Explorations of Chinese Theoretical and Applied Linguistics

Edited by

Dongyan Chen and Daniel Bell

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Part Two

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[1] The conference has now developed into a biennial event. The 2nd ISOCTAL Conference was successfully held on 14th-16th December 2017 at the University of Milano-Bicocca, Italy, and the third event on 12th-14th December 2019 at the University College Cork, Ireland.

We thank our authors for their patience during the development of this book and for their rigour in taking on board feedback and addressing issues accordingly.

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for instance, Buckeye East Asian Linguistics (Volume 4), and such conference proceedings as the Proceedings of the 19th International Congress of Phonetic Sciences and Proceedings of the 32nd Pacific Asia Conference on Language, Information and Computation.

CHAPTER ONE

INTRODUCTION

DONGYAN CHEN AND DANIEL BELL

Scholarly work on Chinese is currently benefiting from a number of accelerating trends in contemporary linguistics, and Chinese in turn is becoming increasingly prominent across the spectrum of theoretical and applied research. Since the 1980s, formal approaches to Chinese have shed light upon important aspects of the study of language, and recent years have also seen an increase in theoretical work on Chinese within China, as well as East-West collaboration in the emergence of new conference series and journals. In terms of language documentation, the diversity existent among Chinese dialects – as well as within Mandarin (which with approximately 900 million native speakers, is the most widely spoken Sinitic language) – is also increasingly becoming apparent in the typological literature. This has been associated with steadily greater appreciation of the value of authentic corpus data in order to provide a reliable basis for empirical work, and efforts are also appearing to incorporate a theoretical approach to the study of regional varieties of Chinese. Meanwhile, Chinese has also been gaining greater prominence internationally within applied linguistics, notably in the field of Second Language Acquisition (SLA) and use. In this area, the growth of Chinese as a global language has led to a redressing of the balance between studies with L1 English and L2 Chinese to studies with Chinese as the L2, and with regard to the latter, the research is broadening out the range of language pairs considered as well as incorporating different Chinese dialects as L1 and L2.

The studies in the present collection, in different ways, reflect these trends. This volume emerged from the first *International Symposium on Chinese Theoretical and Applied Linguistics (ISOCTAL)*, a conference series which combines the two major camps in linguistics and seeks to encourage international collaboration across disciplines. Chinese linguistics is understood in this context to incorporate all Sinitic languages – for instance,

including Mandarin, Cantonese and their regional variants. This volume draws together contributions to Chinese linguistics which address the following major themes.

Part One is comprised of theoretically-informed descriptions of linguistic phenomena – studies which have empirical value and/or seek to make a contribution to linguistic theory through the analysis of their data. Part Two engages with Chinese applied linguistics and specifically with second language acquisition (SLA) and use, where the role of Chinese as L1 or L2 is elucidated for the relevant domains. In Part One of this volume, the focus is predominantly on Standard Mandarin, but Shanghainese (a Wu dialect, which is largely not mutually intelligible with other Sinitic languages, including Mandarin) is considered in the final chapter. Theoretically, the studies are primarily concerned with Optimality theory (Chapter 2), Information structure (Chapter 3), Semantics/scalar inferences (Chapter 4), and Serial verb constructions (Chapter 5), whilst Chapter 6 offers a formal approach to Shanghai Chinese morphosyntax.

Part Two of the volume addresses Second Language Acquisition and use by first considering the relatively new field of the acquisition of Chinese by Danish learners – with a focus on phonology (Chapter 7). Next, the expression of attitudes/appraisal in L1 Chinese and L2 English are considered (Chapter 8), followed by a discussion of the well-known Critical Period Hypothesis in relation to the acquisition of Chinese syntax by Cantonese learners of Mandarin (Chapter 9).

The following is a summary of the chapters in more detail. **Chapter 2** advocates a Perceptually-based Optimality Theory (PB-OT) approach to the problem of phonological opacity by considering the case of Mandarin Chinese nasal rhymes. Opacity occurs where a phonological process is non-transparent in surface phonetic patterns, and this is problematic for Optimality Theory since it only makes reference to surface forms. The authors argue that the solution provided by the traditional OT approach, along with the more recent Output-Output Correspondence (OO-Correspondence) and OT with Candidate Chains (OT-CC) approaches are "unnatural" within an OT framework due to simply imitating input-output derivation processes associated with rule-based phonology. The conceptual inadequacy of these approaches is discussed, and PB-OT, with its focus on the evaluation of output forms (and whole inventories of vowels and vowel-nasal environments), is argued to account for opacity in Chinese nasal rhymes whilst also more fully conforming to the tenets of Optimality Theory.

Chapter 3 explores an important construction in Chinese, presentational sentences, which introduce new referential entities into the discourse ([(NP$_G$+) VP+NP$_F$], such as …*lái rén la* 'someone has come!'). Using natural speech data, it takes as its focus the role of path (of motion) verbs in these sentences (e.g. *lái* 'come' in the example just given). The chapter proposes an information structure analysis in which the construction is used to mark the post-verbal NP as a non-topic, as well as to fulfil more specific pragmatic functions (entity-foregrounding, encoding of an event, and enumerative focus). The corpus data analysed in the chapter is useful with regard to what it tells us about the verb *lái* in presentational sentences, as this was the most common path verb in this construction – whether as a monomorphemic verb or as a deictic in complex path verbs (e.g. *jìn-lai* 'enter-come'). Overall, the chapter helps elucidate the usage of *lai* (and certain other path verbs) in relation to the pragmatic functions of the presentational sentence as well as with regard to the quantification of the post-verbal NP.

Chapter 4 discusses syntactic and semantic functions of *yidianr*, a polarity item in Chinese. The authors conduct a literature review on polarity items from the perspectives of syntax, semantics and pragmatics and introduce the diachronic development of *yidianr*. Following the approach of Israel (2011), in which polarity sensitivity is a lexical semantic property of the relevant items, they argue that the quantity expression *yidianr* in Chinese functions as a minimiser when occurring in a construction that denotes a scalar inference, namely syntactic negation, rhetorical questions, the focus constructions *lian…ye/dou* and the *jiu* 'then' conditional construction.

Chapter 5 discusses, from a cross-linguistic perspective, problems arising from criteria used in defining serial verb constructions (SVCs). According to the author, the existing literature defines SVCs in both a broad and narrow sense which correspond to the single clause and single event criteria commonly used to identify SVCs. The author suggests that the single clause criterion is too broad, while the single event criterion is weakened through affinity to the problematic concept of the macro event property (MEP). The chapter points to incompatibility between the single clause and the single event criteria by referring to cases of multiple events within one clause. The chapter argues that the single clause criterion should be narrowed down to the syntactic unit that corresponds to a single event, whilst the aktionsart of the single event should be defined as an accomplishment.

