

Negation as Tense in Jin Chinese: Based on Jing-le Chinese

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Abstract. In contrast to Mandarin Chinese, which is generally considered a tenseless language, Jin Chinese systematically has tense markers. This paper focuses on Jing-le Chinese, a branch of Jin Chinese, and argues that, in addition to the past tense marker *lai* in affirmatives, the negator *mə* in negative constructions also acts as a past tense marker and *mə* occupies the T position. Furthermore, Jing-le Chinese provides a valuable example for investigating the interaction between negation and tense. This paper shows that in Jing-le Chinese, NegP is selected by T and proposes that negation intrinsically bears the [+past] feature, which raises to T to check the tense feature on T. This accounts for the complementary distribution of negation and tense. Finally, the paper argues that the distribution of the past tense morpheme in affirmatives is derived via syntactic movement.

Keywords: Jing-le Chinese · Negation · Tense · Incorporation · Linearity

1 Introduction

In the literature, Mandarin Chinese was widely argued to be tenseless in the sense of syntactic tense ([14], [20], among others). However, Jin Chinese displays a different pattern in that the tense markers systematically show up in sentences, indicating that syntactic tense should be a functional category in Jin Chinese. Taking Jing-le Chinese (one branch of Jin Chinese) as an example, let us first go into the data to elaborate on the tense markers.

Jing-le Chinese has three particles with different time references, respectively. They are past *lai*, present *lə*, and future *iə*. The clauses in (1) illustrate their time reference restriction.

- (1) a. Lisi *iə* *tiəuy* / *k^hə* *kəuɕiŋ* {*lai* / **lə* / **iə*}.
Lisi yesterday fishing / really happy {PST / PRE / FUT}
'Lisi went fishing / was very happy yesterday.'
- b. Lisi *tsəxui* *tiəuy* / *k^hə* *kəuɕiŋ* {**lai* / *lə* / **iə*}.
Lisi now fishing / really happy {PST / PRE / FUT}
'Lisi goes fishing / is very happy now.'
- c. Lisi *miŋ* *tiəuy* / *k^hə* *kəuɕiŋ* {**lai* / **lə* / *iə*}.
Lisi tomorrow fishing / really happy {PST / PRE / FUT}
'Lisi will go fishing / will be very happy tomorrow.'

As shown in (1), the temporal adverbial *iə* 'yesterday' is only compatible with past *lai*; the temporal adverbials *tsəxui* 'now' and *miŋ* 'tomorrow' are only compatible with present *lə* and future *iə*, respectively. On the other hand, removing these particles will make the clauses ungrammatical, indicating that they are obligatory in the clause. Taking past *lai* as an example, Li and Cheung [10] argued *lai* as a past tense marker occupying the T position syntactically.¹

¹ One of the reviewers raised a question about whether the tense particles can be analyzed as Aspect. There are four reasons why this is not the case. Firstly, tense particles like *lai* do not carry aspec-

In this article, I will further argue that past tense in Jing-le Chinese is sensitive to clause types. To be specific, the externalizations of syntactic tense vary in affirmatives and in negative clauses. In affirmatives, the past tense is spelled out in the post-VP position, whereas in negative clauses it is spelled out as a negator in the pre-VP position.

- | | | | |
|-----|-------------------------------------|---|----------------------------------|
| | a. Lisi mai p ^h iau lai. | b. Lisi məla mai p ^h iau (*lai). | c. *Lisi mai p ^h iau. |
| (2) | Lisi buy ticket PST | Lisi NEG buy ticket PST | Lisi buy ticket |
| | ‘Lisi bought tickets.’ | ‘Lisi did not buy tickets.’ | |

(2a) is an affirmative where *lai* encodes past reading. The negator encoding past interpretation is *məla* ‘not’ in Jing-le Chinese. An important point is that *məla* cannot co-occur with *lai* but the clause must have past-time reading (2b). The past reading has to be activated via *məla* as the clause without *məla* is incomplete at (2c). This fact leads us to assume that negation may interact with tense. In what follows, I will first argue that *məla* is a tense marker in negative clauses, and then I will show that the interaction between negation and tense takes place cross-linguistically. Finally, I will give a proposal illustrating why *məla* and *lai* do not co-occur, and a preliminary syntactic analysis will be drawn to cope with the distribution of *məla* and *lai*.

