

COMPLEX DEADJECTIVAL VERBS BASED ON OPEN SCALE ADJECTIVES IN MANDARIN CHINESE: A COMPARISON BETWEEN *Jiā* 加+ADJ. AND *Nòng* 弄+ADJ. VERBS

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1. Introduction

This paper focuses on Mandarin Chinese complex deadjectival verbs based on open scale adjectives, as those in (1a-b)¹:

- (1) a. [...] 巴斯德只是把葡萄酒加热到摄氏50度，就消灭了不受欢迎的菌体。

| | | | | |
|---------------|---------------|--------------|-----------------|-----------------------|
| <i>Bāsīdé</i> | <i>zhǐshì</i> | <i>bǎ</i> | <i>pútáojiǔ</i> | <i>jiā-rè-dào</i> |
| Pasteur | only | OBJ | wine | increase-hot-up.to |
| <i>Shèshì</i> | | <i>wǔshí</i> | <i>dù</i> | <i>jiù xiāomiè-le</i> |
| Celsius | | 50 | degree | then eliminate-PPV |

¹ The glosses follow the general guidelines of the Leipzig Glossing Rules. Additional abbreviations include *CMR* = complement marker and *MOD* = marker of NP modification. Unless otherwise specified, examples come from the BCC corpus of Modern Chinese: <http://bcc.blcu.edu.cn/> (visited 2023/02/20).

- bù* *shòuhuānyíng* *de* *jūn-tǐ*
not well-received MOD bacterium/germ-form
'Pasteur simply heated the wine to 50 degrees and eliminated
the unwanted microorganisms.'
- b. 我用了20分钟把烧卖弄热。
wǒ yòng-le èrshí fēnzhōng bǎ shāomài
I use-PFV twenty minute OBJ steamed.dumpling
nòng-rè
make-hot
'I warmed up the *shaomai* in 20 minutes.'

Both *nòng* 弄 'make' and *jiā* 加 'increase' have been analysed as causative light verbs (see Basciano 2013, 2019). In particular, *nòng* 'make' has been considered as a causative light verb combining with different change of state verbs, including adjectives (see Lin 2001; Feng 2003; Zhu 2005; Jie 2008; Basciano 2013), while *jiā* has been analysed as the spell-out of both the causative component and the increasing event in the logical representation of the complex (degree achievement) verb (Basciano 2019). Basciano (2019) observes that, while *nòng* 'make' may seemingly combine quite freely with adjectives, *jiā* only combines with open scale adjectives. In cases like (1a-b), *nòng* and *jiā* combine with the same adjective, apparently with the same meaning. Following Rothstein (2008), Basciano (2019) speculates that *jiā* specifies the direction of change, meaning 'cause an increase in a certain property', without specifying a value, while verbs formed with *nòng* specify a value in the property range, without specifying the direction, meaning 'cause to have the value X in the property range'.

This paper aims at comparing these verbs, focusing on their aspectual behavior, in order to identify the differences between them. I will argue that *nòng* 'make' and *jiā* 'increase' mark different senses of degree achievements, and thus they are not freely interchangeable as V_1 in complex deadjectival verbs based on open scale adjectives. The data for this research are drawn from the BCC corpus of Modern Chinese (Beijing Language and Culture University, 15 billion characters).

The paper is organized as follows: Section 2 introduces the light verbs *nòng* and *jiā*, describing their characteristics. Section 3 presents my research questions and the data used for this research. Section 4 presents

the results, showing the different aspectual behaviour of the two kinds of verbs at issue. Section 5 discusses the results and puts forth hypotheses to account for the differences observed between the two kinds of verbs. Finally, in Section 6, I offer some concluding remarks.

2. *Nòng* and *jiā* as light verbs

Modern Chinese has only a few instances of lexical causatives, more precisely labile verbs (as e.g. Eng. *break*), such as *chén* 沉 ‘sink’ and *kāi* 开 ‘open’². Normally, change of state verbs cannot be used transitively (see Basciano 2017):

(2) a. 窗玻璃破了。

| | | |
|-------------------|-----------|-----------|
| <i>chuāngbōli</i> | <i>pò</i> | <i>le</i> |
| windowpane | break | PFV |

‘The windowpane broke.’

b. *我破了窗玻璃。

| | | |
|-----------|--------------|-------------------|
| <i>wǒ</i> | <i>pò-le</i> | <i>chuāngbōli</i> |
| I | break-PFV | windowpane |

‘I broke the windowpane.’

In Modern Chinese, causativity is mainly expressed either by periphrastic means or with resultative compounds, consisting of two elements, where the second constituent represents the resultant state brought about by the action expressed by the first constituent, as e.g. *tī-pò* 踢破 ‘kick-break’, *cǎi-duàn* 踩断 ‘step-break’. In addition, Mandarin Chinese has a few phonetically realized causative light verbs, i.e. verbs that have a general and abstract semantic content (see e.g. Grimshaw and Mester 1988), as e.g. *dǎ* 打 ‘beat, strike, hit’, *nòng* ‘make, handle’, *gǎo* 搞 ‘do’ (Öta 2003 [1958]; Lin 2001; Feng 2003; Zhu 2005; Jie 2008; Basciano 2013). These verbs often do not represent a particular action, origin, or manner, differently from V_1 s in resultative compounds, but are rather bleached verbs whose only function is to form the transitive version

² There are relics of causatives formed by means of tonal contrast as well, as e.g. *liáng* 凉 ‘cool, cold’ / *liàng* 凉 ‘make cool, let sth. cool’.

of change of state verbs (V_2), as in the following example from Zhu (2005: 227):

(3) a. 小蟲死了。

| | | | |
|-------------|--------------|-----------|-----------|
| <i>Xiǎo</i> | <i>Chóng</i> | <i>sǐ</i> | <i>le</i> |
| Xiao | Chong | die | PFV |

‘Xiao Chong died.’

b. 小強弄死 / 搞死了小蟲。

| | | |
|-------------------|----------------------------|-------------------|
| <i>Xiǎo Qiáng</i> | <i>nòng-sǐ / gǎo-sǐ-le</i> | <i>Xiǎo Chóng</i> |
| Xiao Qiang | make-die/ do-die-PFV | Xiao Chong |

‘Xiao Qiang killed Xiao Chong.’

