

On Causative Projections in Mandarin Chinese

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ABSTRACT

In this study, I examine causative projections in the resultative construction in Mandarin Chinese. In comparing Tsai's (2015b) analysis of Chinese resultatives to that of Bi and Pan (2018), I argue that several pieces of evidence favor Bi and Pan's proposal, which situates the causative projection around the ν P periphery. I suggest, however, that their structure could be further refined and propose a fine-grained structure that not only explains the behavior of the relevant resultative and causative constructions in Chinese but also accords with causative distributions cross-linguistically.

Keywords: outer light verb, causative projection, the *ba* construction, tripartite VP analysis, inner light verb

1. Introduction

In this paper, I discuss the syntactic mechanisms of causation in Mandarin Chinese. Recently, Tsai (2015b) has proposed that there are two classes of light verb which introduce eventuality predicates in Mandarin Chinese: the inner light ν and the outer light ν . The outer light verb CAUSE can be lexically realized as *rang*, as in example (1), or, alternatively, the resultative verbal complex *chi-de* can raise to the outer light verb position, as in (2).

- (1) Na-duan fan rang Zhangsan chi-de hen lei.
that-CL meal cause Zhangsan eat-Res very tired
'That meal made Zhangsan eat such that he became tired.'
(lexical light verb)
- (2) a. Na-duan fan chi-de Zhangsan hen lei.
that-CL meal eat-Res Zhangsan very tired
'That meal made Zhangsan eat such that he became tired.'

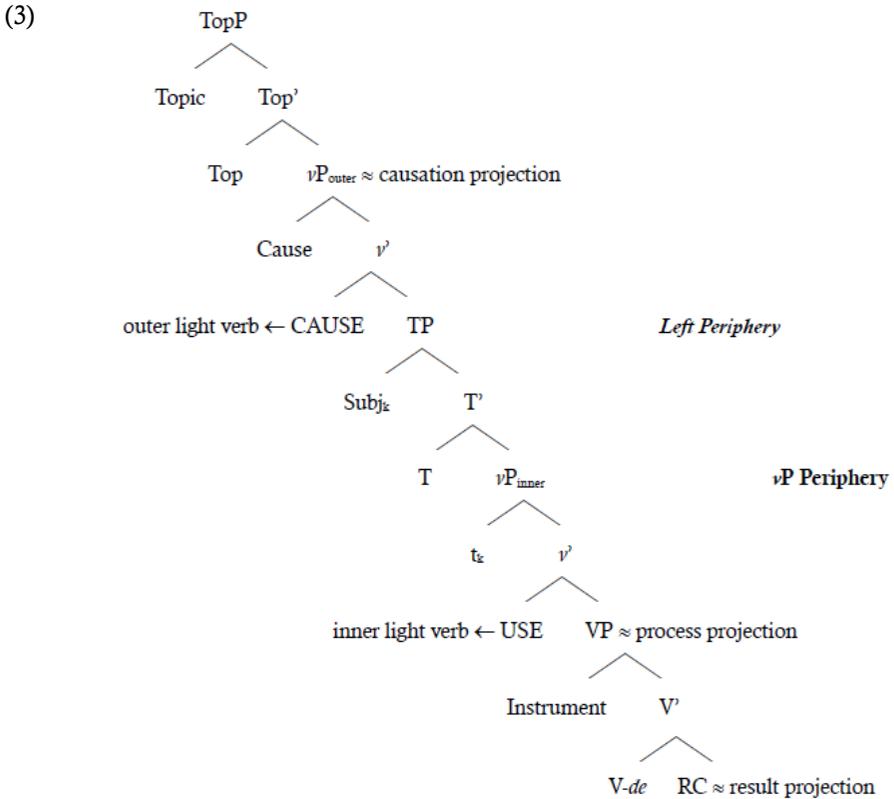
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- b. Na-duan fan [chi-de]_k+CAUSE Zhangsan t_k hen lei.
 that-CL meal eat-Res Zhangsan very tired
 (raising to outer *v*)

Interestingly, Tsai (2015b) has proposed that the outer light verb is in a position higher than TP, as illustrated in (3). Relative to the position of the inner light verb, which is inside the *v*P domain, this is indeed a very outer position.



In the following discussion, I argue for a lower causative projection near the *v*P periphery, a proposal that contrasts with Tsai (2015b), but is in line with Bi and Pan (2018). The paper is organized as follows: In Section 2, I present Bi and Pan's (2018) proposal for Chinese resultatives. In their proposed structure, the resultatives are associated with a causative projection that is comparable to Tsai's outer light verb. In addition, I present some puzzles which cannot be explained if an outer causative projection is in the CP domain in the structure. In Section 3, I propose

that a lower causative projection, similar to the one proposed by Bi and Pan (2018), is required but also argue that a more fine-grained structure is needed to account for additional facts. In Section 4, following Pylkkäinen (2002, 2008), I propose a detailed causative structure in Mandarin Chinese compatible with cross-linguistic data. This refined structure also maintains the basic properties of outer and inner light verbs discussed by Tsai (2015). I conclude the paper in the last section.

2. Comparisons and Facts

2.1. Resultatives and Causatives

To begin, let us first examine Bi and Pan's (2018) analysis of Chinese resultatives. Like Tsai (2015b), Bi and Pan propose a structure that includes a causative projection. They discuss three types of subject-oriented resultatives, as shown in (4), (5), and (6). In these three examples, the verbal part of the resultative construction is composed of two verbs: V1 and V2. In addition, no matter whether the verb can take an object or not, both V1 and V2 are related to the subject. For example, in example (5), the subject Xiaohua, who read the book, is also the person who understood it, as shown in the translation.

(4) Xiaoming xie-lei-le (*zhe-feng xin).
Xiaoming write-tired-ASP this-CL letter
'Xiaoming wrote this letter and became tired.'

(5) Xiaohua kan-dong-le zhe-ben shu.
Xiaohua read-understand-ASP this-CL book
'Xiaohua read this book and understood it.'

(6) Xiaoxin ting-fan-le zhe-shou ge.
Xiaoxin listen-bored-ASP this-CL song
'Xiaoxin listened to this song and became bored.'

Although these examples seem to be alike superficially, Bi and Pan point out some differences through the following comparisons. First, as shown in (7), argument inversion is impossible in example (5) above, but is readily available in (4) and (6).

- (7) a. Zhe-fen xin xie-lei-le Xiaoming.
 This-CL letter write-tired-ASP Xiaoming
 ‘The writing of this letter made Xiaoming tired.’
- b. *Zhe-ben shu kan-dong-le Xiaohua.
 This-CL book read-understand Xiaohua
 ‘The reading of this book made Xiaohua understand it.’
- c. Zhe-shou ge ting-fan-le Xiaoxin.
 This-CL song listen-bored-ASP Xiaoxin
 ‘The listening of this song made Xiaoxin bored.’

Second, as shown in (8), while passivization of the subject is possible in example (4), it is impossible in (5) and only marginal in (6).

