

Parametric Variation in Resultative Patterns in Chinese Dialects¹

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This paper studies some aspects of the parametric variation in resultative constructions (*V-R-Causee* & *V-Causee-R*) in Chinese dialects, which express a change of state as a result of the complement of an action denoted in the event. In this paper, we propose three resultative patterns in Chinese dialects are derived from similar underlying representations. For *V-Causee-R* resultatives, found in Shanghai dialect (Huang 1996) and Ningbo dialect (Cheng & Yang 2016), we maintain that the resultative predicate is phrasal in nature; the categoryless $\sqrt{\text{Root}}$ undergoes head raising to a higher *v*, making it a verbal category (Chomsky 2013). For *V-R-Causee* resultatives, observed in Mandarin Chinese and Cantonese (Chow 2001), we hypothesize head status Res(ultative). Following $\sqrt{\text{Root}}$ -raising, Res-raising occurs. The subsequent head movement is motivated by the need to engage with an [S-VERBAL] feature, triggered by the functional head *v*. Supporting evidence is found in DE-phrasal resultatives (*V-DE-Causee-R*) in Mandarin Chinese.

1. Compounding and serial verb resultatives

This paper compares two resultative patterns in Chinese dialects: *V-R-Causee* and *V-Causee-R*. The first pattern is found in compounding resultatives, observed in Mandarin and Cantonese (Chow 2001). The second pattern contains serial verbs, with an intervening Causee, as seen in Shanghai dialect (Huang 1996; Williams 2008) and Ningbo dialect (Cheng & Yang 2016).

(1) Compounding resultatives

- a. Nei go naam jan daa sei zo gwo zek gau.
this CL man hit-dead ASP that CL dog
'This man beat that dog, and made it dead.' (Cantonese, Chow 2001)
- b. Tamen zha hu le yi pan huashengmi.
they fry overcook ASP one plate peanut
'They fried a plate of peanuts, and the peanuts became overcooked.'

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(2) Serial verb resultatives

- a. ngu so yi su.
 I cook it crisp
 ‘I cook it crisp.’ (Shanghai dialect, Williams 2008)
- b. ngo ye nge huasheng que qi diao.
 you one Cl peanut eat it drop
 ‘you ate up some peanuts.’ (Ningbo dialect, adapted from Cheng & Yang 2016)

Both patterns contain an activity verb, followed by a predicate which signifies a change of state as a result of the action denoted in the event. In this paper, we suppose the resultative state is realized as the secondary predicate (Pylkkänen 2002); these two patterns share similar underlying bases, given the labeling algorithm (Chomsky 2013, 2014). Both patterns are derived from a two-layer-vP structure, but the difference of linearization results from the ‘Res-to-v’ head movement in the compounding pattern, but not in serial verb resultatives. In Section 2 we describe syntactic behaviors of these two patterns: occurrence of aspectual ‘le’, the internal structure of the postverbal argument, argument sharing between the two predicates and a specificity restriction for the postverbal argument. Section 3 analyses how the labeling algorithm is applied to account for resultative patterns, in particular, for the syntactic distribution of Causee in this diagram. Section 4 provides an overall analysis for these two resultative patterns based on the labeling algorithm. In Section 5, we extend the approach to explain another resultative pattern in Mandarin Chinese: the DE-phrasal resultatives, used to support our diagram.

2. Structural properties of resultative patterns

Before discussing the derivational analysis, it is necessary to describe structural characteristics of compounding resultatives and serial verb resultatives. There are distributional similarities: the activity verb always precedes the resultative predicate in both two patterns. It is also of note that no degree modification is allowed to precede the resultative predicate, although it is grammatical in single state clause.

- (3) a. Ma Li zha (*hen) hu le yi pan huashengmi.
 Ma Li fry very overcooked Asp one plate peanut
 Intended reading: ‘Ma Li fried a plate of peanuts, and the peanuts became very overcooked.’
- b. ngu so yi (*hen) su.
 I cook it very crisp
 ‘I cook it very crisp.’ (Williams 2008)
- c. Zhe pan huashengmi hen hu/su.
 this plate peanut very overcooked/crisp

‘This plate of peanuts is very overcooked/crispy.’

