

Severing telicity from result

On two types of resultative compound verb in Dongying Mandarin

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Abstract This paper investigates the peculiar behaviors of resultative compound verbs in Dongying Mandarin, a previously unstudied variety of Mandarin Chinese. Data from multiple syntactic contexts (e.g. completive, negation, future/irrealis, potential) show that resultative complements in this variety fall in two contrasting categories: atelic and telic. Atelic resultatives have full lexical tones and require a grammaticalized telic marker (*liu*) in various [+TELIC] contexts, whereas telic resultatives assume the neutral tone and prohibit *liu* in the same contexts. The theoretical discussion begins with an evaluation of two neo-constructionist approaches, featuring event decomposition and Inner Aspect, and ends with a middle-way model combining and adapting the two. The main proposal is that in Dongying Mandarin, telicity is not encoded in the resultative complement itself, but in a Low Inner Aspect position between the action and the result verbs, which turns the state denoted by the resultative complement into a telos of the complex event. I derive the surface compound verb via the Defective Goal theory (Roberts in Agreement and head movement: clitics, incorporation, and defective goals. MIT Press, Cambridge, MA, 2010) and analyze the tonal variation as Root allomorphy.

Keywords Resultative complement · Compound verb · Telicity · Event decomposition · Inner aspect · Dongying Mandarin · Mandarin Chinese

1 Introduction

Dongying Mandarin (DY) is a variety of Northern Mandarin Chinese. It is spoken in the prefecture-level municipality of Dongying which is located near the Yellow River

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Delta (37°46'N 119°15'E) on the northern coast of Shandong Province, China.¹ In Dongying Mandarin, the V-V resultative compounds² show some peculiar distributional patterns that undermine the standard assumption that the resultative morpheme denotes a natural endpoint and makes the verbal event telic. For instance, unlike Standard Mandarin (STM), the majority of resultative compounds in Dongying Mandarin cannot be used on their own in completive contexts, but obligatorily take a suffix *liu* (1a); compare with STM (1b), where *le* (the counterpart of *liu*) is only optional and preferably left out.³

- (1) a. *Te dv-sui* ***(liu)** *huopingr liæ*. (DY)
he hit-smashed LE vase LE
“He smashed the vase.”
- b. *Ta da-sui* ?**(le)** *huaping le*. (STM)
he hit-smashed LE vase LE
“He smashed the vase.”

This micro-variation between Dongying Mandarin and Standard Mandarin is clear and seemingly has to do with the compound verb structure. I will argue that this is indeed the case. To be specific, I will demonstrate that the semantic component denoting telicity is outside of most resultative complements in Dongying Mandarin and encoded in *liu* instead. In particular, I will distinguish two types of resultative complement in Dongying Mandarin: “atelic resultatives” (the majority) and “telic resultatives” (a small number). The contribution of this paper is threefold. First, Dongying Mandarin reveals empirical facts that Standard Mandarin fails to reveal. Second, I will further adapt the split-VP model along the lines of Cuervo (2003) (event decomposition) and Travis (2010) (Inner Aspect). Third, the Dongying vs. Standard Mandarin distinction exemplifies a new dimension of cross-linguistic variation in complex event formation.

This paper is structured as follows. Section 2 is an overview of Chinese resultative compounds. Section 3 and Sect. 4 respectively discuss and identify atelic and telic resultatives in Dongying Mandarin. Section 5 evaluates two recent theoretical approaches to Mandarin resultative compounds. Section 6 proposes a novel approach to account for the Dongying Mandarin data. Section 7 examines two potential counterexamples. Section 8 provides an explanation for the cross-dialectal variation. Section 9 concludes.

¹ Dongying has three districts (Dongying, Hekou, Kenli) and two counties (Guangrao, Lijin). The data in this paper are from the variety spoken in Dongying District, of which I am a native speaker. Unless specified, all data are my own, with confirmation from four other native speakers.

² Here “compound” is used in a conventional pre-theoretical sense and does not mean these constructions are true lexical items.

³ *Liæ* is the Dongying Mandarin counterpart of the Standard Mandarin sentence-final *le*. I will come back to it in Sect. 3.2.

Table 1 Chinese predicate-complement compounds

Classification	Examples
Resultative	<i>da-sui</i> “hit-smashed,” <i>xi-jing</i> “wash-clean”
Directional	<i>zou-jin</i> “walk-enter; walk into,” <i>pa-shang</i> “climb-ascend; climb up”
Aspectual	<i>ting-jian</i> “listen-see; hear,” <i>yong-kai</i> “use-open; begin to use”

2 Overview

Traditionally, Chinese resultative compounds are classified under the type of compound verb termed “predicate-complement,” which is made up of a main verb and a verbal complement. Chao (1968) defines three semantic types of verbal complement: resultative, directional, and aspectual,⁴ as in Table 1.

Li and Thompson (1981) treat directional and aspectual complements as subtypes of resultatives. Resultative compounds are a most important type of compound verb in Chinese (see Hu 2015 for a recent overview and Shi 2003 for a diachronic investigation).

As we have seen in Sect. 1, Dongying Mandarin resultative compounds obligatorily require a *liu* in completive contexts. This is the multi-functional particle LE.⁵ While the exact property of LE is still under debate (cf. Chao 1968; Li and Thompson 1981; Shi 1990; Sybesma 1997; Soh 2008, 2009), researchers generally observe two positions for it which can be associated with different meanings—one directly following the verb (verbal LE), the other following the entire sentence (sentential LE), as in (2).⁶

- (2) a. *Ta ma le ta de haizi.* (STM)
 he scold LE he POSS child
 “He scolded his child.”
- b. *Ta ma ta de haizi le.*
 he scold he POSS child LE
 “He is scolding his child (contrary to what one may expect).”
 (Soh 2009: 628)

According to Soh (2009), the *le* in (2a) entails the finishing of the verbal event “scold his child,” while that in (2b) does not. One false impression one may get from the English translations is that the verbal LE marks past tense. This is not true, because the verbal LE can also appear in non-past contexts, such as future (3a) and imperative (3b). English past-tense verbs like *scolded* are paraphrases rather than verbatim translations.

⁴ Chao (1968) and subsequent works use the term “phase complement,” with “phase” defined as the beginning/middle/ending stage of an event. To avoid confusion with Chomskyan (2000, 2001, 2008) Phase (cyclic spell-out), I use “aspectual” for Chaoian phase complements.

⁵ I use capital letters to abstract away from the cross-dialectal phonological variation.

⁶ Note that in (2b), either *ma* “scold” or some part of *ta de haizi* “his child” needs to be stressed in order for the sentence to sound natural.

- (3) a. *Deng-dao ming-nian ni sheng le haizi, women yiqi* (STM, future)
 wait-till next-year you bear LE baby we together
qu kan ni.
 go see you
 “After you give birth to your baby next year, we will go to see you together.”
- b. *Kuai chi le nide fan!* (imperative)
 quickly eat LE your meal
 “Quickly eat (up) your meal!”

In (3), *le* does not mark past tense, but denotes a guaranteed event endpoint like the birth of the baby and the total consumption of the meal. The standard assumption is that this is an aspect marker. While I follow this basic assumption, it will turn out in the course of our discussion that the aspect marking function of the verbal LE is not homogenous either (Soh 2009: 627 has a similar remark).⁷ I use “perfective” for grammatical/outer aspect and “telic” for lexical/inner aspect (in the sense of Smith 1991 and Travis 2010), though this distinction will turn out to be cancelable (Sect. 6).

Telicity refers to the existence of a fixed terminal point in an event’s internal temporal organization, i.e. some final part of the event must be realized (Bohnermeyer and Swift 2004). As Smith (1991: 19) says, telic events have “a natural final endpoint” or are “intrinsically bound,” whereas atelic events have “arbitrary final endpoints.” Among the four Vendlerian event types (Vendler 1957), states (e.g. *know, love*) and activities (e.g. *run, walk*) are atelic, while accomplishments (e.g. *build a house, draw a circle*) and achievements (e.g. *recognize, find*) are telic (Dowty 1979: 54). In Mandarin, unlike in English, there are very few mono-morphemic achievements and probably no mono-morphemic accomplishments (Tai 1984; Soh 2014; Huang 2015). Instead, these two telic event types are predominantly expressed by phrases or V-V compounds. For example, “write a letter” is an accomplishment ([+TELIC]) in English but not in Chinese. As in (4a), one can write a letter without finishing it. In order to turn this into a telic event, an aspectual complement like *wan* “finish” or *hao* “good” is needed (4b). Note that *le* in (4) marks perfectivity rather than telicity.

- (4) a. *Wo zuotian xie le yi-feng xin, keshi mei xie-wan.* (STM)
 I yesterday write LE one-CL letter but not write-finish
 “I wrote a letter yesterday, but didn’t finish it.”
- b. *Wo zuotian xie-wan/hao le yi-feng xin.*
 I yesterday write-finish/good LE one-CL letter
 “I finished writing a letter yesterday.” (Smith 1994: 113)

As Lin (2004) points out, in a resultative V_1 – V_2 compound, V_2 “describes the end state that is brought about by the V_1 event,” and the entire compound verb is “necessarily telic.” For example, in STM *da-sui huaping* “hit-smashed the vase,” *sui* “smashed” is the end state caused by *da* “hit.” However, this point is challenged by Dongying

⁷ Among others, the *le* in (3) does not mark viewpoint perfectivity (but event telicity), because perfectivity is incompatible with future/irrealis contexts (also true for Dongying Mandarin, see Sect. 3.3).