Chapter 6 describes the distribution of phonological variants *(laq/laqlaq/laqhae/laqkae)* of the L marker in Shanghai Chinese, a

morpheme which roughly corresponds to the imperfective markers *zai* and *zhe* in Standard Mandarin. The study provides an explanation to the puzzle of why the short form *laq* behaves differently from the other variants, for instance being prohibited from occurring alone as a predicate and from following a sentence-final verb/VP. The author notes the role of syntactic movement in constructions where *laq* is disallowed, and argues for a syntax-phonology interface analysis in which a blocking rule applies at the PF level (the mapping between syntax and phonology) due to the inability of *laq* to license the trace of the moved element. The study concludes that the general rule, subsuming cases involving movement, is that phonological realisation as *laq* is prevented when the marker is the sister of an empty category.

Moving on to Part 2, **Chapter 7** engages with the emerging field of the acquisition of Chinese by L1 Danish learners, and it provides empirical data on the challenges encountered with regard to Chinese dental obstruents. The investigation considers whether – as predicted in previous literature – a 'quirk' of Danish phonology, the high degree of affrication found for alveolar stops, causes problems in learners' production of the Standard Chinese phonemic dental stops and affricates /t tʰ tˢ tˢʰ/. The study focuses mainly on the Danish alveolar stop /tˢ/, and also considers transfer for this phoneme during production of English. The findings indicate that the majority of Danes encounter problems with the Chinese dental obstruents, pronouncing /ts/ as a fricative, and also transferring affrication to the Chinese phonemes /tʰ tsʰ/ as well as during production of English. The chapter argues that the effect of this transfer is to reduce the distinction between /tʰ tsʰ/ in their Chinese output. Overall, in terms of linguistic theory, the findings are consistent both with Best's Perceptual Assimilation Model (PAM; e.g. Best et al. 2001) and Flege's Speech Learning Model (SLM, e.g. Flege 1995).

Chapter 8 considers how the roles and attitudes speakers adopt during narration are influenced by the language used. Using a corpus of narrations by L1 Chinese and L2 English speakers, the authors examine the domain of Judgement, a sub-system of the Appraisal System (Martin and White 2005) concerned with assessments of the actions and character of others. As might be expected, the authors found that the variety of Judgement expressions was reduced in the L2 narrations, though sometimes the differences were striking. In speakers' L1 narrations, Social Esteem judgements were more common than Social Sanctions, with judgements concerning Tenacity (e.g. *danxiao* 'cowardly') and Normality (e.g. *qipa* 'weird') having the highest frequency, followed by Capacity (e.g. *bucuo* 'not bad'). In English, Capacity judgements (e.g. 'capable' and 'proud') were most common, followed by

Tenacity and Normality. Meanwhile, with regard to Social Sanctions (moral judgements concerning one's truthfulness and ethicality), these were used in Chinese but were entirely absent in English – a fact which the authors explain in terms of the different roles narrators adopt in the L1 compared to the L2.

Finally, **Chapter 9** contributes to a longstanding puzzle in second language acquisition research, i.e. the effect of AoA (age of acquisition) on L2 learners' ultimate attainment. The authors of the chapter conducted an experimental study on 30 Cantonese speakers' production of displacement and disposal pre-transitive *ba*-constructions in Mandarin (with 20 native Mandarin speakers as a control group) using pictures as stimuli. Data from regression modelling showed a tendency that with increased AoA, ultimate attainment became more divergent from the L2 target. However, their results did not show poorer L2 attainment where participants' AoA exceeded particular pre-puberty age breakpoints, leading the authors to reject the Critical Period Hypothesis proposed in the existing literature. Also, they report that Cantonese learners did not differ qualitatively in their acquisition of subtypes of the *ba*-construction, whilst L1 Cantonese learners performed better than learners with other L1 backgrounds – a finding which they attribute to the typological affinity of Cantonese and Mandarin.

PART ONE

CHAPTER TWO

A PERCEPTUALLY-BASED OT APPROACH TO OPACITY IN MANDARIN CHINESE NASAL RHYMES[1]

MINGQIONG LUO, JEROEN VAN DE WEIJER & MARJOLEINE SLOOS

Abstract

In this paper we discuss a case of opacity in Mandarin Chinese. Opacity refers to non-transparency in surface phonetic patterns, which, in rule-based approaches, is captured by rule ordering. In Optimality Theory (henceforth OT), opacity poses a problem because constraints are surface-oriented. We show how opacity arises from rules like rhyme harmony, vowel nasalisation, and nasal deletion in Mandarin Chinese nasal rhymes, *i.e.* syllables closed by a nasal. Whereas it is difficult or impossible to capture this effect in standard OT, it is possible to do so in more recent variants of OT (involving output-output (OO)-correspondence and Candidate Chains), but these approaches have a number of conceptual problems. We then introduce the framework of Perceptually-based OT, which provides a number of constraints on (oral vs. nasal) vowel perception in relevant environments. In addition, it evaluates whole inventories of vowels and vowel-nasal environments (unlike standard OT, in which EVAL only evaluates candidate sets from single input forms). We show that, under such an approach, the problem of opacity in Mandarin Chinese nasal rhymes can be solved.

Key words: Mandarin Chinese, opacity, Optimality Theory (OT), Perceptually-based; nasal rhymes

1. Introduction: opacity

Phonological opacity occurs when the application of a phonological process is not visible on the phonetic surface. The effect was first described in rule-based phonology, as represented by *The Sound Pattern of English* (SPE) (Chomsky and Halle 1968).

Opacity poses a serious problem for the Optimality Theory (OT; Prince and Smolensky (1993 [2004])), which only evaluates the well-formedness of the surface form, disallows reference to pre-output forms, and replaces derivations with an evaluation module which is produced as output. A variety of approaches have been proposed to deal with opacity within the OT framework, such as Local Conjunction (Smolensky 1995), OO (Output to output) Correspondence (Benua 1995, 1997), Sympathy Theory (McCarthy 1999), OT with "candidate chains" (OT-CC) (McCarthy 2005), and Harmonic Serialism (HS) (McCarthy 2011; McCarthy and Pater 2016). All these approaches tackle opacity by introducing some derivational variant into classical OT, but at the cost of invoking "unnatural" mechanisms or constraints (see *e.g.* van der Hulst and Ritter 2000 for a critique of sympathy-based approaches). An alternative approach is possible, however. Perceptually-based OT approaches (PB-OT) use perceptually- and articulatorily-grounded constraints which can capture opacity (see Steriade 2001, Flemming 2004, among others). Since PB-OT is only based on the distributional patterns of the output forms, ignoring input-output correspondence, it avoids the need to resort to a derivational process or to invoke unnatural constraints to account for opaque surface patterns.