Now let us compare four features of these two resultative patterns: occurrence of aspectual ‘LE’, argument sharing between the two predicates, the syllabic structure of the postverbal argument, and a specificity restriction for the postverbal argument.

First, Chinese has a rich aspectual representation, and LE is one aspectual marker, used to indicate the complement of an action (Lin 2004). The perfective aspectual marker LE may co-occur with either atelic or telic verbs, denoting the boundaries of an event (Lin 2004). In (4a), the aspectual LE indicates the inception point of the event denoted by the atelic state predicate *bing* ‘sick’. In (4b), the aspectual marker LE co-occurs with the compounding resultative pattern. The compounding verb *xie-wan* ‘write-complete’ functions as a resultative predicate, and LE is added to supplement the complement of the event (Lin 2004). However, the completive usage of aspectual LE is not used in serial verb resultatives in (4c).

- (4) a. Ta bing le.
 he sick LE
 ‘He’s sick. (He has become sick.)’ [He is still sick.] (Inchoative LE, Lin 2004)
- b. Wo xie-wan le yi feng xin.
 I write-complete LE one Cl letter
 ‘I completed a letter.’ [I am no longer writing] (completive LE, Lin 2004)
- c. Ngu so (*le) yi su (*le).
 I cook it crisp
 ‘I cook it crisp.’ (No aspectual LE)

Second, argument sharing between the activity verb and the resultative predicate is optional in compounding resultatives, but obligatory in serial verb resultatives. In compounding resultatives, the argument structure between these two predicates and the postverb argument is complex, since the postverbal argument is not necessarily the s-selected complement of the activity verb.

The postverbal argument in (5a) is the common argument shared by the activity verb and the resultative predicate. In (5b), however, the postverbal argument is the argument of the resultative predicate, since the activity verb *ku* ‘cry’ is an ergative verb, without any s-selected complement. In the serial verb pattern (5c), only the pronoun ‘it’ can be used in the postverbal argument, so the argument is shared by two predicates.

- (5) a. Tamen zha hu le yi pan huashengmi.
 they fry overcook Asp one plate peanut
 ‘They fried a plate of peanuts, and made the peanuts overcooked.’
- b. Ta ku shi le shoupa.

- he cry wet Asp handkerchief
 ‘They cried the handkerchief wet.’ (Cheng and Huang: 1994)
- c. Ngu so yi su.
 I cook it crisp
 ‘I cook it crisp.’ (Williams 2008)
- d. *Ngu so pingdiguo hu.
 I cook pan burnt

The argument sharing contrast indicates the structural relation between the postverbal argument and the activity verb is more flexible in the compounding pattern, but less productive in the serial verb pattern. We will explain this is caused by a post-syntactic M-merger operation in serial verb patterns in this paper.

Third, the internal structure of the postverbal argument shows distinctions in these two patterns: a phrasal constituent appears in compounding resultatives (unless a topicalized or focalized phrase is mentioned in the sentence-initial position), but a monosyllabic pronoun is necessary in serial verb resultatives.

- (6) a. Tamen zha hu le yi pan huashengmi.
 they fry overcook Asp one plate peanut
 ‘They fried a plate of peanuts, and made the peanuts overcooked.’
- b. *(Zhe zhi niao,) Tamen da si le ta.
 this Cl bird they hit dead Asp it
 Literal: ‘As for this bird, they hit it, and made it dead.’
- c. Ngu so yi su.
 I cook it crisp
 ‘I cook it crisp.’ (Williams 2008)
- d. *Ngu so yi pan huashengmi su
 I cook one plate peanut crisp
 Literal: ‘I cook a plate of peanuts crisp.’

The asymmetric structure further shows that the postverbal argument is less productively used in serial verb resultatives. The exclusively pronoun-usage indicates that serial verb resultatives are highly context-dependent, and the antecedent of the pronoun is supposed to be known by language participants.

Fourth, the pronominal contrast in postverbal arguments above direct us to the asymmetric specificity between these two patterns in (7). In compounding resultatives, either specific or unspecific postverbal arguments are allowed, while only the specific reading is possible in serial verb resultatives. It is not surprising the pronoun usage is expected to denote specific interpretation. In this paper, we explain the specific asymmetry is created by labeling algorithm, corresponding to two different landing sites of Causee in two patterns.