Mandarin, where the counterpart of “hit-smashed the vase” is *do-sui-liu huopingr* instead of **do-sui huopingr*. The latter is ill-formed both as an isolated phrase and in sentences requiring telic predicates such as (1a). In fact, *do sui huopingr* is difficult to parse; it is more prone to be interpreted as *do sui-huopingr* “hit the smashed vase” (despite the pragmatic oddness), with *sui* “smashed” analyzed as a modifier of *huopingr* “vase.”⁸ Since such resultative complements cannot convey telicity without the help of *liu*, I call them “atelic resultatives.” In the next section, I will justify this term by four tests.

3 Atelic resultatives

3.1 *Liu* is a telic marker

As we have seen, atelic resultatives on their own are ill-formed in contexts with a telicity requirement, such as completive sentences, and the ill-formedness can be saved by *liu*. Below are more examples.

- (5) a. *Te do-sui * (liu) huopingr liæ.* (DY)
 he hit-smashed LE vase LE
 “He smashed the vase.”
- b. *Te ku-hong * (liu) yæ liæ.*
 he cry-red LE eye LE
 “He cried his eyes red.”
- c. *Te zu-shu * (liu) fæ liæ.*
 he make-cooked LE meal LE
 “He made the meal ready.”

In (5a), *do-sui* alone is not equivalent to the English accomplishment verb *smash* but must rely on an additional *liu*. Similarly, in (5b) and (5c), *ku-hong* and *zu-shu* alone are not equivalent to English *cry red* and *make ready* either, but must rely on *liu* to achieve the same semantic effect. More generally, *liu* is required as long as an inherent end point is made reference to, as in the following sequenced events.

- (6) a. *Siæ duo-sui * (liu) rou, zai mæ ne sui-rou lai* (DY)
 first chop-minced LE meat then BA the minced-meat LAI
gao-de guo-liou.
 put-to pan-inside
 “First chop the meat till minced, and then put the minced meat into the pan.”
- b. *Siæ mæ ne sheng ji-dæ lai zhu-shu ? (liu), zai tiæ shui.*
 first BA the raw chicken-egg LAI boil-cooked LE then add water
 “First boil the eggs till ready, and then add water.”

These sentences are not completive, as indicated by the absence of the sentence-final *liæ* (cf. Sect. 3.2). Nevertheless, the event sequencing makes it necessary for the first

⁸ The informants generally do not like the phrase *do sui huopingr* and report it to be at best ambiguous between “hit the smashed vase” (first impression) and “hit-smashed the vase” (somehow coerced). By contrast, no such hesitation occurs in the interpretation of *do sui liu huopingr*.

event to be telic. *Liu* is required to yield the natural judgment and, as aforementioned, without it native speakers preferably parse an ACTION-STATE-OBJECT string as ACTION (ATTRIBUTIVE-)STATE-OBJECT, e.g. “chop the minced meat” in (6a),⁹ which is pragmatically odd but grammatically fine.¹⁰ Note that while the verbal LE in sequenced events is arguably a perfective marker in Standard Mandarin (cf. Tham and Soh 2006; Wu 2005), this cannot be the case in Dongying Mandarin.¹¹ On the one hand, the verbal

⁹ In (6b), where there is no post-verbal object, the omission of *liu* is less bad.

¹⁰ Unlike the situation in footnote 8, here the informants’ judgments are rather clear, i.e. *duo sui rou* means “chop the minced meat” instead of “chop-minced the meat.”

¹¹ A reviewer mentions STM verbal *le* is generally odd in isolated activity sentences (cf. Tham and Soh 2006; Wu 2005, though see Soh and Gao 2006; Zhang 1997 for disagreement) and suggests the obligatoriness of DY *liu* in atelic resultatives may simply mean these are activities. While acknowledging this intuition, I suspect the obligatoriness of DY *liu* and the oddness of STM *le* are two heterogeneous phenomena, and that accounts for one cannot be carried over to the other. There are three main reasons. First, DY *liu* is always strictly required, while the acceptability of STM *le* varies from context to context, e.g. it is quite natural in (i).

- (i) *Ta li le fa.*
 he cut LE hair
 “He had a haircut.”

Second, the sentences showing the oddness of STM *le* must be paraphrased in Dongying Mandarin (by the particle *lai*), as in (ii), where LE issues do not arise at all.

- (ii) (a) *?Ta chi le rou.* (STM)
 he eat LE meat
 “He ate meat.” (Wu 2005: 300)
 (b) *Te chi rou lai.* (DY)
 he eat meat LAI
 “He ate meat.”

The event-sequencing sentences which reportedly cancel the oddness of *le* must also be paraphrase (by the particle *di*).

- (iii) (a) *Women kan le dianying, ranhou gei ni da dianhua.* (STM)
 we watch LE movie then give you make phone call
 “We watched the movie, then called you.” (Tham and Soh 2006: 185)
 (b) *ηæ siæ kæ di diaeying, you ji ni do di diaehud.* (DY)
 we first watch DI movie then give you make DI phone call
 “We first watched the movie and then called you.”

Third, isolated sentences (e.g. those without discourse particles) are always ungrammatical in Dongying Mandarin regardless of the event type or the availability of *liu*, as in (iv), which means the ungrammaticality has nothing to do with the verbal LE (unlike STM).

- (iv) (a) **Te chi (liu) fa.* (DY, activity)
 he eat LE meal
 “He has eaten.”
 (b) **Te do-sui (liu) huopingr.* (achievement)
 he hit-smashed LE vase
 “He smashed the vase.”

LE is not obligatory (and preferably left out) in the Standard Mandarin counterparts of (6), as in (7).

- (7) a. *Xian duo-sui* (?**le**) *rou, zai ba sui-rou fang-jin* (STM)
 first chop-minced LE meat then BA minced-meat put-into
guo-li.
 pan-in
 “First chop the meat till minced, and then put the minced meat into the pan.”
- b. *Xian ba sheng ji-dan zhu-shou* (***le**), *zai tian shui.*
 first BA raw chicken-egg boil-cooked LE then add water
 “First boil the eggs till ready, and then add water.”

On the other hand, as mentioned in footnote 7, the perfective LE is incompatible with future events, but *liu* in (6) is equally obligatory in future contexts, as in (8).

- (8) a. *Ni yihou siæ duo-sui* (***liu**) *rou, zai mæ ne sui-rou* (DY)
 you later first chop-minced LE meat then BA the minced-meat
lai gao-de guo-liou.
 LAI put-to pan-in
 “Later you first chop the meat till minced, and then put the minced meat into the pan.”
- b. *Ni xinyihui siæ mæ ne sheng ji-dæ lai zhu-shu* ?(**liu**), *zai*
 you next time first BA the raw chicken-egg LAI boil-cooked LE then
tia shui.
 add water
 “Next time you first boil the eggs till ready, and then add water.”

Furthermore, that the [+TELIC] component in contexts like (5)–(6) is in *liu* rather than in the resultative complement is also evidenced by (9), sentences that are sometimes used in casual registers.¹² These sentences do not have resultative complements at all but still require telic predicates.

- (9) a. *Te da* *(**liu**) *huopingr liæ.* (DY)
 he hit LE vase LE
 “He hit the vase (into pieces/halves).”
- b. *Siæ duo* *(**liu**) *rou...*
 first chop LE meat
 “First chop the meat (into mince/chunks)...”

In (9), it does not matter whether the vase is broken into many small pieces or two/three parts and whether the meat is chopped into minces or larger chunks; what matters is that the vase is broken and the meat is no longer a whole piece, both of which are

¹² Dongying Mandarin, as an exclusively spoken variety, is already casual compared to Standard Mandarin, but there are further register differentiations within the variety. See Feng (2010, 2012) for the register system in Chinese and its possible correlation with the grammar.

result states. Such resultative readings are not cancelable, i.e. one cannot say “he hit *liu* the vase/chop-*liu* the meat but the vase/meat is still intact.” Remember that unlike in English, in Chinese “hit/break” and “chop” are activity verbs that do not entail any result, so the resultative readings must come from *liu*. The pattern in (9) is similar to English particle verbs like *eat up* (vs. *eat*) and also reminiscent of the telicizing prefixes in some languages, such as *meg-* in Hungarian (10) (see É. Kiss 2002 for more details of Hungarian verbal prefixes).

- (10) a. *Tanul-t-am a szavakat.* (Hungarian)
 study-PST-1SG the words
 “I studied the words (and that’s all).”
 b. *Meg-tanul-t-am a szavakat.*
 MEG-study-PST-1SG the words.
 “I studied the words (and learned them all by heart).”

In (10a), *tanul* “study” only indicates such an action took place, with no result guaranteed. By contrast, with the verbal prefix *meg-* in (10b), the studying event has a guaranteed result, i.e. the words are mastered by heart. As such, *liu* in (9) has the same function as *meg* in (10): both add a telicity component to the verbal event. In Sect. 7.2 I will show that this bare *liu* is likely to be an aspectual complement rather than an aspect marker, but this does not change the fact that its role is to express telicity.¹³

3.2 Negation with *liu*

That the *liu* accompanying atelic resultatives in Dongying Mandarin is a telic rather than perfective marker is also supported by negation data. The Chinese languages have multiple negative particles for different purposes. Dongying Mandarin uses at least four of them: *bu* “not” (general purpose), *mu* “not” (for possessive “have”¹⁴ and perfective predicates), *hou* “don’t” (imperative), and *beng* “needn’t” (imperative/modal). The four negators are exemplified in (11).

- (11) a. *Siaohong bu shang-xiao.* (DY)
 Xiaohong not ascend-school
 “Xiaohong doesn’t go to school (i.e. she isn’t a student).”
 b. *Siaohong mu shang-xiao.*
 Xiaohong not ascend-school
 “Xiaohong didn’t go to school (e.g. she’s sick at home).”
 c. *Siaohong ai, hou shang-xiao æ!*
 Xiaohong SFP don’t ascend-school SFP
 “Xiaohong, don’t go to school (e.g. find a job instead)!”