In the following sections of this paper, we will first show how opacity arises in Mandarin Chinese (thereafter MC nasal rhymes), focusing on the rules that would be needed in a derivational approach in Section 2. In Section 3, we will explain how classical OT is unable to account for opacity effects and outline the operation (and defects) of OO-Correspondence and OT-CC approaches. Section 4 explains how PB-OT captures opacity in MC nasal rhymes, highlighting its advantages over more traditional approaches. Section 5 offers a brief discussion and conclusion.

2. Opacity in MC nasal rhymes

MC has two contrastive nasal codas: the coronal /n/ and the velar /ŋ/ (*e.g.* Duanmu (2000)).

(1)	Character	Pinyin	IPA	English
a.	搬	*ban*	/pan/⁵⁵	"carry"
	帮	*bang*	/paŋ/⁵⁵	"help"
b.	奔	*ben*	/pen/⁵⁵	"rush"
	崩	*beng*	/peŋ/⁵⁵	"collapse"
c.	宾	*bin*	/pin/⁵⁵	"guest"
	冰	*bing*	/piŋ/⁵⁵	"ice"

The vowel preceding the tautosyllabic nasal coda undergoes nasalisation and rhyme harmony. Rhyme harmony refers to agreement of the backness feature of the vowel and the tautosyllabic nasal coda: when the vowel is followed by the coronal /n/, its backness feature is [–back]; when it is followed by the velar /ŋ/, its backness feature is [+back]. Both nasalisation and rhyme harmony are natural phonetically: vowel nasalisation is caused by anticipatory lowering of the velum, and rhyme harmony results from anticipatory fronting or backing during the vowel.

The phonetic properties of the vowel actually provide better perceptual cues to the place of articulation of the nasal than the nasal itself (*e.g.* Chen 1973; Ren 1988; Lin and Yan 1991; Chen 2000; Mou 2006, among others). That is, the vocalic properties identify both the presence of a final nasal and its place of articulation (Ren 1988). In MC monosyllables, the beginning and end of the F2 transition of /a, i, ə/ generally have a higher frequency before /n/ than before /ŋ/ (Ren 1988; Lin & Yan 1991). In addition, /a, ə/ have a lower F1 and a higher F3 before /n/ than before /ŋ/ (Lin & Yan 1991). The presence of the place of articulation of the nasal can be detected by measuring the phonetic attributes in the vowel region: the former by the presence of a vowel-nasal consonant boundary, and the latter by determining the vowel formant (F2 and F3) frequencies and the acoustic attributes at the vowel-nasal consonant boundary (Chen 2000).

These phonetically-induced processes in MC nasal rhymes have been phonologised in the grammar (2).

(2) a. $V \rightarrow \tilde{V}$ / _ N#   Vowel nasalisation

b. $V_{[-high]} \rightarrow V_{[-back]}$ / _ n#   Rhyme harmony with /n/

$V_{[-high]} \rightarrow V_{[+back]}$ / _ ŋ#   Rhyme harmony with /ŋ/

Returning to (2a, b), a more accurate phonetic representation of these surface forms would be [pãn], [pãŋ], [pẽn], and [pɤ̃ŋ], respectively, in the citation forms. Note that MC also has the high vowels /i, y, u/. These vowels are also specified for backness underlyingly (/i, y/ as [–back] and /u/ as [+back]), but rhyme harmony for high vowels differs from that for /ae/. An intervening vocoid is inserted between the vowel and the nasal coda, with the same backness features as the non-high vowels. Therefore, the surface forms of /in, iŋ/, /yn, yŋ/ and /un, uŋ/ are [in,iᵚŋ]², [yn, yuŋ], and [uən,uŋ].

Despite apparent consensus on the phonological processes concerning the vowels in MC nasal rhymes, many issues remain controversial, especially those concerning the nasal codas in phrase-medial position, where the nasal coda can be followed by three kinds of initials: a consonant, a vowel or a semi-vowel (3).

(3) a. $V_1N_1.C_2V_2$ *e.g.* /fan.kʰai/   fan-kai   "open (verb)"

b. $V_1N_1.V_2$ *e.g.* /faŋ.ai/   fang-ai   "interfere"

c. $V_1N_1.G_1V_2$ *e.g.* /fen.wai/   fen-wai   "especially"

The following spectrograms (Figure 1) show a clear boundary between V_1 and N_1 in the context $V_1N_1.C_2V_2$ (3a) but not in the contexts $V_1N_1.V_2$ (3b) and $V_1N_1.G_1V_2$ (3c).

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² In Beijing Mandarin, this contrast is more obvious, whereas in other varieties of Mandarin Chinese it is less clear, sometimes resulting in confusion between /in/ vs. /iŋ/.
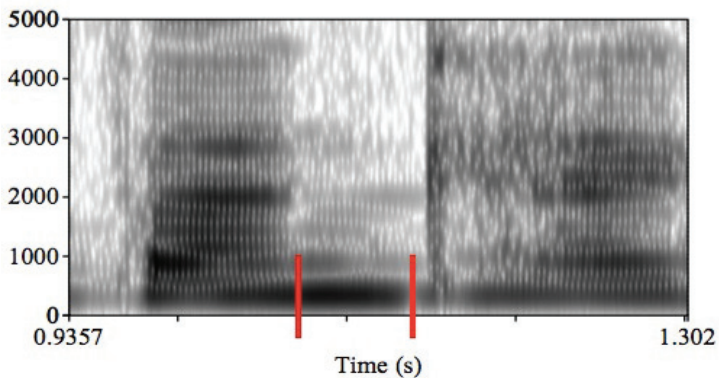
Figure 2-1a: Spectrogram of *fan-kʰai* (the part enclosed between two bars is the nasal)[3]
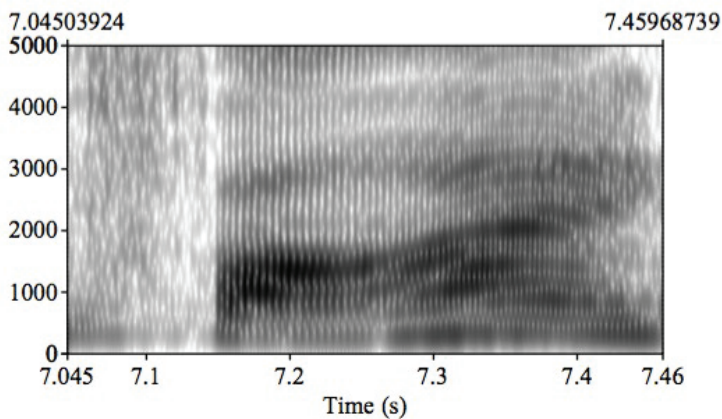
Figure 2-1b: Spectrogram of *fang-ai*