The light verb *nòng* ‘make’ combines with different change of state verbs, including adjectives, as e.g. *nòng-duàn* 弄斷 ‘make-break (intr.), break’, *nòng-xǐng* 弄醒 ‘make-awake, wake up’, *nòng-chén* 弄沉 ‘make-sink, sink (tr.)’, *nòng-gān* 弄干 ‘make-dry, to dry’, *nòng-àn* 弄暗 ‘make-dark, darken’. In these verbs, *nòng* does not express a particular action and is thus devoid of lexical content, having just a general causative meaning. It is an element involved in the causative/inchoative alternation, having a causativizing function:

(4) a. 头发干了。

| | | |
|--------------|------------|-----------|
| <i>tóufā</i> | <i>gān</i> | <i>le</i> |
| hair | dry | PFV |

‘The hair dried.’

b. 现在我得帮你把头发弄干。

| | | | | | | |
|----------------|-----------|------------|-------------|-----------|-----------|--------------|
| <i>xiànzài</i> | <i>wǒ</i> | <i>děi</i> | <i>bāng</i> | <i>nǐ</i> | <i>bǎ</i> | <i>tóufā</i> |
| now | I | must | help | you | OBJ | hair |

nòng-gān
make-dry
‘Now I have to help you drying your hair.’

The root *jiā* too has been analysed as a special case of causative light verb, which forms the transitive variant of change-of-state verbs based on open scale adjectives involving an increase in the property denot-

ed by the adjective³ (Basciano 2010, 2019). Examples of this kind of verbs are: *jiā-kuān* 加宽 ‘increase-wide, widen’, *jiā-cháng* 加长 ‘increase-long, lengthen’, *jiā-shēn* 加深 ‘increase-deep, deepen’, *jiā-qiáng* 加强 ‘increase-strong, strengthen’ (see also Steffen Chung 2006: 196). *Jiā* ‘increase’ is generally added to open scale adjectives and only to those involving an increase in the degree to which an object possesses a gradable property. Those involving a decrease in some property require a V_1 that marks the negative direction of the change in degree, like *jiǎn* 减 ‘decrease, subtract’ and *suō* 缩 ‘shrink’ (Steffen Chung 2006: 197-198), as e.g. *jiǎn-duǎn* 减短 ‘decrease-short, shorten’, *suō-xiǎo* 缩小 ‘shrink-small, reduce, narrow (make smaller)’⁴.

Basciano (2010, 2019) points out that these verbs can be considered as degree achievements, as Eng. *widen*, *lengthen*, *dry*, which express events that describe the change undergone by an object with respect to the gradable property introduced by the base adjective (Hay *et al.* 1999: 132). Hay *et al.* (1999) introduce a function INCREASE in the semantic representation of these verbs, which they assume to be conveyed in English by the suffix *-en* (e.g. *widen*) or by a \emptyset morpheme (e.g. *dry*), which takes a gradable adjective and returns a description of an event involving some property undergoing a change in its degree. The logical representation assumed by Hay *et al.* (1999: 132) is as follows:

$$(5) \text{ [[INCREASE } (\emptyset) (x) (d) (e)]] = 1 \text{ iff } \emptyset (x) (\text{SPO } (e)) + d = \emptyset (x) (\text{EPO } (e))$$

³ Note that the right-hand constituents of these complex verbs are considered as intransitive verbs and not as adjectives, since they are able to act as change-of-state verbs (see e.g. Sybesma 1997; Zhang 2006; Liu 2010; Basciano 2019). The same goes for the right-hand adjectival constituent of complex verbs formed with *nòng* 弄 as a light verb seen above.

⁴ Kennedy and Levin (2002) point out that verbs like *shorten* could be seen as involving a decrease in some property, i.e. a decreasing change that involves an increase in negative properties. Nevertheless, they assume that a change in the degree to which an object possesses some (gradable) property involves an increase, of a positive or negative degree. In Chinese, in contrast, different roots are used, marking the two directions.

INCREASE (\emptyset) (x) (d) is true of an event e just in case the degree to which x is \emptyset at the beginning of the event plus d equals the degree to which x is \emptyset at the end of the event; i.e., just in case x increases in \emptyset -ness by d . (Hay *et al.* 1999: 132)

Therefore, the logical representation of the sentence in (6a) is as in (6b):

- (6) a. Kim lengthened the rope
 b. $\exists e, d$ [increase (*long* (*rope*)) (d) (e)]

Accordingly, *Kim lengthened the rope* is true if the length of the rope at the end of the increasing event equals its length at the beginning plus some unspecified degree of length⁵.

Hay *et al.* (1999) assume that this logical representation is the one underlying both transitive and intransitive degree achievement verbs, which differ for the presence or absence of a causative component; they omit the external argument and the causative component from the logical representation⁶.