- (8) a. Xiaoming bei xie-lei-le.
 Xiaoming BEI write-tired-ASP
 ‘Xiaoming wrote something and he became tired by writing.’
- b. *Xiaohua bei kan-dong-le.
 Xiaohua BEI read-understand-ASP
 ‘Xiaohua read something and she became understood by reading.’
- c. ?Xiaoxin bei ting-fan-le.
 Xiaoxin BEI listen-tired-ASP
 ‘Xiaoxin listened to something and he became tired by this listening event.’

Third, as shown in (9), only the V2 in the resultative in example (4) can be modified by *-de bu* (‘-DE not’). The same modification results in ungrammaticality for example (5) and slight ungrammaticality for example (6).

- (9) a. Xiaoming xie-de bu lei.
 Xiaoming write-DE not tired
 ‘Xiaoming wrote and he was not tired.’
- b. *Xiaohua kan-de bu dong.
 Xiaohua read-DE not understand
 ‘Xiaohua read and he didn’t understand.’
- c. ?Xiaoxin ting-de bu fan.
 Xiaoxin listen-DE not bored
 ‘Xiaoxin listened and he was not bored.’

To explain these differences, Bi and Pan (2018) propose that among the three subject-oriented resultatives, the *xie-lei* resultative in (4) involves a biclausal event, while the *kan-dong* resultative in (5) involves a monoclausal event. For the *ting-fan* resultative in (6), because *fan* is ambiguous, it can be categorized with either *xie-lei* or *kan-dong*. Importantly, the composition of *xie-lei* includes a cause event and a result event. On the other hand, for the *kan-dong* resultative, *kan* is simply interpreted as the manner of the main “understanding event” (i.e., *dong*). As pointed out by Bi and Pan (2018), this difference can be seen clearly by the insertion of an adverb *buzhibujue* (‘unconsciously’), as shown in (10) and (11).

- (10) a. Xiaoming *buzhibujue-de* jiu *xie-lei-le*.
 Xiaoming unconsciously JIU write-tired-ASP
 ‘Xiaoming unconsciously wrote and became tired.’
- b. Xiaoming *buzhibujue-de* *xie-le* *henjiu*.....
 Xiaoming unconsciously write-AP long
 ‘Xiaoming unconsciously wrote for a long time.....’
- c. Xiaoming *buzhibujue-de* jiu *lei-le*.....
 Xiaoming unconsciously JIU tired-ASP
 ‘Xiaoming unconsciously became tired.....’
- (11) a. Xiaohua *buzhibujue-de* jiu *kan-dong-le*.
 Xiaohua unconsciously JIU read-understand-ASP
 ‘Xiaohua unconsciously read and became understood.’
- b. *Xiaohua *buzhibujue-de* *kan-le* *henjiu*.....¹⁾
 Xiaohua unconsciously read-ASP long
 ‘Xiaohua unconsciously read for a long time.....’
- c. Xiaohua *buzhibujue-de* jiu *dong-le*.....
 Xiaohua unconsciously JIU understand-ASP
 ‘Xiaohua unconsciously became understood.....’

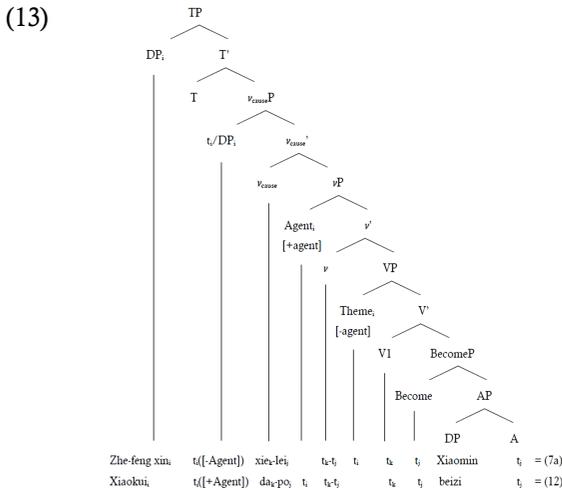
As shown in (10b) and (10c), the adverb *buzhibujue* (‘unconsciously’) can modify

1) As pointed out in footnote 9 in Bi and Pan (2018), sentence (11b) can be grammatical if it is used independently. However, Bi and Pan has pointed out that (11b) has to be compared with (11a) and (11c) since what they would like to focus is the compound *kan-dong* (‘read-understand’) here. Via the comparisons in (11), Bi and Pan shows that it is the progress of *dong* (‘understand’) which is done unconsciously, not the progress of *kan* (‘read’). The author would like to thank one of the reviewers who brings up this issue to my attention.

both V1 and V2, respectively, which clearly indicates that there are two independent events. As for *kan-dong*, since *buzhibujue* can only modify the event of understanding, as shown (11c), this shows that *dong* ('understand') is the only core event, while *kan* ('read') is a modifying element.

Based on the above observations, Bi and Pan (2018) adopt Pykkänen's (2002, 2008) analysis for causatives and propose the structure in (13) for example (7a).² The same structure is also proposed to accommodate example (12), which is an object-oriented resultative. That is, in example (12), Xiaokui is the Agent who initiates the action (described by V1), and eventually it is the cup which is broken (described by V2). This is essentially different from the subject-oriented resultative since in the subject-oriented resultative, both V1 and V2 are predicates of the subject (e.g., (4)).

- (12) Xiaokui da-po beizi.
 Xiaokui hit-broken cup
 'Xiaokui broke the cup.'

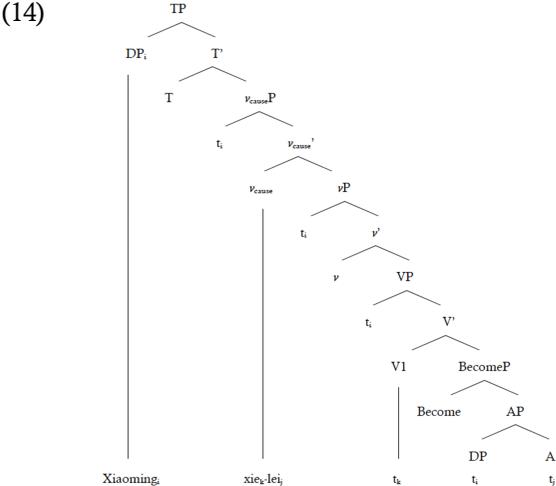


Thus, both subject-oriented and object-oriented resultatives are proposed to share the same structure in (13). Patients and complements are base-generated in AP. Later, the complement (the AP head) raises to the light verb position of *Become* and

2) Bi and Pan's adoption of Pykkänen's (2002, 2008) analysis mainly lies in the bi-verbal construction. That is, semantically, the formation of resultative in Chinese is based on the causation relationship of CAUSE. Syntactically, CAUSE is realized as a functional layer (i.e. $\nu_{cause}P$) right about νP of the first verb.

functions as a V2. The V2 will further raise and incorporate with the V1, forming a verbal complex. The complex predicate will undergo head movement to νP , where it can assign accusative case to the Theme argument. Eventually, it will raise to the head position of $\nu_{\text{cause}}P$.

As for the causer at Spec, $\nu_{\text{cause}}P$, it can be derived via the A-movement of the Agent or Theme of V1 and will move to Spec, TP in the structure. On the other hand, if there are no causers available, the Theme argument in the very deep AP will move to Spec, TP in order to satisfy the EPP, as shown in (14). Bi and Pan indicate that under this derivation, we can get a subject-oriented resultative like the one in (4). It also explains why the subject Xiaoming has a strong Theme interpretation.