[3] The spectrograms in Figure 2-1 were the Praat analyses of three di-syllabic words pronounced by the first author of this paper, who is a native speaker of MC, and recorded with a microphone connected to a headset, which was connected to the computer.

9.10018461   9.53019011
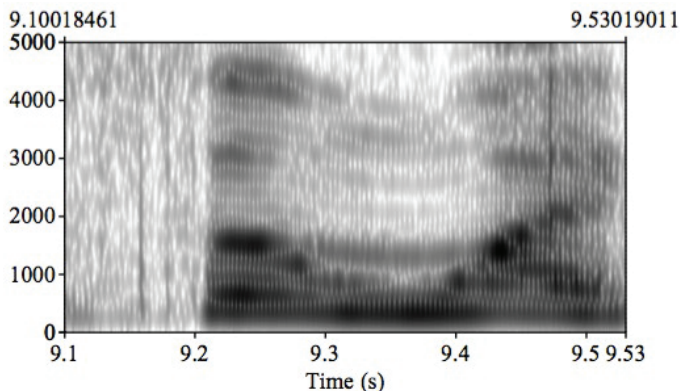
Figure 2-1c: Spectrogram of *fen-wai*

Many researchers (*e.g.* Liang 2001, Fang 2004, among others) interpret this unclear boundary in the contexts $V_1N_1.V_2$ (3b) and $V_1N_1.G_1V_2$ (3c) as a "loss of the nasal coda", but the specifics of the process remain unclear. As Hajek (1997) points out, nasal deletion is not a simple process, because of the inherent complexity of the featural structure of nasals, as illustrated in (4) below:

(4)

X	skeletal slot
RN	root node
L SL [cont]	laryngeal / supralaryngeal node
PN	place node
LAB COR VEL	articulator nodes
[rnd] [ant] [dist] [lo] [hi] [back]	
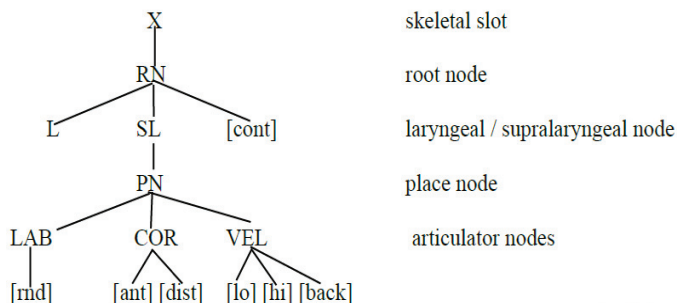
(Hajek 1997, 181)

Nasal attenuation (Hajek's term for nasal weakening, including deletion) can happen in any of the following ways:

(5) a. deletion of X, RN, the Supralaryngeal Node, or PN

    b. voicing assimilation ([+voi] →[–voi] / __ [–voi])

    c. manner assimilation ([–cont] →[+cont] / __ [+cont])

    d. place shift (*e.g.* velarisation)

<div align="right">(Hajek 1997, 182)</div>

We propose that in MC, the root node for N is lost in $V_1N.V_2$ and $V_1N.G_1V_2$. One of the major arguments is that the loss of the nasal coda does not lead to the loss of the tone contour that the syllable bears. This suggests that the weight profile of the syllable is retained after nasal deletion. Since the weight profile of the syllable is closely related with the number of skeletal slots in the rhyme (*e.g.* Hajek 1997; Gordon 2004), we assume that the root node of the nasal coda is deleted instead of the skeletal slot.

Some sort of phonetic "weakening" must have taken place before nasal deletion (cf. Chen 1972, Foley 1975, 1977; Pagliuca and Mowrey 1987, Trigo 1988; Hajek 1997 among many others). The nasal consonant is either first debuccalised, losing its place of articulation, or it undergoes other weakening processes such as spirantisation or gliding before absorption (Trigo 1988). MC nasal codas do not have a strong release after oral occlusion (like its onset counterpart does), which results in weaker energy in the murmur region (*e.g.* Xu 1986; Wang 1997; Chen 2000; Mou 2006; Tan, Shi, and Shi 2016 among many others). In the process of nasal attenuation, the nasalised vowel is often lengthened in MC (e.g. Ruhlen 1973; Chen 1974; Foley 1977; Lass 1980; Hayes 1986; Goldsmith 1990). Based on both cross-linguistic and diachronic evidence, Hajek (1997) claims that long nasal vowels are favored over short ones, and that short nasal vowels have a strong cross-linguistic tendency to be either lengthened or eliminated, because increased vowel duration provides better perceptual cues to both the nasality of the vowel and the underlying nasal coda. Moreover, the spectrograms in Figure 2-1 show that the nasal coda in the $V_1N.(G)V$ context is a nasal vowel. A reasonable inference is that the nasalised vowel is lengthened when the nasal coda is deleted.

The nasal attenuation and vowel lengthening processes in MC nasal rhymes can be schematised with the following rule:

(6) $\tilde{V}N \rightarrow \tilde{V}{:}^N/$ __ #   nasal attenuation and vowel lengthening

After the nasal coda is weakened in $V_1N_1.(G)V_2$ contexts, the nasal coda is completely deleted:

(7) N $\rightarrow \emptyset$ / __. (G)V   complete nasal deletion

In the $V_1N_1.C_2V_2$ (3a) environment, changes on the nasal coda are more subtle and complex than those in the $V_1N_1.V_2$ (3b) and $V_1N_1.G_1V_2$ (3c) that we just discussed. They are sensitive to (i) the manner of articulation of C_2; (ii) the place of articulation of N_1; (iii) the vowel height of V_1; (iv) whether there is a morphological boundary between the two syllables; (v) speech rate and speech style (see *e.g.* Xu 1986; Liang 2001; Fang 2004).

