Event delimitation in Mandarin:
The case of diminishing reduplication

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Mandarin verbal reduplication is generally regarded as a phenomenon conveying an aspectual value since it temporally bounds the event expressed by the base verb, thus resulting in a (counter-iconic) 'diminishing' semantics. In this paper, we put forward a novel syntactic account of diminishing reduplication in Mandarin, which derives the aspectual semantic properties of these constructs from the syntax of their event structure. In particular, we outline an analysis of reduplication as the spell out of two copies of the same lexical item, whereby the reduplicant is the lower copy sitting as the complement of the verbal head (higher copy), and displaying the distributional and interpretive properties of 'weak' verbal classifiers. Focusing on the status of the reduplicant, we present distributional, interpretive and diachronic evidence in support of our analysis.[*]

KEYWORDS: reduplication, Chinese, event structure, boundedness, classifier

1. Introduction

Mandarin Chinese is an often quoted example of the isolating language type, characterised by little morphology, few affixes (often etymologically transparent) and by a very straightforward relationship between form and meaning: it displays clearly defined morpheme boundaries, no cumulative exponence and no allomorphy or suppletion, i.e. morphemes usually have a single phonological form (for an overview, see Arcodia & Basciano 2017). The most productive means of word formation in Chinese is compounding. The lexicon of Modern Chinese is characterised by a huge number of complex words, i.e. words made of more than one morpheme, typically two, displaying a

strong tendency towards disyllabism: e.g. 冰山 *bīng-shān* [ice-moun-tain] 'iceberg', 大小 *dà-xiǎo* [small-big] 'size', 司机 *sī-jī* [take.charge.of-machine] 'driver', 喝醉 *hē-zuì* [drink-drunk] 'get-drunk', 吹风机 *chuī-fēng-jī* [blow-wind-machine] 'hairdryer'. As for verbs, Mandarin tends to express complex events by means of compound verbs: e.g. 看到 *kàn-dào* [look-arrive] 'see', 听见 *tīng-jiàn* [listen-see] 'hear', 找到 *zhǎo-dào* [look.for-arrive] 'find', 学会 *xué-huì* [study-know] 'learn', 杀死 *shā-sǐ* [kill-die] 'kill' (for an overview, see Basciano 2017). Besides compounding, a widely used morphological phenomenon in Mandarin is reduplication.

Total reduplication is a widespread phenomenon in Mandarin Chinese, ranging over different lexical classes and expressing several semantic values. Typically, a 'diminishing' or 'decreasing' function is found in the verbal domain, e.g. 看看 *kàn kan* [look look] 'have a look', whilst an 'increasing' value is typical of the adjectival domain, e.g. 紅紅 *hóng hóng* [red red] 'very / quite red'. In this paper we will focus on diminishing reduplication (henceforth DR),[1] which is a means to temporally bound the event expressed by the base verb and, accordingly, to express an *Aktionsart* value. The phenomenon has been abundantly described and subjected to theoretical analyses, especially focusing on its phonological, morphological and semantic facets. In this article we propose a novel syntactic account of DR, which derives the aspectual semantic properties of these constructs from the syntax of their event structure (see Arcodia, Basciano & Melloni 2014 for a first proposal along these lines). After a brief presentation of the data in section 2, section 3 puts forward an analysis of DR as the spell out of two copies of the same lexical item, whereby the reduplicant is the lower copy sitting as the complement of the verbal head (higher copy), and displaying the distributional and interpretive properties of 'weak classifiers' (in the sense of Paris 2013). In section 4, focusing on the status of the reduplicant, we present distributional, semantic and diachronic evidence in support of our analysis. Section 5 concludes the paper by summarising the main results and suggesting future work.

2. *Aspectual constraints on diminishing reduplication*

DR has often been understood as an aspectual marker, conveying the so-called 'delimitative' or 'tentative' aspect (Chao 1968, Li & Thompson 1981, Tsao 2004), meaning to do something "a little bit/ for a while" (Li & Thompson 1981:29), to act quickly, lightly, casually or just for a try. Further, beyond the pragmatic function of marking a

casual, relaxed tone, reduplicated verbs can be used as mild imperatives. However, on the grounds of theoretical arguments and empirical evidence, it has been claimed that tentativeness and the other above-mentioned semantic values are extensions of the core function of temporal delimitation (see Xiao & McEnery 2004 for relevant remarks on this).

On a formal level, both monosyllabic and disyllabic verbs may undergo DR. However, the reduplicant of a monosyllabic verb is prosodically marked as toneless (看看 *kàn kan* [look look], see above), while the reduplicant of a disyllabic verb keeps its tone (休息休息 *xiūxi xiūxi* [rest rest] 'rest a little / for a while'). Moreover, only with monosyllabic verbs, the morpheme 一 *yi* (< *yī*)[2] 'one' can appear between the base and the reduplicant, e.g. 看一看 *kàn yi kàn* [look one look] 'have a look', apparently setting aside monosyllabic from disyllabic reduplication.

DR is severely restricted to the verbal domain and poses aspectual constraints on its base. The base verb must be a dynamic and volitional verb (Li & Thompson 1981), i.e. it should possess the features [+controlled], [+dynamic], [+durative]. In other words, it must be a process/activity verb under the control of an Agent (yet semelfactives too, i.e. punctual events lacking a *telos*, are possible bases of DR, see *infra*). In fact, DR does not apply to telic verbs, which cannot undergo this reduplication pattern (but can be reduplicated through the increasing pattern, as observed by Arcodia, Basciano & Melloni 2014, 2015). It has been argued that the motivation for this ban is semantic: the delimiting function of DR is incompatible with the *Aktionsart* of those verbs that are inherently delimited. Accordingly, DR is impossible with accomplishments (followed by a quantized object) and achievements, including resultative compounds, e.g. *赢赢那場比賽 *yíng yíng nà chǎng bǐsài* [win win that CLF match] 'win that match by a bit' (Xiao & McEnery 2004: 155); *喝醉喝醉 *hē-zuì hē-zuì* [drink-drunk drink-drunk] 'get drunk (a bit)'. Furthermore, in accordance with the obligatory dynamicity of the base, stative verbs generally cannot reduplicate (see Tsao 2004).[3] A semantic explanation is less convincing in this case because, cross-linguistically, a subset of stative verbs can be temporally delimited by means of adjuncts or adverbials (e.g. *John loved Anna for a while*).