The fact that subject-oriented resultatives can be explained by the same structure as object-oriented resultatives is a major advantage of Bi and Pan’s proposal.

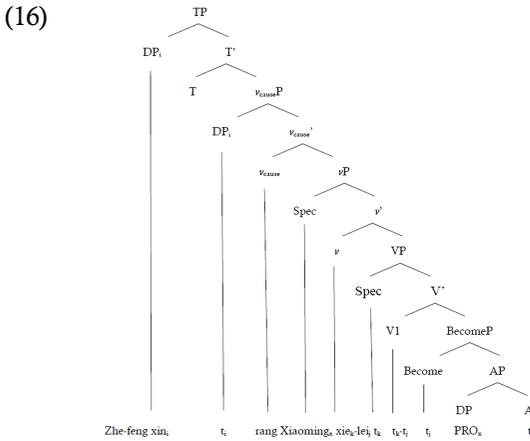
2.2. Further Observations

In this section, I present additional data to compare various aspects of the resultatives discussed by Bi and Pan (2018) and Tsai (2015b). These comparisons should enable us to anchor the precise position of the causative projection in the structures.

Example (15) is a subject-oriented resultative variant that also seems derivable under Bi and Pan’s structure in (13). The relevant structure is shown in (16). In this example, the $\nu_{\text{cause}}P$ head is realized as *rang* (‘cause’), and since the $\nu_{\text{cause}}P$ head

has been occupied, the verbal complex stays in the ν head position without further raising.³⁾ Note that there are also some structural revisions which are different from Bi and Pan's (2018) proposal here. If Xiaoming is base-generated in Spec, AP, it is unclear why it has to move to Spec, ν P if we follow Bi and Pan's original derivation. The movement motivation by the EPP of Spec, TP is not available now. Here I adopt the proposal by Lin (2021) and assume that Xiaoming is base-generated in Spec, ν P and is co-indexed with a PRO in Spec, AP. In this way, the movement issue can be solved and the subject-oriented resultative relationship can be maintained.⁴⁾

- (15) Zhe-fen xin rang Xiaoming xie-lei-le.
 This-CL letter cause Xiaoming write-tired-ASP
 'Xiaoming wrote this letter and became tired.'



The alternation between (4) and (15) is reminiscent of the alternation between (1) and (2a), repeated here as (17).

3) The author would like to thank one of the reviewers who brings up this issue to my attention.
 4) As pointed out by one of the reviewers, the ν_{cause} in (16) seems to function as a two-place predicate, which is in contrast to the ν_{cause} in Bi and Pan's (2018) structure (13) where we find a raising predicate. However, it is not impossible that the ν_{cause} can introduce an additional external argument itself, which is actually Pylkkänen's (2002, 2008) proposal in that the cause projection is an argument "introducer". Hence, under the current application in (16), the ν_{cause} introduces an external argument, which is base-generated at Spec, $\nu_{\text{cause}}\text{P}$. In Chinese, the well-known *ba* construction allows both internal argument raising and external argument base-generation as the *ba* NP, and Zhao (2021) has proposed that *ba* construction involves an applicative projection (see also the discussion in Section 4.2). If the applicative projection can have two different functions, it is not surprising to see that the similar causative projection can do that, too.

- (17) a. Na-duan fan **rang** Zhangsan chi-de hen lei.
 that-CL meal cause Zhangsan eat-Res very tired
 ‘That meal made Zhangsan eat such that he became tired.’
 (lexical light verb)
- b. Na-duan fan **chi-de** Zhangsan hen lei.
 that-CL meal eat-Res Zhangsan very tired
 ‘That meal made Zhangsan eat such that he became tired.’
 (raising to outer *v*)

For ease of discussion, I will refer to Bi and Pan’s resultatives as V-V resultatives and Tsai’s as *V-de* resultatives. Notably, a very similar syntactic process can be observed with these two kinds of resultatives - the raising (or not) of the verbal complex. If there is raising, the verbal complex will land at the head position of the causative projection. If there is no raising, the causative head can be lexicalized as *rang* (‘cause’). Moreover, as pointed out by Huang (1988), these two kinds of resultatives are interchangeable (i.e., Huang’s phrasal causatives versus lexical causatives). That is, the V-V resultative can become a *V-de* resultative in (18), and vice versa in (19).⁵⁾

- (18) Zhe-fen xin xie-de Xiaomin lei-le. (V-V -> V-de)
 this-CL letter write-DE Xiaomin tired-ASP
 ‘The writing of this letter caused Xiaomin to be tired.’
- (19) Na-dun fan chi-lei-le Zhangsan. (V-de -> V-V)
 that-CL meal eat-tired-ASP Zhangsan
 ‘That meal made Zhangsan eat such that he became tired.’

5) One restriction for a *V-de* resultative to become a V-V resultative is that the resultative part has to be monosyllabic. Hence the examples with non-monosyllabic resultatives in (ia) and (iia) cannot be transformed into a V-V resultative structure as in (ib) and (iib).

- (i) a. Na-duan fan chi-de Zhangsan fan-si-le.
 that-CL meal eat-DE Zhangsan bored-dead-ASP
 ‘The eating of that meal made Zhangsan tired.’
 b. *Na-dan fan chi-fan-si-le Zhangsan.
 that-CL meal eat-bored-dead Zhangsan
- (ii) a. Na-duan fan chi-de Zhangsan xinjingdanzhan.
 that-CL meal eat-DE Zhangsan tremble-with-fear
 ‘The eating of that meal made Zhangsan tremble with fear.’
 b. *Na-duan fan chi-xinjingdanzhan Zhangsan.
 that-CL meal eat-tremble-with-fear Zhangsan

Given their similarity and structural alternation, the question arises of where the causative projection might be located. Recall that for the examples in (17), Tsai (2015b) has proposed that the relevant causative projection is located right above TP. However, under Bi and Pan's proposal, the relevant causative projection is right above ν P. This contrast motivates further examination of these two similar pairs and the proposed causative projections.

The relevant examples are repeated as follows. The examples in (20) are the V-V resultatives discussed by Bi and Pan (2018), and the V-*de* resultatives discussed by Tsai (2015b) are in (21).

- (20) a. Zhe-fen xin **xie-lei-le** Xiaoming.
 This-CL letter write-tired-ASP Xiaoming
 'The writing of this letter made Xiaoming tired.'
- b. Zhe-fen xin **rang** Xiaoming xie-lei-le.
 This-CL letter cause Xiaoming write-tired-ASP
 'The writing of this letter made Xiaoming tired.'
- (21) a. Na-duan fan **chi-de** Zhangsan hen lei.
 that-CL meal eat-Res Zhangsan very tired
 'That meal made Zhangsan eat such that he became tired.'
- b. Na-duan fan **rang** Zhangsan chi-de hen lei.
 that-CL meal cause Zhangsan eat-Res very tired
 'That meal made Zhangsan eat such that he became tired.'