¹³ That the bare *liu* may be an aspectual complement does not mean the *liu* accompanying atelic resultatives is also one. The latter is necessarily an (inner) aspect marker in our model (see Sect. 6.4).

¹⁴ *Mu* in Dongying Mandarin and *mei* in Standard Mandarin. Note that DY *you* “have” is exclusively a possessive verb and has no auxiliary function. It can neither mark perfectivity as in Southern Chinese varieties (cf. Wang 1965) nor follow *mei* as in Standard Mandarin (*mei-you* “not-have”).

- d. *Siaohong ai, **beng** shang-xiao æ!*
 Xiaohong SFP needn't ascend-school SFP
 "Xiaohong, don't go to school (there's no need)!"

Neither *mu*, nor *hou*, nor *beng* is compatible with a perfective context, as *mu* negates perfectivity (Lin 2003), and *hou/beng* (being imperative) are only used for irrealis scenarios. If we change "go to school" in (11b–d) to "went/has gone to school" (*shang-xiao di liæ*), the sentences immediately become ungrammatical.

- (12) a. **Siaohong **mu** shang-xiao di liæ.* (DY)
 Xiaohong not ascend-school DIST LE
 "*Xiaohong didn't went to school."
 b. **Siaohong ai, **hou** shang-xiao di liæ!*
 Xiaohong SFP don't ascend-school DIST LE
 "*Xiaohong, don't went to school!"
 c. **Siaohong ai, **beng** shang-xiao di liæ!*
 Xiaohong SFP needn't ascend-school DIST LE
 "*Xiaohong, you needn't went to school!"

As such, if a LE is compatible with *mu/hou/beng*, it cannot be a perfective marker. This is precisely the case with the *liu* in atelic resultatives, as in (13).

- (13) a. *Te mu do-sui **liu** hupingr æ.* (DY)
 he not hit-smashed LE vase SFP
 "He didn't smash the vase."
 b. *Te mu ku-hong **liu** yæ æ.*
 he not cry-red LE eyes SFP
 "He didn't cry his eyes red."
 c. *Te hæ mu zu-zhong **liu** fæ æ.*
 he still not make-cooked LE meal SFP
 "He hasn't made the meal ready."

In (13), *liu* is compatible with *mu* and therefore not a perfective marker. In fact, what is complementary with *mu* is the sentence-final *liæ*, or more exactly *li-*. Previous studies show the sentence-final LE in many Chinese varieties is not mono-morphemic, but contracted from a perfective LE plus a declarative/confirmative particle (*æ* in DY) (cf. Liu 1985; Mei 1994; Song 2015).¹⁵ The complementarity of *mu* and *li-* is manifested in a comparison of (13a) and (1a) (repeated below), which are otherwise identical.

¹⁵ That the sentence-final particles can be phonologically contracted is clear in Dongying Mandarin. In all our examples except those involving the potential-*liu* (Sect. 3.4), the declarative SFP *æ* is resyllabified with the preceding morpheme, e.g. *yæ-æ* → *yæ-næ/yæ-ŋæ*, *fæ-æ* → *fæ-næ/fæ-ŋæ*, etc. Informants do not accept phonologically standalone SFPs where they should be contracted.

- (14) *Te do-sui liu huopingr li-æ.* (DY, =1a)
 he hit-smashed LE vase LE- SFP
 “He smashed the vase.”

As such, it is *li-* that performs the perfectivizing function.¹⁶ Given the minimal distinction between (13a) and (14), we can conclude that the verbal *liu* in both sentences performs the same telicizing function. Thus, the structural difference between (13a) and (14) can be represented as below; (13b–c) follow the same pattern.

- (15) a. Subject NEG_[-PFV] Event_[+TELIC] SFP (=13a)
 b. Subject Event_[+TELIC] ASP_[+PFV]-SFP (=14)

(16)–(17) are examples of atelic resultatives in *hou/beng*-negated sentences.

- (16) a. *Hou do-sui liu huopingr æ.* (DY)
 don't hit-smashed LE vase SFP
 “Don't smash the vase!”
 b. *Hou ku-hong liu yæ æ.*
 don't cry-red LE eye SFP
 “Don't cry your eyes red!”
- (17) a. *Beng ku-hong liu yæ zhuang tæciæren!* (DY)
 needn't cry-red LE eye pretend poor
 “Don't cry your eyes red and pretend to be poor (there's no need)!”
 b. *Beng zao zu-zhong liu fæ deng-zhou te æ!*
 needn't early make-ready LE meal wait-PROG he SFP
 “Don't make the meal ready early and wait for him (there's no need)!”

The verbal *liu* in the above examples, being compatible with *hou/beng* (and actually required), is not a perfectivizer. And given the invariability of the predicate phrases in (16)–(17) and (5), we can identify the *liu* here as a telicizer too.

Finally, a special use of the general-purpose negator *bu* can also confirm the telicizing function of the verbal *liu*. As in (18a), *bu* plus a telic event can form a conditional clause expressing an extreme situation (*guo* is an aspectual complement meaning “successfully doing something”).¹⁷ The same meaning cannot be conveyed when the event following *bu* is atelic, as in (18b).

- (18) a. *Siaoming bu bei-guo kewenr bu shui-jiao.* (DY)
 Xiaoming not memorize-pass text not sleep
 “Xiaoming wouldn't go to bed until he successfully memorized the text.”

¹⁶ Unless necessary, I will keep glossing *liæ* as LE for expository convenience.

¹⁷ Chao (1968: 664) mentions a similar construction: while *you* “have” is normally negated by *mei*, it can also be negated by *bu* in conditional clauses, as in (i).

(i) **Bu** *you yi-ge kekaode ren bangmang, shi bu-hui chenggong de.*
 not have one-CL dependable person help SHI not-will succeed DE
 “Without having a dependable man to help, you will certainly not succeed.”

Here the “without” clause, as the minimal condition for success, qualifies as an extreme situation.

- b. ?*Siaoming bu bei kewenr bu shui-jiao.*
 Xiaoming not memorize text not sleep
 “lit. Xiaoming doesn’t memorize the text and doesn’t sleep.”

Strikingly, if we apply this construction to atelic resultatives (19), the verbal *liu* becomes obligatory just like in the completive sentences in (5). The events introduced by “until” are necessarily telic, for otherwise they would not qualify as extreme situations.

- (19) a. *Bu dǎ-sui *(liu) hūpǐng r ni hèn nǎ-shòu hān?! (DY)*
 not hit-smashed LE vase you very uncomfortable SFP
 “You don’t feel comfortable until you smash the vase?!”
- b. *Tě bu kū-hóng *(liu) yǎn bu sàihuò.*
 he not cry-red LE eyes not stop
 “He won’t stop until crying his eyes red.”
- c. *Bu zu-zhōng *(liu) fàn bēi¹⁸ chū-mén!*
 not make-ready LE meal don’t exit-door
 “Don’t you go out until you make the meal ready!”

In sum, the negation data in this section provide convincing evidence that in Dongying Mandarin atelic resultatives, telicity is not encoded in the resultative complements themselves but in the verbal *liu* instead.

3.3 *Liu* in future and irrealis contexts

According to Soh (2008) and Tham and Soh (2006) among others, the perfective verbal LE is incompatible with future events. However, as we have seen in Sects. 3.1 and 3.2, DY *liu* is equally obligatory in future contexts, as in (20).

- (20) a. *Tě dǎi duò-suǐ *(liu) rǒu à.* (DY)
 he will chop-minced LE meat SFP
 “He will mince the meat.”
- b. *Nǐ dǎi dǎpù r mǎ nè hūpǐng r lái dǎ-suǐ *(liu) o?*
 you will plan BA the vase LAI hit-smashed LE SFP
 “Are you planning to smash the vase?”
- c. *Nǐ yǐhòu dǎi xīwú-mù *(liu) měi.*
 you later will scare-absent LE pulse
 “Later you’ll be scared to death.”

The same is true for other irrealis contexts such as subjunctive (21) and imperative (22).

¹⁸ *Bei* “don’t” is another imperative negator. It is not interchangeable with *hou* or *beng*.

- (21) a. *Wo menliang-zhou ni zaoken dangmer dai tang-huai* (DY)
 I guess-PROG you tomorrow probably will perm-bad
 ***(liu)** *tu.*
 LE head
 “I guess you’ll probably damage your hair tomorrow by perming it.”
 b. *Kuai chuæ-hao ?(liu) yishang!*
 quickly wear-good LE clothes
 “Quickly put on your clothes!”

Recall that sometimes the STM verbal *le* is also compatible with future and irrealis contexts (see Sect. 2), though, unlike in Dongying Mandarin, this only occurs with mono-morphemic verbs but not with V-V resultative compounds, as in (22).

- (22) a. *Kuai chi le nide fan!* (STM, =3b)
 quickly eat LE your meal
 “Quickly eat (up) your meal!”
 b. *Kuai chi-wan *(le) nide fan!*
 quickly eat-finish LE your meal
 “Quickly finish eating your meal!”

If the STM bare *le* and the DY verbal *liu* have the same telicizing function as we separately concluded in Sects. 2 and 3.1, then the grammaticality difference between (21a) and (22b) can only be due to the property of the resultative compound. I will return to this point in Sect. 8.

3.4 Double-*liu* potential construction

A final piece of evidence for the existence of atelic resultatives is a special potential construction featuring double *lius*. It is absent in Standard Mandarin but exists in quite a few dialectal Northern Mandarin varieties (Lamarre 1995) including Dongying Mandarin. With intransitive verbs, the two *lius* are stacked next to each other (23).

- (23) a. *Te qu liu liu æ.* (DY)
 he go LE LE SFP
 “He is able to get there.”
 b. *Te sing liu liu æ.*
 he wake LE LE SFP
 “He is able to wake up.”