As for the output of reduplication, delimitative aspect turns an unbounded dynamic event into a holistic/temporally bounded event (see Xiao & McEnery 2004). This is apparent if we consider that, unlike the base verb, reduplicated verbs are incompatible with the

progressive aspect marker 正在 *zhèngzài*, but are perfectly compatible with the perfective aspect marker 了 *–le*, which signals completion or termination of an action (Xiao & McEnery 2004, Ding 2010): e.g. 學習了學習 *xuéxí-le xuéxí* [study-PFV study] 'studied a bit'. It is worth noticing that the perfective aspect marker 了 *–le* must be placed between the base and the reduplicant, unlike resultatives and other kinds of compound verbs, where 了 *–le* obligatorily follows the complex verb, e.g. 喝醉了 *hē-zuì-le* [drink-drunk-PFV].[4]
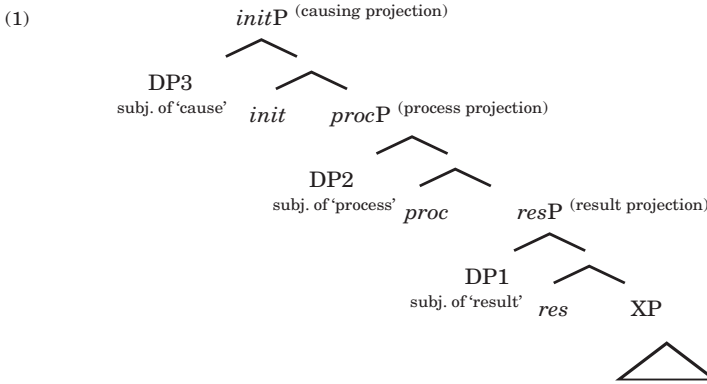
3. Analysis

While other types of total reduplication in Mandarin seem sensitive to morphological constraints and their building blocks are allegedly chunks of structure below the X° level (see Arcodia, Basciano & Melloni 2014 on 'increasing' reduplication), we intend to defend the hypothesis that DR is a syntactic phenomenon, which combines larger structures within the vP domain.

This rationale is motivated primarily by the separability of the verbal complexes obtained via the diminishing pattern, which challenges the alleged syntactic atomicity or lexical integrity of words (see Lapointe 1979, *inter alios*). Specifically, in the previous section we remarked that the aspect marker 了 *–le*, usually occurring at the rightmost side of verbs, is 'interfixed' between the base and the reduplicant. We have also shown in section 1 that the morpheme 一 *yi* 'one' may appear between the base and the reduplicant with monosyllabic verbs. Furthermore, under the acknowledged view that aspectual properties are 'syntactically' encoded,[5] the range of aspectual constraints described in the previous section for the input verbs are unexpected if one treats this pattern as a strictly morphological phenomenon. Besides, DR lacks morphological constraints which are found in other reduplication phenomena. For instance, AABB increasing reduplication requires coordinate-compound bases (see Arcodia, Basciano & Melloni 2014, 2015), while no such constraints, imposing morphology-specific requirements on the structural makeup of input verbs, are found with DR.

We thus propose a syntactic analysis of DR in the constructionist framework put forth by Ramchand (2008), which is based on a syntactic decomposition of the event structure ('first phase syntax'). In this system, the event structure can be decomposed into a maximum of three subevents, each represented with its own projection, ordered in a hierarchical causal embedding relation: the causative subevent (*init*P) introduces the causation event and the verb external

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argument hosted in its specifier (i.e. the subject of cause or 'initiator' in Ramchand's theory); the process subevent (*proc*P) specifies the nature of the change or process and introduces the entity undergoing the change or process (i.e. the subject of process or 'undergoer');[6] the result subevent (*res*P) provides the *telos* or 'result state' and hosts the subject of result or 'resultee'.

(1)

*init*P (causing projection)

DP3
subj. of 'cause'   *init*   *proc*P (process projection)

DP2
subj. of 'process'   *proc*   *res*P (result projection)

DP1
subj. of 'result'   *res*   XP

In this framework, lexical items specify the syntactically-relevant information by means of a category label or 'tag', which permits their insertion in the eventive structure, and may have multiple category features. Telicity in this framework can arise in two ways: either it is lexically encoded (in Ramchand's terms, the lexical item is marked by a [res] feature) or it is compositionally obtained in *proc*P by means of a spatial bounded path (usually acknowledged as 'incremental theme') in the complement position.[7]

The present analysis rests upon the main hypothesis that DR spells out two copies of the same lexical item within the *v*P domain. Let us now see the details of our proposal. First, it should be premised that the group of Chinese verbs that can undergo DR are easy to delimit in Ramchand's framework since – being activities and accomplishments with a non-quantized object – they are lexically marked by the tags [init, proc]. All verbs tagged with [res] (i.e. achievements) are excluded. Relevant literature (see Xiao & McEnery 2004) advances a purely semantic explanation for the incompatibility between inherently telic verbs and DR. We contend instead that this fact straightforwardly follows from the inner structure of reduplicated verbs.

It has been noticed that the main semantic function of DR is to delimit the temporal duration of an otherwise unbounded event.

We thus claim that the reduplicant (the verb lower copy) adds a [+bounded] temporal path to the [-bounded] situation codified by the base verb. Being a path of process verbs, the reduplicant occupies a dedicated syntactic position in the complex structure of *v*P, i.e. it is the complement of the Process head in Ramchand's (2008) framework. This analysis implies a 'structural' incompatibility between the reduplicant and the *res*P, which sits in the complement of *proc*P; hence it syntactically accounts for the aspectual restrictions exclusively ascribed to the lexical semantic level in previous analyses.