⁵ Note, however, that Kearns (2007: 43-44) points out that many transitive deadjectival verbs, in collocations as e.g. *lower the blind*, *lengthen my pants*, *widen the road*, and *lengthen the rope*, may have event structures based on action scripts, i.e. prototypical courses of actions performed by the agent, rather than on a gradual property change in the theme. For example, the script associated to *lengthen pants* “is very like that for shorten pants or alter pants, the main components being to unpick the old stitching, re-pin the garment to the new configuration, and re-stitch it” (Kearns 2007: 43). In this case, it is the sequence of actions that provides the event structure, and the predicate does not denote a caused gradual increase in the length of the pants; the event structure is not associated with a property scale, and thus the telicity of these examples does not provide evidence for contextually licensed closed scales for adjectives such as *low* and *long* (open scale adjectives). For example, Kearns (2007: 44) remarks that “the rope may be gradually lengthened by weaving or it may be lengthened all at once by tying a new piece to it”. In other words, the property scale does not play a role in the aspectual interpretation of these examples. I will leave aside this issue here.

⁶ They point out that the exact analysis of the causative is not central to what they intend to represent. In addition, they are not sure whether, in the analysis

Following Hay *et al.* (1999), Basciano (2010, 2019) proposes that *jiā* is the spell-out of one of the relevant parts of the logical representation, i.e. the increasing event (Basciano 2019: 231):

(7) a. 我们加宽了路面

wōmen jiā-kuān-le lù-miàn
 we increase-wide-PFV road-surface
 ‘We widened the road surface’

b. ∃e, d [jiā 加 ‘increase’ (kuān 宽 ‘wide’ (lùmiàn 路面 ‘road surface’)) (d) (e)]

In other words, *jiā* generically expresses the increasing event leading to the gradual change of state characteristic of degree achievements. However, Basciano (2019) points out that *jiā* also represents the causative component, thus acting as a causative light verb: in other words, it is the spell-out both of the increasing event in the logical representation and of the causative component.

3. Research questions and data

According to Basciano (2019), while *nòng* may seemingly combine quite freely with adjectives, *jiā* is subject to many restrictions: it is generally not found with closed scale adjectives, as e.g. **jiā-gān* 加干 ‘increase-dry’, **jiā-shī* 加湿 ‘increase-wet’, **jiā-píng* 加平 ‘increase-flat’ (cf. *nòng-gān* 弄干 ‘make-dry, to dry’, *nòng-shī* 弄湿 ‘make-wet, to wet’, *nòng-píng* 弄平 ‘make-flat, flatten’). In addition, as seen above, *jiā* is generally added to open scale adjectives involving an increase in the degree to which an object possesses a gradable property, while those involving a decrease in degree need a different V_1 marking the negative direction (see Sect. 2). *Nòng*, in contrast, is not subject to

of the causative alternation represented by intransitive/transitive pairs (*the soup cooled* vs. *I cooled the soup*), the causative component should be included in both the transitive and the intransitive forms (e.g. Levin and Rappaport Hovav 1995) or only in the transitive one (e.g. Hale and Keyser 1986; Hoekstra 1992, 2004; Ramchand 2008).

such kind of restriction: both positive and negative adjectives⁷ are allowed (e.g. *nòng-cháng* 弄长 ‘make-long’ / *nòng-duǎn* 弄短 ‘make-short’ vs. *jiā-cháng* 加长 ‘increase-long’ / **jiā-duǎn* 加短 ‘increase-short’ / *jiǎn-duǎn* 减短 ‘decrease-short’). In my opinion, this is strictly connected to the semantics of these two (light) verbs: *nòng* is a ‘make’ verb, and its causative use derives from a process of abstractive generalization (Moreno 1993): creation of a physical object → creation of abstract entities → bringing about of an event (Basciano 2013); cross-linguistically, verbs expressing the meaning of ‘make’ tend to become markers of causativity (Moreno 1993). This verb combines with different kinds of change of state verbs, forming their causative variant (see Sect. 2); it does not provide any information about the direction of the change of state. In contrast, *jiā* means ‘make a quantity or a degree higher’: thus, it contains specific information about the direction of the change of state undergone by the object; it is precisely the ‘increase’ component which makes it compatible only with positive adjectives. We assume that, as in the case of *nòng*, this use of *jiā* can be seen as the result of a process of abstractive generalization: addition of a quantity (physical object; e.g. *jiā liáng shuǐ* 加凉水 ‘add cool water’) → addition of a quantity (abstract object; e.g. *jiā yā* 加压 ‘raise the pressure’) → increase in the degree of a gradable property. In the latter meaning, it expresses a change in a particular direction in the value of a scalar attribute; it is thus incompatible with negative adjectives. In order to express a decrease in the degree of a gradable property, a verb marking the ‘negative’ direction is required, as seen above (see Sect. 2)⁸. Therefore, in Chinese there is a clear distinction between the ‘in-

⁷ According to Hay *et al.* (1999), positive adjectives, like e.g. *long* and *wide*, are analyzed as functions from objects to positive degrees, while negative adjectives, as e.g. *short* and *narrow*, denote functions from objects to negative degrees. However, according to Caudal and Nicolas (2005), antonymy is not lexically but contextually determined, and, differently from Hay *et al.* (1999), they do not use negative degrees.