So far, we have seen that there seems to be a strong correspondence between the V-V resultative and the V-*de* resultative. However, recall that the two kinds of resultatives are explained by different syntactic analyses. The major difference between the two analyses is the position of the CauseP, a difference that might lead to different consequences. For Bi and Pan (2018), the CauseP is right above ν P, while for Tsai (2015b), it is above TP. In the following discussion, I present evidence favoring a location right above ν P.

The first suggestive fact is that it is possible to have a deontic modal *hui* ('tend' to) appearing between the subject and the raised verbal complex/*rang*, as shown in (22) and (23).

- (22) a. Zhe-fen xin (hui^D) **xie-lei** Xiaoming.
 This-CL letter tend.to write-tired Xiaoming
 ‘The writing of this letter tends to make Xiaoming tired.’
- b. Zhe-fen xin (hui^D) **rang** Xiaoming xie-lei.
 This-CL letter tend.to cause Xiaoming write-tired
 ‘The writing of this letter tends to make Xiaoming tired.’
- (23) a. Na-duan fan (hui^D) **chi-de** Zhangsan hen lei.
 that-CL meal tend.to eat-Res Zhangsan very tired
 ‘That meal tended to make Zhangsan eat such that he became tired.’
- b. Na-duan fan (hui^D) **rang** Zhangsan chi-de hen lei.
 that-CL meal tend.to cause Zhangsan eat-Res very tired
 ‘That meal tended to make Zhangsan eat such that he became tired.’

In Tsai (2010, 2015a, 2017), the deontic modal is proposed to be located between the ν P and TP domains. If the deontic *hui* (‘tend to’) precedes the raised verb and *rang* in (22) and (23), the raised verb and *rang* should be in the ν P domain, rather than in the CP domain.

Secondly, the four examples in (20) and (21) can all have the *ba* construction counterparts. The possibility of (20a) becoming a *ba* construction has been pointed out by Bi and Pan (2018), as shown in (24). Example (24) is also the *ba* counterpart of (20b). The same applies to example (21), with the *ba* counterpart of (21a) and (21b) shown in (25).

- (24) Zhe-fen xin ba Xiaoming **xie-lei-le**.
 this-CL letter BA Xiaoming write-tired-ASP
 ‘The writing of this letter made Xiaoming tired.’
- (25) Na-duan fan ba Zhangsan **chi-de** hen lei.
 that-CL meal BA Zhangsan eat-DE very tired
 ‘That meal made Zhangsan eat such that he became tired.’

In the literature, Li (2006) has proposed that the *ba* marker in the *ba* construction is located in an additional *BaP* right above ν P, and the *ba* NP that follows it is located at Spec, ν P. The structure of a typical *ba* construction like the one in (26a) is shown in (26b).

- (26) a. Xiaokui ba beizi da-po-le.
 Xiaokui BA cup hit-broken-ASP
 ‘Xiaokui broke the cup.’
 b. [TP Xiaokui_i [_{baP} t_i ba [_{vP} beizi_k v [_{vP} da-po t_k]]]]

In examples (24) and (25), the fact that the *ba* marker and the object NP precede the raised verbal complex supports the proposal that the raised verbal complex is in the *vP* periphery.

Finally, evidence from negation can also help establish the location of CauseP. If we try to negate the examples in (20) and (21), their negative counterparts are shown as (27) and (28).

- (27) a. Zhe-fen xin mei **xie-lei** Xiaoming.
 this-CL letter not write-tired Xiaoming
 ‘The writing of this letter didn’t make Xiaoming tired.’
 b. Zhe-fen xin mei **rang** Xiaoming xie-lei.
 this-CL letter not cause Xiaoming write-tired
 ‘The writing of this letter didn’t make Xiaoming tired.’
- (28) a. Na-duan fan mei **chi-de** Zhangsan hen lei.
 that-CL meal not eat-Res Zhangsan very tired
 ‘That meal didn’t make Zhangsan eat such that he became tired.’
 b. Na-duan fan mei **rang** Zhangsan chi-de hen lei.
 that-CL meal not cause Zhangsan eat-Res very tired
 ‘That meal didn’t make Zhangsan eat such that he became tired.’

In Wang (1965), Huang (1988), Ernst (1995), Li (1997) among others, the negations *bu* and *mei* in Mandarin Chinese are proposed to be located in the *vP* periphery. For example, in Ernst (1995), *bu* is proposed to be situated at Spec, VP, which is reinterpreted as Spec, *vP* by Holmberg (2016). On the other hand, *mei* is proposed to be located in Spec, AspP in the lower TP domain.⁶⁾ In addition, it is well-known that *mei* can precede *bu*, but not vice versa. In examples (27) and (28), the fact that *mei* precedes the raised verbal complex or *rang* also supports the proposal that the CauseP is around the *vP* periphery.

6) But see Lam (2018) for a different proposal for *mei* in which it occupies a lower position.

To summarize, we have thus far seen that there seems to be a strong correspondence between the V-V resultative and the V-*de* resultative. We have also seen that there are many similarities when these two resultatives interact with other elements. Notably, however, the similar syntactic patterns all favor the proposal in which the CauseP is in the *v*P periphery, as proposed by Bi and Pan (2018).

3. The Causative Projections

In this section, I provide additional support for the structure proposed by Bi and Pan (2018) based on the behavior of *rang* ('cause') in certain contexts. However, I then show that their proposal may need to be refined to accommodate further data about causatives.

To start, consider the following sentence (29), in which there seems to be an embedded clause after *rang* ('cause'), and the subject is another Agent (see Lowe 2008). For Tsai (2015b) and Bi and Pan (2018), the sentences with an Agent as the causer are not discussed. However, I believe that it is possible to push Bi and Pan's analysis further to accommodate examples like (29), which also has a lexical causative word *rang* ('cause') in the structure. In (29), the seeming embedded clause is quite similar to the one in example (12), as shown in (30).

(29) Xiaoming rang Xiaokui da-po-le zhe-ge beizi.
 Xiaoming cause Xiaokui hit-broken-ASP this-CL cup
 'Xiaoming caused Xiaokui to break the cup.'

(30) Xiaokui da-po-le zhe-ge beizi.
 Xiaokui hit-broken-ASP this-CL cup

Superficially, there seems to be a biclausal structure in (29). That is, one might argue that *rang* ('cause') can function as a verb, and hence that it in fact has a biclausal structure, as shown in (31).

(31) [_{TP} Xiaoming [_{VP} rang [_{TP} Xiaokui [_{VP} da-po-le
 Xiaoming cause Xiaokui hit-broken-ASP
 zhe-ge beizi]]]]
 this-CL cup

However, previously it was shown that *rang* ('cause') can be the realization of the $v_{\text{cause}}\text{P}$ head if the complex verb has not raised. Therefore, the question arises whether this is a genuine biclausal structure for (29). Based on three contrasts between *rang* and the verb *zhidao* ('know') discussed below, I would like to argue that adopting a structure like the one in (31) for example (29) is untenable.

First of all, as shown in (32a), a verb like *zhidao* ('know') can take an embedded clause. As discussed in the literature, internal topicalization of the object to the TP domain can only be done in a single clause (c.f. Fu 1994, Paul 2002). In (32b), if the object in the embedded clause is internally topicalized to the matrix clause, the sentence is judged ungrammatical. On the other hand, if the internal topicalized object is in the embedded clause, as in (32c), the sentence becomes acceptable.