- (7) a. Ma Li zha hu le yi/na pan huashengmi.
 Ma Li fry overcooked ASP one/that plate peanut
 ‘Ma Li fried a plate of peanuts, and the peanuts became overcooked.’
 b. Ngu so yi/(*yi pan huashengmi) su.
 I cook it/one plate peanut crisp
 ‘I cook it crisp.’

The differences are identified between compounding and serial verb resultatives in (8), which presents an overview of these two resultative patterns in Chinese dialects.

(8) Structural Properties in Two Resultative Patterns

Distinctions	Compounding Resultatives	Serial Verb Resultatives
Aspect ‘le’	Co-occurrence	No co-occurrence
Internal structure of object	Phrasal and polysyllabic	Monosyllabic pronoun
Argument sharing of object	May or may not share between V & R	Must share between V & R
Specificity restriction of object	Specific/non-specific	Specific

These contrastive structural properties will be explained via derivations based on Chomsky’s (2013, 2014) labeling algorithm.

3. Theoretical assumption

3.1 Labeling and its implication

Background assumptions about labeling and the implications for resultative patterns are introduced in this section. A generative grammar is explored as a formal and computational system (Chomsky 1995, cited in Krivochen 2015); the operation Merge combines two syntactic objects and Labeling is an operation to determine and label the new syntactic object (Biskup 2015). It is labeling that licenses syntactic objects, which are interpretable at interfaces, and only labeled syntactic objects are transferred (Chomsky 2013, Biskup 2015). According to Chomsky (2013), labels are determined by a fixed labeling algorithm based on minimal research (cited in Biskup 2015).

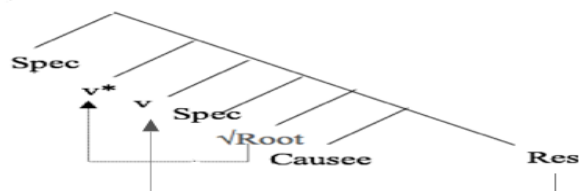
In the configuration [H, XP], the labeling algorithm takes H as the label, if H is a phasal head. If H is a non-phasal head, the head H becomes strengthened, by moving the specifier of XP to the specifier position of H. The shared feature between the non-phasal head H and the raised spec-XP is the new label. For instance, the Root and V obtain their labels by moving the subject of their complement, and the shared feature $\langle \phi, \phi \rangle$ is the label of the syntactic object (cited in Hosono 2015).

Chomsky (2013) also supposes that in the configuration {XP, YP}, two possibilities work for labeling. If there are shared features between X and Y, then the shared feature is the label. If no shared feature, one of phrases must move. The labeling algorithm takes the head of the remaining phrase as the label (Biskup 2015). Thus “movement feeds labeling” (Chomsky 2013, Biskup 2015: 9).

3.2 Head movement and the motivation

We propose a two-layer vP structure in the derivation, where feature inheritance occurs from the phasal head v^* to a lower functional v . The [C(ategorizing)-feature] is assumed on phasal head v^* , and it splits into the [CATEGORIAL] feature on the higher v^* and the [VERBAL] feature on the lower v . The two-layer-vP structure is empirically supported by the phrasal nature of compounding verbs. Following Chomsky (2013), Root is categoryless, and its merger to a higher functional head v , creating the verbal category. We suppose it is the [CATEGORIAL] feature on the higher v^* that triggers the Root-to- v^* movement, taking a verbal label. However, a [VERBAL] feature is assumed on the lower v , which can be strong or weak, represented as [S-VERBAL] and [W-VERBAL] respectively. The [S-VERBAL] feature can trigger Res(ultative)-to- v movement, whereas [W-VERBAL] leaves Res in-situ.