Notably, not only are (durative) processes possible bases for DR, but semelfactives are too, e.g. 跳一跳 *tiào yi tiào* 'jump one jump, jump a bit'. Interestingly, in Ramchand (2008) these verbs allow for an optional syntactic realization of the result phrase, since they are ambiguously tagged in the lexicon as [init, proc], when they convey a durative and atelic interpretation, or as [init, proc, res], when they are punctual and telic. Ramchand's analysis is based on the following observation: when a verb like *jump* is used in its process (/iterated event) reading, it is compatible with path PPs, like any other motion verb (e.g. *jump into the field*), and not with locative place PPs (e.g. *jump in the field*, where only a punctual reading is possible).[8]
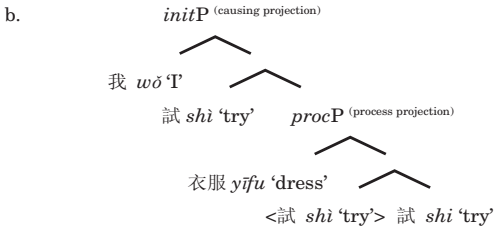
In Chinese, the different readings of a semelfactive like 跳 *tiào* 'jump' correlate with the occurrence of different locative PPs: a preverbal locative PP (2a) correlates with an atelic (iterated) reading; a postverbal locative PP, indicating the *goal* of the event (2c), correlates with a telic (punctual) reading (see e.g. Sybesma 1999). Crucially for the present analysis, semelfactives cannot be reduplicated under their telic/punctual reading (2c), but only in their atelic/iterated reading (2b).

(2)   a.   他在水裡跳。
          tā   zài   shuǐ   lǐ   tiào
          3SG.M   at   water   in   jump
          'He is jumping in the water.'

      b.   他在水裡跳一跳。
          tā   zài   shuǐ   lǐ   tiào   yi   tiào
          3SG.M   at   water   in   jump   one   jump
          'He is jumping in the water.'

      c.   他(*跳一)跳在水裡。
          *tā   (*tiào   yi)   tiào   zài   shuǐ   lǐ*
          3SG.M   jump   one   jump   at   water   in
          'He jumped into the water.'

As mentioned in section 1, limited temporal duration is not the only semantic value conveyed by DR; besides this, a number
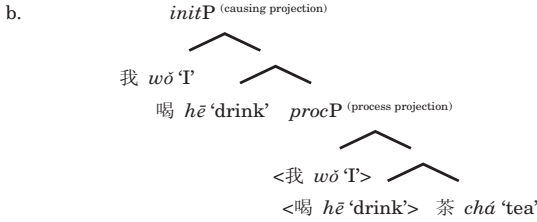
of related semantic effects, such as casualness, tentativeness, etc., are also listed as possible meanings of reduplication in reference grammars of Mandarin. In fact, the aspectual constraints on input verbs hold in all the instances of DR, independently from the over-all semantics of the output. We argue, however, that the aspectual restrictions on input verbs are hardly justified in an account that derives them from the lexical-semantic incompatibility between the inner temporal constitution of the base and the varied (hardly predictable) semantics of the reduplication template. On the other hand, the derived semantic nuances of DR are structurally justified in the present analysis provided that they are analysed as 'shifted' semantic correlates of the core meaning of the *proc*P–path template, i.e. temporal boundedness.

3.1 Reduplicants as objects

In order to grasp the technical details of our analysis, let us start from the simplest case of an intransitive verb, 走 *zǒu* 'walk' [init, proc], which reduplicates as 走走 *zǒu zou* [walk walk] 'have a walk / walk a little'. The structure of the reduplicated verb would be as fol-lows:

(3)

The structure in (3) shows that the reduplicant, occupying the verb complement, turns a basically unergative verb into a transi-tive one, a solution which is reminiscent of Hale & Keyser's (1993) understanding of unergative verbs. Thematically, the object is not a patient, but a temporal path, which provides the event with a tempo-ral boundary.

If all reduplicated verbs undergo a kind of 'transitivisation', the obvious issue to address concerns the position of syntactic objects of inherently transitive bases, provided that the reduplicant should cause the unavailability of the complement of *proc*P. In Ramchand's

framework, however, 'objects' of the verb can originate in different places within the *v*P. In *proc*P, they can be either undergoers (i.e. the entity undergoing the change or process), which originate in the specifier of *proc*P, or paths sitting in complement position (see above). Let us consider the case of verbs with undergoers first. It is worth noticing that undergoers cannot measure out the event, since they are not incremental themes, but do undergo the change described by the event. Therefore, no incompatibility arises in cases such as 試試 *shì shi* [try try] 'try on (shortly, for a while)' because the syntactic object and the reduplicant occupy different structural positions:

(4) a. 我試試衣服
        wǒ   *shì*   *shi*   *yīfu*
        1SG   try   try   dress
        'I'll try the dress on'

    b.

                *init*P ^(causing projection)

       我 *wǒ* 'I'
               試 *shì* 'try'   *proc*P ^(process projection)

            衣服 *yīfu* 'dress'
                     <試 *shì* 'try'> 試 *shi* 'try'

Ramchand (2008) observes that some transitive verbs are characterized by having an object which is not the undergoer of the process but a path (more typically acknowledged as incremental theme). With respect to the traditional Vendlerian taxonomy, verbs which take a path as their direct object are accomplishments. According to Ramchand, when the verb takes a path object, the property mapped onto the process is inherent to the DP and does not change. The homomorphism with the process of the event is established via the scalar structure of the inherent property, and the process is defined by its progress through the scale provided by the path object (see Krifka 1992). This class includes creation and consumption verbs, like *build*, *write*, *eat*, *drink*, etc. Ramchand assumes that in these cases the specifier position of *proc*P is not filled by the direct object of the verb, which is a path, and that it is the initiator itself which fills the undergoer position too, given its status as a continuous experiencer of the process. See the example below:

(5)   a.   我喝茶
        wǒ   *hē*   *chá*
        1SG   drink   tea
        'I drink tea'

    b.

*init*P ^(causing projection)

我 *wǒ* 'I'

喝 *hē* 'drink'   *proc*P ^(process projection)
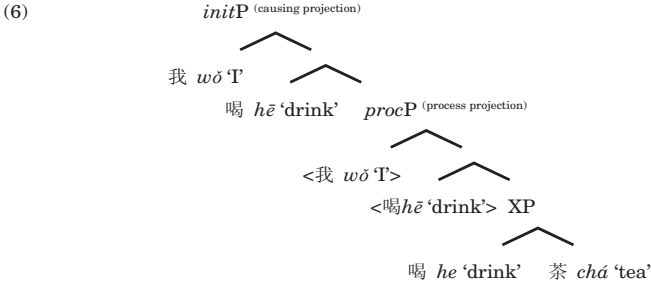
<我 *wǒ* 'I'>

<喝 *hē* 'drink'> 茶 *chá* 'tea'

As for DR, accomplishment verbs do not behave in the same way. Typically, they cannot undergo reduplication when they are combined with a quantized object. However, when taking a non-quantized object, accomplishments too can undergo reduplication: e.g. 喝喝茶 *hē he chá* [drink drink tea] 'have some tea'.