According to Song (2016), the first *liu* in (23) turns the atelic events *qu* “go” and *sing* “wake”¹⁹ into telic events “get there, arrive” and “wake up,” and the second *liu* is a modal item expressing the subject’s ability to realize the verbal event. Importantly, the

¹⁹ Note that *sing* “wake” only denotes the activity of waking and does not entail the result of being awake. Therefore, one could say:

- (i) *Te sing-liu bæ-tiæ mu sing-liu.* (DY)
 he wake-LE.PFV half-day not wake-LE.TEL
 “He tried waking for quite a while but didn’t manage to wake up.”

Table 2 Evidence for Dongying Mandarin telic marker *liu*

Test	Condition	DY resultative compounds
Completive context	requires [+TELIC] predicate	require verbal <i>liu</i>
<i>Mu/hou/beng</i> -negation	incompatible with [+PFV]	can take verbal <i>liu</i>
Conditional <i>bu</i> -negation	requires [+TELIC] predicate	require verbal <i>liu</i>
Future/irrealis context	incompatible with [+PFV]	can take verbal <i>liu</i>
Potential- <i>liu</i> construction	requires [+TELIC] predicate	require verbal <i>liu</i>

potential-*liu* is only compatible with telic events (which have a realizable endpoint) but not with atelic events like states and activities, as in (24).

- (24) a. **Te zhidao liu* æ. (DY, state)
 he know LE.POT SFP
 Intended: “He is able to know.”
 b. **Te qu liu* æ. (activity)
 he go LE.POT SFP
 Intended: “He is able to go.”

We can use the selectional restriction of the potential *liu* to test the telicity property of a predicate: predicates that are compatible with it are necessarily [+TELIC]. It turns out that the resultative compounds we have seen so far are incompatible with the potential *liu*; they must take a verbal *liu* for the construction to work, as in (25).

- (25) a. *Te dv-sui* *(**liu**) *huppinger liu* æ. (DY)
 he hit-smashed LE vase LE.POT SFP
 “He is able to smash the vase.”
 b. *Te zu-zhong* *(**liu**) *fæ liu* æ.
 he make-ready LE meal LE.POT SFP
 “He is able to make the meal ready.”

The tests in this section are summarized in Table 2. They all demonstrate the verbal *liu* in Dongying Mandarin is a functional item making the resultative compound telic.

4 Telic resultatives

The majority of resultative compounds in Dongying Mandarin are atelic. However, there is also a small group of them that show the opposite distributional pattern, being incompatible with the telicizing *liu* in all the tests in Table 2. Take *po* “broken, damaged, wounded,” *duæ* “broken (in half),” and *she* “dead” for example (underline marks neutral tone²⁰). First, the telicizing *liu* is forbidden in completive sentences.

²⁰ The neutral tone (*qingsheng* “lit. light tone”) is a weakened tone form in Mandarin Chinese which can be regarded as the lack or loss of lexical tone.

- (26) a. *Te gv-po* (**liu*) *shou liæ*. (DY)
 he cut-broken LE hand LE
 “He cut his hand.”
 b. *Te shui-duæ* (**liu*) *tui liæ*.
 he tumble-broken LE leg LE
 “He broke his leg.”
 c. *Te chai-she* (**liu*) *ne-guo miyang liæ*.
 he trample-dead LE that-CL ant LE
 “He trampled that ant to death.”

In (26), the V-V compounds alone entail the endpoints “be wounded,” “be broken in half,” and “be dead” without the aid of *liu*. The same is true for sequenced events (27).

- (27) a. *Te jiang gv-po* (**liu*) *shou you kv-po* *tou liæ*. (DY)
 he just cut-broken LE hand then crack-broken head LE
 “He had just cut his hand and soon also cracked his head.”
 b. *Te shui-duæ* (**liu*) *tui chɔmodianr si-liu*.
 he tumble-broken LE leg almost die-LE
 “He broke his leg and almost died.”

Second, for these three items, *liu* is forbidden in conditional *bu*-negation, as in (28).²¹

- (28) a. *Te bu gv-po* (**liu*) *shou bu sæhuo*. (DY)
 he not cut-broken LE hand not stop
 “He won’t stop until he cuts his hand.”
 b. *Te bu shui-duæ* (**liu*) *tui bu sæhuo*.
 he not tumble-broken LE leg not stop
 “He won’t stop until he breaks his leg.”
 c. *Te bu chai-she* (**liu*) *ne-guo miyang bu sæhuo*.
 he not trample-dead LE that-CL ant not stop
 “He won’t stop until he tramples that ant to death.”

Third, *liu* is also forbidden in potential-*liu* sentences involving the three items, as in (29).

- (29) a. *Te gv-po* (**liu*) *shou liu æ*. (DY)
 he cut-broken LE hand LE.POT SFP
 “He is able to cut his hand.”
 b. *Te shui-duæ* (**liu*) *tui liu æ*.
 he tumble-broken LE leg LE.POT SFP
 “He is able to break his leg.”

²¹ While *liu* is equally forbidden in *mu/hou/beng*-negation, those are not suitable tests here, for they, being incompatible with perfectivity, can only prove the well-formed *liu* is not a perfective marker, but cannot guarantee it is a telic marker (remember in Sect. 3 we identified the *liu* in these cases as a telic marker by minimal pair comparison).

- c. *Te chai-she* (**liu*) *ne-guo miyang liu* æ.
 he trample-dead LE that-CL ant LE.POT SFP
 “He is able to trample that ant to death.”

In conclusion, the three neutral-tone resultative complements are intrinsically telic; call them “telic resultatives.” Telic resultatives in Dongying Mandarin form an independent equivalence class with two defining characteristics: (i) they cannot co-occur with the telicizing *liu*; (ii) they are in the neutral tone (i.e. phonologically subminimal²²).

Interestingly, most of the STM aspectual complements classified by Chao (1968) and Li and Thompson (1981) (cf. Sect. 2) pattern with DY telic resultatives,²³ such as *zhao* “touch” (=DY *zhou*) and *jian* “see” (=DY *jiæ*) in (30)–(31).²⁴

- (30) a. *Te zhao-zhou* (**liu*) *jiaoshi liæ*. (DY)
 he look for-touch LE classroom LE
 “He found the classroom.”
 b. *Te bu zhao-zhou* (**liu*) *jiaoshi bu sæhuo*.
 he not look for-touch LE classroom not stop
 “He won’t stop until he finds the classroom.”
 c. *Te zhao-zhou* (**liu*) *jiaoshi liu æ*.
 he look for-touch LE classroom LE.POT A
 “He is able to find the classroom.”
- (31) a. *Te ting-jiæ* (**liu*) *dongder liæ*. (DY)
 he listen-see LE sound LE
 “He heard the sound.”
 b. *Te bu ting-jiæ* (**liu*) *dongder bu chu-menr*.
 he not listen-see LE sound not exit-door
 “He won’t go out the door until he hears a sound.”
 c. *Te ting-jiæ* (**liu*) *dongder liu æ*.
 he listen-see LE sound LE.POT A
 “He is able to hear the sound.”

The parallelism between telic resultatives and aspectual complements is not accidental, but will turn out to reflect an underlying commonality concerning Inner Aspect. To sum up our empirical data, the atelic and telic resultatives in Dongying Mandarin form two clearly contrasting categories, as in Table 3, which challenges the traditional view that resultative compounds are necessarily telic.

²² If there is a correlation between functional categories and prosodic subminimality (Roberts and Roussou 2003), then the neutral-tone elements in Chinese may be somewhat grammaticalized.

²³ An exception is *wæ* “finish,” which I will return to in Sect. 7.

²⁴ Although the aspectual complements are idiosyncratically selected by the main verbs, they are more productive than one might expect. For instance, in addition to *zhao-zhou* and *ting-jiæ*, one can also say *zhao-jiæ* and *ting-zhou*, with no major difference except for the idiosyncratic contribution of *jiæ* (highlighting the result) and *zhou* (highlighting the successful achievement).

Table 3 Atelic and telic resultative complements in Dongying Mandarin

	<i>Liu</i> in [+TELIC] contexts	Tone
Atelic resultatives	obligatory	lexical (full)
Telic resultatives	forbidden	neutral (light)

5 Two approaches to Mandarin resultative compounds

How can the atelic and telic resultatives be differentiated in structural terms? In this section, I will review two recent theoretical approaches to Mandarin resultative compounds and show that they both face problems.

5.1 Event decomposition

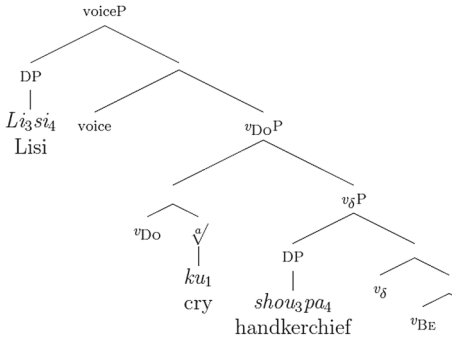
Complex events may be decomposed into subparts. Since events are linguistically introduced by verbs, their semantic decomposition can be reflected in syntax via an elaborate VP structure. This idea has been widely pursued in the past twenty years (e.g. Hale and Keyser 1993; Marantz 1997; Borer 2005), and has led to a research program known as neo-constructionism (see Acedo-Matellán 2016 for a recent overview). As a specific instantiation of this approach, Cuervo (2003)—following Distributed Morphology (DM; Morris and Marantz 1993; Halle and Marantz 1994; Marantz 1997 et seq.) and building on Harley (1995)—proposes three flavors of the verbalizer that correspond to three event primitives, i.e. v_{DO} (activity), v_{GO} (change), and v_{BE} (state).²⁵ An event may contain one or more *vs*. Lin (2004) and Kan (2007) apply this framework to Standard Mandarin resultative compounds, arguing that an item like *ku-shi* ‘cry-wet’ in (32) has the structures in (33). Although differing in details,²⁶ they both identify the action ‘cry’ as v_{DO} and derive the surface word order by successive head movement (v_{BE} -to- v_{DO}).