2 *Məla* Encoding Past Tense

This section will present arguments to support the analysis that *məla* functions as a tense marker in negative clauses. Firstly, the adverbial treatment of *məla* will be refuted, followed by the presentation of semantic and syntactic evidence to support the tense-marker analysis.

2.1 Against Adverb Analysis

While it is true that *məla* appears pre-verbal and post-subject like most adverbs, categorizing it as an adverb is problematic. Firstly, *məla* is strictly fixed between the subject and the predicate in a clause (3), as opposed to adverbials which are relatively more movable (but still tend to be fixed in placement), even if they are manner adverbials (4).² The following examples illustrate the instances of dislocation.

- | | |
|-----|---------------------------------|
| (3) | a. Lisi məla ɕiɛ tsəiə. |
| | Lisi NEG write homework |
| | ‘Lisi did not do the homework.’ |

tual meaning. Secondly, *lai* can save sentences from incompleteness, whereas aspect markers cannot. Thirdly, aspect markers in Jing-le Chinese must be attached to verbs (e.g., the experience marker *ku*, the perfective marker *lau*), or to the entire verb phrase (e.g., the progressive marker *tə*). These markers can co-occur with *lai* in single-clause domains. Fourthly, the past morpheme *lai* is much more free compared to the much-bounded aspect morphemes, for instance, when licensed by particular contexts, such as a question-answer pair, the main predicate selected by *lai* can be omitted; in contrast, the main predicate selected by an aspect marker can never be omitted. The examples are not provided due to space constraints.

² While one of the reviewers pointed out the potential ambiguity of the word “carefully” in English, the adverb *xauxautei* in Jing-le Chinese does not exhibit such ambiguity. The placement of manner adverbs like *xauxautei* is more fixed in Jing-le Chinese, typically occurring between the subject and the predicate. The dislocation of *xauxautei* in example (4b) could be motivated by pragmatic factors, such as focalization. Notably, *xauxautei* can also occur after the entire sentence; in contrast, the negator *məla* does not exhibit this flexibility in placement.

- b. **məla* Lisi *ɕiɛ* *tsəiə*.
NEG Lisi write homework
- (4) a. Lisi *xəuxəutei* *ɕiɛ* *tsəiə* *lai*. b. *xəuxəutei* Lisi *ɕiɛ* *tsəiə* *lai*.
Lisi carefully write homework PST carefully Lisi write homework PST
'Lisi did the homework carefully.'

The observed distributional difference suggests that *məla* should be distinguished from an adverb. Secondly, as previously noted, the past-time reading is triggered by *məla* in negative constructions. Additionally, we have observed that, in affirmatives, the clause is incomplete without the presence of *lai*, even if there is a past temporal adverbial. If *məla* were a past temporal adverbial, we would expect a clause with *məla* but without *lai* to also be incomplete. However, the opposite is true (2b).

Thirdly, *məla* exhibits selection restrictions. Specifically, it selects a VP as its complement, while it does not select an adjective phrase (AP) complement in most cases. Such restriction properties are not typically associated with adverbials. (5) and (6) demonstrate that the adverbial *tsəŋkɤ* 'really' can modify both a VP and an AP (6a–b), while *məla* can only select a VP (5a).

- (5) a. Lisi *məla* *ɕiɛ* *tsəiə*. b. *?Lisi *məla* *kauɕiŋ*.
Lisi NEG write homework Lisi NEG happy
'Lisi did not do the homework.' 'Lisi was not happy.'
- (6) a. Lisi *tsəŋkɤ* *ɕiɛ* *tsəiə* *lai*. b. Lisi *tsəŋkɤ* *kauɕiŋ* *lai*.
Lisi really write homework PST Lisi really happy PST
'Lisi really did the homework.' 'Lisi was really happy.'