Assuming that the object is a path in the complement position of *proc*P, we should exclude the possibility that the reduplicant is a path itself, since the complement position is already occupied by the object (see (5b)). We thus advance a tentative hypothesis that might be able to capture the structure and semantics of accomplishment verbs. Interestingly, a cross-linguistic observation shows that reduplicated verbs combined with incremental themes are close, at the semantic level, to light verb constructions (henceforth, LVCs), attested in many Romance and Germanic languages, as e.g. It. *fare (*bere) una bevuta di tè* [do.INF (*drink.INF) a.SG.F drink-NMLZ.SG.F of tea], Eng. *take a drink of tea* (see also Paris 2013). In these cases, a semantically light verb (such as *do*, *make*, *take*, etc.) takes as its object a complex DP that, beyond codifying the core event semantics, is able to delimit the event temporally. In particular, *una bevuta (di…)* / a *drink (of…)* is a DP containing an event noun, which acts as a measure phrase, able to turn the mass noun *tea* into a quantized nominal expression. At the *v*P level, this DP also provides a 'boundary' to the unbounded process encoded by the verb *bere* / *drink*.

Provided that LVCs are formed by a process verb combined with a DP complement, which in turn embeds a complement (*di tè* 'of tea' is the internal argument of the event noun *bevuta*, from *bere* 'to drink'), we argue that the semantic parallel between LVC and DR can be translated into a syntactic one. Structurally, both *bevuta / drink* and the reduplicant 喝 *he* 'drink' are paths able to delimit the event.

Further, just as *di tè / of tea* acts as the complement of *bevuta / drink*, in Chinese 茶 *chá* 'tea' would be the complement of 喝 *he* 'drink'.

(6)

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                    initP (causing projection)
                   ╱  ╲
          我  wǒ 'I'    ╲
                  喝  hē 'drink'   procP (process projection)
                                 ╱  ╲
                        <我  wǒ 'I'>  ╲
                             <喝hē 'drink'>  XP
                                        ╱  ╲
                              喝  he 'drink'    茶  chá 'tea'
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In this picture, many issues still merit further understanding; above all, we still lack an assessment of the categorial nature of the reduplicant, which as a verb should not sit in the complement of *proc*P, but as a noun should not be able to license its nominal complement (茶 *chá*). We will return to this in the next section. For the moment, let us provisionally conclude by stating that this line of analysis, whose details are omitted here due to space limitations, offers novel insights on a phenomenon generally ascribed to the lexical or morphological domain. First, it gives a straightforward structural account for the semantics of the diminishing/delimiting pattern, where the reduplicant acts as a temporal delimiter of the event. Furthermore, it can justify the lack of lexical integrity of the complex since, as a phenomenon affecting the 'first phase syntax' of the verb, DR is not expected to create syntactic atoms. In addition, it offers a structural explanation for the incompatibility between result state (*res*P) and DR; under the present analysis, the result state and the reduplicant cannot co-occur because they are base-generated in the same structural position. Furthermore, it also accounts for the lack of stative DR, since states do not contain a *proc*P[9] and, accordingly, do not take path complements, where reduplicants are realised. Finally, it predicts the semantics of direct objects of reduplicated verbs, which are never paths/incremental themes: they can be either undergoers (originated in the specifier position of *proc*P) or complements of the reduplicant itself.

4. Reduplicants, verbal classifiers and cognate objects as event delimiters

In the following sections, we attempt an explanation of the categorial nature of the reduplicant. On the grounds of a (synchronic)

comparative overview of cognate object and verbal classifier construc-
tions, and with further support from diachronic data, we aim at show-
ing the following:

1. the reduplicant occupies the same structural position as a 'weak'
   verbal classifier (in the sense of Paris 2013);
2. the patterns of reduplication with and without 一 *yi* 'one' are
   manifestations of the very same phenomenon.

4.1. Cognate Object Constructions

In section 3, we argued that reduplicants are direct objects of the
verb. Other evidence in support of the object analysis of the redupli-
cant comes from the heterogeneous class of cognate object construc-
tions (COCs). It has been proposed (see Chao 1968 and Hong 1999)
that Mandarin V-*yi*-V reduplicating construction may be understood
as a kind of COC, sharing many properties of Indo-European COCs.
Consider the following English standard case of COC:

(7)   *laugh a (scornful) laugh*

A cognate object such as *a (…) laugh* possesses the following
three characteristics: from the point of view of its morpho-phonologi-
cal form, *laugh* bears the same form as the verb *laugh*; from the point
of view of its syntactic function, *a laugh* is the syntactic object of the
verb *laugh* (at least according to e.g. Massam 1990, and Pham 1999,
but cf. e.g. Jones 1988, Moltmann 1990, according to whom they are
adjuncts rather than arguments); as for its semantic function, *a laugh*
is delimitative, since it temporally bounds the process codified by the
verb *laugh* (see Hong 1999: 263).[10]
Hong (1999), elaborating on Chao (1968), identifies three types of
COCs in Mandarin Chinese, including among cognate objects lexemes
(specifically, verbal classifiers) that do not have the same form of the
verb:

1. verbal reduplication with 一 *yi* (< *yī*), like 看一看 *kàn yi kàn*
   [look-one-look] 'have a look / look for a while';
2. constructions containing a tool, a part of the body, etc., 'borrowed'
   as verbal classifiers (VCL), e.g. 看一眼 *kàn yī yǎn* [look one eye]
   'take a look';
3. constructions containing a VCL which "indicates the time(s) an
   action is done" (Hong 1999: 265), such as 次 *cì*, 下 *xià*, 頓 *dùn*, 遍 *biàn*,
   e.g. 他看了一次中國電影 *tā kàn-le yī cì Zhōngguó diànyǐng* [3sg.m
   watch-PFV one VCL China film] 'He watched a Chinese film once'.

