) … [ [vP … (bù = NEG) … VP ] le ] ]

a. “... bù ... le” (15a) ⇒ le > NEG
b. “... bùshì ... le” (15b) ⇒ NEG > le

Lin (2011) observes a similar contrast regarding the scope of le with respect to different modals. Consider the following pair of sentences in (18), varying only in the choice of existential modal: the circumstantial ability modal néng ‘able to’ and the epistemic modal kěnèng ‘may.’

(18) SFP le takes scope above néng but below kěnèng (Lin, 2011):¹⁰

a. Zhāng Sān néng qù Tàiběi le.  ‘Zhang San is able to go Taipei’
   Asserts: ‘Zhang San is able to go to Taipei.’
   Presupposes: ‘ZS was not able to go to Taipei in the immediate past.’
   * ‘Zhang San is able to have gone to Taipei.’

b. Zhāng Sān kěnèng qù Tàiběi le.  ‘Zhang San may go Taipei’
   *le > MAY, ‘MAY > le
   Asserts: ‘Zhang San may have gone to Taipei.’
   Presupposes: ‘Zhang San had not gone to Taipei in the immediate past.’

While le takes scope over the circumstantial modal néng ‘able to’—reflected by the presupposition introduced by le commenting on the previous inability of Zhang San to go to Taipei—it takes scope under the epistemic modal kěnèng ‘may.’ Grano (2012: section 5.4.4) argues that both (18a) and (18b) are monoclusal and that this contrast is best explained by these modals occupying different positions in the clause, with le in a

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¹⁰One-line translations here are from Lin (2011). The phrasing ‘It has become the case that’ in the faithful English translation for (18a) reflects le taking scope over the modal.
structural position above něng and below kěněng. This accords with the structural hierarchy of modals observed crosslinguistically: epistemic modals (here, kěněng) are structurally higher in the clause, whereas circumstantial modals (here, něng) are structurally lower in the clause (see Grano, 2012, and references therein).

Grano’s (2012) analysis of this contrast requires that SFP₁ such as sentence-final le occupy a position above some modals such as něng but below others such as kěněng. If le were in the CP domain, we would expect it to take scope over all modals and we would not predict the contrast in (18). In contrast, the correct scope relations for (18) are predicted by the proposal put forward here, if we analyze the modal něng within the lower (vP) phase and kěněng above it.¹¹ This is independently motivated by Tsai’s (2012) work on the cartography of modals in Mandarin Chinese, which identifies ability modals (něng) within vP and epistemic modals (kěněng) in a higher position in the clause.

(19) Explaining the contrast in (18):

\[ TP \ldots (kěněng = MAY) \ldots [vP \ldots (něng = ABLE TO) \ldots VP ] le ] \]

a. “... něng ... le” (18a) \( \rightarrow \) le > ABLE TO

b. “... kěněng ... le” (18b) \( \rightarrow \) MAY > le

4.3. Summary of motivations

In this section I presented evidence that the items in SFP₁ interact scopally with material in the TP. These contrasts support the view that SFP₁ (éryì, le, etc.) occupies a head in the extended vP periphery, illustrated schematically in (7), repeated here as (20):

(20) SFP₁ scopes over some and under others, supporting the proposal:

a. \[ TP [SFP₁P [vP ... Op ... ] SFP₁ ] ] \( \rightarrow \) \( ^{'} \)SFP₁ > Op, *Op > SFP₁

b. \[ TP ... Op ... [SFP₁P vP SFP₁ ] ] \( \rightarrow \) *SFP₁ > Op, \( ^{'} \)Op > SFP₁

Having motivated that the low class of sentence-final particles, SFP₁, occupy a position in the extended vP periphery, important questions remain regarding the syntax of SFPs. Given the overwhelmingly head-initial nature of Mandarin Chinese clause structure (Huang, 1982; a.o.), why are apparently head-final heads allowed at these positions—at the edge of the vP periphery (SFP₁) and the edge of the CP periphery (SFP₂ and SFP₃)—and not at other positions in the clause? I will explore this question in the next section.