⁸ An anonymous reviewer suggested that another possible reason for this difference may be that, while *nòng* +Adj. verbs are phrasal, *jiā* +Adj. verbs are lexical and, as such, are much more restricted. However, this view apparently is not supported by the syntactic behavior of *nòng* +Adj. verbs, which display non-separability of constituents, except for potential complement markers: indeed, aspect

crease' and 'decrease' functions, with different verbs marking the direction of change; a decrease in some property is not seen as involving an increase of a negative degree (cf. Kennedy and Levin 2002; see fn. 4). However, in some cases, *nòng* and *jiā* can combine with the same adjective, apparently with the same meaning, as e.g. *jiā-rè* 加热 'increase-hot' and *nòng-rè* 弄热 'make-hot' (see exx. 1a-b). Basciano (2019: 231, fn. 59), based on Rothstein (2008), hypothesizes that these two roots convey a difference in meaning. Rothstein (2008) points out that, while the English verb *cool* means 'undergo a decrease in temperature' (see also Hay *et al.* 1999), and not 'get a value in the cool range', *become cool* means 'get to have a temperature value in the (contextually determined) cool range', without specifying the direction of change:

- (8) When I took the soup out of the fridge it was so cold that it burned my mouth, but after some time at room temperature, it had become pleasantly cool/ *it had cooled. (Rothstein 2008: 192)

Following Rothstein (2008), Basciano (2019) suggests that *jiā* specifies the direction of change, meaning 'cause an increase in a certain property', without specifying a value, while verbs formed with *nòng* specify a value in the property range, without specifying the direction, meaning 'cause to have the value X in the property range':

- (9) a. *jiā-rè* 'increase-hot, heat, warm up' ('cause an increase in temperature');
 b. *nòng-rè* 'make-hot' ('cause to have a temperature value in the (contextually determined) hot range').

In this paper we aim at answering the following research questions:

markers, if present, must follow the whole verb complex, and not the main verb. Another possible reason for this difference suggested by an anonymous reviewer is that the right-hand constituent in *jiā* +Adj. verbs is a noun rather than an adjective (*jiā* +N). I leave this issue for further research.

1. What is the aspectual behaviour of deadjectival verbs based on open scale adjectives with *nòng* and *jiā* as V_1 ?
2. Are *nòng* and *jiā* freely interchangeable in degree achievements?
3. May *nòng* be freely attached to open scale adjectives?
4. Are *nòng* and *jiā* used for different senses of degree achievements?

In order to answer these research questions, I examined the behavior of ten pairs of deadjectival verbs based on open scale adjectives, differing for the V_1 used (*nòng* and *jiā*) in the BCC corpus (Beijing Language and Culture University, 15 billion characters):

nòng-rè 弄热 ‘make-hot’ – *jiā-rè* 加热 ‘increase-hot’
nòng-kuān 弄宽 ‘make-wide’ – *jiā-kuān* 加宽 ‘increase-wide’
nòng-shēn 弄深 ‘make-deep’ – *jiā-shēn* 加深 ‘increase-deep’
nòng-zhòng 弄重 ‘make-heavy’ – *jiā-zhòng* 加重 ‘increase-heavy’
nòng-qiáng 弄强 ‘make-strong’ – *jiā-qiáng* 加强 ‘increase-strong’
nòng-dà 弄大 ‘make-big’ – *jiā-dà* 加大 ‘increase-big’
nòng-cháng 弄长 ‘make-long’ – *jiā-cháng* 加长 ‘increase-long’
nòng-kuài 弄快 ‘make-fast’ – *jiā-kuài* 加快 ‘increase-fast’
nòng-gāo 弄高 ‘make-high’ – *jiā-gāo* 加高 ‘increase-high’
nòng-hòu 弄厚 ‘make-thick’ – *jiā-hòu* 加厚 ‘increase-thick’

I considered the following factors:

- Ability to take imperfective markers (durative and progressive).
- Ability to be followed by the resultative *dào* 到 ‘up to’, which sets a boundary to the event.
- Ability to take bounded measures of change.

4. Results

First of all, looking at the results of our search, we can observe that, generally speaking, with open scale adjectives *jiā* is much more common than *nòng* as V_1 . Thus, there is a strong preference for using *jiā* to form deadjectival verbs from open scale adjectives; with some open scale adjectives only very few instances of *nòng* + Adj. can be found, as shown in Table 1.

| Verb | Tokens |
|---------------------------------------|--------|
| <i>jiā-rè</i> 加热 ‘increase-hot’ | 17920 |
| <i>nòng-rè</i> 弄热 ‘make-hot’ | 79 |
| <i>jiā-kuān</i> 加宽 ‘increase-wide’ | 1214 |
| <i>nòng-kuān</i> 弄宽 ‘make-wide’ | 3 |
| <i>jiā-shēn</i> 加深 ‘increase-deep’ | 17394 |
| <i>nòng-shēn</i> 弄深 ‘make-deep’ | 1 |
| <i>jiā-zhòng</i> 加重 ‘increase-heavy’ | 35319 |
| <i>nòng-zhòng</i> 弄重 ‘make-heavy’ | 1 |
| <i>jiā-qiáng</i> 加强 ‘increase-strong’ | 401530 |
| <i>nòng-qiáng</i> 弄强 ‘make-strong’ | 4 |
| <i>jiā-dà</i> 加大 ‘increase-big’ | 94490 |
| <i>nòng-dà</i> 弄大 ‘make-big’ | 338 |
| <i>jiā-cháng</i> 加长 ‘increase-long’ | 2724 |
| <i>nòng-cháng</i> 弄长 ‘make-long’ | 33 |
| <i>jiā-kuài</i> 加快 ‘increase-fast’ | 132680 |
| <i>nòng-kuài</i> 弄快 ‘make-fast’ | 58 |
| <i>jiā-gāo</i> 加高 ‘increase-high’ | 2041 |
| <i>nòng-gāo</i> 弄高 ‘make-high’ | 24 |
| <i>jiā-hòu</i> 加厚 ‘increase-thick’ | 8045 |
| <i>nòng-hòu</i> 弄厚 ‘make-thick’ | 1 |

Table 1. Number of tokens in the BCC corpus.