Finally, the complementary distribution of *məla* and *lai* further supports the argument for the head status of *məla*. As previously noted, *məla* and *lai* cannot occur in the same clause domain but can co-occur in different clause domains, as illustrated in (7). The adverbial classification of *məla* is clearly unsuitable for accounting for this co-occurrence restriction.

- (7) Lisi *k^hantɕian* [*məla* *səŋpan* *kə*] *tə* *viɛ* *zən* *lai*.
Lisi see [NEG go.to.work go] DE that.one person PST
'Lisi saw the person who did not go to work.'

Furthermore, it is generally assumed that adverbs (e.g., *xəuxəutei* in (4)) are unable to license VP-ellipsis, as demonstrated in (8a). If *məla* is an adverb, we might expect that it would also be unable to license VP-ellipsis. However, this is not the case, as shown in (8b), suggesting that *məla* is not an adverb.

- (8) a. *Lisi *xəuxəutei* *ɕiɛ* *tsəiə* *lai*, Luqi *iɛ* *xəuxəutei* *ɕiɛ* *tsəiə* *lai*.
Lisi carefully write homework PST Lisi also carefully write homework PST
'Lisi did the homework carefully, Luqi also did carefully.'
- b. Lisi *məla* *ɕiɛ* *tsəiə*, Luqi *iɛ* *məla* *ɕiɛ* *tsəiə*.
Lisi NEG write homework. Luqi also NEG write homework
'Lisi did not write the homework, Luqi did not, either.'

On the other hand, VP-ellipsis has been observed to be licensed by modal or auxiliary verbs in English ([19], [15]) as well as in European and Brazilian Portuguese ([3]), where it is believed that T may play a role in the licensing of VP-ellipsis. Based on this, it appears that *məla* in Jing-le Chinese functions more like a functional head than an adverb. By and large, based on the aforementioned evidence, it is inappropriate to classify *məla* as an adverb.

- b. *Lisi sitaŋ [məla mai p^hiaŋ].
 Lisi try [NEG buy ticket]
 ‘Lisi tried to [not buy tickets].’
- c. Lisi məla sitaŋ [mai p^hiaŋ].
 Lisi NEG try [buy ticket]
 ‘Lisi did not try to [buy tickets].’

Furthermore, *məla* and the past-tense marker *lai* exhibit complementary distribution within the same clause domain. Specifically, all finite environments containing *məla* such as those in (13) are no longer incompatible with *lai*. This distributional complementarity is not determined by the semantic conflict between *lai* and *məla*; in fact, they can only co-occur when they are in separate finite domains, as demonstrated in example (14).

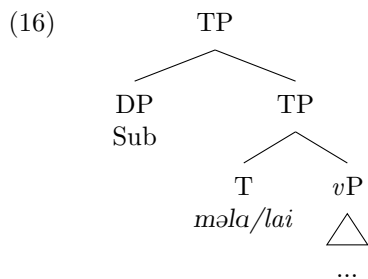
- (14) [t₁ məla xau Lisi ts^hautɕiaŋ] tə [viɛ zən]₁ si Luqi lai.
 [t NEG with Lisi quarrel] DE [that.CL person] be Luqi PST.
 ‘The person who did not quarrel with Lisi was Luqi.’

In (14), *məla* appears in the relative clause, where *lai* is prohibited from occurring, while *lai* can occupy the matrix clause, indicating the past-time reference of the matrix. The only plausible explanation for this complementarity is that *məla* and *lai* occupy the same syntactic position.

If *lai* is the spell-out of T, we would expect *məla* to also occupy the T position, which is then structurally lower than the subject. This seems to be the case. It is widely acknowledged that in Chinese, negation can license the non-interrogative reading of *wh*-phrases only when negation c-commands the *wh*-phrases at the surface(S-) structure (see [8], [12], and [13]). Similar use of *wh*-phrases is also found in Jing-le Chinese, as demonstrated in (15), where *məla* triggers the indefinite reading of the in-situ *wh*-object *səŋ* ‘what’ (15a).