- (32) a. Zhangsan *zhidao* Lisi *da-po-le* **zhe-ge** **beizi**.
 Zhangsan know Lisi hit-broken-ASP this-CL cup
 'Zhangsan knows that Lisi broke the cup.'
- b. ?*Zhangsan **zhe-ge** **beizi** *zhidao* Lisi *da-po-le*.
 Zhangsan this-CL cup know Lisi hit-broken-ASP
- c. Zhangsan *zhidao* Lisi **zhe-ge** **beizi** *da-po-le*.
 Zhangsan know Lisi this-CL cup hit-broken-ASP

If the main verb is changed into *rang* ('cause'), however, as shown in (33a), the opposite pattern results. The internal topic preceding the first verb *rang* ('cause') is grammatical, but it becomes ungrammatical when the internal topic precedes the second verb *chang* ('sing'), as in (33b) and (33c), respectively.⁷⁾

- (33) a. Xiaoming *rang* Xiaokui *da-po-le* **zhe-ge** **beizi**.
 Xiaoming cause Xiaokui hit-broken-ASP this-CL cup
 'Xiaoming caused Xiaokui to break this cup.'
- b. Xiaoming **zhe-ge** **beizi** *rang* Xiaokui *da-po-le*.
 Xiaoming this-CL cup cause Xiaokui hit-broken-ASP
- c. *Xiaoming *rang* Xiaokui **zhe-ge** **beizi** *da-po-le*.
 Xiaoming cause Xiaokui this-CL cup hit-broke-ASP

In addition, the distribution of a deontic modal *hui* ('tend to') is also different

7) Example (33c) can become grammatical if the preposed object before the verbal complex is introduced by the *ba* marker. See also discussion for example (43a) below.

in the *zhidao* ('know') and *rang* ('cause') pairs. The deontic modal *hui* ('tend to') can be inserted into the embedded clause, as shown in (34). However, it is not grammatical to place a deontic *hui* ('tend to') in the seeming embedded clause, as in example (35).

(34) Zhangsan *zhidao* Lisi (*hui*^D) da-po zhe-ge beizi.
 Zhangsan know Lisi tend.to hit-broken this-CL cup
 'Zhangsan knew that Lisi tended to break this cup.'

(35) Xiaomin *rang* Xiaokui (**hui*^D) da-po zhe-ge beizi.
 Xiaomin cause Xiaokui tend.to hit-broken this-CL cup
 'Xiaomin caused Xiaokui to tend to break this cup.'

Finally, the insertion of negation also patterns with the insertion of the deontic modal *hui* ('tend to'). As shown in (36) and (37), respectively, negation can be added in the embedded clause following *zhidao* ('know'), while it is not allowed in the seeming embedded clause following *rang* ('cause').

(36) Zhangsan *zhidao* Lisi (*mei*) da-po zhe-ge beizi.
 Zhangsan know Lisi not hit-broken this-CL cup
 'Zhangsan knew that Lisi didn't break this cup.'

(37) Xiaoming *rang* Xiaokui (**mei*) da-po zhe-ge beizi.
 Xiaoming cause Xiaokui not hit-broken this-CL cup
 'Xiaoming caused Xiaokui not to break this cup.'

The above contrasts therefore show that *rang* ('cause') does not behave like typical verbs such as *zhidao* ('know'), which can take a genuine embedded clause.⁸⁾

Drawing on Bi and Pan's (2018) analysis where *rang* ('cause') is located at the $\nu_{\text{cause}}\text{P}$ head, the contrasts with *zhidao* ('know') can all be explained. Consider the structure in example (38) below:

8) One possibility to explain the phenomena observed in the embedded clause taken by *rang* is to assume that what follows *rang* ('cause') is a non-finite clause. If the embedded clause is a non-finite one, it is expected that the elements which need to be hosted by functional projections cannot exist. However, Hu et al. (2001) has argued that there is no independent evidence to support the finite and non-finite distinctions in Chinese. Since the distinction is still controversial in Chinese, I do not pursue and discuss this non-finite assumption for the embedded clause taken by *rang* ('cause') here.

(38) [TP Xiaoming [_{v_{cause}P} rang [_{vP} Xiaokui [_{VP} da-po zhe-ge beizi]]]]]

When *rang* ('cause') is situated at the *v_{cause}P* head, what follows *rang* ('cause') is *vP*. Thus, TP-domain or periphery elements like internal topics, modals, and negation cannot appear there.

While Bi and Pan's (2018) proposal can nicely account for the contrasts discussed above, as well as for resultative examples such as (4), (7a), and (29), it may need further refining to accommodate additional data relating to the *ba* construction sentences. Recall that Bi and Pan (2018) mention that example (7a)/(20a), repeated here as (39), can have a *ba*-construction counterpart, as in (40). As a *ba* NP, Xiaoming is understood to be strongly affected by the writing of the letter (see also Sybesma 1992, 1999).

(39) Zhe-fen xin xie-lei-le Xiaoming.
 This-CL letter write-tired-ASP Xiaoming
 'The writing of this letter caused Xiaoming to be tired.'

(40) Zhe-fen xin ba Xiaoming xie-lei-le. = (24)
 This-CL letter BA Xiaoming write-tired-ASP
 'The writing of this letter caused Xiaoming to be tired.'

For Bi and Pan (2018), example (39) is structured as in (41) (see also (13)). The subject has undergone successive cyclic movement from Spec, VP to Spec, TP. Similarly, the complex verb has also raised to the *v_{cause}* head position.

(41) [TP Zhe-fen xin_i [_{v_{cause}P} t_i xie_k-lei_j [_{vP} t_i t_k-t_j [_{VP} t_i t_k t_j Xiaomin]]]]]

Following Li's (2006) proposal for the *ba* construction, and based on Bi and Pan (2018) (e.g., example (41)), the presumed structure for example (40) would be that in (42). In (42), *BaP* is inserted right above *vP*, the subject moves from Spec, VP to Spec, TP, and the verbal complex only raises up to the *v* head. In addition, the object moves from the VP complement to Spec, *vP* to become the *ba* NP.

(42) [TP Zhe-fen xin_i [_{v_{cause}P} t_i [_{baP} t_i ba [_{vP} t_i [_{vP} Xiaoming_k xie-lei-le_z [_{VP} t_i t_z t_k]]]]]]]

Returning to example (38), its *ba* counterpart can have two different versions, as

shown in (43).⁹⁾

- (43) a. Xiaoming rang Xiaokui ba zhe-ge beizi da-po.
 Xiaoming cause Xiaokui BA this-CL cup hit-broken
 ‘Xiaoming caused Xiaokui to break this cup.’
- b. Xiaoming ba zhe-ge beizi rang Xiaokui da-po.
 Xiaoming BA this-CL cup cause Xiaokui hit-broken

In (43), if *rang* (‘cause’) is the v_{cause} head as proposed above, its *ba* counterparts in (43) could successfully be derived as in (44) and (45) under Bi and Pan’s structure.