(9)



Res-to- v movement seems not to respect the Head Movement Constraint (Travis 1984), which skips an intervening Root. This is due to how head-movement depends on feature checking (Roberts 2010): the strong [VERBAL] feature on v must be checked by a [VERBAL] head, which locates at Res, rather than the categoryless Root, although it is the closest within the local domain. The Root-to- v^* movement skipping the lower v is also grammatical. The [CATEGORIAL] feature on the higher v^* checks and values a category to Root, making it a verbal category, whereas the lower v does not carry the

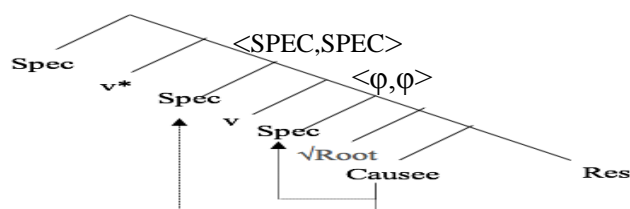
[CATEGORIAL] feature, so it is not an expected landing site of Root. This may indicate that the Res-to-v movement occurs later, in counter-cyclic fashion.

3.3 Landing sites of postverbal arguments

Another issue involves the postverbal argument in resultatives. Chomsky (2013, 2014) advocates a specifier position for Root from the labeling perspective. In the labeling algorithm, Root inherits ϕ -features from the higher functional v. The non-phasal head Root is weak and cannot be labeled by itself. It must be strengthened by the movement of the specifier of its complement; LA takes the shared $\langle\phi,\phi\rangle$ feature as the label.

We adopt this hypothesis to analyse resultative patterns in Chinese dialects, and further suppose Causee lands in spec-Root in Compounding resultatives, but further moves to spec-v in serial verb resultatives, required by labeling algorithm. In compounding resultatives, Root inherits uninterpretable ϕ -features from v (cyclically from v*), thus LA takes the shared $\langle\phi,\phi\rangle$ feature between Root and the shifted Causee as the label. In serial verb resultatives, we hypothesize that Root does not inherit ϕ -features from v, so no label is created at that point. The unlabeled result further merges with a functional v; the functional v and the moved Causee share specificity features. LA takes the common feature as the label. The ϕ -feature-inheritance from v (cyclically from v*) to Root is motivated by [VERBAL] feature on the functional head v: it is allowed when the [VERBAL] feature is strong, otherwise no inheritance is permitted. This hypothesis on multiple landing sites of Causee conforms to asymmetric specificity of Causee in two resultative patterns, which will be discussed in Section 4.2.

(10)



4. Syntactic analysis of resultative patterns

In this section, we analyze two resultative patterns in Chinese dialects based on these premises. The contrasting structural characteristics discussed in Section 2 are also accounted for in this section.

4.1 Head and phrasal distinctions

The resultative predicates in compounding and serial verb resultatives are realized as secondary predicates (Pylkkänen 2002). Res is a predicate head (Res^o) in compounding resultatives, but phrasal (ResP) in serial verb resultatives. Supporting evidence is found in the distribution of the negative adverb ‘not’.

At the first sight, the item *bu* ‘not’ can be used right before Res in both patterns in (11). It seems these two patterns bear identical properties and our assumption is false at first. However, the denotation of ‘not’ is different in two patterns: potential modality (i.e., possibility or/and ability) in compounding patterns, but negative modification (i.e., negatively modifying the resultative state) in serial verb resultatives. The hypothesis is tested via occurrence of the other potential modality *de* ‘able to’. Both DE and BU can be used in compounding pattern, showing BU is a modality item in (11a). The modality DE is prohibited in serial verb patterns in (11b), supporting BU in this pattern is not a modality item.

Modality items in compounding resultatives can be analyzed as an inner modal head generated between V and R, rather than as an adjunct (see Wu 2004: 273). However, BU in serial verb patterns is a negation adverb, modifying the resultative state.