¹¹ My analysis here relies on this boundary coinciding with a phase boundary, though the precise label for this phase edge is not crucial for my proposal. Recall that “vP” is used here as a label to refer to the first phase in Mandarin clauses (footnote 5).
5. SFPs and the Final-Over-Final Constraint

Here I have proposed that the the low class of Mandarin SFPs occupy a position in the vP periphery and presented evidence from the semantic scope of SFP₁ to support this view. In this section I will discuss some consequences of this proposal.

I follow the common view that Chinese SFPs are head-final heads in the clausal spine (Lee, 1986; Tang, 1988; Cheng, 1991; Paul, 2014; and references therein). An alternative would be to analyze SFP as right-adjoining adverbs. However, I believe this approach is untenable for three reasons: (a) SFPs are a small, closed class; (b) uncontroversially adjoined adverbs are not linearized on the right in Mandarin clause structure, except low in the VP (Ernst, 2002); and (c) the items in each of the three classes of SFPs are in complementary distribution with other items in their class; i.e. a clause may only have one SFP₁ at a time (Paul, 2014; Erlewine, 2010 for éryì). Adjunction should be able to apply recursively, as long as the adjuncts are independently licensed in the position and they lead to a meaningful semantic interpretation. Given that the semantics of various items in SFP₁ are compatible with one another, their complementary distribution is unexpected under an adverb analysis.

Under the view that they are head-final heads, Chinese SFPs are an anomalous creature given the otherwise head-initial clause structure of Chinese (Huang, 1982; a.o.). Moreover, Chinese SFPs would instantiate a cross-linguistically rare configuration with head-final heads taking head-initial projections as their complements. In fact, this configuration is precisely what is predicted to be impossible under the Final-over-Final Constraint, a universal constraint on structure building and word order proposed by Holmberg (2000) and supported by Biberauer, Holmberg, & Roberts (2008) and Biberauer, Newton, & Sheehan (2009):

(21) The Final-over-Final Constraint (FOFC) (Holmberg, 2000):
If α is a head-initial phrase and β is a phrase immediately dominating α, then β must be head-initial. If α is a head-final phrase, and β is a phrase immediately dominating α, then β can be head-initial or head-final.

Informally, FOFC allows for the existence of three types of linguistic structure: strictly head-initial (HI), strictly head-final (HF), and mixed structures with head-initial projections above head-final projections. This is schematized as follows:

(22) Predictions of the Final-over-Final Constraint:

\[
\begin{align*}
\text{a.} & \quad \checkmark \text{HF over HF:} \\
\text{b.} & \quad \checkmark \text{HI over HI:} \\
\text{c.} & \quad \checkmark \text{HI over HF:} \\
\text{d.} & \quad \ast \text{HF over HI:}
\end{align*}
\]
The effects of FOFC can be observed both across languages and within individual languages with relatively free word orders. See Biberauer et al (2008, 2009) for examples supporting FOFC from both synchronic and diachronic grammar.

That Chinese SFPs might counterexemplify the proposed universal FOFC has not gone unnoticed (Biberauer et al, 2008, 2009; Bailey, 2010; Paul, 2014; a.o.). Biberauer et al (2008, 2009) discuss the clause-typing Mandarin SFP in this light, and propose that SFP are not counterexamples to FOFC because they are at a boundary between major categories (nominal versus verbal). The insight here is that FOFC does not hold across structures of all sizes. For example, consider the German in (23). If the entire tree were subject to evaluation by FOFC all together, we would predict the structure in (23) to be ungrammatical, given the head-final VP that dominates a head-initial DP.

(23) **A potential exception to FOFC in German (Biberauer et al., 2008):**

Johann hat [VP [DP den Mann] gesehen].

John has the man seen

‘John has seen the man.’

Biberauer et al propose that FOFC should hold only within the spine of extended projections of the same major category—nominal or verbal—but not across major-category boundaries. The grammaticality of the German structure in (23) is therefore due to the object DP being nominal and therefore categorically distinct from the verbal projection above it. Discussing the Mandarin clause-typing SFP, Biberauer et al (2008) propose that the Mandarin “C is nominal,” since CPs can be selected by verbs just as nominals are. This allows C to select for a head-initial TP, which is an extended verbal projection, without violating FOFC.