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All the above-mentioned constructions depict the event as temporally bounded, pairing with COCs in other languages. As for the reduplicated forms at point 1 above, they are those that more closely approach standard COCs, since the reduplicant has the same phonological form as the base verb. However, Hong indirectly suggests that the COC analysis applies to reduplicated forms with 一 *yi* only. In fact, there is an open debate on the status of DR in relation to the 'infixed' version with 一 *yi*: Chao (1968) and Li & Thompson (1980) highlight the parallels between verbal reduplication with and without 一 *yi*, while Paris (2013), *inter alios*, treats them as different phenomena. In addition, while Chao (1968) and Li & Thompson (1980) consider almost equivalent DR and constructions taking verbal classifiers, Paris (2013) argues that they do not function alike, neither syntactically nor semantically. In what follows, we will argue that verbal reduplications with and without 一 *yi* are two instances of the same phenomenon (see section 4.3). Before turning to this, in the next section we will highlight some important parallels between DR and a particular class of VCL constructions, i.e. 'weak' classifiers.

4.2. Verbal classifiers as event delimiters

Firstly, it is worth emphasising that, differently from DR, not all VCLs are event delimiters. In fact, we may remark that at least some VCLs do not seem to impose aspectual restrictions on the verb with which they combine. For instance, they occur with atelic verbs, yet telic verbs too are admitted, as e.g. 进一次 *jìn yī cì* [enter one VCL] 'enter once'. Paris (2013) proposes to distinguish VCLs on the basis of their role in the quantification domain rather than according to their lexical properties, and identifies two classes of VCLs, which she dubs as 'weak' and 'strong'. Strong classifiers are markers of frequency (8a); in contrast, weak classifiers bound the (durative) predicate by delimiting a sub-interval (8b) (Paris 2013: 272). This aspectual modification is proven by the fact that when they combine with an activity (atelic) verb, the whole construction V-VCL, differently from the base verb alone, is incompatible with the durative and the progressive aspect marker. Like reduplicants in DR, weak classifiers can only be preceded by the numeral 一 *yī* 'one', which is a 'weak' number, indicating 'small quantity' (see e.g. Li 2002), and it is rather interpreted as an indefinite marker (see (8b)).

(8) a. 她去了一/两趟。

tā	*qù*	*le*	*yī*	/	*liǎng*	*tàng*
3SG.F	go	PFV	one	/	two	VCL

'She went once / twice.'

b.　他罵了張三一/*兩頓。

tā	mà	le	Zhāngsān	yī	/	*liǎng	dùn
3SG.M	scold	PFV	Zhangsan	one	/	*two	VCL

'He gave Zhangsan a good scolding.'

Conversely, Donazzan (2012) argues that VCLs do not have the function of delimiting predicates, and proposes a semantic analysis for Mandarin VCLs, analysing them as functional words that single out individual units in the verbal domain on the basis of the aspectual structure of the predicate.

Zhang (2016), elaborating on Donazzan's (2012) proposal, distinguishes between two classes of classifiers: *phase* classifiers (cf. Donazzan's Event-related verbal classifiers), as e.g. 下 *xià*, and *événement* classifiers (cf. Donazzan's Occasion-related verbal classifiers), as e.g. 次 *cì*. She argues that both types of classifiers have the role of 'quantifiers' in the verbal domain, but at different levels. Événement VCLs quantify events that are already built up at the lexical aspect level; in other words, they do not modify the lexical aspectual structure of the predicate. This seems to be proven by the fact that they can modify both telic and atelic predicates (see Donazzan 2012). In contrast, phase classifiers are incompatible with telic situations; Zhang further argues that they combine with atelic situations only, modifying their lexical aspectual structure, specifically, providing a temporal boundary. Thus, classifiers belonging to this class behave similarly to post-verbal durative expressions and to reduplicated verbs. The distinction proposed by Zhang (2016) basically corresponds to the division between 'strong' and 'weak' classifiers proposed by Paris (2013).

Due to space constraints, we cannot go through the details of this debate, yet we agree with Paris (2013) and Zhang (2016) and argue that a class of VCLs in Mandarin ('weak' or 'phase' classifiers) are event delimiters and, as such, share an important property with COCs and DR in Mandarin, i.e. they provide a temporal boundary to the event. As a matter of fact, the sentence 我等了一下 *wǒ děng-le yī xià* [1SG wait-PFV one VCL] 'I waited for a while' is interpretively equivalent to 我等了(一)等 *wǒ děng-le (yi) děng* [1SG wait-PFV (one) wait] 'I waited for a while', where a reduplicated form is used.

Summing up, similarly to reduplicants in DR, at the structural level weak VCLs follow the verb and are preceded by a weak numeral 'one', which may be omitted. At the semantic level, they temporally bound the event, producing an aspectual change. Overall, does this distributional and interpretive evidence suffice to argue in favour of

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the classifier-status of the reduplicant in DR? In order to pursue this line of analysis, it is important to shed light on the syntactic status of weak VCLs. Although we cannot do justice to the literature on this complex issue, let us premise that, like DR, VCLs can occur with syntactic objects, and accordingly they have been analysed as adjuncts to Vbar (Huang *et al.* 2009). However, others have argued against an adjunct analysis of VCLs (e.g. Gao 2010, Zhang forthcoming). In particular, Gao (2010) treats VCLs as complements.

We propose that several elements seem to suggest a complement analysis of weak VCLs: firstly, they are typically post-verbal, in contrast to other adverbial modifiers, which typically are preverbal in Mandarin. Secondly, VCLs are strictly non-recursive, whilst manner, location and other adverbials can be recursive. Thirdly, VCLs are always (extended) NPs, but are never PPs, in contrast to other types of adverbials that are typically introduced by a P. Furthermore, unlike adverbials, VCLs can occur between verbs and objects; see e.g. Zhang (forthcoming), who shows that, contrary to VCLs, frequentative adverbials, such as e.g. 經常 *jīngcháng* 'often', never surface between a transitive verb and its object.

On these grounds, we propose that weak classifiers occupy the same structural position in the *v*P as the reduplicant in verbal DR, i.e. they sit in the complement position of the verb projection (*proc*P in the present analysis), providing a bounded temporal path to the unbounded situation codified by the base verb.

Lastly, another piece of evidence arguing for the same structural position of VCLs and DR is their complementary distribution:

(9)   *看看一下
         kàn   *kan*   *yī*   *xià*
         look   look   one   VCL

We argue that this ungrammaticality follows from the fact that weak VCLs and reduplicants are both complements of the verb; more specifically, they are path objects in the *proc*P in the present framework.