Firstly, when C_2 is a stop or an affricate, which has a definite place of constriction in the oral cavity, nasal assimilation is likely to happen. When C_2 is a fricative, which does not have a definite place of constriction in the oral cavity, N_1 is likely to delete, in the same way as nasal deletion in the N.(G)V context mentioned above (Liang 2001).

Secondly, the coronal nasal coda is more likely to undergo place assimilation (to a following consonant) than the velar nasal (*e.g.* Xu 1986; Zheng and Liu 2005; Zheng and Bao 2003; Fang 2004; Liang 2001, among others):

(8) a. n $\rightarrow N_{[\alpha place]}$ / __.$C_{[\alpha place]}$ nasal place assimilation of /n/

b. n $\rightarrow \emptyset$ / __.$C_{[fricative]}$ nasal deletion of /n/

However, even for velars, place assimilation and deletion are still possible, especially in fast-rate speech, because the nasal place feature is much better cued in the vowel region, viz. by the second and third vowel formants F2 and F3 (Chen 2000). Besides, in connected speech, information about single segments at the phonological level can be derived from that at the morphological and syntactic levels (*e.g.* Fang 2004, Tan, Shi, and Shi 2016). In addition, in $V_1N_1.C_2V_2$ (3a) environments, the C_2 closure starts roughly at the midpoint of the realisation of /ŋ/ (Zheng and Liu 2005), *i.e.* /ŋ/ undergoes partial place assimilation and becomes a complex nasal $\widehat{ŋN}_{[-velar]}$. Therefore, possible changes that can happen to the velar nasal coda in MC are as follows:

(9) ŋ $\rightarrow \widehat{ŋN}_{[-velar]}$ / __.$C_{[-velar]}$V   partial place assimilation

ŋ $\rightarrow N_{[-velar]}$ / __. $C_{[-velar]}$V   complete place assimilation

ŋ $\rightarrow \emptyset$ / __. (G)V   complete nasal deletion

Thirdly, the vowel preceding the nasal can also affect the realisation of the nasal. For instance, F2 in /a, e/ and F3 in /i/ are significantly higher before /n/ than before /ŋ/ (Chen 2000). Fourthly, coda nasal alternations in MC are more likely to happen within word boundaries than across word boundaries (Xu 1986).

And finally, nasal attenuation is more likely to happen in fast, casual speech than in slow, formal speech (*e.g.* Zheng and Liu 2005; Tan, Shi, and Shi 2016; Fang 2004, among others).

Let us take the derivation of the disyllabic words /fАn^{55}.k^{h}Аi^{55}/, /ʂАn^{55}.Аu^{51}/, /p^{h}Аŋ^{35}.tА^{51}/ and /fАŋ^{35}.Аi^{51}/^{4} as examples.

(10) i. Underlying form: /fАn.k^{h}Аi/   翻开   "open"

    Vowel nasalisation: fÃn.k^{h}Аi

    Rhyme harmony: fãn.k^{h}ai^5

    Nasal place assimilation: fãŋ.k^{h}ai

    Surface form: [fãŋ.k^{h}ai]

---

^{4} Here /А/ stands for the low unrounded vowel, with under specification of the backness feature. The superscriptions specify the tones for each syllable: 55 is the high-level Tone 1, 35 the high-rising Tone 2, and 51 the high-dipping Tone 4.

^{5} There are four allophones of the unrounded low vowel in MC: (i) [А] in open syllables, *e.g.* and *gua* [kwА] (瓜, "melon"); (ii) [a] if followed by the glide coda /i/ or the nasal coda /n/, *e.g. hai* [xai] (海, "sea"), *gan* [kan] (干, "dried"); (iii) the low back vowel [ɑ] if it is followed by the back glide coda /u/ or the nasal coda /ŋ/, *e.g. hao* [xɑu] (好, "good"), *bang* [pɑŋ] (帮, "help"); (iv) mid front [ɛ] between the pre-nuclear glide /j/ and the coda /n/, *e.g. tian* [tjɛn] (天, "sky"), *qian* [tɕ^{h}jɛn] (钱, "money"). We use /А/ as the underlying form to highlight the backness harmony with the nasal coda but not to commit to any specific underlying value for backness.

ii. Underlying form: /ʂAn.Au/ 山坳 "col"

    Vowel nasalisation: ʂÃn.Au

    Rhyme harmony: ʂãn.ɑu

    Nasal attenuation and V lengthening: ʂã^n.: ɑu

    Nasal deletion: ʂã:.ɑu

    Nasal place assimilation: N/A

    Surface form: [ʂã:.ɑu]

iii. Underlying form: /pʰAŋ.tA/ 庞大 "enormous"

    Vowel nasalisation: pʰÃŋ.tA

    Rhyme harmony: pʰãŋ.tA

    a. Incomplete place assimilation: pʰã͡ŋn.tA (in slow speech)

    b. Complete place assimilation: pʰãn.tA (in fast speech)

    c. Surface form: a. [pʰã͡ŋn.tA]

                   b. [pʰãn.tA]

iv. Underlying form: /fAŋ.Ai/ 妨碍 "interfere"

    Vowel nasalisation: fÃŋ.Ai

    Rhyme harmony: fãŋ.ai

    Nasal attenuation and V lengthening: fã^ŋ:.ai

    Complete nasal deletion: fã:.ai

    Nasal place assimilation: N/A

    Surface form: [fã:.ai]

From the rule ordering in (10), we can see that in the case of nasal coda deletion, both nasality and the backness feature of the vowel are opaque. In the next section, we will briefly show how classical OT fails to capture this opacity-inducing rule interaction.

3. Opacity as a problem for classical OT and variants on classical OT

3.1 Classical OT

Optimality Theory (OT) can be regarded as the latest development of classical Generative Phonology (GP). Both rely to a certain extent on Universal Grammar (UG) (see *e.g.* Kager 1999, van de Weijer 2014). OT differs from classical GP in that it dispenses with phonological rules completely, and therefore also with serial derivation. It captures all phonology-related phenomena through the ranking of two sets of interactive constraints that evaluate surface forms only: faithfulness constraints and markedness constraints, which are both violable. Faithfulness constraints require that the surface form be faithful to the underlying form, which prevents phonological alternations. Markedness constraints (or well-formedness constraints) trigger phonological alternation by requiring that the surface form be well-formed. The core hypothesis of OT is that all constraints are the same for all languages, and that languages merely differ in the hierarchy of the constraint set.