(44) [TP Xiaoming_i [_{vcauseP} t_i rang [_{baP} Xiaokui ba [_{vP} zhe-ge beizi_k da-po_z [_{VP} t_z t_k]]]]]]

(45) [TP Xiaoming_i [_{baP} t_i ba [_{vcauseP} zhe-ge beizi_k rang [_{vP} t_k [_{vP} Xiaokui da-po_z [_{VP} t_z t_k]]]]]]

However, let us consider the effect of adding a manner adverb in the above *ba*-counterparts to see if the proposed structure can accommodate them. It is well known that a manner adverb like *xiaoxin-de* (‘carefully’) can precede or follow *ba* (i.e. Huang, Li and Li 2009). Hence, for example (43a), adding the manner adverb *xiaoxin-de* results in the following two patterns shown in (46).

- (46) a. Xiaoming rang Xiaokui xiaoxin-de ba zhe-ge beizi da-po.
 Xiaoming cause Xiaokui carefully BA this-CL cup hit-broken
 ‘Xiaoming caused Xiaokui to break this cup carefully.’
- b. Xiaoming rang Xiaokui ba zhe-ge beizi xiaoxin-de da-po.
 Xiaoming cause Xiaokui BA this-CL cup carefully hit-broken

It is usually assumed that manner adverbs are in an XP-adjoined position (e.g. Ernst 2002).¹⁰⁾ For example, in (47), a manner adverb can precede *ba*, as in (47a),

9) The possibility of (43b) is a further support that examples like (43b) have a monoclausal structure. As shown in (i), when the main verb is *zhidao* (‘know’), *ba* and its *ba*-NP are allowed in the embedded clause, but not in the matrix clause.

- (i) a. Zhangsan zhidao Lisi ba beizi da-po.
 Zhangsan know Lisi BA cup hit-broken
 ‘Zhangsan knew that Lisi has broken the cup.’
- b. *Zhangsan ba beizi zhidao Lisi da-po.
 Zhangsan BA cup know Lisi hit-broken

10) If the manner adverb is assumed to be a specifier of a phrase, the same problem occurs. That is,

or the verbal complex, as in (47b). Structurally, the manner adverb is assumed to adjoin to *BaP* or *VP*, as in (48a) and (48b), respectively.

- (47) a. Xiaokui xiaoxin-de ba beizi da-po-le.
 Xiaokui carefully BA cup hit-broken-ASP
 ‘Xiaokui broke the cup carefully.’
 b. Xiaokui ba beizi xiaoxin-de da-po-le.
 Xiaokui BA cup carefully hit-broken-ASP

- (48) a. [_{TP} Xiaokui_i [_{baP} xiaoxin-de [_{baP} t_i ba [_{νP} beizi_k ν [_{VP} da-po t_k]]]]]
 b. [_{TP} Xiaokui_i [_{baP} t_i ba [_{νP} beizi_k ν [_{VP} xiaoxin-de [_{VP} da-po t_k]]]]]

Given Bi and Pan’s (2018) structure, there is no problem accommodating the manner adverb in (46b). The structure for the sentence without the adverb is shown in (44). The adverb that follows *ba* in (46b) can adjoin to *VP*. However, for example (46a), for the manner adverb to precede *ba* would mean that it has to adjoin to *ba’*, which is an *X’*-position. This seems to be an ad-hoc stipulation and different from the typical proposal or generalization for manner adverbs. In the following section, I propose a refinement of Bi and Pan’s (2018) structure that addresses this issue and better handles additional data related to the distribution of the quantifier *ge* (‘each’).

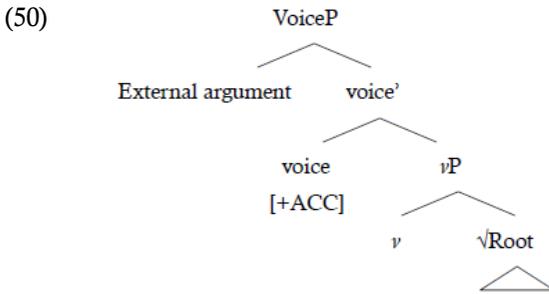
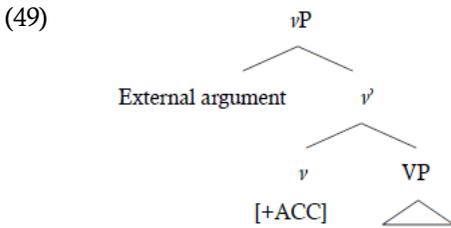
4. The Proposal and Its Consequences

4.1. A Tripartite VP Structure

We have seen, consistent with Bi and Pan (2018), that it is quite possible that *CauseP* is located in the *νP* periphery, rather than in a position higher than *TP* as proposed by Tsai (2015b). However, as shown above, there may be room for further refinement of Bi and Pan’s proposed structure. In the following, I provide a more fine-grained structure that draws specifically on Pyllkänen’s (2002, 2008) analysis of cross-linguistic variation in causatives within a tripartite *VP* framework.

under structure (44), it is again not possible to accommodate example (46a). In example (46a), the adverb has to precede *ba* and follows the embedded subject. However, in structure (44), there is no such a position for the adverb between the embedded subject and *ba*. The specifier position preceding *ba* has been occupied by the embedded subject. The author would like to thank one of the reviewers who brings up this issue to my attention.

Before proceeding, let us go over the tripartite VP analysis briefly (i.e. Pylkkänen 2002, 2008; Cuervo 2003; Collins 2005; Alexiadou et al. 2006; Harely 2013; Merchant 2013, among others). In contrast to the typical ν P-VP structure in (49), which has only one functional projection (i.e. Chomsky 1995; Hale & Keyser 1993; Harley 1995; Kratzer 1996; Marantz 1997, among others), the tripartite VP shown in (50) has two functional projections.



In the tripartite VP, a VoiceP has been added to the structure, and it is responsible for introducing the external argument and assigning accusative Case. Following Marantz (1997), the major function of the ν P is to verbalize its complement, which is a category-neutral $\sqrt{\text{Root}}$. The ν P now can also mark the eventuality type like BE/DO/BECOME/CAUSE etc. The CAUSE eventuality is our focus here.

Under the tripartite VP analysis, Pylkkänen (2002, 2008) proposes that there are cross-linguistic variations in the realization of CAUSE. The first one is whether CAUSE can have its own projection (i.e. ν P), or if it can be bundled with the VoiceP. The second variation lies in the complement selection of the CAUSE head. There are three possible variations cross-linguistically. The CAUSE head can select a $\sqrt{\text{Root}}$, a Verb, or a Phase (the Phase is defined by a VoiceP or a high ApplP).

To see whether a CAUSE head should be bundled with a VoiceP, Pylkkänen (2002, 2008) proposes that this can be inferred by checking whether a language with

unergative or transitive verbs can have causative counterparts or not. For example, English has a Voice-bundling causative because it cannot have causative versions of an unergative or transitive verb, as shown in (51). On the other hand, for languages such as Japanese, the causative counterpart for the unergative or transitive verb is allowed, as in (52); hence, the VoiceP and the ν P in Japanese are independent projections.