From the aspectual point of view, the two types of verbs at issue display different behaviours. First of all, verbs with *jiā* as V_1 can generally be modified by imperfective markers (the progressive *zài* 在 / *zhèngzài* 正在 and the durative *zhe* 着), while verbs with *nòng* as V_1 cannot (no occurrences found in our sample):

- (10) 中国正在加深改革、扩大开放 [...]

Zhōngguó zhèngzài jiā-shēn gǎigé kuòdà
 China PROG increase-deep reform enlarge
kāifàng

open.to.the.world

‘China is deepening the reform and opening more to the world [...].’

- (11) 目前，上海正在加快“四个中心”的建设。

mùqián Shànghǎi zhèngzài jiā-kuài sì ge
 at.present Shanghai PROG increase-fast four CLF
zhōngxīn de jiànshè
 center MOD construction

‘At present, Shanghai is accelerating the construction of the ‘four centers’.’

- (12) [...] 经济全球化趋势正在加深 [...]

jīngjì quánqíuhuà qūshì zhèngzài jiā-shēn
 economy globalization trend PROG increase-deep
 ‘[...] the trend of economy globalization is deepening [...].’

- (13) 这一切都加深着加重着他们相依为命的感觉，加深着加重着他们想要寻求一个属于他们两人小世界的渴望。

zhè yīqiè dōu jiā-shēn-zhe jiā-zhòng-zhe
 this all all increase-deep-DUR increase-heavy-DUR
tāmen xiāngyīwéimìng de gǎnjué
 they depend.on.each.other.for.survival MOD feeling
jiā-shēn-zhe jiā-zhòng-zhe tāmen
 increase-deep-DUR increase-heavy-DUR they
xiǎngyào xúnqiú yī ge shǔyú tāmen
 want seek one CLF belong.to they
liǎng rén xiǎo shìjiè de kěwàng
 two person small world MOD thirst

‘All of this is deepening and making heavier the feeling of depending on each other for life, it is deepening and making heavier their need for a small world for the two of them.’

This suggests that *jiā* + Adj. verbs are basically atelic, while *nòng* + Adj. verbs are basically telic. This is further proved by the ability of *jiā* + Adj. verbs to appear with ‘for X time’ expressions, which are compatible only with atelic verbs and set a temporal boundary to the event. For example, with the query *jiārè * fēn zhōng* 加热*分钟 ‘heat up for * minutes’ we found 127 occurrences, while no occurrences were found of *nòngrè * fēn zhōng* 弄热*分钟 ‘heat up for * minutes’:

(14) [...] 放入微波炉加热4分钟。

| | | | | |
|----------------|----------------|---------------|-----------|-----------------|
| <i>fàng-rù</i> | <i>wēibōlú</i> | <i>jiā-rè</i> | <i>sì</i> | <i>fēnzhōng</i> |
| put-enter | microwave | increase-hot | four | minute |

‘[...] put it in the microwave and heat it up for four minutes.’

As it is the case for English degree achievements based on open scale adjectives (see Hay *et al.* 1999), with these verbs telicity may emerge contextually⁹ or by adding a bounded measure of change:

(15) 达罗沙把香烟放到唇边，吸进一大口，烟灰又加长了一毫米左右。

| | | | | |
|-----------------|-----------|-----------------|-----------------|-----------------|
| <i>Dáluòshā</i> | <i>bǎ</i> | <i>xiāngyān</i> | <i>fàng-dào</i> | <i>chúnbiān</i> |
| Darousha | OBJ | cigarette | put-to | lip |

| | | | | | |
|--------------|-----------|---------------|---------------|------------|---------------------|
| <i>xījìn</i> | <i>yī</i> | <i>dà-kǒu</i> | <i>yānhuī</i> | <i>yòu</i> | <i>jiā-cháng-le</i> |
| inhale | one | big-mouthful | ash | again | increase-long-PFV |

| | | |
|-----------|--------------|---------------|
| <i>yī</i> | <i>háomǐ</i> | <i>zuǒyòu</i> |
| one | millimeter | about |

‘Darousha put the cigarette to his lips, inhaled a big mouthful, and the ash lengthened about one millimeter.’

⁹ In particular collocations and contexts, verbs derived from open scale adjectives, which are usually atelic, may be associated with closed scales and behave telically: for example, in *the tailor lengthened my pants*, real-world knowledge imposes a conventional maximal length for pants (see Hay *et al.* 1999; but see fn. 5). Hay *et al.* (1999) assume a contextual telos also for a sentence like *the soup cooled in ten minutes*. The insertion of an *in*-adverbial is possible because *the soup cooled* is more informative with a telic interpretation: the soup cooled to some bounded degree, i.e. room temperature.

- (16) [...] 把水渠加宽三尺、加深一尺 [...]

bǎ *shuǐqú* *jiā-kuān* *sān* *chǐ*
 OBJ ditch increase-wide three *chi* (1/3 meter)

jiā-shēn *yī* *chǐ*
 increase-deep one *chi*

‘[...] they widened the ditch three *chi* and deepened it one *chi*.’

In addition, *jiā* +Adj. verbs may be followed by the resultative *dào* ‘up to’, which sets a boundary to the event (see also ex. 1a):

- (17) 牛奶加热到 37度左右，加入酵母搅拌 [...]

niúnái *jiā-rè-dào* *sānshíqī dù* *zuǒyòu* *jiārù*
 milk increase-hot-up.to 37 degree about add

jiàomǔ *jiǎobàn*
 yeast stir

‘When the milk reaches about 37 degrees (has warmed up to 37 degrees), add the yeast and stir it.’