For MC nasal rhymes, the processes of vowel nasalisation and rhyme harmony are the result of the interaction between the following faithfulness constraints and markedness constraints:

(11)   a. Faithfulness constraints

IDENT-IO (nasal): Correspondent segments in input and output have identical values for [nasal].

IDENT-IO (back): Correspondent vowels in input and output have identical values for [back].

b. Markedness constraints

*$V_{ORAL}N$: before a tautosyllabic nasal, vowels must not be oral.

*V_{NASAL}: vowels must not be nasal.

RHYME HARMONY (R-H): The nuclear vowel in the rhyme agrees in its value of the [±back] feature with that of the nasal coda.

The markedness constraints *$V_{ORAL}N$ and R-H are undominated in the constraint hierarchy since they are never violated in surface forms. However, IDENT-IO (nasal) and IDENT-IO (back) can be violated to

satisfy the markedness constraints, so they must rank lower. $*V_{NASAL}$ is violated when the syllable has a vowel-only rhyme or a nasal vowel followed by an off-glide. Therefore, it should rank lower than the $*V_{ORAL}N$ constraint but higher than the IDENT-IO (nasal) constraint. The ranking is given in (11) and exemplified in (12).

(12) $*V_{ORAL}N$, R-H >> $*V_{NASAL}$ >> IDENT-IO (nasal), IDENT-IO (back)

Consider the evaluation of the syllable /fAn/ (pronounced in isolation; recall that /A/ (refer to Note 3) denotes a vowel underspecified for backness):

(13)

Input: /fAn/	$*V_{ORAL}N$	R-H	$*V_{NASAL}$	IDENT-IO (nasal)	IDENT-IO (back)
a. [fAn]	*![6]	*			
b. [fÃn]		*!	*	*	
☞c. [fãn]			*	*	*

The trigger of nasal place assimilation in the N.C environment and nasal deletion in the N.(G)V environment is the well-formedness constraint CODA-CON, which militates against codas that have an independent place of articulation:

(14)   CODA-CON: A coda cannot license its place feature.

CODA-CON can account for both nasal place assimilation (CODA-CON >> IDENT-IO (place)) and deletion (CODA-CON >> MAX-IO)

(15)   CODA-CON >> MAX-IO, IDENT-IO (place)

Moreover, in the $V_1N_1.C_2V_2$ (3a) context, nasal deletion is disallowed. Hence:

(16)   MAX-IO >> IDENT-IO (place)

Therefore, the alternations of the MC nasal codas are captured by the following constraint ranking:

(17)   CODA-CON >> MAX-IO >> IDENT-IO (place)

---

[6] "*" indicates a non-fatal violation, and "!" indicates a fatal one.

This ranking is illustrated in (18):

(18) i.

[fãn.kʰai]	CODA-CON	MAX-IO	IDENT-IO (place)
a. [fãn.kʰai]	*!		
b. [fã.kʰai]		*!	
☞ c. [fãŋ.kʰai]			*

ii.

[ʂãn.ɑu]	*CODA-CON	MAX-IO	IDENT-IO (place)
a. [ʂãn.ɑu]	*!		
☞ b. [ʂã.ɑu]		*	

Vowel lengthening can be captured by three faithfulness constraint MAX-IO (weight), IDENT-IO (vowel length) and MAX-IO:

(19) MAX-IO (weight): Syllable weight in the input should be kept in the output.
IDENT-IO (vowel length): Correspondent vowels in input and output have identical values for length.

The ranking of these constraints is as follows:

(20) MAX-IO (weight) >> MAX-IO >> IDENT (vowel length)

The constraint ranking relative to that in (17) is illustrated in (21) below:

(21)

[ʂãn.ɑu]	*CODA-CON	MAX-IO (weight)	MAX-IO	IDENT-IO (place)	IDENT-IO (vowel length)
a. [ʂãn.ɑu]	*!				
b. [ʂã.ɑu]		*!			
☞ c. [ʂã:.ɑu]			*		*

Problems arise in opacity, *i.e.* when nasal place assimilation/deletion is considered together with vowel nasalisation and rhyme harmony (see section 2). The reason is that since OT dispenses with the derivation process and all constraints inspect the surface form simultaneously (and *only* the surface form), the ranking R-H >> IDENT-IO (back) (see (12)) requires that the vowel feature of [±back] *always* be in agreement with that of the nasal place of articulation; therefore, the optimal forms [fãŋ.kai] and

[ʂã.ɑu] lose to the suboptimal forms *[fɑ̃ŋ.kai] and *[ʂA.ɑu], respectively, because the former violate the higher ranked well-formedness constraint R-H, whereas the latter does not. Again, consider the disyllabic words /fAn.kAi/ and /ʂAn.Au/.[7]

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[7] Many of the constraint names in the following OT tableaux are abbreviated, such as, MAX-IO (w), ID-IO (vl), ID-IO (na), ID-IO (ba), and ID-IO (pl), whose full names are MAX-IO (weight), IDENT-IO (vowel length), IDENT-IO (nasal), IDENT-IO (back), and IDENT-IO (place), respectively. This practice is accepted in OT for oversized tableaux. For complete constraint names, please refer to the constraint ranking that precedes each tableau.

Chapter Two

(22) i.

Input: /fÃn.kʰÃi/	*V_{ORAL}N	CODA-CON	MAX-IO (w)	MAX (pl)	MAX	R-H	*V_{NASAL}	ID-IO (na)	ID-IO (ba)	ID-IO (pl)	ID-IO (V-length)
a. fÃn.kʰÃi	*!	*!				**					
b. fan.kʰai	*!	*!				*					
c. fãn.kʰai		*!				*	*	*	**		
d. fã:ŋ.kʰai			*!				*	*	***	*	*
e. fã:kʰai					*!	*!	*	*	***	*	*
☞ f. fãŋ.kʰai							*	*	**	*	*
* g. fɐŋ.kʰai						*!	*	*	**	*	*

ii.