4.3. Verbal reduplication and verbal classifiers in diachrony

Having established a parallel between verbal reduplication and (weak) VCLs, we will now have a look at the main differences between these two patterns.

First of all, Paris (2013) observes that there is a fundamental morphological difference: whereas VCLs are free forms, the reduplicant in verbal reduplication is a bound form. Indeed, while some objects can occur between the base and the VCL, objects must follow the reduplicant in verbal reduplication:

(10) a. 我等了他一下

	wǒ	děng	le	tā	yī	xià
	1SG	wait	PFV	3SG.M	one	VCL

'I waited him for a while'

    b. *我等了他(一)等

	wǒ	děng	le	tā	(yi)	deng
	1SG	wait	PFV	3SG.M	one	wait

    c. 我等了(一)等他

	wǒ	děng	le	(yi)	děng	tā
	1 SG	wait	PFV	one	wait	3SG.M

'I waited him for a while'

This fact, in our view, does not force a morphological treatment of DR since a syntactic operation such as the incorporation of the reduplicant into the *proc*P head might explain the special behaviour of reduplication. Furthermore, although we do not spell out the details of this analysis here, it is worth noticing that considering the reduplicant as a bound form and arguing for a morphological/pre-syntactic status of DR does not explain the exceptional placement of the perfective aspect marker 了–*le* (see section 2).

In addition, if we consider the diachronic dimension, we can see that objects intervening between the base and the reduplicant were indeed possible in previous stages of the language.[11] Since the Yuan period (1271-1368), when DR first appeared, objects could precede or follow the reduplicant. Those preceding the reduplicant generally were only personal pronouns or proper nouns (11), while other kinds of object generally followed the whole reduplicated verb.

(11) [...] 我推了他一推便死了[...]

wǒ	tuī	le	tā	yī	tuī	biàn	sǐ	le
1SG	push	PFV	3SG.M	one	push	then	die	PFV

'[...] I just pulled him a bit and he died [...]'
(元曲选 *Yuán Qǔ Xuǎn* 'Anthology of Yuan Drama', in Tang 2001: 36)

This distribution of direct objects is found up to the Qing period (1644-1911), and examples are occasionally found in the works of some modern writers: e.g. [...] 仔細看了他一看 *zǐxì kàn-le tā yi kàn* [careful look-PFV 3SG.M one look] 'have a careful look at him' (Ouyang Shan (1908-2000), in Li 2002: 5). Furthermore, this syntactic pattern is very close to the current distribution of direct objects in VCL constructions.

Another difference between DR and VCLs noted by Paris (2013) is that in DR the reduplicant is either placed immediately after the base or preceded by the numeral 一 *yī* 'one'. VCLs, on the other hand, must be preceded by a numeral and this numeral is not limited to *yī*

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'one'. However, different remarks can be made in this respect. First of all, as we have seen, weak classifiers, which are those having a function close to the one conveyed by verbal reduplication, can only be preceded by 一 *yī* 'one', which acts as a *weak* number. Additionally, Li (2002: 3) observes that, with weak classifiers, if the object is a monosyllabic personal pronoun, 一 *yī* may be omitted (Li 2002: 3), e.g. 打他下儿 *dǎ tā xiàr* [beat 3SG.M VCL] 'beat him a bit'.[12] Furthermore, we may remark that at the time when verbal delimiting reduplication first appeared, the reduplicant could be preceded by numerals other than一 *yī* 'one', such as e.g.:

(12)   [...] 吹師耳兩吹

     chuī   *shī*   *ěr*   *liǎng*   *chuī*
     blow   master   ear   two   blow
     '[...] (he) blew twice in the master's ears'
     (景德傳燈錄 *Jǐng dé chuándēng lù* 'The Records of the Transmission of the Lamp',
     chapter 6, 1004 AD, in Pan 2008: 69)

This may be considered as a VCL construction, where the verb is 'borrowed' as a VCL. Actually, verbs borrowed as VCLs are attested since the Five Dynasties period (907-960), and became quite common during the Song (960-1279) period (Zhang 2000, Pan 2008), e.g. 師抬起手, 打兩摑 *shī tái-qǐ shǒu, dǎ liǎng guāi* [master lift-raise hand strike two VCL(slap)] 'The master raised his hand and slapped (him) twice' (祖堂集 *Zǔ táng jí*, 952, chapter 12, in Zhang 2010: 10).[13]

It has indeed been argued that verbal reduplication developed from VCL constructions (e.g. Zhang 2000, Li 2002, Pan 2008). During the Song period the pattern V-*yī*-V, where 一 *yī* 'one' does not represent any longer a fixed quantity but has a bleached meaning, emerged for the first time. The meaning of this pattern was short duration, light degree or relaxed tone, like in Modern Chinese (see Zhang 2000, Pan 2008). This process of bleaching from VCL constructions with a VCL 'borrowed' from a verb to the verbal reduplication pattern V-*yi*-V closely approaches the process of bleaching that led from strong classifiers to weak classifiers (see Li 2002):

(13)   a.   From strong to weak classifiers
          V+(real) Num+VCL —> V+ 一 *yī* 'one' (weak) +VCL

      b.   From VCL constructions to verbal reduplication
          V+(real) Num+V(VCL) —> V+ 一 *yi* 'one' (weak) +V

These facts not only contribute to highlight the tight relation between weak classifier constructions and DR, but also support the hypothesis that the reduplicant in DR has classifier-like features.

4.4. VV vs. V-yi-V

As we have seen in section 3, Hong (1999) considers as instances of COCs only verbal reduplication patterns containing the morpheme 一 *yi* 'one'. However, we argue that all instances of verbal DR may be considered as instances of COCs. Two types of evidence are in favour of this analysis. First of all, there is virtually no semantic difference between reduplicated forms with and without the numeral 一 *yi*: 看 看 *kàn kan* [look look] / 看一看 *kàn yi kàn* [look one look] 'have a look / look for a while'. Let us consider the following example, taken from the novel 兄弟 *Xiōngdì - Brothers* by Yu Hua (2005: 182), where the two patterns are indistinctly used in the same sentence:

(14) [...] 他們不斷地去看看對方，不斷地向對方笑一笑。

tā-men	*bùduàn-de*	*qù*	*kàn*	*kan*	*duìfāng*
3SG.M-PL	unceasingly-ADV	go	look	look	the.other
bùduàn-de	*xiàng*		*duìfāng*	*xiào*	*yi*	*xiào*
unceasingly-ADV	towards		the.other	smile	one	smile

'[...] They continuously gave a look at each other, continuously gave each other a smile.'