- (18) 最后村里出资 20 万元，将桥面加宽到了 9 米。

zuìhòu *cūnlǐ* *chūzī* *èrshí wàn* *yuán*
 finally village invest 20 ten.thousand Yuan

jiāng *qiáo-miàn* *jiā-kuān-dào-le* *jiǔ* *mǐ*
 OBJ bridge-floor increase-wide-up.to-PFV nine meter

‘Finally, the village invested 200000 Yuan and widened the bridge floor nine meters.’

- (19) 除了把姚明将要用的床加长到2.4米、淋浴喷头加高到顶着天花板之外 [...]

chúle *bǎ* *Yáo Míng* *jiāngyào yòng* *de*
 except OBJ Yao Ming will use MOD

chuáng *jiā-cháng-dào*
 bed increase-long-up.to

èrdiǎnsì *mǐ* *línǚ-pēntóu* *jiā-gāo-dào*
 2.4 meter shower-nozzle increase-high-up.to

dǐngzhe *tiānhuābǎn* *zhīwài*
 push.to.the.top ceiling excluding

‘Except for lengthening the bed where Yao Ming will sleep up to 2.4 meters and heightening the shower nozzle up to the ceiling [...]’

In contrast, *nòng* + Adj. verbs are never followed by bounded measures of change nor by the resultative *dào* ‘up to’.

To sum up, despite the verbs we considered are all formed from open scale adjectives, they display distinct aspectual behaviour: while *jiā* + Adj. verbs are basically atelic and can be made telic contextually or by adding bounded measures of change, *nòng* + Adj. verbs are telic.

5. Discussion

Since the two kinds of verbs at issue display distinct aspectual behaviour, I argue that *jiā* and *nòng* mark different senses of degree achievements. In this section, after presenting an overview of the main characteristics of degree achievements and on the properties of their base adjectives, I will put forth my hypothesis of the differences between these verbs.

Degree achievements are peculiar from the aspectual point of view since they display both telic and atelic behaviour according to standard diagnostics; thus, they do not necessarily entail the achievement of an endstate (Levin and Rappaport Hovav 1995: 172). Whether this ambiguity is related to the nature of the property of the scale denoted by the adjective or not is a matter of debate. According to Abusch (1986), the atelic sense of a deadjectival verb is ‘become A-er’, while the telic sense is ‘become A’. Levin and Rappaport Hovav (1995: 129-130) and Jackendoff (1996: 331) consider the change of state described by these verbs as a movement along a path constituted of degrees of a property indicated by the adjectival base; Jackendoff (1996) points out that, if the path has a boundary, reaching the property described by the adjective, the sentence is telic, while, if the path is unbounded, going on indefinitely in the direction described by the adjective, the sentence is atelic. Kennedy and Levin (2002) observe that verbs of gradual change have as part of their meaning gradable properties; telicity is

not determined by a lexical diacritic (e.g. [\pm bounded]) or by some morphosyntactic features, but rather by the semantic properties of the degree of change.

According to Hay *et al.* (1999), the properties of the base adjective are crucial in determining the telicity of degree achievements: degree achievement verbs derived from closed scale adjectives are usually telic (*the clothes are drying* does not entail *the clothes have dried*), unless an adverbial or an explicit denial is added to cancel the ‘completely’ implicature (e.g. *I strengthened the rope, but not completely*); in contrast, degree achievement verbs derived from open scale adjectives are usually atelic (*the snow is slowing* entails *the snow has slowed*). However, Hay *et al.* (1999) point out that, in particular collocations and contexts, verbs derived from open scale adjectives may be associated with closed scales, displaying telic behaviour: for example, in *the tailor lengthened my pants*, real-world knowledge imposes a conventional maximal length for pants (see fn. 9). In addition, if a measure phrase providing an explicit bounded value is added, as e.g. in *Kim lengthened the rope 5 inches*, the predicate is always telic, regardless of the nature of the base adjective (Hay *et al.* 1990: 130).

Kearns (2007) holds a different view: she argues that telicity in degree achievements does not depend on the property nature of the scale of the base adjectives. She defends the traditional distinction between the two main senses of deadjectival verbs (‘become A-er’ and ‘become A’; see Abusch 1986) and argues that there are two kinds of telic senses for deadjectival verbs, namely an achievement sense (‘become A-er’) and an accomplishment sense (‘become A’). She points out that all deadjectival verbs can express at least the change of state ‘become A-er’ (comparative endstate); thus, since predicates which lexically entail an endstate are usually telic, all deadjectival verbs should be regarded as telic (see also Bertinetto and Squartini 2006). However, Kearns (2007: 36) points out that “although the comparative endstate is sufficiently identified to count as a telos, it is not uniquely specified, and thus a whole series of transitions to comparative endstates may fall under the same predicate”. The process interpretation of these verbs, thus, comes from the repeatability of the non-unique comparative endstate, so

that in *the room quietened for a few minutes* the interpretation is that ‘throughout a period of a few minutes the room progressively became quieter and quieter’.

The telic accomplishment interpretation with deadjectival verbs is assigned the content ‘become A’ (where A is the positive form of the corresponding adjective), rather than ‘completely’ (giving the interpretation ‘X becomes maximally A’). Thus, the interpretation of the implicature is given by the standard value of the property, and it is not dependent on the property nature of the scale (open scale adjectives vs. closed scale adjectives) but rather on the standard value (‘become A’), which is a degree of the relevant property that constitutes the lower bound of the property region. Kearns (2007) assumes that a change-of-state accomplishment contains a process of iterated ‘become A-er’ transitions but has a necessary endpoint, i.e. the unique and non-repeatable transition ‘become A’, which provides the telos: beyond this endpoint the event cannot continue. Therefore, the telic sense in the traditional telic/atelic contrast is the accomplishment sense.