Input: /ʂÃn.ʌu/	*V_{ORAL}N	CODA-CON	MAX-IO (w)	MAX (pl)	MAX	R-H	*V_{NASAL}	ID-IO (na)	ID-IO (ba)	ID-IO (pl)	ID-IO (V-length)
a. ʂÃn.ʌu	*!	*!				*					
b. ʂan.ʌu	*!	*!					*		**		
c. ʂãn.ʌu		*!					*		**		
d. ʂã.ʌu			*!	*!				*	**		
e. ʂʌ.ʌu			*!		*						
f. ʂãn.ʌu			*!					*	**		
☞ g. ʂã.ʌu					*		*!	*	**	*	*
h. ʂÃN.ʌu				*!			*!	*	*	*	*
i. ʂʌ.ʌu					*		*!	*	*	*	*
* j. ʂʌ.ʌu					*			*	*	*	*

So, in a classical OT approach the opacity facts of MC nasal rhymes cannot be accounted for. The OO-Correspondence approach and OT-CC approach are developments within OT framework that specifically tackle opacity while maintaining the idea of parallel evaluation, which we will discuss in the following sections.

3.2 The OO-correspondence approach to opacity

OO-Correspondence, or Output-to-Output Correspondence, was first proposed by McCarthy and Prince (1995) and Benua (1995) to capture phonological identity relations between morphologically-related output forms. OO-Correspondence claims that phonological forms are related such that the *output* form of one morpheme may affect the output form of another, morphologically related, output form. Essentially, OO-Correspondence makes OT a two-level theory, with Input-Output correspondence and correspondence between the output and an intermediate Base, a free-standing output form (Kager 1999, chapter 6).

(23)   Schematic illustration of IO-faithfulness and OO-correspondence:
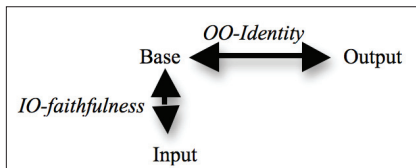
One obvious advantage of the OO-Correspondence approach, as Benua (1997) claims, is that it solves the problem of phonological opacity and cyclicity within a single constraint hierarchy. Although the introduction of OO-Identity constraints is justified in the sense that cross-linguistically speaking, morphologically-related paradigms are phonologically related, it is in essence an implicit way of re-introducing the idea of derivation and serialism into classical OT. However, in languages like MC, which have very little morphology, an appeal to morphological derivations is not well supported. We therefore consider the other major approach to opacity problems in OT: Candidate Chains.

3.3 The OT-CC approach

The Optimality Theory with Candidate Chains (OT-CC) is a development of classical OT by McCarthy (2005). In classical OT, a candidate is a single form, which can differ in infinite ways from the input form;

whereas in OT-CC a candidate is a chain of forms, which includes a series of intermediate forms, each differing minimally from the immediately preceding form. The candidate chains must meet three conditions: initial form, gradualness, and local optimality.

(24)   a.   Initial form: the first member of every candidate chain based on the input must be a fully faithful parse of the input.

b.   Gradualness: In every pair of immediately successive forms in a candidate chain, $<..., f_i, f_{i+1}, ...>$ $(0 \leq i < n)$, f_{i+1} has all of f_is localised unfaithful mappings, plus one more.

c.   Local optimality: For every pair of immediately successive forms in a candidate chain, $<..., f_i, f_{i+1}, ...>$ $(0 \leq i < n)$, where F is the basic faithfulness constraint violated by the localised unfaithful mapping (LUM) that distinguishes f_{i+1} from f_i, f_{i+1} is more harmonic than f_i according to H and every other form that differs from f_i by a different F-violating LUM.

(*cf.* McCarthy 2007, 62)

For example, valid chains for MC disyllabic word /fAn.kAi/ from the input to the output are:

(25)   a. <fAn.kAi>
                    Faithfulness parse

b. <fAn.kAi, fÃn.kAi>
            Harmonically improving because *$V_{ORAL}N$>> IDENT-IO
            (nasal)

c. <fAn.kAi, fÃn.kAi, fãn. kai>
            Harmonically improving because RHYME HARMONY >>
            IDENT-IO (back)

d. <fAn.kAi, fÃn.kAi, fãn. kai, fãN.kai>
            Harmonically improving because CODA-CON >> MAX
            (place)

e. <fAn.kAi, fÃn.kAi, fãn. kai, fãN.kai, fãŋ.kai>
            Harmonically improving because MAX (place) >> IDENT
            (place)

By using such chains and evaluating the derivations step by step, OT-CC is able to account for opacity. Important in this respect is that OT-CC introduces the concept of PREC constraints. PREC constraints are

precedence constraints which specify the precedence relation between two faithfulness constraints. For the formalisation of PREC constraints, see McCarthy (2007, 99).

OT-CC was proposed specifically to address the problem of opacity in phonology. It apparently follows the general principle of parallel evaluation in OT, but the idea of candidate chains is an explicit recognition of derivation. Therefore, OT-CC can be said to be a derivationally-based OT approach. Besides, the technical complexities in OT-CC make it even less attractive than the OO-Correspondence approach. Note that the PREC constraints (and all possible permutations of PREC relations) would have to be assumed to be part of UG, *i.e.* innate. Without any evidence for this, this claim seems too bold, and we therefore conclude that OT-CC (like OO-Correspondence) fails to provide an adequate account of the opacity problem in MC nasal rhymes. In the next section, we will consider a perceptually-based approach that does provide an adequate analysis, without relying on unwarranted assumptions.

4. The Perceptually-based OT approach

4.1 Theoretical framework

The perceptually-based approach in phonology can be traced back to the mid-1990s. Representative researchers include Steriade (1997, 1994, 2001), Flemming (1995, 1995 [2002], 2004), and Jun (1995), among others. It consists of two major theories: the Perceptibility Map (also known as P-Map), mainly attributed to Steriade (1997, 2001), and the Dispersion Theory of Contrast (DTC) (Flemming 1995 [2002]). Both are cast in the OT framework, and share some basic premises, which all underline the importance of perception (and therefore acoustics): (i) the purpose of effective communication is best achieved by phonological systems that have maximally distinct contrasts, which are perceptually grounded; (ii) contrast in a particular environment is licensed by the availability of perceptual cues to that contrast; (iii) the more salient the perceptual cues, the more distinct the contrast is; (iv) neutralisation of a contrast in a certain environment often results from the loss of salient perceptual cues to that contrast in that particular environment.

In the P-map, degree of faithfulness of a phonological mapping is directly proportional to the degree of perceptual similarity between the input and output of that mapping. Moreover, the perceptually more similar input-

output pair is preferred because it is more faithful under the P-Map (McCarthy 2009).

As McCarthy (2009) points out, the P-map must refer to the underlying representations when evaluating faithfulness, but lexical representation are more often than not underspecified, which means that the input lacks the information that the P-Map needs. This is the "P-Map's Input Problem" (PMIP), identified by McCarthy (2009). However, the problem is not relevant in the DTC approach, because DTC focuses only on the distributional pattern in the output form.