Here it seems impossible to differentiate between the functions of these two structures (see also Xiao & McEnery 2004: 151-152).

Furthermore, we may remark that 一 *yī*, as a numeral taking a nominal classifier, may be easily omitted in speech: e.g. 我想買(一)本書 *wǒ xiǎng mǎi (yī) běn shū* [1SG want buy (one) CLF book] 'I want to buy a book'. As we have seen in the previous section (4.3), this is sometimes possible with verbal classifiers too.

Nevertheless, Paris (2013) argues that the two patterns are not equivalent, showing that they do not behave alike. First of all, she shows that there is a specific construction, the so-called 'tentative construction', where the reduplicated verb is followed by 看 *kàn* 'look', which only accepts the VV pattern without the numeral: 你跑跑 看！ *nǐ pǎo pao kàn* [2SG run run look] 'Let's see how you run!' *vs.* *你 跑一跑看！ *nǐ pǎo yi pǎo kàn* [2SG run one run look] (Paris 2013: 268). However, the fact that reduplication with 一 *yi* cannot appear in this particular kind of construction is far from being conclusive evidence, since it is restricted to this idiomatic construction and does not apply elsewhere. Furthermore, in previous stages of the language the pattern with 一 *yi* could also be used in this construction, as can be seen in the sentences in (15).

(15) a. 聞一聞看

wén	*yi*	*wén*	*kàn*
smell	one	smell	look

'smell a bit'

b. 問他一問看

wèn	tā	yi	wèn	kàn
ask	3SG.M	one	ask	look

'try and ask him'
(西遊記 *Xīyóujì* 'Journey to the West', c. 1592, in Pan 2007: 148)

Paris (2013) remarks that, though sharing many syntactic and semantic characteristics, the VV and the V-*yi*-V pattern are not phonologically identical: in VV, the second form is toneless, but in V-*yi*-V the second V keeps its tone. However, this might be due to a general prosodic constraint of Mandarin, namely a ban on two consecutive toneless syllables.

Therefore, there does not seem to be evidence robust enough to set apart the two patterns of reduplication. Actually, from a diachronic perspective, they seem to have developed one from the other. As we have seen in the previous section, the first type of DR that appeared in Chinese was the V-*yi*-V type, which seems to have developed from a VCL construction. The VV pattern appeared later, between the end of the Song period and the beginning of the Yuan period (see Zhang 2000: 14), and increased during the Yuan period. This can be seen as the last step of the bleaching process from VCL constructions to verbal reduplication (see Li 2002). According to Zhang (2000), since in the V-*yi*-V pattern the numeral 一 *yi* does not retain a true cardinal value (see (13b)), then it starts to be dropped, producing the 'bare' VV pattern. It is worth highlighting that before the Song-Yuan period, the VV pattern of verbal reduplication (only of monosyllabic bases) existed, but it expressed verb repetition or action in progress (see e.g. Ōta 1987, Pan 2008). This kind of reduplication declined during the Song dynasty and then disappeared. From a functional perspective, then, in the first stages of DR, the morpheme 一 *yi* enabled to formally distinguish between the two different types of verbal reduplication (with diminishing and increasing value). While the V-*yi*-V pattern was overwhelmingly dominant up to about the XV century, the VV (diminishing) template began to increase and then surpassed the V-*yi*-V pattern around the XVI century. By the beginning of the XVII century, VV became predominant and the occurrences of V-*yi*-V underwent an enormous decline (see e.g. Tang 2001, Pan 2008).

As for reduplication of disyllabic verbs (ABAB), the biggest difference from reduplication of monosyllabic verbs (AA) is that the numeral 一 *yi* can never appear between the base and the reduplicant. This would seem to set apart the two patterns. However, if we look at historical data, examples with the morpheme 一 *yi* (AB-*yi*-AB) can be found. Reduplication of disyllabic verbs first appeared in the Yuan period, both in the ABAB and in the AB-*yi*-AB pattern:

(16)   你打聽一打聽

nǐ   *dǎting*   *yi*   *dǎting*
2SG   inquire   one   inquire
'inquire a bit about it'
(朴通事 *Piáo Tōngshì*, in Zhang 2000: 15)

The AB-*yi*-AB pattern then gradually declined, while the ABAB pattern increased. For example, in the 西遊記 *Xīyóujì* 'Journey to the West' (c. 1592), there are 53 instances of the ABAB template and only two instances of AB-*yi*-AB pattern (data from Pan 2007). The decline and disappearance of the AB-*yi*-AB pattern could be motivated by its excessive length, in terms of number of syllables (see Zhang 2000).

Another difference between the AA pattern (reduplication of monosyllabic verbs) and the ABAB pattern (reduplication of disyllabic verbs) is that the reduplicant is toneless in the AA template, whereas the reduplicant keeps its tone in the ABAB template (see section 1). Tone preservation, however, as we have seen before in relation to forms with *yi*, might result from a prosodic constraint that disallows a sequence of two toneless syllables.

Therefore, considering synchronic and diachronic evidence, we put forth the tentative hypothesis that not only monosyllabic verbs reduplicated with 一 *yi* (*yī*) are instances of COCs, but that the COC analysis can apply to all instances of DR, which would contain 一 *yi* (*yī*) covertly or overtly. Under this analysis, the double parallelism arising between DR and COC is easy to capture. That is to say, both reduplicants and cognate objects, including Mandarin weak VCLs, provide a (temporal) boundary to the event. Syntactically, they all can be analysed as complements of the verb, specifically as delimiting paths of V/*proc*P heads.

5. Concluding remarks

In the previous sections, we outlined a syntactic analysis of DR phenomena in Mandarin framed in Ramchand's first phase syntax framework. Our analysis offered a fresh structural account for the semantics of DR, and for the aspectual and distributional constraints characterising this pattern. Further, concerning the categorial status of the reduplicant, we presented some intriguing evidence supporting a weak-classifier analysis, able to account for its event-delimiting function and V-complement status. Both synchronic and diachronic evidence argue in favour of a tight relation between VCL and DR constructions, on the one hand, and of a substantial equivalence between DR with and without the numeral *yi* 'one', on the other (under the present view, only differing in the covert or overt nature of the numeral).