- (32) *Lisi/Meimei ku-shi le shoupa.* (STM)
 Lisi/sister cry-wet LE handkerchief
 ‘Lisi/The little sister cried the handkerchief wet.’

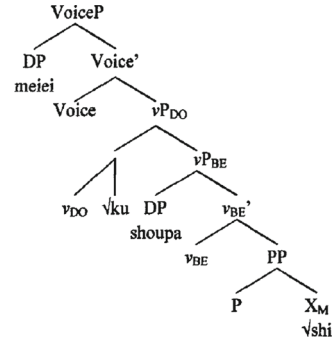
²⁵ Throughout this paper, I use *v* in the Marantzian sense, i.e. as a verbalizer and eventuality introducer (à la Marantz 2013). To avoid confusion, I follow a standard treatment and label the Chomskyan *v* (i.e. the external argument introducer) as Voice (à la Kratzer 1996).

²⁶ For example, v_{GO} is labeled in Lin (2004) as v_{δ} , and Kan (2007) further decomposes the complement of v_{BE} into a relational element P and a measuring-out element X_M .

(33) a. Lin (2004: 112)



b. Kan (2007: 250)

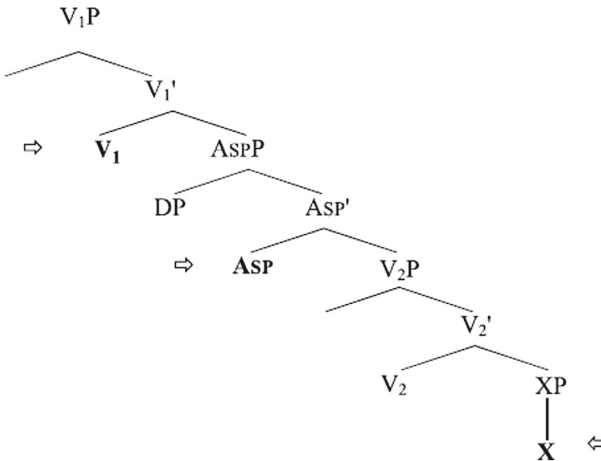


The models in Lin (2004) and Kan (2007) encounter three problems facing the Dongying Mandarin data. First, it is unclear where the telicizing *liu* can be accommodated in (33). Second, the atelic/telic variation remains mysterious, as the trees in (33) only provide one way to derive the V-V compound (by v_{BE} -to- v_{DO} movement). Third, in order to derive the correct surface word order, both models have to stipulate that the v_{BE} -to- v_{DO} movement involves right-adjunction, which is exceptional in an otherwise left-adjunction language like Mandarin and also goes against Kayne's (1994) hypothesis that head adjunction is always to the left.

5.2 Inner aspect

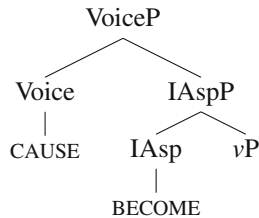
The telicizing *liu* in Dongying Mandarin has a more natural place in another split-VP model—the Inner Aspect theory in Travis (2010) (also see Borer 2005) which posits an inflectional category Asp within the VP domain, between the External Argument (EA) introducing head and the lexical verb, as in (34).

(34) Travis (2010: 242)



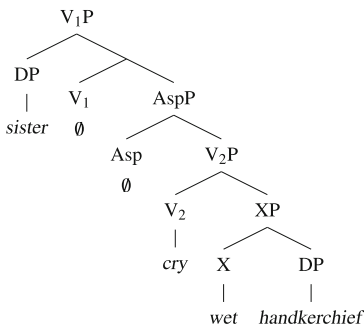
Travis (2010: 9) splits the event spine into two parts: an idiosyncratic part including V_1 , V_2 , and X, and a more productive part (Inner) Asp. V_1 is the EA introducing head semantically identified as CAUSE, Asp is identified as BECOME, and V_2 is the contentful lexical verb (ibid. p. 5). Note that V_2 , being able to head and project, is not a DM Root (in the sense of Chomsky 2013, Alexiadou 2014) but a categorized verb. The above model can be simplified as in (35).

(35)

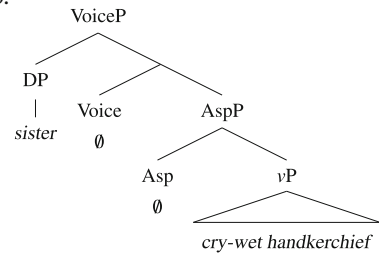


The simplification reveals that in Travis' model V_2 is the only locus for open-class lexical morphemes, while V_1 is "closer to a light verb" (ibid. p. 12), such as the Tagalog causative marker *mag* in *mag-tumba* "CAUS-fall down; cause to fall down," *mag-sabog* "CAUS-explode; scatter," *mag-luwas* "CAUS-go into the city; take into the city," etc. Travis also mentions Chinese and assumes Chinese resultative complements to be in the same structural position as English PP goal phrases (XP in (34)) (p. 246). So, the sentence in (32) can be represented as in (36a), whose simplified version is (36b).

(36) a.



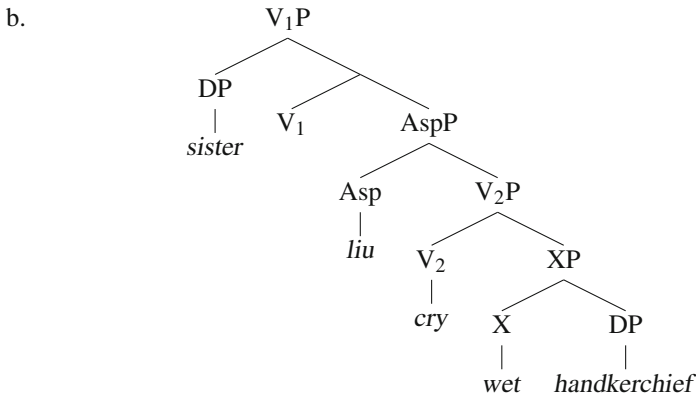
b.



V_1 /Voice is null because in a resultative compound like *ku-shi* "cry-wet," both "cry" and "wet" are lexical verbs with their own Roots. The Inner Aspect model is adopted for Standard Mandarin in i.a. Su (2012) and Woo (2013). While it also provides a potential locus for DY *liu*, when applying it to our data we immediately meet two problems.

First, as in (37), the only position available for the telicizing *liu* is Asp, which causes a linearization problem similar to that in Sect. 5.1. In order to get the correct surface word order *ku-shi-liu shoujuanr* “cry-wet-LE the handkerchief,” two steps of head movement are needed: X-to-V₂ (right-adjunction) and [V₂-X]-to-Asp (left-adjunction). The direction of head adjunction is inevitably arbitrary.

- (37) a. *Meimei ku-shi liu shoujuanr liæ.* (DY)
 sister cry-wet LE handkerchief LE
 “The little sister cried the handkerchief wet.”

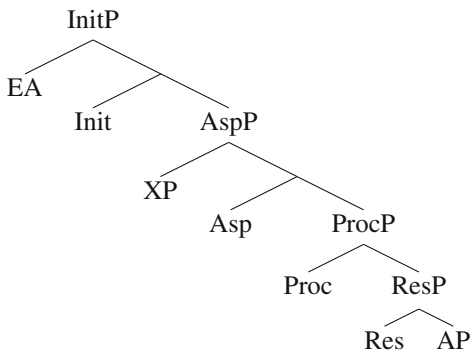


Second, if Asp encodes telicity, then telic resultative complements like *po* “broken, damaged, wounded,” *duæ* “broken (in half),” and *she* “dead” need to be either base-generated at Asp or moved there. However, both options encounter difficulties. If they are base-generated at Asp, then they are inflectional aspect markers and should not predicate the internal argument of the compound. This is clearly not true. The predication may be literal (38a) or metaphorical (38b), but it is always there.

- (38) a. *shui-duæ tui* “tumble-broken leg; break the leg” ⇒ “the leg is broken”
 b. *ting-jiaæ dongder* “listen-see (perceive) sound; hear the sound” ⇒ “the sound is perceived”

Alternatively, if the telic resultatives are base-generated at X and then moved to Asp, then their derivation becomes identical to that of atelic resultatives, and all the observed distinctions between the two classes become mysterious. In addition, if the neutral tone of telic resultatives has to do with Asp, then this should affect both X and V₂ (which are moved together) rather than X alone. So, Travis’ model is not suitable for Dongying Mandarin, either (which is not surprising as different languages may have different VP structures). An adapted Inner Aspect model is seen in Zhang (2017), which combines Inner Aspect with Ramchand’s (2008) tripartite event decomposition, as in (39).

(39) Zhang (2017)



However, a closer examination reveals that (39) is in fact equivalent to (37). In Ramchand (2008), a complex event may have three subevental components: INIT, PROC, and RES. INIT and RES are defined as states, while PROC is the only dynamic part of the event spine.²⁷ Since Chinese resultative compounds like “cry-wet” have a dynamic main verb and a stative resultative complement, the entire compound verb should be lower than Asp. Therefore, apart from the different notation, (39) and (36) are essentially the same, and so are their problems.

In sum, Dongying Mandarin poses two significant problems that neither the event decomposition model nor the Inner Aspect model can readily account for: (i) how to derive the surface word order without arbitrary head adjunction direction; (ii) how to account for the distribution of telic resultatives and especially their neutral tone. Next, I will adapt the two previous approaches and develop a novel model to solve these problems.