- (11) a. Tamen zha **de/bu** hu yi pan huashengmi.
 they fry able/unable overcook one plate peanut
 ‘They are able/unable to make the peanuts overcooked.’ (Modality, only Res in the domain of DE/BU)
- b. Ngu so yi (*de)/**bu** su.
 I cook it not crisp
 ‘I cook it not crisp.’ (Negation, only Res in the domain of BU)

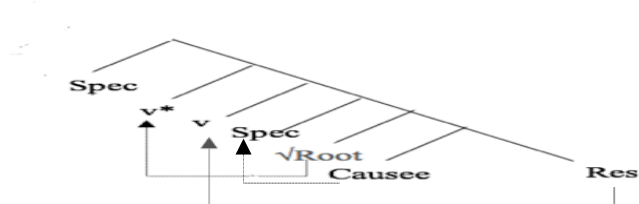
Treating the negation item *not* as a category of adverbs has been mentioned by Broekhuis (2016: 1181). We conclude the polarity adverb *not* adjoins to ResP in serial verb resultatives, which does not change the phrasal nature of the resultative predicate. In other words, constituent negation is possible in the serial verb structure.

4.2 Syntactic derivations

Now let us look at the overall derivational process of compounding resultatives. With the labeling algorithm, Root inherits ϕ -features from the higher functional *v* (cyclically from *v**). The postverbal argument is originated in the sister node of Res, later moving to the specifier of Root. Movement gets the non-phasal head Root strengthened, and the labeling algorithm takes the shared $\langle\phi, \phi\rangle$ features between Root and the raised Causee as the label. We suppose the phasal head *v** locates more than one functional features, such as [CATEGORIAL] feature, [VERBAL] feature or many others. The [VERBAL] feature is inherited from *v** to *v*, whereas the [CATEGORIAL] feature stays in the phasal head *v** in resultative constructions. It is the [CATEGORIAL] feature on

the phasal head v^* which triggers Root-to- v^* movement, creating a verbal category. The strong [VERBAL] feature on the lower v is also strong in compounding resultatives. The strong [VERBAL] feature is reflected by a verbal aspectual affix in v (e.g., morphologically realized as aspectual ‘*le*’ in Chinese). The strong [VERBAL] feature triggers Res-to- v head movement, as seen in (12).

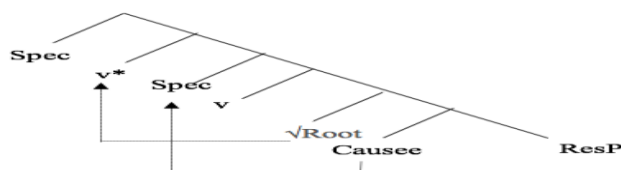
(12) Compounding resultatives



Next, turning to serial verb resultatives, the resultative predicate is analyzed as a phrasal constituent, supported by the negation adverb *bu* ‘not’ (in Section 4.1). In the configuration {Causee, ResP}, no shared features between these two sister phrases, so one of them has to move out. The categoryless weak Root enters the derivation, and no labels can be made by itself. In serial verb resultatives, v cannot inherit ϕ -features from v^* and transfer to Root, since v is weak in this pattern (i.e., being null, without any overt affix). So no label is created at that point. The unlabeled result further merges with the functional v . In order to label this exocentric structure, a semantic feature must be present on both the v and its specifier. We suppose specificity serves as the (SPEC) shared feature. LA takes the shared feature as the label in (13).

In this paper, we further propose a morphological merger operation applies in serial verb patterns, since the postverbal argument is frozen and highly restricted to an exclusively closed category. This idea will be specified in Section 4.2.

(13) Serial verb resultatives



So far, coherent syntactic derivations of two resultative patterns follow from labeling-based assumption. The head (Res^0) and phrasal (ResP) nature is distinguished in these

two patterns. Moreover, two landing sites of Causee are also observed: specifier of Root in compounding patterns, but specifier of *v* in serial verb patterns.

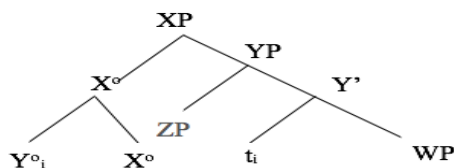
4.3 Explanation on syntactic distinctions

In Section 2, we discussed syntactic distinctions between compounding and serial verb resultatives in Chinese dialects: occurrence of aspectual ‘LE’, argument sharing between the two predicates, the internal structure of the postverbal argument and a specificity restriction for the postverbal argument. These characteristics are explained in this section.