In verbs like *darken* or *quieten*, based on closed scale adjectives, the positive adjective does not lexicalize the maximal property value, so that the standard endstate may not coincide with the maximal value for *dark* (i.e. the standard value and maximal value for *dark* may differ): these verbs take both process and accomplishment senses freely.

In verbs like *clear*, *dry*, *empty*, also derived from closed scale adjectives, the positive adjective lexicalizes the maximal property value, and thus the standard value ‘X is A’ entails ‘X is maximally A’; these verbs are associated with a default accomplishment sense¹⁰.

Verbs like *cool* are based on open scale adjectives but have accomplishment senses which entail the standard endstate (‘X is A’). Kearns (2007: 51) points out that “[t]here is no need to propose contextually given natural endpoints which are implicitly identified as contextual

¹⁰ Kearns (2007: 64) argues that even deadjectival verbs with strong default accomplishment senses can have a process sense: all deadjectival verbs have the ‘become A-er’ sense, and this sense, as seen above, is interpreted as a process of iterated achievement-like transitions, with a duration adverbial.

upper bounds to the property scale. That is, there is no need to propose that an otherwise open property scale is closed just in case the verb is telic". Kearns (2007: 50) argues that in a sentence like *the soup cooled*, the telos is provided by the standard endstate 'X is A', and that the standard value is a normative value given by context and convention¹¹.

There are also deadjectival verbs based on open scale adjectives, like *wide* and *deep*, which do not take an accomplishment sense. The base adjectives of these verbs denote standard values with a lower bound partly inaccessible to modification (see also Caudal and Nicolas 2005), which correlates with the lack of an accomplishment sense for these verbs. Apparently, context cannot supply an upper bound for verbs like *widen*: *the gap widened in ten minutes* has only the achievement sense (within ten minutes the gap became wider), but not the accomplishment sense (the gap was widening throughout those ten minutes): cf. *the soup cooled in a few minutes*, which can have both the accomplishment sense (event duration: the soup was becoming cooler throughout a period of a few minutes, and at the end of that period the soup was cool) and the achievement sense (event delay: at the end of a few minutes the soup became cooler) (Kearns 2007: 36)¹².

¹¹ Kearns (2007: 50) points out that in the case of an event such as *the soup cooled*, the contextually determined telos correlates with contextual criteria for applying the positive adjective *cool*. For example, in *the soup cooled in ten minutes so we had to reheat it*, the context provides the salient presupposition that the soup should be eaten hot, so that the contextual standard for *cool* is 'too cool to eat'. In *the soup cooled in ten minutes so we started eating it* (before it cooled too much), the salient presupposition is that the soup can be too hot to eat, so the contextual standard for *cool* means 'cool enough to eat'. In both cases, the telos of the event is the onset of the state denoted by *the soup is cool*.

¹² See also the contrast between the following sentences (Kearns 2007: 52, 54):

- a. # *The gap was half-wide/completely wide.*
- b. *The soup was half-cool/completely cool.*
- c. # *The gap widened (completely) in 90 seconds.*
- d. *The soup cooled (completely) in ten minutes.*

Thus, while deadjectival verbs like *widen* only have a comparative endstate, verbs like *quiet*, *cool*, and *clear* have both the comparative endstate and a standard endstate.

To sum up, in Kearns's analysis, the availability of a telic accomplishment sense ('become A') depends on the characteristics of the standard value, rather than on the kind of scale of the adjectives (cf. Hay *et al.* 1999). Accordingly, the telic accomplishment sense is the strong default reading where 'X is A' entails 'X is maximally A', i.e. X bears the maximal possible degree of the relevant property; thus, deadjectival verbs like *empty* or *dry* have a default accomplishment sense. In contrast, at the other extreme, deadjectival verbs based on open scale adjectives that denote a standard value with a lower bound which is partly inaccessible to modification, like *widen* or *deepen*, cannot have an accomplishment telic sense. Thus, process resistant verbs are those based on closed scale adjectives for which the standard value entails that 'X is maximally A', while accomplishment resistant verbs are those based on open scale adjectives with an indeterminate lower bound. This is along the same lines claimed by Hay *et al.* (1999); however, the distinction is not based on the open or closed nature of the property scale, but rather on the standard value of the property. Accordingly, besides default accomplishments and process-only verbs, there are also verbs which display free variation; these verbs can be based both on closed and on open scale adjectives.

Based on Kearns' (2007) account of degree achievements, I argue that *nòng* always marks the telic accomplishment sense, i.e. 'cause to become A', whereby the interpretation of the implicature is given by the standard value of the property, and thus *nòng* +Adj. verbs are always telic. In contrast, *jiā* marks the process sense.

The fact that some base adjectives take *nòng* more easily than others (see Table 1) arguably depends on the characteristics of the standard

e. *The gap widened in ten minutes but it was still narrow.*

f. *!The soup cooled in ten minutes but it was still hot.*

Note that Kearns argues that when *completely* modifies an open scale adjective such as *cool*, the modifier is interpreted as 'indubitably, definitely, unquestionably'. Correspondingly, *the soup cooled completely* is interpreted as 'the soup cooled all the way to being (definitely) cool'.