- (15) a. Lisi məla ts^hə səŋ. b. *səŋ₁, Lisi məla ts^hə t₁. c. *fu məla ts^həfan.
 Lisi NEG eat what what Lisi NEG eat t who NEG eating
 ‘Lisi did not eat anything.’ ‘Lisi did not eat anything.’ ‘Someone did not eat.’

However, if the *wh*-object *səŋ* moves out of the surface domain of *məla*, the indefinite reading is no longer licensed. This is exemplified in (15b), where *səŋ* raised to the left of the clause and only the *wh*-reading was licensed. Therefore, we can infer that *məla* cannot license the indefinite reading of a *wh*-subject if *məla* occupies the T position. This is confirmed by example (15c), where *məla* does not c-command the *wh*-subject *fu* at S-structure and the licensing fails. Hence, we can conclude that *məla* functions as a tense marker in negative clauses and occupies the T position. See the structure representation of *məla* and *lai* in (16).



consists of a default tense feature. One piece of evidence supporting this claim comes from Bengali, where present and past tenses are negated using *na* (21a), while the perfective is negated using *ni* (21b), as argued by De Clercq [5].

- (21) a. Ami amta kha -cch -i na.
 NOM mango.CLF eat -PROG/PRS -1SG NEG
 ‘I am not eating the mango.’
 b. Ami amta kha -i ni.
 NOM mango.CLF eat -1SG NEG
 ‘I did not eat the mango.’
 (from De Clercq [5])

All these examples demonstrate that negation is highly likely to interact with tense cross-linguistically. From this perspective, Jing-le Chinese provides direct and compelling evidence for the interaction between negation and tense.

Moreover, negation encoding tense is not unique to Jing-le Chinese. For instance, in Ma’di, a Central Sudanic language, negations also display sensitivity to tense. The two negation forms in Ma’di are *kū* and *kūrù*. According to Blackings and Fabb [2], *kū* can only be used in clauses with a non-past reading (22a), while *kūrù* is used in clauses with a past reading (22b). Importantly, both *kū* and *kūrù* must select uninflected verbs but not inflected ones (23), indicating that they intrinsically encode tense features.⁵

- (22) a. m’-āwí dʒótī kū.
 1SG-open door NEG
 ‘I will not / do not open the door.’
 b. m’-āwí dʒótī kūrù.
 1SG-open door NEG
 ‘I did not open the door.’
 (23) *má dʒótī āwí kūrù.
 1SG door N-open NEG
 ‘I did not open the door.’

(from Blackings and Fabb [2]: 467, 469)

In addition to the past negator *məla*, there is another negator *pə* ‘not’ that is mainly used in sentences with a non-past reading in Jing-le Chinese, as shown in (24).⁶

- (24) a. Lisi pə mai p^hiau.
 Lisi NEG buy ticket
 ‘Lisi does not / will not buy tickets.’
 b. Lisi məla mai p^hiau.
 Lisi NEG buy ticket
 ‘Lisi did not buy tickets.’

It seems that Jing-le *pə* is the equivalent of Ma’di *kū*, while Jing-le *məla* corresponds to Ma’di *kūrù*. While I will not delve further into the analysis of Jing-le *pə* or the negations in Ma’di, what is noteworthy is that Jing-le Chinese and Ma’di exhibit a high degree of parallelism with regard to negation bearing tense features. In particular, the fact that negations in Ma’di select

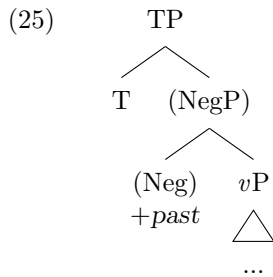
⁵ According to Blackings and Fabb ([2]: 13), “The inflected verb is prefixed by a low tone which can appear on the preceding word’s vowel, and is glossed as N-.”