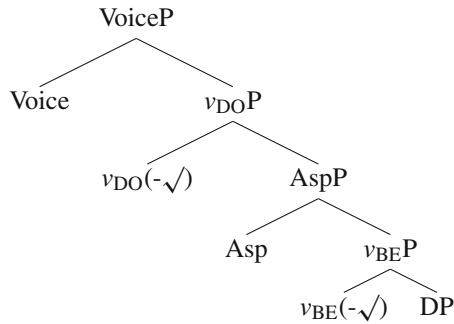
6 A middle-way approach

6.1 Low Inner Asp

As we have seen, the event decomposition and the Inner Aspect approaches both reveal useful components of the VP-internal structure and are helpful models, but they both also need to be further adapted to cover the Dongying Mandarin data. I tentatively propose (40) for this purpose. Since each of v_{DO} and v_{BE} can categorize a lexical Root, they are both under V_2P in Travis’ framework (or vP in the simplified version). My main innovation is putting Asp between two lexical verbs rather than between a lexical verb and a light verb.

²⁷ Ramchand (2008: 42) defines INIT as stative because this “gives a simpler ontology” and “allows a simpler analysis of stative verbs.”

(40)



The logic behind (40) is as follows. Since Asp heads are in the Extended Projection (EP) of the [V] category, and the base of an EP is the lexical category itself (i.e. the categorizer), it follows that in a multi-categorizer model each categorizer can start an EP until another categorizer is merged in. As such, all Asp heads could be the same functional category which simply recurs in different EPs.²⁸ Note that this is not to say each verbalizer must have an Asp in its EP or must have an EP at all. While reducing the event structure to a series of v and EP heads, I assume the interaction of the v heads and the way they project (short) EPs to be language-specific and, in Biberauer’s (2016) terms, emergent. The advantage of (40) is that it enables us to specify aspectual information for the individual lexical verbs that together make up a complex event. The telicizing *liu* in Dongying Mandarin resultative compounds, which specifies aspectual information for the stative verb it selects, qualifies as an Asp head in the EP of v_{BE} .

6.2 Verb movement and linearization

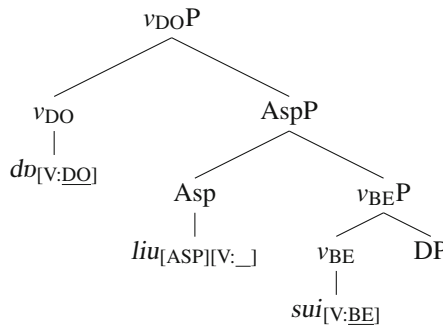
In atelic resultatives, v_{DO} precedes v_{BE} , and v_{BE} precedes *liu*. As aforementioned, this causes a linearization problem: v_{BE} -to-Asp movement is left adjunction while [v_{BE} -Asp]-to- v_{DO} movement is right adjunction, which violates Kayne’s (1994) hypothesis that head adjunction is always to the left and, more importantly, makes the direction of head adjunction arbitrary. To solve the problem, I propose that v_{BE} -*liu* does not further move to v_{DO} . This proposal can be backed up by a head movement constraint proposed in Roberts (2010). Roberts accounts for head movement by the notion of Defective Goal, i.e. a Goal whose formal features are properly included in those of the Probe. When the Probe agrees with such a Goal, the formal features on the latter are exhaustively copied, which is formally indistinguishable from the copying involved in movement. This means that only Defective Goals can undergo head movement.

In a DY resultative compound such as *da-sui* “hit-smashed” (41), v_{DO} and v_{BE} both have the categorial feature [V], while Asp bears the feature [ASP]. If we regard DO/GO/BE as grammaticalized feature values, the [V] on v_{DO} and v_{BE} would respectively be [V: DO] and [V: BE]. Moreover, Asp, as part of the verbal EP, should also have a [V] feature, which is lexically unvalued, i.e. [V: _]. Since the formal feature of

²⁸ This converges with Soh’s (2008) independent study on the semantics of STM *le*. Soh argues that *le* only has one underlying function, i.e. denoting transition, and that its different surface interpretations are given rise to by different structural positions. I will come back to this point in Sect. 8.

v_{BE} ([V]) is properly included in the features of Asp ([V][ASP]), v_{BE} is a Defective Goal for Asp and in effect moves to Asp when it is probed by the latter. By comparison, v_{DO} is neither a Probe for Asp nor properly includes its features, so v_{BE} -Asp does not further move to v_{DO} , and the surface word order becomes $v_{DO}>v_{BE}>Asp$.²⁹ As a result of the head movement relation between Asp and v_{BE} , Asp's [V: _] gets valued as [V: BE].

(41) a.



b. [_{vDO P} [_{vDO} *do*] [_{Asp P} [_{Asp} *sui*-*liu*] [_{vBE P} *t*_i DP]]]

Note that the selection between Asp and v_{BE} is a syntactic one between two categories (i.e. c-selection). Telicity belongs to the overall complex event rather than to v_{BE} , which in itself denotes a state and is by definition atelic. Asp does not value v_{BE} as [+TELIC] (there is nothing on v_{BE} that needs such valuation), but turns the state denoted by v_{BE} into an endpoint in relation to the higher subevent (v_{DO}). In other words, the property of v_{BE} remains unchanged throughout the derivation. What gets fixed is merely its function in the event structure. The Low Inner Asp serves to connect v_{DO} and v_{BE} in a single complex event (accomplishment) instead of letting them remain two independent events (which is possible in Chinese where serial verbs are allowed). The derivation in (41) is in line with the intuition that *liu* only directly affects the meaning of the result *sui* “smashed” but merely indirectly affects that of the action *do* “hit” (via *sui*). Further evidence for this is that *do* can have its own aspectual suffixes, such as (42).

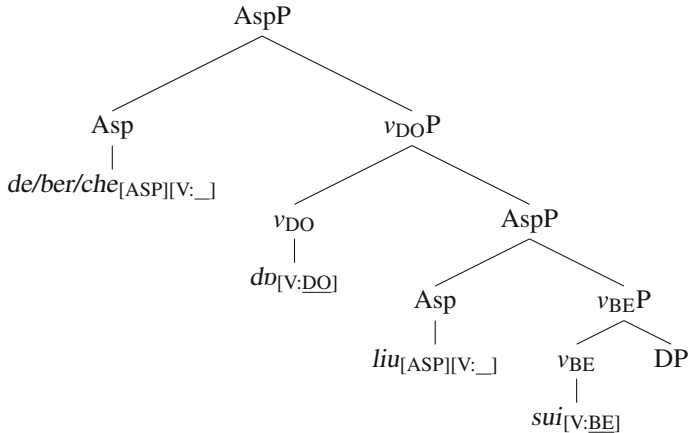
- (42) a. *do-de sui-liu* (DY)
 hit-ASP.DO smashed-ASP.BE
 “hit on and off/repeatedly till smashed”
 b. *do-ber sui-liu*
 hit-ASP.DO smashed-ASP.BE
 “hit (and stop) till smashed (according to the plan)”

²⁹ Following Berwick and Chomsky (2011), I assume syntactic derivation to be purely hierarchical, so the DP in (41a) should not be considered as following v_{BE} in syntax, though it eventually does so at PF. Also note that while Chinese Asp is generally conceived as head-initial (cf. Travis 2010, Su 2012, Woo 2013, Zhang 2017), the linearization problem in (36) stays even if it were head-final, for head-finality alone cannot derive the surface word order $V_2>X>Asp>DP$ (it derives $V_2>X>DP>Asp$ instead).

- c. *do-che sui-liu*
 hit-ASP.DO smashed-ASP.BE
 “hit (crudely and thoroughly) till smashed (without care)”

In (42), *de*, *ber*, *che* only modify the action verb *do* “hit,” while *liu* invariantly modifies the result verb *sui* “smashed.” Such double-suffixed resultatives have a natural explanation in the model in (40), which allows each *v* to have a separate EP and each EP to have its own head movement cycle. The examples in (42) can be derived as follows.

(43) a.



- b. [AspP [Asp *do*_i-*de/ber/che*] [vDOP t_i [AspP [Asp *sui*_j-*liu*] [vBEP t_j DP]]]]

In sum, the *v*-to-Asp movement is a byproduct of Agree between a Probe (Asp) and a Defective Goal (*v*). In atelic resultatives this leads to the left-adjunction of *v* to Asp.

6.3 Root allomorphy and neutral tone

Telic resultatives in Dongying Mandarin are incompatible with *liu* and systematically assume the neutral tone. Tone is a lexical property that should be specified in the spell-out instruction of the Root. Since a Root relies on a category for interface interpretation, when the categorial label is modified, the Root interpretation may also be modified (e.g. *in'crease*_V vs. *'increase*_N). Below I will argue that the neutral tone of telic resultatives is precisely due to such a label change.

Marantz (2007) proposes that DM categorizers are Phase heads. This might lead one to think that in the complex event structure in (40), the merger of the higher *v*_{DO}—or Voice, depending on which version of the Phase Impenetrability Condition one adopts—would trigger the spell-out of its complement, which includes the lower *v*_{BE}. Although this has no influence on the Dongying Mandarin data, as *v*_{BE}-*liu* does not further move up, I want to point out that it is a false conception, because what is merged onto the clausal spine are not the bare verbalizers, but the categorized verbs, i.e. the *v*-√ combinations (which are pre-derived in separate workspaces). While *v* is a Phase head for the Root, it is not one for the clausal spine. The first Phase head

on the clausal spine is still Voice, as in Chomsky's original proposal. Thus, the two lexical verbs in the resultative V-V, together with the Low Inner Asp between them, are spelled out together.