(51) English

- a. Unergative root
*John cried the baby.
- b. Transitive root
*John learned Mary Finnish.

(52) Japanese

- a. Unergative root
John-ga kodomo-o nak-asi-ta.
John-NOM child-ACC cry-CAUSE-PAST
'John made the child cry.'
- b. Transitive root
John-ga Taroo-ni Eigo-o os-hie-ta.
John-NOM Taro-DAT English-ACC learn-CAUSE-PAST
'John taught Taro English.' (Lit.: 'John made Taro learn English.')

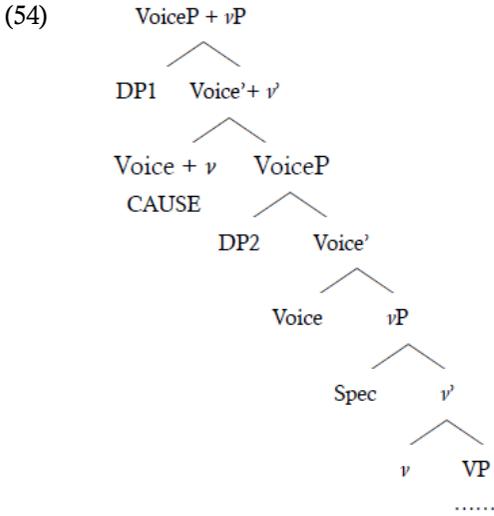
According to the above tests, Chinese seems to pattern with English, where the ν P/CauseP has been bundled with VoiceP, as shown in (53).

(53) Chinese

- a. Unergative root
*Xiaoming ku xiaohai.
Xiaoming cry child
'Intended Meaning: Xiaoming made the child cry.'
- b. *Xiaoming xue Xiaohua fayu.
Xiaoming learn Xiaohua French
'Intended Meaning: Xiaoming made Xiaohua learn French.'

As for the complement selected by the CAUSE head, under Bi and Pan's proposal

(2018), what follows CAUSE is a ν P that can take an external argument. However, in light of Pyllkäinen's tripartite VP analysis (2002, 2008), Bi and Pan's structure could be revised as follows in (54). The original ν_{cause} P now is a bundle of VoiceP + ν P, and the ν P complement of the ν_{cause} head is VoiceP, which introduces an external argument.



Compared to Bi and Pan's structure, the refined structure in (54) has an additional functional projection. The additional VoiceP does not tangibly influence the derivations examined previously. For example, (7a), repeated here as (55), can be derived as in (56).

- (55) Zhe-fen xin xie-lei-le Xiaoming.
 this-CL letter write-tired-ASP Xiaoming
 'The writing of this letter made Xiaoming tired.

- (56) [TP Zhe-feng xin_i [VoiceP+νP t_i xie-lei-le_j [VoiceP t_i t_k-t_j [νP t_k-t_j [VP tk Xiaoming tj]]]]]

The slight difference in (56) from the original derivation proposed by Bi and Pan (2018) is that now the subject originates in Spec, VoiceP, which is the new projection and is responsible for introducing the external argument. In addition, an example such as (29), repeated here as (57), has a derivation like the one in (58). In this case, the slight difference lies in where the Causee originates.

(57) Xiaoming rang Xiaokui da-po beizi. = (29)
 Xiaoming cause Xiaokui hit-broken cup
 ‘Xiaoming caused Xiaokui to break the cup.’

(58) [TP Xiaoming_i [VoiceP+_{vP} t_i rang [VoiceP Xiaokui [_{vP} [_{VP} da-po zhe-ge beizi]]]]]

However, the revised structure offers a solution for the problem raised by (47a), repeated here as (59a) - the sentence in which the manner adverb *xiaoxin-de* (‘carefully’) precedes *ba*. Its structure under Bi and Pan is shown in (59b). The main problem for (59b) is that the manner adverb in (59a) will be forced to adjoin to an X’ position, which is not a typical position for manner adverbs.

(59) a. Xiaoming rang Xiaokui xiaoxin-de ba zhe-ge beizi da-po.
 Xiaoming cause Xiaokui carefully BA this-CL cup hit-broken
 ‘Xiaoming caused Xiaokui to break this cup carefully.’
 b. [TP Xiaoming_i [_{vCauseP} t_i rang [_{baP} Xiaokui ba [_{vP} zhe-ge beizi_k [_{VP} da-po t_k]]]]]

With the additional functional projection, the example can now be explained easily. Under the refined structure, now the manner adverb can adjoin to *baP*, as shown in (60).

(60) [TP Xiaoming_i ... [VoiceP + _{vP} t_i rang [VoiceP Xiaokui_j [_{baP} xiaoxin-de [_{baP} t_j ba [_{vP} zhe-ge beizi_k [_{VP} da-po t_k]]]]]]]

In addition, the tripartite VP analysis also provides a coherent explanation for the distribution of the distributive quantifier *ge* (‘each’) (see Lin 1998, 2001 and Soh 2005, among others). Soh (2005) has argued that *ge* can be regarded as an adverbial quantifier that can adjoin to *vP* or *VP*. In a sentence like (61a), *ge* can follow the plural NP *women* (‘we’) or *tamen* (‘they’).

(61) a. Women rang tamen da-po yi-ge beizi.
 we CAUSE they hit-break one-CL cup
 ‘We made them break a cup.’
 b. Women ge rang tamen da-po yi-ge beizi.
 we each CAUSE they hit-break one-CL cup
 ‘Each one of us made them broke a cup.’

- c. Women rang tamen ge da-po yi-ge beizi.
 we CAUSE they each hit-break one-CL cup
 ‘We made each one of them broke a cup.’

Under Bi and Pan’s proposal, the structure of (61a) would be like that in (62). For *ge* to be placed in the right order, it has to adjoin to $\nu_{\text{cause}}\text{P}$ or VP in (62).

(62) [_{TP} Women [_{$\nu_{\text{cause}}\text{P}$} rang [_{$\nu\text{P}$} tamen [_{VP} da-po yi-ge beizi]]]]

However, it is not possible for *ge* to adjoin to νP in (62), since it will result in an ungrammatical sentence, as shown in (63). This seems questionable since *ge* can adjoin to $\nu_{\text{cause}}\text{P}$ in (62), and $\nu_{\text{cause}}\text{P}$ is a kind of νP .

- (63) *Women rang (*ge) tamen da-po yi-ge beizi.
 We CAUSE each they hit-break one-CL cup

On the other hand, the structure for (61a) under the current analysis is shown in (64).

(64) [_{TP} Women [_{VoiceP+ νP} rang [_{VoiceP} tamen [_{νP} [_{VP} da-po yi-ge beizi]]]]]]

In structure (64), *ge* is assumed to adjoin to the $\nu_{\text{cause}}\text{P}$ as well as the νP , which then provides a more coherent explanation for the distribution of *ge* in example (61).

With the additional functional projection under the tripartite VP analysis, the proposed structure is in accord with Pyllkkänen’s (2002, 2008) cross-linguistic proposal for causatives. Moreover, data which cannot be explained properly by Bi and Pan’s (2018) proposal is easily accommodated under the current analysis.