⁶ But see footnote 3.

uninflected verbs provides additional evidence for our tense analysis of *məla* in Jing-le Chinese. In the next section, we attempt to address the issue of how *məla* can encode the tense feature in Jing-le Chinese.

4 Negation-Tense Incorporation

In this section, I will present my proposal for how *məla* can encode tense features in Jing-le Chinese. My assumption is that, unlike in some Romance languages where Neg takes TP as its complement ([24], [25]), T in Jing-le Chinese takes NegP as its complement. The selection property is shown in (25).



Furthermore, I propose that in affirmative clauses, NegP does not project, and the past tense feature on T is checked by merging *lai*; NegP only projects in negative clauses, and the past tense feature on T can be checked by Neg-to-T movement, as Neg bears [+past] feature. In other words, Neg is incorporated into T in negative clauses. The process of checking the past tense feature in affirmative (a) and negative (b) clauses can be depicted in the diagrams (26).



One advantage of this proposal is that it can effectively explain the co-occurrence restriction of the negator *məla* and the past marker *lai* in the same clause domain mentioned in Section 1. Here's how it works: in affirmatives, Neg does not project, and the tense feature on T is checked by merging *lai*. In negative constructions, however, Neg projects and bears the [+past] feature, which can subsequently raise to T to check the tense feature on T and is externalized as *məla*. This results in the non-co-occurrence of *məla* and *lai*.

One of the reviewers suggested the possibility of analyzing the negation marker *məla* in Jing-le Chinese as a complex head, specifically a Neg-T head. In fact, this is essentially what we proposed in our analysis, where the Neg head raises to T and results in a complex Neg-T head, as shown in (26b). This proposal is potentially supported by phonological evidence. For instance, the disyllabic form of *məla* can be decomposed into *mə* and *la*. It is possible that *la* could be the phonetically weak form of *lai* (the past marker in affirmatives). This is supported by the fact that, on the one hand, the negation form is the monosyllabic *mə* in some branches of Jin Chinese;

on the other hand, we found that in Xinzhou Jin, the past negation form is pronounced as *məɬɛ*, while the past marker in affirmatives is pronounced as *læ*. The phonetic similarity between *ɬɛ* and *læ* suggests that *məɬɛ* may be a compound of the neutral negator *mə* and the past *ɬɛ* in Xinzhou Jin. However, since we have not conducted a detailed investigation, further research is needed to confirm this assumption.

Recall that my assumption is that T takes NegP as its complement in Jing-le Chinese, which differs from Neg taking TP as its complement in Romance languages (although see [18] for a different assumption in English). One may wonder why these languages exhibit different selection properties. In fact, the selection of NegP by T or of TP by Neg is parameterized (see [16], [26]). Additionally, there is evidence from other branches of Jin Chinese that supports our assumption. For instance, in some branches of Jin Chinese, such as Jiexiu, Wuzhai, and Pianguan, the counterpart of *məla* can co-occur with *lai* under certain conditions. To illustrate, in Jiexiu Chinese, the counterpart of Jing-le *məla* is *məla*, which can co-occur with *lai* but with some semantic restrictions, as shown in the examples in (27).

- (27) a. Lisi məla ts^həfan.
 Lisi NEG eat.meal
 ‘Lisi did not eat.’
 b. Lisi məla ts^həfan lai.
 Lisi NEG eat.meal PST
 ‘Lisi did not eat **yet**.’

The sentence in (27a) has a simple past reading, while the one in (27b) is different in that a past perfect reading is preferred. Although whether perfect is a tense or aspect is debated in the literature, what matters here is that (27b) has a perfect or relative tense reading to some extent (see [21], who considers the perfect as a relative tense). The semantic meaning of (27b) can be described as in (28).

- (28) Lisi did not [_{məla}] eat at a time [_{event time}] which is before a past referent time [_{lai}].

According to the semantic interpretation, *lai* refers to a past reference time, while *məla* refers to the event time of not eating before the past reference time. If there is a mapping between semantics and syntax, *lai* should be higher than *məla* in Jiexiu Chinese. Additionally, the coordination test can also confirm that *lai* should be higher than *məla*. Consider the examples in (29).