value of the adjective involved. For example, only 3 occurrences of *nòng-kuān* 弄宽 ‘make-wide, widen’ (vs. 1214 of *jiā-kuān* 加宽 ‘increase-wide, widen’), and no occurrences of *nòng-shēn* 弄深 ‘make-deep, deepen’ (vs. 17934 of *jiā-shēn* 加深 ‘increase-deep, deepen’) are found in the BCC corpus. Following Kearns (2007), I argue that this is due to the fact that open scale adjectives like *kuān* 宽 ‘wide’ and *shēn* 深 ‘deep’ denote a standard value with a lower bound which is partially inaccessible to modification, and the satisfactory telos for an accomplishment reading (‘become A’) is not identifiable. They are thus rarely found with *nòng*, which marks the telic sense, precisely because they resist the accomplishment meaning. The occurrence of these adjectives with the light verb *nòng* is possible only in certain contexts, as e.g.:

- (20) 可那缝子细得连尾巴都塞不进去，就是用尽猿猴的气力也无法将缝隙扩大弄宽。

| | | | | | | |
|-----------------|----------------------|---------------|-------------|------------------|-------------|----------------|
| <i>kě</i> | <i>nà</i> | <i>fēngzi</i> | <i>xì</i> | <i>de</i> | <i>lián</i> | <i>wěiba</i> |
| but | that | crack | thin | CMP | even | tail |
| <i>dōu</i> | <i>sāi-bù-jìnqu</i> | | | <i>jiùshì</i> | | <i>yòngjìn</i> |
| all | squeeze.in-not-enter | | | even.if | | exhaust |
| <i>yuán-hóu</i> | | <i>de</i> | <i>qìli</i> | <i>yě</i> | <i>wúfǎ</i> | <i>jiāng</i> |
| ape-monkey | | MOD | strength | still | cannot | OBJ |
| <i>fēngxi</i> | | <i>kuòdà</i> | | <i>nòng-kuān</i> | | |
| crack | | enlarge | | make-wide | | |

‘But that opening is so thin that even a tail cannot squeeze in it, nor could all the strength of an ape enlarge and widen it.’

I argue that here *kuān* is best interpreted as ‘wide enough’ rather than simply ‘wide’, and, accordingly, *nòng-kuān* ‘make-wide’ means ‘make wide enough’. ‘Wide enough’ is not interpreted according to the contextual standard value for wide but is rather an implicit comparative, i.e. ‘it is not wide enough for the current purpose’: the implicit comparison is between the actual width of the opening and a specific width which is determined by the context (see Kearns 2007: 56).

A verb as *nòng-rè* 弄热 ‘make-hot’, instead, is more common (79 occurrences of *nòng-rè* ‘make-hot’ vs. 17920 occurrences of *jiā-rè* 加热

‘increase-hot, heat up’) because it is based on an open scale adjective with a determinate lower bound. Thus, *nòng-rè* ‘make-hot’ expresses an accomplishment sense, where the telos is provided by the standard endstate ‘X is A’, which is a normative value given by context and convention.

Therefore, the reason why *jiā* is more common with open scale adjectives than *nòng* is arguably that those deadjectival verbs based on open scale adjectives are basically used in their process sense, which is marked by *jiā*. However, for a subset of those verbs, i.e. those based on open scale adjectives with a determinate lower bound, the accomplishment interpretation is possible too, and thus *nòng*, which marks the telic accomplishment interpretation (‘become A’), can be used. In contrast, verbs based on open scale adjectives with an indeterminate lower bound, which are accomplishment resistant, are rarely found with the light verb *nòng* as V_1 .

6. Conclusions

In this paper, using data drawn from the BCC corpus, I examined the behaviour of two kinds of complex deadjectival verbs based on open scale adjectives formed by means of two different light verbs, namely *nòng* +Adj. and *jiā* +Adj. verbs. I showed that these verbs, despite their apparently similar meaning, display distinct aspectual behaviour. Verbs formed with the light verb *jiā* as V_1 can generally be modified by imperfective markers (the progressive *zài/zhèngzài* and the durative *zhe*) and can appear with ‘for X time’ expressions, which set a temporal boundary to the event. This suggests that they are basically atelic. In addition, they can occur with bounded measures of change and with the resultative *dào* ‘up to’, which sets a boundary to the event, making the event telic. Thus, with these verbs telicity may arise contextually or by adding a bounded measure of change. In contrast, deadjectival verbs based on open scale adjectives with the light verb *nòng* as V_1 are always telic: they cannot be modified by imperfective markers and can neither occur with bounded measures of change nor with the resultative *dào* ‘up to’. Therefore, these verbs differ in telicity, and the two light verbs are not freely interchangeable when forming deadjectival verbs based on open scale adjectives.

The data drawn from the corpus also highlight that *nòng* cannot be

freely attached to open scale adjectives; quite to the contrary, its use is quite limited with open scale adjectives (see Table 1).

Based on Kearn's (2007) account of degree achievements, I argued that the light verb *nòng* always marks the telic accomplishment sense, i.e. 'cause to become A', and the telos is provided by the standard endstate 'X is A'. In contrast, complex verbs formed with *jiā* mark the process sense of degree achievements. Since the process sense is always available for degree achievements based on open scale adjectives, the light verb *jiā* is much more commonly used. The light verb *nòng* is found in those verbs in which the base is an open scale adjective with a determinate lower bound: verbs based on this type of adjectives allow both the process and the accomplishment sense. In contrast, when the base is an open scale adjective with an indetermined lower bound, and thus the satisfactory telos for an accomplishment reading ('become A') is not identifiable, *nòng* is rarely found as V_1 .

Many issues still deserve further research. First of all, a more fine-grained analysis of deadjectival verbs based on open scale adjectives with determinate and indeterminate lower bounds may provide further insights into the phenomenon. In addition, a detailed study of the syntactic behaviour of these verbs could highlight other differences between them. Finally, an investigation of degree achievements verbs based on closed scale adjectives would provide a clearer picture of deadjectival verbs and could validate the hypotheses put forth in this paper.

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