4.2. Light Verb Distributions

With the new proposal about causatives, we now turn back to examine the relations between the outer light verb and the inner light verb discussed by Tsai (2015b). Recall that in Tsai (2015b), in addition to the outer light verb that is proposed to be in the CP domain, there is also an inner light verb in the νP periphery, as shown in (3). Under Bi and Pan’s structure in (13) and the refined structure in (54), the so-called outer light verb is also in the νP periphery. One might wonder if there is any effect on the inner light verb once the analysis has been

revised.

Let us first go over the relevant examples for inner light verbs presented by Tsai (2015b). Following Lin (2001), Tsai indicates that inner light verbs are associated with instrumental, locative, and benefactive roles. An instrumental example is shown in (65). Similar to the case observed with the outer light verb, example (65) can be paraphrased by employing the lexical light verb *yong* ('use'), as in (66).

(65) Ni xie na-chi bi, wo xie zhe-chi bi.
You write that-CL pen I write this-CL pen
'You (will) write with that pen, and I (will) write with this pen.'

(66) Ni yong na-chi bi xie, wo yong zhe-chi bi xie.
You use that-CL pen write I use this-CL pen write
'You (will) write with that pen, and I (will) write with this pen.'

The inner light verb also shares a similar syntactic derivation with the outer light verb. As shown in (67a), the light verb USE can be lexically realized as *yong*, as in (66). Alternatively, the verb can undergo raising to the light verb position to form (67b).

(67) a. Ni USE na-chi bi xie, wo USE zhe-chi bi xie.
you that-CL pen write I this-CL pen write
(inner light verb)
b. Ni xie_j+USE na-chi bi t_j, wo xie_k+USE zhe-chi bi t_k.
you write that-CL pen I write this-CL pen
(raising to inner *v*)

No matter whether Bi and Pan's structure or the current revised structure is adopted, both the outer light verb and the inner light verb will be located inside the *v*P domain. This is not surprising since both structures are based on Pytkäinen's (2002, 2008) proposal. An advantage of situating the outer light verb in the *v*P domain is that it is a more expected position for an actual "light verb" (see Lin 2001). In addition, Tsai's (2015b) proposal for the two kinds of light verbs and their relative positions is maintained. The difference simply lies in the specific position of the outer light verb. Hence example (68) discussed by Tsai, which combines both the causative and instrumental usages, can also be explained under the current analysis.

- (68) Na-chi bi xie-de Xiaoming hen lei.
 that-CL pen write-DE Xiaoming very tired
 ‘Xiaoming wrote with the pen and became very tired.’

Examples like (68) are quite similar to the object-oriented resultatives such as example (7a) discussed by Bi and Pan (2018). A major difference is that it is not the object which becomes the subject, but rather an instrument which does. The derivation under the refined structure is shown in (69). Following Tsai (2015b), the instrument NP is base-generated at Spec, VP. However, unlike Tsai’s null operator analysis, here we follow Bi and Pan’s proposal in that the instrument NP undergoes movement to the Spec, TP position. The verbal complex also undergoes head movement, passing through the inner light verb head and landing at the outer light verb position. This is how the example can both have the causative and instrumental interpretations.

- (69) [_{TP} Na-chi bi_i ... [_{VoiceP} + _{vP} t_i xie-de_j [_{VoiceP} t_i [_{VoiceP} Xiaoming t_j [_{vP} t_i t_j [_{VP} t_i hen-lei]]]]]]

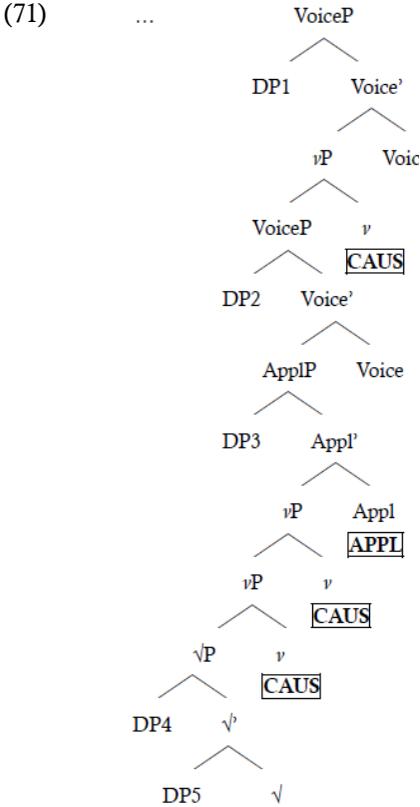
Further, having an independent projection for the outer light verb and for the inner light verb in the *vP* domain also predicts the possibility of co-existence for these two light verbs. Indeed, these two projections can both be overtly present if the two light verbs are realized in certain ways. As shown in (70), if the outer light verb in the VoiceP + *vP* bundle is realized as *rang* (‘cause’) under the current analysis, the inner light verb can have two variants.

- (70) a. Xiaoming rang Xiaokui yong na-chi bi xie.
 Xiaoming CAUSE Xiaokui USE that-CL pen write
 ‘Xiaoming made Xiaokui to write with that pen.’
 b. Xiaoming rang Xiaokui xie na-chi bi.
 Xiaoming CAUSE Xiaokui write that-CL pen

In (70a), the inner light verb is lexically realized as *yong* (‘USE’). On the other hand, it is also possible to have verb raising to the inner light verb position, as in (70b).

Finally, an advantage of the current proposal with multiple tiers of causatives in the *vP* domain is its cross-linguistic applicability. For example, Jung (2014) proposes that there are three possible CAUSE heads in Korean, as illustrated in (71).¹¹⁾

Unlike Chinese, Korean patterns with Japanese in that VoiceP and ν P are independent projections.



(Jung 2004: p19, (7))

However, there are also similarities observed in Korean that seem to support what we have proposed for Chinese so far. First of all, in Korean, the highest ν P also functions as a CAUSE light verb. Secondly, the second ν P, functioning as CAUSE in Korean, is also a kind of light verb. In Chinese, we have the light verb USE in this position instead. Thirdly, note that there is an Applicative Projection in between the highest ν P and the second ν P in Korean. In Chinese, as shown previously, we can have a *Ba*P in the same position. In the literature, there are also proposals such as Zhao (2021) in which *Ba*P is a kind of Applicative Projection. This is not surprising since there is an affected reading on the *Ba* NP, as observed

11) This is a simplified version of Jung (2014) since some details which are not related to the current discussion have been omitted.

in the literature (i.e., Li and Thompson 1981). Based on the above, it is reasonable to suggest that the current proposal for a fine-grained structure for the ν P domain has some cross-linguistic applicability.

5. Conclusion

In this paper, I have questioned Tsai's (2015b) proposal that a causative projection is located in the CP domain. I start from Bi and Pan's (2018) proposal about Chinese resultatives which are associated with causative projections and argue that their proposal can be linked to Tsai's discussion of *V-de* resultatives. In addition, I provide evidence that the causative projection in Chinese should be located in the ν P periphery, in line with Bi and Pan (2018). However, I also show that Bi and Pan's structure can be further refined under the tripartite VP analysis discussed by Pyllkäinen (2002, 2008). The fine-grained structure gets support from cross-linguistic analysis and enriches our understanding of causatives/light verbs in the ν P domain.

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