This approach to reconciling Chinese SFPs with FOFC may work for the high, clause-typing SFP. However, the existence of head-final heads (SFPs) at the vP edge position, as I have proposed here, is unexpected and problematic for Biberauer et al’s characterization of FOFC, which is designed specifically to hold across material in both the vP and CP domains. The existence of SFP at the vP edge has the consequence that FOFC cannot apply across the entire CP and vP phases together, at least in Chinese.

A possible solution is to adopt a characterization of FOFC that holds only within individual Spellout domains, as in Richards (2013). Consider a dynamic view of phase boundaries (Bošković, 2013), where the highest head in an extended projection will

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12 In Biberauer et al (2009), it is instead stated that Chinese SFPs are “categorically deficient.”

13 For Richards (2013), this characterization of FOFC limited to Spellout domains follows from a particular view of the linearization that allows the derivation of head-final heads in some contexts but not others. I refer the reader to Richards (2013) for details.
behave as the phase head.\textsuperscript{14} The head SFP\textsubscript{1} that I propose is the highest head in the verbal extended projection, and will therefore act as the phase head of the lower phase of the clause. FOFC holds within each Spellout domain. As the lowest head in its Spellout domain, SFP\textsubscript{1} can be head-final without violating FOFC, even though its complement is a head-initial projection. Once a head-initial projection is built above it, though, FOFC ensures that the rest of the Spellout domain above it will stay head-initial.

\begin{align*}
\text{(24) The Mandarin clausal spine (hierarchical):} \\
\quad & \text{phase head} \\
\quad & \cdots [\text{TP T} \ldots [\text{SFP}_1 \text{SFP}_1] \quad [\text{VP} \quad \text{V} \ldots] \\
\quad & \text{Spellout domain} \\
\quad & \text{Spellout domain}
\end{align*}

In this way, the linearization of SFP\textsubscript{1} can be reconciled with a version of FOFC. What’s more, this Spellout-based characterization of FOFC offers an explanation for why head-final heads (SFP) can only occur at the vP edge or CP edge in Mandarin Chinese.

However, this proposal that FOFC only applies within individual Spellout domains has the effect of severely weakening FOFC. Much of the original motivation for FOFC stemmed from a gap in the possible word orders of heads in both the vP and CP domains. For example, consider the Finnish \textit{wh}-question below, originally from Holmberg (2000). This \textit{wh}-question allows for various word orders between the auxiliary, V, and O, which correspond to a head-initial or head-final auxiliary and a head-initial or head-final verb. Just one of the four possible orders is unavailable: the FOFC-violating V-O-Aux order.

\begin{align*}
\text{(25) Word orders in Finnish \textit{wh}-questions (Biberauer et al, 2008):} \\
\quad & \text{a. } \checkmark \text{ Milloin Jussi olisi kirjoittanut romanin?} \quad \text{Aux-V-O} \\
& \quad \text{when Jussi would have written novel-DEF} \\
& \quad \text{‘When would Jussi have written the novel?’} \\
\quad & \text{b. } \checkmark \text{ Milloin Jussi olisi romanin kirjoittanut?} \quad \text{Aux-O-V} \\
& \quad \text{when Jussi would have novel-DEF written} \\
\quad & \text{c. } \checkmark \text{ Milloin Jussi romanin kirjoittanut olisi?} \quad \text{O-V-Aux} \\
& \quad \text{when Jussi novel-DEF written would have} \\
\quad & \text{d. } \text{* Milloin Jussi kirjoittanut romanin olisi?} \quad \text{*V-O-Aux} \\
& \quad \text{when Jussi written novel-DEF would have}
\end{align*}

\textsuperscript{14} This dynamic view of phasehood is also independently predicted by the idea that heads in an extended projection are related by head movement (Shimada, 2007), combined with the idea that phase boundaries are extended by head movement (Den Dikken, 2007).
If FOFC holds within the vP Spellout domain and separately within the CP Spellout domain, FOFC no longer explains this pattern. Richards (p.c.) suggests that this difference may lie in the morphological status of \( v \). Richard's (2013) derivation of FOFC is based on a theory that heads are by default head-initial and become head-final only if the head is an affix which can then be adjacent to a host. If \( v \) is an affix which is linearly adjacent to a possible host \( V \), \( v \) will necessarily stay head-initial, and therefore the effect of FOFC will apply across the entire vP and CP domains. Therefore the apparent difference between Chinese on the one hand and many other languages on the other hand may be attributed to a difference in the morphological status of \( v \): the (arguably unpronounced) \( v \) head in Chinese is not an affix, unlike many other languages. I refer the reader to Richards (2013) for more details.