At spell-out, syntactic operations like Agree take place (à la Chomsky 2008, also see Citko 2014), the syntactic representation is mapped to PF, and the corresponding Vocabulary Items (VIs)³⁰ are inserted. In DM, VIs target terminal nodes (including complex heads) based on their featural specification. The featural specification of the complex head v_{BE-Asp} is $\langle \sqrt{\cdot}, [V:BE], [ASP] \rangle$. My proposal is that atelic and telic resultatives represent two scenarios of Root exponent insertion: for atelic resultatives like *sui*, only the $\langle \sqrt{SUI}, [V] \rangle$ part has a VI, while [ASP] gets spelled out by a separate *liu*, as in (44a). For telic resultatives like *pò*, however, the entire $\langle \sqrt{PO}, [V], [ASP] \rangle$ has a dedicated VI, and the separate spell-out of [ASP] is blocked, as in (44b).

- (44) a. $\langle \sqrt{SUI}, [V:BE], [ASP] \rangle = sui\text{-}liu$
 b. $\langle \sqrt{PO}, [V:BE], [ASP] \rangle = p\bar{o}$

The prerequisite of the above proposal is that there must be two types of resultative VI in Dongying Mandarin: one specified for [ASP] and the other not. The existence of these two types is clearly manifested in (45), where the same Root in (44b) also has an atelic use, as exemplified in (46).

- (45) $\langle \sqrt{PO}, [V:BE], [ASP] \rangle = p\bar{o}\text{-}liu$

- (46) a. *Te* *gd-pò* (**liu*) *shou liæ*. (DY)
 he cut-broken LE hand LE
 "He cut and hurt his hand."
 b. *Te* *dv-pò* *(*liu*) *shenghuo-guilü liæ*.
 he hit-broken LE life-routine LE
 "He broke his life routines."

As an observation, \sqrt{PO} is spelled out as neutral tone when its meaning involves some bodily injury. This is also true for other telic resultative morphemes, as in (47)–(48).

- (47) a. *Te* *shui-duæ* (**liu*) *tui liæ*. (DY)
 he tumble-broken LE leg LE
 "He tumbled and broke his leg."
 b. *Te* *huo jiv-liu cie-duæ* *(*liu*) *liæxi liæ*.
 he with home-in cut-broken LE contact LE
 "He broke contact with his family."

³⁰ Vocabulary Items in DM are the language-specific phonological exponents of Roots/formal features and stored in List 2 (Vocabulary).

- (48) a. *Te chai-she* (**liu*) *ne-guo miyang liæ*. (DY)
 he trample-dead LE that-CL ant LE
 “He trampled that ant to death.”
 b. *Te yao-sǐ* *(*liu*) *ne-guo shir liæ*.
 he bite-dead LE that-CL matter LE
 “He firmly insisted on that matter.”

(47)–(48) show that the exponent of a Root can be conditioned by the context it appears in (cf. Siddiqi 2009). In our case, what seems to play a role is the semantic property of the internal argument. When it is a living body, the [ASP]-equipped exponent is inserted; otherwise the less specified exponent is inserted, as in (49).

- (49) a. $\langle \sqrt{\text{PO}}, [\text{V: BE}], [\text{ASP}], [\text{DP: BODY}] \rangle \Rightarrow \underline{po}$
 b. $\langle \sqrt{\text{PO}}, [\text{V: BE}], [\text{ASP}], [\text{DP: ELSE}] \rangle \Rightarrow \underline{p\ddot{o}}$

In sum, the distinction between atelic and telic resultative morphemes lies in the featural specification of their VIs: atelic resultatives have featurally less specified VIs, while telic resultatives have more specified ones. In Dongying Mandarin this is overtly reflected in tonal change. Since phonological reduction is a typical concomitant of grammaticalization (Hopper and Traugott 2003; Roberts and Roussou 2003), and [ASP] is an inflectional category in the verbal EP (Travis 2010), the telic resultative morphemes in Dongying Mandarin are presumably in some sort of grammaticalization process.

6.4 Aspectual complement or aspect marker

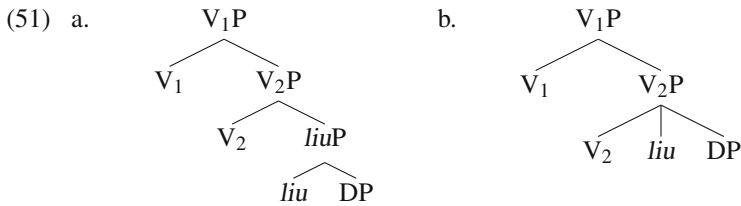
Before finishing this section, I want to make a distinction between aspectual (i.e. Chaoian phase) complements and aspect markers, which will show us why the *liu* accompanying atelic resultatives cannot be an aspectual complement.

First of all, the two classes differ in their categorial status, which is reflected in their different argument taking ability. An aspectual complement, being a subtype of verbal complement, is essentially a lexical verb, with a verbalizer and a Root. As such, it should be able to have an argument structure as mentioned in Sect. 5.2. An aspect marker, on the other hand, directly spells out the Asp head, which in most cases is merely a feature bundle. There being no verbalizer, it cannot have an argument structure, but only serves as an auxiliary. Take (50) for example.

- (50) a. *Te gǔ-pō* *shou liæ*. (DY)
 he cut-broken hand LE
 “He cut his hand.”
 b. *Te dǔ-sui* *liu huǒpingr liæ*.
 he hit-smashed LE vase LE
 “He smashed the vase.”

In (50a), *shou* is an argument of *po*; in (50b), *huopingr* is an argument of *sui* rather than *liu*. In fact, we cannot imagine anything that could ever be an argument of *liu*. So, whatever *liu* is, it cannot be a verbal complement.

Second, since aspectual complements have verbal Roots, they in principle form an open class. By contrast, aspect markers have narrow and dedicated semantics, and synchronically one Asp value is usually associated with only one exponent. From this perspective, *liu* is an aspect marker rather than an aspectual complement. Third, since one head can only have one complement (a requirement of binary Merge), an aspectual complement cannot co-exist with another (e.g. DP) complement of the same head. This means if the *liu* accompanying atelic resultatives were an aspectual complement, the structure of a transitive resultative compound V₁-V₂ could only be (51a) but not (51b).



However, (51a) in effect establishes a thematic relation between *liu* and the object DP, which is contradictory to our earlier observation that the atelic resultative accompanying *liu* has no argument-taking ability. Therefore, (51a) cannot be the right structure. If that is so, however, then there is no way to derive a V-V-*liu* construction with *liu* being an aspectual complement, which means this *liu* must be an aspect marker.³¹

7 Potential counterexamples

7.1 Wæ: telic or atelic?

Wæ “finish, be finished” is traditionally classified as an aspectual complement, but with regard to our tests in Sect. 3, it shows mixed patterns, as in (52).

- (52) a. *Te chi-wæ (liu) fæ liæ.* (DY, completive)
 he eat-finished LE meal LE
 “He has finished the meal.”
- b. *Te chi-wæ fæ ?(liu) liu æ.* (potential-*liu*)
 he eat-finished meal LE LE.POT SFP
 “He is able to finish the meal.”
- c. *Hou mæ shao-di ne fæ lai dou chi-wæ* (hou-negation)
 don’t BA brought the meal LAI all eat-finished
 ?(liu) æ.
 LE SFP
 “Don’t finish eating all the meal you bring!”

³¹ NB this does not mean *liu* can never be an aspectual complement. As mentioned in Sect. 3.1 and footnote 13, the bare *liu* may be an aspectual complement (see Sect. 7.2 for further discussion).

- d. *Beng mæ ne fæ lai dou chi-wæ* ?(**liu**) æ. (beng-negation)
 needn't BA the meal LAI all eat-finished LE SFP
 "Don't finish all the meal (there's no need)!"
- e. *Tè mu chi-wæ* (?**liu**) fæ. (mu-negation)
 he not eat-finished LE meal
 "He hasn't finish the meal."

The consistent full tone suggests that *wæ* is an atelic resultative, but the optionality of *liu* in (52) indicates it can be either atelic or telic. As such, the telicity of *wæ* seems to be on a continuum, which is impossible in our model, for the VI of a resultative complement either contains [ASP] or does not—there is no middle state.

A solution to this problem is implied in Travis' (2010) three loci of telicity marking, i.e. V_1 , Asp, and X in (34), or Voice, Asp, and $v_{BE}(-\sqrt{ })$ in (40). The implication here is that if telicity can be encoded in more than one locus, it may also not be grammatically encoded at all, but form an inherent part of the Root meaning, i.e. the $(-\sqrt{ })$ part of $v_{BE}(-\sqrt{ })$. Since semantic interpretation is based on both composition and encyclopedic information, as long as one of the two yields a telic reading, the overall telicity requirement of the context can be met.

Therefore, we can hypothesize that the Low Inner Asp is only optionally selected into the Numeration in the case of *wæ*, which literally means "finish" and lexically specifies an endpoint for the verbal event. When Asp is present, *wæ* undergoes head movement and requires a separately spelled-out Asp exponent *liu*; when Asp is absent, *liu* cannot be inserted, and the contextual requirement for telicity is satisfied by the Root meaning of *wæ*. While *liu* may be more preferred in some contexts than others, as in (52), the certainly impossible scenario is to have $\sqrt{wæ}$ - v -Asp spelled out as a whole, for there is no such exponent in the DY Vocabulary.

Since *wæ* can well follow the atelic patterns, it is not a real counterexample. The mixed distribution in (52) is just a result of *wæ*'s special lexical meaning.

7.2 The position of bare *liu*

Another potential counterexample is the bare telicizing *liu* mentioned in Sect. 3.1. In (53)(=9a), *liu* does not accompany a resultative complement, which means it is not in the EP of v_{BE} . However, its presence is equally obligatory.