- (29) a. *Lisi [məla [ɕiɛ ɕin lai] [ɕiɛ tsəiɛ lai]].
 Lisi [NEG [write letter PST] [write homework PST]]
 ‘Lisi did not write the letter and did not do the homework.’
 b. Lisi [[məla ɕiɛ ɕin] [məla ɕiɛ tsəiɛ] lai].
 Lisi [[NEG write letter] [NEG write homework] PST]
 ‘Lisi did not write the letter and did not do the homework.’

In (29a), coordinating *ɕiɛ ɕin lai* (wrote the letter) and *ɕiɛ tsəiɛ lai* (did the homework) is not grammatical under the scope of the negator *məla*. Conversely, coordinating *məla ɕiɛ ɕin* (did not write the letter) and *məla ɕiɛ tsəiɛ* (did not do the homework) is grammatical under the scope of *lai*. This suggests *lai* is structurally higher than *məla*.

5 Linearity

This section revisits the question raised in Section 2. If our analysis is correct, Jing-le Chinese should have two positions that hold tense: one is preverbal (*məla*), and the other is sentence-final

(*lai*). The question is, which one is more basic? I try to argue that the final position of *lai* is derived by raising the complement of *lai*, using the existential reading licensing of *wh*-phrases in Chinese. I will offer a brief overview of existential reading licensing and then proceed to the test. It is widely recognized that existential closure (\exists -closure) can be triggered by certain elements ([8], [6], [22], [17]). Tsai ([22]: 63) further argues that the scope of \exists -closure is determined by the structural position of the triggers. For example, Mandarin *ruguo* ‘if’ triggers \exists -closure at the TP level, which can license a *wh*-subject to have an existential reading (30).

- (30) Ruguo \exists [_{TP} shei mai-le chezi], Akiu yiding hui lai gaosu wo.
 if \exists [_{TP} who buy-PERF car] Akiu surely will come tell me
 ‘if someone bought a car, Akiu surely will come to tell me.’

(from Tsai [22]: 62–63)

In Jing-le Chinese, the deontic modal *piäcy-tië* ‘must’ can trigger an indefinite reading of a *wh*-phrase in its domain (31a). Adding *lai* into the clause will cancel the indefinite reading (31b).

- (31) a. Lisi piäcy-tië ts^hə ciə sən.
 Lisi must eat some what
 ‘Lisi must eat something.’
 b. Lisi piäcy-tië ts^hə ciə sən lai.
 Lisi must eat some what PST
 ‘What did Lisi have to eat?’

The epistemic modal *k^hynəŋ* ‘may/possibly’ can also trigger an indefinite reading of a *wh*-object. However, in this case, the insertion of *lai* does not block the indefinite reading licensing (32).

- (32) Lisi k^hynəŋ iou sən lai.
 Lisi may want what PST
 ‘Lisi might want something.’

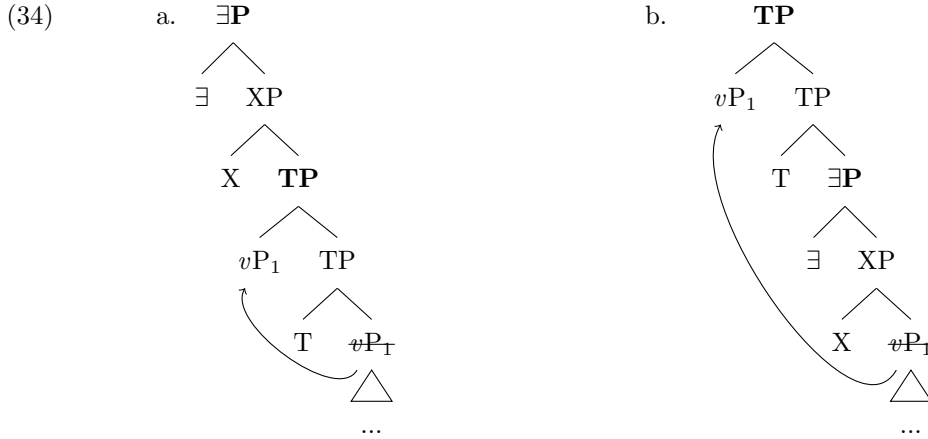
It appears that this blocking effect is connected to the hierarchical relationship between *lai* and the triggers. Tsai [23] has shown that deontic modality is lower than T, while epistemic modality is higher than T in Chinese, as illustrated in (33).