First, occurrence of the aspectual marker LE in compounding resultatives supports the Res-to-*v* head movement in this pattern. The perfective aspect LE is analyzed as a strong verbal affix in the lower *v*, and the [S-VERBAL] feature triggers the Res-to-*v* head movement, ending up with a ‘Res+le’ complex. In serial verb resultatives, no overt LE is allowed; the [W-VERBAL] feature on the lower *v* cannot trigger any head movement. Moreover, the resultative predicate is phrasal in nature. In this configuration {Causee, ResP}, ResP stays in its originated node, creating Res as its label after Causee moves out.

Second, argument sharing between two predicates is optional in compounding resultatives, but obligatory in serial verb pattern. Following Matushansky (2006), we suppose the contrast is triggered by a post-syntactic *M-merger* in serial verb but not compounding patterns. Matushansky (2006) assumes a new view of head movement, suggesting a combination of two operations in head movement: a syntactic movement and a morphological merger (i.e., m-merger). To explain Matushansky’s core idea more specifically, just like phrasal movement, head movement targets a specifier position of the attracting head. M-merger happens between the probe and the target of head movement. M-merger is a morphological operation applying after movement in syntactic level. The representation is shown in (14), in which the head Y^0 moves to the specifier of the root, and then the moved Y^0 m-merges to the probe X^0 .

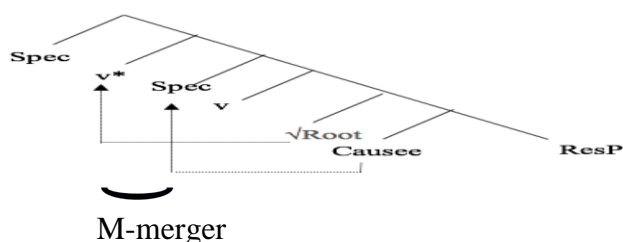
(14) M-merger operation (Matushansky 2006: 81)



We adopt the concept of M-merger, but apply it in a slight different way in this paper. In serial verb resultatives, the postverbal Causee moves out of the configuration {Causee, ResP} to the specifier of Root, triggered by the labeling algorithm (see details in Section

4.2). Head movement Root-to- v^* is triggered by the [CATEGORIAL] feature on the higher functional v^* . After movement in syntax, we suppose a morphological M-merger applies between the shifted Causee and the ' v^* +Root' complex, resulting in a ' v^* +Root+Causee' complex. The m-merger operation in serial verb patterns requires a monosyllabic nominal, hence the monosyllabic pronoun for Causee. The restricted usage of Causee supports our hypothesis that a m-merger operation applies in this pattern.

(15) M-merger in serial verb patterns



Third, the internal structure of the postverbal argument is different in two patterns. A phrasal constituent is used in compounding resultatives, but a pronoun is exclusively used in serial verb resultatives. Accordingly, the syllabic structure of the postverbal argument is also distinct: multiple syllables in the former, but monosyllabic pronoun in the latter. The less productive postverbal argument in serial verb resultatives is created by the m-merger operation, resulting in the restrictively selected postverbal argument.

Fourth, the specificity asymmetry in these two patterns correlates with two different landing sites of the Causee. In compounding resultatives, Root inherits uninterpretable ϕ -features from v (cyclically from v^*), thus LA takes the shared $\langle\phi,\phi\rangle$ feature between Root and the moved Causee as the label. The $\langle\phi,\phi\rangle$ feature pair creates an optional specificity. In Serial verb resultatives, Root does not inherit ϕ -features from v , thus no label is created at that point. The unlabeled result further merges with a functional v , and the functional v and the shifted Causee share a $\langle\text{SPEC},\text{SPEC}\rangle$ feature pair. LA takes the shared feature as the label. The ϕ -feature-inheritance from v (cyclically from v^*) to Root is motivated by [VERBAL] feature on the functional head v : it is allowed when the [VERBAL] feature is strong, otherwise no inheritance is permitted.