Although not explicitly designed to address FOFC, Hsieh & Sybesma (2011) similarly analyze SFPs as heads whose complements are Spellout domains.\(^{15}\) For Hsieh & Sybesma, SFPs then invoke complement-to-specifier movement as a symmetry-breaking operation—following Uriagereka (1999), the Spelled-out complement will be a syntactic atom with no internal structure, and therefore will not be linearizable using Kayne’s LCA without this movement of the complement. Their analysis therefore predicts head-final heads in the clausal spine—i.e. SFPs—can only occur at phase edges.

Without additional restrictions, Hsieh & Sybesma’s Spellout-based analysis predicts the existence of SFPs at the vP edge as well as the CP edge. Hsieh & Sybesma discuss this prediction as a potential problem for their analysis:

“A question reviewers have raised has to do with vP, also a phase. On the basis of our treatment of CP, we expect that with vP, we will also run into symmetry problems, as soon as a higher functional head (e.g., Asp, T) is merged after it has been spelled out, with subsequent movement to the spec of this head. The reviewers raising this important point imply that this never happens.”

Far from being a problem, following the view that SFPs are clausal heads, this prediction made by the theory of Hsieh & Sybesma (2011) is borne out by the low class of SFPs, such as \( le, éryi, làizhe \), etc., which I argue are in the extended vP periphery.

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\(^{15}\) The details of Spellout and phasehood in Hsieh & Sybesma (2011) differ from what I presented here in section 5. Hsieh & Sybesma propose that Spellout targets the entire phase, including the phase head and its specifier, instead of the complement of the phase head as is common in phase theory. Therefore under their conception, the highest head in the complement of the SFP is a phase head, rather than the SFP itself as described here. Hsieh & Sybesma’s proposal can be restated without difficulty into the terms I present here. The key is to allow the highest head within an extended projection to be the phase head, as proposed by Bošković (2013). (See also the footnote 14 above.) This allows us to keep the common conception of Spellout domains as the complement of phase heads.
6. Conclusion

Sentence-final particles (SFPs) have long been a puzzle for Chinese syntax. Previous approaches have analyzed all SFPs as heads in a head-final split CP. In this paper I propose that the low class of Mandarin SFP—SFP₁; sentence-final le, éryí, láizhe, etc.—occupy a position in the extended vP periphery. Evidence for this view comes from the semantic scope of SFP₁ with respect to negation and modals: rather than taking scope over all operators in TP, as would be expected if they were in the extended CP, items in SFP₁ take scope under negations and modals higher in the clause. Such evidence from semantic scope sheds light on the position of these items in the structure of the Mandarin clause, particularly as the linear position of these SFPs does very little to communicate their structural position.

The sentence-final linear position of Chinese SFPs, in contrast to the otherwise strictly head-initial clausal spine, has made them notorious as a possible counterexample to the Final-over-Final Constraint (Biberauer et al, 2008; Bailey, 2010; Paul, 2014; a.o.). Rather than view SFPs as a challenge to FOFC as a cross-linguistic universal of structure-building, I view Mandarin SFPs as an important empirical testing ground for FOFC, in light of its otherwise broad coverage. The structural distribution of Mandarin SFPs that I argue for here—with SFPs at both the vP and CP peripheries—can be explained by a characterization of FOFC which holds only within individual Spellout domains, as in Richards (2013). Because of FOFC, only the heads right above a Spellout domain, e.g. the phase heads, are able to be linearized on the right (be head-final) while taking a head-initial projection as their complement.

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