- (53) *Te do* *(**liu**) *hupingr liæ*. (DY, =9a)
 he hit LE vase LE
 "He hit the vase (into pieces)."

There are two logical possibilities behind this phenomenon. First, this *liu* could be in the EP of v_{DO} , which then patterns with *de/ber/che* in (42), as repeated in (54).

- (54) a. *do-de sui-liu* (DY, =42a)
 hit-ASP smashed-ASP
 "hit on and off/repeatedly till smashed"

Nevertheless, if *liu* in (53) occupies the same position as *de* in (54), they should be interchangeable, which is not true, as in (55).

- (55) **dv-liu sui-liu*
 hit-ASP smashed-ASP
 Intended: “hit_{TEL} smashed_{TEL}”

The ungrammaticality of (55) may have to do with the position of v_{DO} —there is no higher subevent which v_{DO} can serve as a telos for. This means that the Asp above v_{DO} does not mark telicity, but merely denotes the termination of the action verb, which is essentially viewpoint perfectivity. However, since viewpoint aspect is specified for the entire (complex) event rather than for its subparts, *liu* in (55) cannot be in the local EP of v_{DO} , but should be in the IP domain above Voice (hence Outer Aspect). But if so, it cannot come between the V-V compound; rather it should either precede or follow it (as well as other things in VoiceP, unless there is V-to-I movement). In Dongying Mandarin, the IP-CP domain is linearized after VoiceP, as is evidenced by the sentence-final position of the perfectivizing *li-* (56).

- (56) *Te* [_{VoiceP} *dv-sui* *(***liu***) *hupingr*] ***li-æ***. (DY, =1a)
 he hit-smashed LE.TEL vase LE.PFV- SFP
 “He smashed the vase.”

In sum, the boldfaced *liu* in (55) can be neither a telic nor a perfective marker, which makes it semantically uninterpretable (or vacuous), hence the ungrammaticality. Note that this does not mean v_{DO} can never have its own Asp layer. Items like *de*, *ber*, and *che* (as well as *mag* in Tagalog) clearly exemplify the availability of such a High Inner Asp position. What we can conclude is merely that DY *liu* (more exactly the aspectual value it spells out) is not eligible for this position.

The second possible explanation for the bare *liu* is that it is not an Asp marker of any kind, but a telic resultative complement. This is plausible because Mandarin *liu* synchronically still has a full-tone counterpart *liǎo* “end, be ended,” which makes it a possible candidate for the telic derivation. In addition, the bare *liu* passes the telic tests in Sect. 3 as well. As in (57), it is incompatible with an additional telicizing *liu* in complete context, conditional *bu*-negation, and the potential-*liu* construction.

- (57) a. *Te dv-liu* (****liu***) *hupingr liæ*. (DY, complete)
 he hit-LE ASP vase LE
 “He broke the vase.”
 b. *Te bu dv-liu* (****liu***) *hupingr bu sæhuo*. (conditional *bu*-negation)
 he not hit-LE ASP vase not stop
 “He won’t stop until he breaks the vase.”
 c. *Te dv-liu* (****liu***) *hupingr liu æ*. (potential-*liu* construction)
 he hit-LE ASP vase LE.POT SFP
 “He is able to break the vase.”

If the bare *liu* is a telic resultative complement, then it is base-generated at v_{BE} and then moved to Asp_{BE} , with the composite label $\langle \sqrt{LIAO}, [V:BE], [ASP] \rangle$ spelled out

as a whole. Insofar as our data is concerned, this possibility seems more tenable. In any case, the bare *liu* is not a real counterexample to our model either.

8 Standard Mandarin vs. Dongying Mandarin

At the beginning of this paper, I mentioned the atelic vs. telic resultative complement is a point of micro-variation. To recapitulate, this distinction only manifests itself in Dongying Mandarin but not in Standard Mandarin. For example, in Standard Mandarin both normal and aspectual complements behave in the same way in the completive, negation, and future/irrealis tests (the potential-*liu* test is not applicable to STM), as in (58)–(59).

- (58) a. *Ta da-sui* (?**le**) *huaping le*. (STM)
 he hit-smashed LE vase LE
 “He smashed the vase.”
 b. *Ta mei da-sui* (***le**) *huaping*.
 he not hit-smashed LE vase
 “He didn’t smash the vase.”
 c. *Ta mingtian keneng hui da-sui* (***le**) *huaping*.
 he tomorrow probably will hit-smashed LE vase
 “He will probably smash the vase tomorrow.”
- (59) a. *Ta dao-diao* (?**le**) *sheng-cai le*.
 he pour-drop LE remaining-dish LE
 “He threw away the leftovers.”
 b. *Ta mei dao-diao* (***le**) *sheng-cai*.
 he not pour-drop LE remaining-dish
 “He didn’t throw away the leftovers.”
 c. *Ta mingtian keneng hui dao-diao* (***le**) *sheng-cai*.
 he tomorrow probably will pour-drop LE remaining-dish
 “He will probably throw away the leftovers tomorrow.”

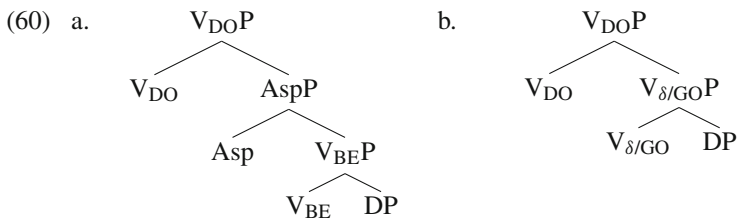
Sui “smashed” is a normal resultative complement and *diao* “dropped; TEL” a typical aspectual complement in Standard Mandarin, but as we can see, they have identical distributions. In addition, there is no clear tonal contrast between non-aspectual and aspectual verbal complements. So their distinction seems more taxonomical than formal.

Where in the grammar can we locate the cross-dialectal variation? One hypothesis is that V-V resultatives can only be accomplishments/achievements in Standard Mandarin but may also be activities in Dongying Mandarin.³² While this nicely summarizes the main findings of this paper, i.e. that there is a systematic class of atelic resultatives in Dongying Mandarin, a natural further question is why there should be such a typological difference. After all, resultative compounds are not lexical prim-

³² Thanks to an anonymous reviewer for making this explicit.

itives, and the Vendlerian event types are an empirical generalization rather than a formal parametrization. Following the Borer-Chomsky Conjecture (Baker 2008), we ideally want to locate this typological variation in the functional lexicon.

Comparing our middle-way model for Dongying Mandarin (Sect. 6) and the event decomposition models in Lin (2003) and Kan (2007) for Standard Mandarin (Sect. 5.1), I tentatively suggest that the variation in question is one of complex event organization. Dongying Mandarin and Standard Mandarin may have fundamentally different strategies to compose complex event types from simple ones. In order to get a telic event like accomplishment or achievement, Dongying Mandarin combines an action verb with an “aspectualized” stative verb (60a), while Standard Mandarin combines an action verb with a dynamic verb (60b) ($V = v-\sqrt{\quad}$).



In (60), the action verb is invariably an activity, while both the aspectualized stative verb and the dynamic verb are change-of-states. As such, the key difference between the two varieties is how dynamicity is achieved in the lower subevent—via a functional category *Asp* as in DY or via a special verbalizer $v_{\delta/GO}$ as in STM. Since no Low Inner *Asp* is involved in the derivation of telic events in Standard Mandarin, the *liu*-related phenomena, including the atelic-telic contrast, do not arise. To wit, the cross-dialectal variation can be reduced to the existence/absence of a specific flavor of the verbalizer (which in turn is a matter of diachronic grammaticalization).

In both varieties, simple events cannot form complex ones without their introducing heads being syntactically connected. Recall that an atelic resultative compound is not even parsed as a unit without the mediating *liu* (Sects. 2–3.1). Besides, as mentioned in footnote 28, the Low Inner *Asp liu* and Outer *Asp li-* in Dongying Mandarin, as well as the verbal and sentential *les* in Standard Mandarin, may well be the same morpheme. Soh (2008) unifies the various readings of LE with the semantic function “transition,” which may also be the single *Asp* value (as contrasted with other values like progressive) covering the different uses of LE: $Asp_{transit}$ is a perfectivizer when merged in the IP domain and a telicizer when merged in the VoiceP domain.

9 Conclusion

I began this paper by observing a contrast between two types of resultative complement in Dongying Mandarin, which I respectively dubbed as atelic and telic resultatives. Atelic resultatives have full lexical tones and require a verbal LE (*liu*) in various [+TELIC] contexts, whereas telic resultatives assume the neutral tone and prohibit *liu* in the same contexts. As there is no previous study of Dongying Mandarin, I first reviewed two recent theoretical approaches to Standard Mandarin, respectively in

the event decomposition and the Inner Aspect models. Since neither turned out to be readily applicable to Dongying Mandarin, I adapted them and proposed a novel middle-way model featuring a Low Inner Asp position between two open-class lexical verbs. I accounted for the compound linearization with the Defective Goal theory and analyzed the tonal variation as Root allomorphy. In addition, I resolved two apparent counterexamples as further support for the proposed model and located the cross-dialectal variation in the dynamicity-creating functional category used in complex event derivation.

To conclude, Dongying Mandarin reveals that telicity is not a necessary property of the resultative complement, which in itself merely denotes a state and relies on extra functional mediation to serve as the telos of a complex event. In addition, it became clear in our discussion that there are various non-trivial differences between Dongying Mandarin and Standard Mandarin concerning the nature of the morpheme LE. For instance, Dongying Mandarin has a special sentential LE form (Sect. 3.2), an additional modal LE (Sect. 3.4), a different LE-distribution in sequenced events (Sect. 3.1), etc. A comparative study of the LE-related issues is a valuable direction of future research.

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