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Many issues deserve a deeper analysis, which could not be developed here, especially concerning the alleged word-like status of reduplicated verbs. This appears to be the main fact setting apart DR and V-VCL constructions. We leave the exploration of this issue for future research.

Co-authorship
Authors' names are listed alphabetically. For academic purposes, Bianca Basciano takes responsibility for sections 1, 3.1, 4.3, 4.4, and Chiara Melloni for sections 2, 3, 4, 4.1, 4.2, 5.

Notes

[1]   Verbs can also undergo increasing reduplication, but this is possible only if the base is bimorphemic and its constituents are in a relation of coordination; the reduplicated verb generally expresses pluractionality or action in progress, but can also express vividness or other kinds of more abstract meanings (see e.g. Arcodia, Basciano & Melloni 2014): e.g. 進出 *jìn-chū* [enter-exit] 'enter and exit' → 進進出出 *jìn~jìn-chū~chū* [enter~enter-exit~exit] 'go in and out, shuttle in and out'.

[2]   Toneless items in Chinese are typically grammatical morphemes, such as e.g. aspectual markers, (some) no longer productive derivational suffixes, and the second syllables of some reduplicated or compound words, as e.g. 爸爸 *bàba* 'father', 学生 *xuésheng* 'student'. Thus, lack of tone points towards either grammaticalisation or lexicalisation. The fact that 一 *yī* 'one' is toneless when appearing inside a reduplicated verb seems to suggest that the structure is grammaticalised and, indeed, 一 *yi* no longer retains its lexical value, but simply highlights short duration (see 4.3 and 4.4 *infra*).

[3]   However, verbs expressing psychological states that can also have a dynamic interpretation, as e.g. 了解 *liǎojiě* 'understand', may actually reduplicate (Ding 2010: 283).

[4]   As an anonymous reviewer observed, this is not true for Verb-Object constructions, like 洗澡 *xǐ-zǎo* [wash-bath] 'take a bath', 擔心 *dān-xīn* [carry.on.shoulder-heart] 'worry', where the perfective marker 了 *-le*, if present, is placed between the verb and the object, i.e. 洗了澡 *xǐ-le zǎo* [wash-PFV bath]. These constructions are sometimes classified as Verb-Object *compounds* (e.g. Li & Thompson 1981). However, they cannot be considered as true compounds since they lack structural integrity: 我每天洗兩次澡 *wǒ měi tiān xǐ liǎng cì zǎo* [1SG each day wash two time (VCL) bath] 'every day I take two baths'. Many criteria have been proposed to classify them as compounds (for an overview, see Packard 2000: 106-125), nevertheless some items defy a clear-cut categorisation in that they actually possess features of both words and phrases. For instance, the above mentioned 擔心 *dānxīn* has a lexicalised meaning and may take a direct object, entailing that 心 *xīn* 'heart' is invisible to syntax, as predicted by Lexical Integrity, and the whole construction accordingly behaves as a word; on the other hand, the lack of structural cohesion appears as incompatible with wordhood. The issue of the distribution of the perfective marker in V-O constructions clearly deserves further exploration, but cannot be taken as clear evidence for an overall coherent interfixal nature of the perfective marker, which, on the contrary, typically follows the verb. Indeed, we may remark that there are also inseparable V-O compounds, such as e.g. 動員 *dòng-yuán* [move-member] 'mobilise', where the perfective marker 了 *-le* actually

follows the whole sequence and cannot be placed between the verb and the noun constituents: 動員了 *dòngyuán-le* [mobilise-PFV] *vs.* *動了員 *dòng-le yuán* [move-PFV member].

[5]   Since the early 1990s, a number of studies have advanced the hypothesis that thematic and aspectual requirements of events are directly encoded in the syntax; see, among others, Travis (2000, 2010), Borer (1994, 2005), McClure (1995), Ramchand (1997, 2008).

[6]   The *proc*P is the heart of the dynamic predicate, since it represents change through time and is present in every dynamic verb.

[7]   "The complement position of a process head is associated with the semantic relation of structural homomorphism, regardless of the category of that complement." (Ramchand 2008: 47). We refer the reader to Ramchand (2008) for further details.

[8]   The reader is referred to the interesting discussion in Ramchand (2008: 79-82).

[9]   As highlighted by an anonymous reviewer, some stative predicates in Chinese may have a process interpretation, entailing a [proc] feature in their lexical specification. Indeed, some predicative adjectives, i.e. those compatible with a change of state (inchoative) reading, can be used as inchoative verbs and, accordingly, are event-like: e.g. 頭髮白了 *tóufa bái-le* [hair white-PFV] 'the hair whitened'; 衣服髒了 *yīfu zāng-le* [clothes dirty-PFV] 'the clothes got dirty'; 他會胖 *tā huì pàng* [3SG.M can fat] 'he may become fat'. Therefore, besides adjectival features, these items would be specified in the lexicon as having verbal features too (see Basciano 2010). In particular, Basciano (2010) shows that they may be ambiguous between being [proc] and [proc, res] and lack an [init] feature altogether. Given their features, they are incompatible with diminishing reduplication.

[10]   A similar phenomenon found in European languages such as English, as we have seen in 3.1, is represented by predicative constructions containing a light (causative) verb (LVC), like *have*, *take*, *give*, e.g. *have a chat*, *take a seat*, *give a gasp* (see Paris 2013: 274). While verbs like *chat*, *seat* and *gasp* are temporally unbounded, their LVC versions are bounded. Thus, both COCs and LVCs provide a temporal boundary to the event.

[11]   The diachronic data in the remainder of this section are mainly drawn from the existing literature in Chinese on the topic; sources are specified after each example. Also, we consulted the Academia Sinica Tagged Corpus of Early Mandarin Chinese (http://early_mandarin.ling.sinica.edu.tw/) and the literary works available at Chinese Text Project (http://ctext.org/), an online open-access digital library of pre-modern Chinese texts.

[12]   This is sometimes possible with other VCLs too, such as e.g. 去趟廣州 *qù tàng Guǎngzhōu* [go VCL Canton] 'to have been once to Canton' (see Li 2002).

[13]   See also Modern Chinese 嚇了一跳 *xià –le yī tiào* [frighten –PFV one jump] 'got frightened', where the verb 跳 *tiào* 'jump' acts as a VCL.

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