5. Implication to DE-phrasal resultatives

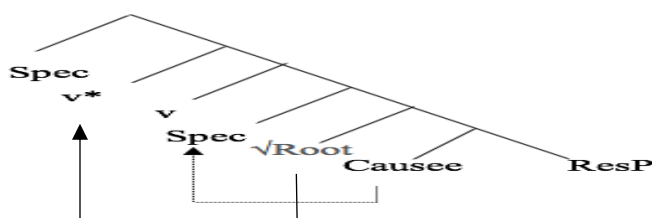
The shared base is further tested by another resultative pattern in Mandarin Chinese, known as DE-phrasal resultatives.

(16) Tamen zha de na pan huashengmi hen cui.
 they fry DE that plate peanut very crisp

‘They fried that plate of peanuts, and made peanuts very crispy.’

The resultative predicate in DE-phrasal structures is phrasal in nature, supported by the predicate-degree modifier *hen* ‘very’, as seen in (16). In the configuration {Causee, ResP}, the Causee moves out, since there is no shared feature between the postverbal argument and the phrasal ResP. We analyse DE-phrasal resultatives with a similar two-layer-vP structure as before. The [CATEGORIAL] feature and [VERBAL] feature are originated on the phasal head v^* , but the [VERBAL] feature is inherited from v^* to v . The [CATEGORIAL] feature on v^* triggers the merger of Root to the higher v^* , creating a verbal category. DE is a participle realized in the lower functional v . Not being truly verbal, v cannot inherit $\langle\phi,\phi\rangle$ features, but does have specificity features inherited from v^* to v , then transferred to Root. So the \langle SPEC,SPEC \rangle feature is shared between Root and the shift Causee. LA takes this shared feature as the label.

(17)



The labeling analysis is supported by the fact that cardinal subjects are not allowed, and only the specific reading is expected in DE-phrasal patterns. The specific reading is created by the \langle SPEC,SPEC \rangle label.

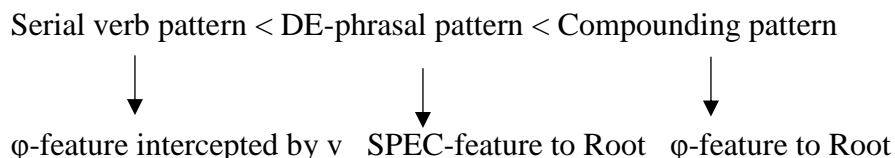
(18) Tamen zha de (*yi)/na pan huashengmi hen cui.
 they fry DE one/that plate peanut very crisp
 ‘They fried that plate of peanuts, and made peanuts very crispy.’

So far DE-phrasal patterns are analyzed in a similar way with serial verb resultatives. Both patterns contain a phrasal ResP, but different landing sites of Causee: specifier of Root in DE-phrasal patterns, and specifier of v in serial verb patterns. In these two patterns, Roots cannot inherit $\langle\phi,\phi\rangle$ features from v (cyclically from v^*), due to a weak [VERBAL] feature on v . Instead, \langle SPEC,SPEC \rangle features are labeled.

Considering all together, for three resultative patterns together, two landing sites of Causee are proposed: specifier of Root in compounding and DE-phrasal patterns, and specifier of v in serial verb patterns. The distinction is explained by different degrees of exuberance in multiple feature inheritance. Multiple features are originated on the phasal head v^* : interpretable [CATEGORIAL] and [VERBAL] features, uninterpretable ϕ -

feature and SPEC-feature. The functional v becomes easier to inherit uninterpretable ϕ -features from v^* and then transfer to Root, when the phasal head v^* is more exuberant to transfer its [VERBAL] feature to v . Hierarchy on feature-inheritance exuberance is proposed for these three resultative patterns.

(19) Feature-Inheritance Exuberance



These differences in multiple feature inheritance consequently create asymmetric specificity of Causee in three resultative patterns.

6. Summary

To sum up, we demonstrated a labeling-based analysis for compounding resultatives and serial verb resultatives in Chinese dialects. The relationship of two predicates and the postverbal argument, and specificity asymmetry in postverbal arguments are made manifest in resultative patterns. The discrepancy of structural characteristics results from multiple feature inheritance distinctions. Furthermore, the labeling-based analysis is also found to account for another resultative pattern, the DE-phrasal resultatives in Mandarin Chinese. Thus a united underlying base is provided to account for three resultative patterns in Chinese dialects.

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