- (33) [..._{[EpiP Epistemic} [_{TP T} [_{DoeP Doentic}]]]...]

The fact now is that *lai* blocks the existential reading triggered by an element that is lower than *lai*, but it does not block the existential reading triggered by a higher element. How does this blocking effect work? Let us explore one possibility to explain it. Since *piäcy-tië* is lower than T, it can only trigger \exists -closure in the *v*/VP domain (34b); in contrast, *k^hynəŋ* ‘can/possibly’ and *ruguo* ‘if’ are higher than T and, consequently, will trigger \exists -closure in or above the TP layer (34a). The *v*P is supposed to move to Spec,TP; the consequence is that *v*P moves out of the domain of the *v*P-level \exists -closure (34b), resulting in the cancellation of the existential reading. In contrast, for triggers that are higher than T, the \exists -closure aroused is above TP; even after *v*P raising, it’s still in the domain of the \exists -closure (34a), which is why no blocking effect arises.⁷ We conclude that the tests support the syntactic raising analysis.⁸

⁷ XP is the projection of triggers, \exists P stands for the projection of \exists -closure semantically. Based on our observations, we assume that \exists P is directly generated higher than XP but not lower than XP.

⁸ As pointed out by Dr. Tommy Tsz-Ming Lee in our reading group, this raising analysis may face a problem of linear order. Take (31b) as an example, since *piäcy-tië* generates on a position that is lower than T, after *v*P raising, *piäcy-tië* is left behind, then the surface word order should be the following (less acceptable):



6 Conclusion

While Mandarin Chinese is generally considered a tenseless language in the literature, Jing-le Chinese differs from Mandarin in terms of tense. I first demonstrate that, in addition to the past tense marker *lai* in affirmatives, the negator *məla* in negative constructions acts as a past tense marker and argue that *məla* occupies the T position. Jing-le Chinese provides a valuable example to investigate the interaction between negation and tense. Unlike some Romance languages and English, where negation selects TP as its complement, I demonstrate that NegP in Jing-le Chinese, however, is selected by T and further propose that negation intrinsically bears the [+past] feature and raises to T to check the tense feature on T. This can well explain the complementary distribution of negation and tense. Lastly, I argue that the distribution of the tense morpheme in affirmatives is derived via syntactic movement.

I would like to conclude the paper with a final remark on the incorporation between negation and tense that we proposed in this paper. In addition to the negation-tense incorporation pattern, there are languages that show the incorporation of negation with other functional categories. Interested readers can refer to [1], who argued for the incorporation of negation with modal/mood in Dravidian languages. Both the proposal presented in this paper and Amritavalli’s proposal demonstrate the interaction between negation and other functional categories across languages.⁹

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(i) Lisi ts^hə ɕiə sən lai piəcy-tiɛ.
 Lisi eat some what PST must
 ‘What did Lisi have to eat?’

One potential solution to this issue is to stipulate that the \exists -closure is immediately triggered when *piəcy-tiɛ* is merged in, and that subsequent movement of the trigger does not introduce a new \exists -closure. Under this condition, we propose that *piəcy-tiɛ* moves together with *vP*, but the \exists -closure remains located under TP. This would avoid the problematic outcome mentioned by Dr. Lee. However, it is worth noting that the validity of this proposal would need to be tested through further examination.

⁹ As one of the reviewers pointed out, this paper did not address the semantic aspects of negation. We acknowledge the importance of exploring the semantic properties of negation in our future research.

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