 DTC differs from conventional OT significantly in two respects. First, it only pays attention to the distributional patterns of the output forms, and thus dispenses with input-output correspondence constraints. Second, DTC constraints evaluate the inventories of contrasting sounds in a particular context instead of evaluating complete words. For example, instead of focusing on how to derive the nasalised and harmonised vowel in MC by evaluating individual words like /fAn.kAi/, DTC constraints derive the nasal-oral and front-back contrasts on all possible vowels by evaluating the inventory of possible VN sequences in MC.

The core hypothesis in DTC is that the selection of contrasts requires a maximum number of contrasts and distinctiveness and a minimum of articulatory effort (Flemming 2001), based on the communicative function of language. A maximum number of phonological contrasts enables a language to differentiate a substantial vocabulary of words. A maximum auditory distinctiveness of contrasts minimises confusion. The minimisation of articulatory efforts is a general principle of human motor behavior. The relevant constraints are formalised as MAX CONTRASTS, MINDIST and MINIMISE EFFORTS[8], respectively.

In section 4.2, we will show how the PB-OT approach accounts for opacity in MC nasal rhymes, formalise the explanation with a constraint hierarchy, and illustrate the analysis with a number of OT tableaux.

4.2 A PB-OT account of opacity in MC nasal rhymes

Viewed from the PB-OT perspective, vowel nasalisation in MC results in an oral-nasal contrast of the vowel segments in the surface form. Acoustically, the spectral alternations due to vowel nasalisation often

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[8] This constraint is controversial and thus is not used in later PB-OT analysis (see *e.g.* Flemming 2002).

occur in the first formant (F1) (Ohala 1975), more precisely the degree of the prominence of the spectral peak in the vicinity of F1 (Hawkins and Stevens 1985). We therefore propose the constraint ΔVF1 (nasal-oral) to capture the co-existence of nasal vowels and oral vowels in MC:

> (26) ΔVF1(nasal-oral): assign a violation mark to every candidate that does not have vowels contrasting in nasality along the F1 dimension.

However, there is no phonemic contrast in nasality among MC vowels because oral vowels and nasal vowels are complementary in distribution—oral vowels always occur in oral rhymes whereas nasal vowels only occur in nasal rhymes. This distributional pattern can be seen as the result of a constraint that requires harmony in manner of articulation among segments in the rhyme: RHYME HARMONY (manner of articulation), which is defined as follows:

> (27) RHYME HARMONY (manner of articulation): assign a violation to every candidate that has rhymes containing segments differing in manner of articulation.

Both constraints (26) and (27) rank highest in the constraint hierarchy because they are never violated in MC.

In Section 2, we also mention that rhyme harmony results in a front-back contrast in the surface form of MC vowels. The major acoustic correlate for the vowel front-back contrast is the second vowel formant F2: everything else being equal, front vowels have a higher F2 frequency than back vowels (*e.g.* Ladefoged 2006). The distributional pattern of co-existing front and back nasal vowels can be derived from the interaction of the MAXIMISE ṼF2 CONTRASTS and MINDIST constraints. MAXIMISE ṼF2 CONTRASTS favors a larger number of contrastive pairs of nasalised vowels, but MINDIST requires that the contrastive pairs be at least some distance apart, to avoid perceptual confusion. If we consider the distance between a front vowel and a central vowel to be 1 (equivalent to the distance between central and back), the difference between /a/ and back /ɑ/ is 2 (along the dimension of the second formant F2). MINDIST=ṼF2:2 requires that the dispersion between nasalised vowels along the dimension of F2 be no less than 2, and MINDIST=ṼF2:1 requires that the dispersion be no less than 1. The exact definition of the three constraints is as follows:

> (28) a. MAXIMISE ṼF2 CONTRASTS: for a candidate with x members, assign a value according to the second nasal vowel formant. Higher values are better than lower values.

b. MINDIST=ṼF2:2: Assign a violation for every candidate which has pairs of nasalised vowels whose height and roundness features are the same but whose F2 difference is smaller than 2.

c. MINDIST=ṼF2:1: assign one violation for every candidate which has pairs of nasalised vowels whose height and roundness features are the same but whose F2 difference is smaller than 1.

Since MC has a front-back contrast but not a front-central-back contrast among nasalised non-high vowels, the ranking between the constraints in (28) for MC nasal rhymes is as follows:

(29)   MINDIST=ṼF2:2 >> MAXIMISE ṼF2 CONTRASTS >> MINDIST=ṼF2:1

In tableau (30), candidate (a) has nasal vowels that do not contrast in the F2 dimension. Therefore, it violates both MINDIST constraints. Candidate (b) satisfies both MINDIST constraints and therefore is the optimal output. Candidate (c) has the highest value for the MAX CONTRASTS constraint, but it has nasal vowels whose dispersion along the F2 dimension is smaller than 2, which violates the dominating MINDIST constraint.

(30)

	MINDIST=ṼF2:2	MAX-ṼF2-CONTRASTS	MINDIST=ṼF2:1
a. Ãn.C Ãŋ.C	*!	✓[9]	**
☞b. ãn.C ãŋ.C		✓✓	
c. Ãn.C Ãŋ.C ãn.C ãŋ.C	*!*	✓✓✓	

However, the contrast in backness among MC nasal vowels are not phonemic but allophonic, because front vowels and back vowels are complementary in distribution—front nasal vowels occur only before the coronal nasal coda and back nasal vowels occur only before the velar nasal coda, especially in monosyllabic words. This distribution pattern can be predicted from two constraints that requires backness harmony between the vowel and the nasal coda in the rhyme:

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[9] One tick "✓" indicates one satisfaction of the constraints, and the number of ticks indicates the number of members that satisfies the constraint in the candidate (see Flemming [1995] 2002).

(31) a. RHYME HARMONY-Ṽ[-back]n: Assign a violation to every candidate that has syllable rhymes containing front vowels immediately followed by nasals other than the coronal nasal.

b. RHYME HARMONY-Ṽ[+back]ŋ: Assign a violation to every candidate that has syllable rhymes containing back vowels immediately followed by nasals other than the velar nasal.

The two constraints in (31) rank highest in MC monosyllabic words because they are never violated in MC monosyllabic words. But in connected speeches, their ranking changes in relation to the speech rate, which will be explained later in this section.

Turning to vowel lengthening and nasal attenuation, these are closely related to the syllable weight profile. As is explained in Section 2, the nuclear vowel lengthens as a result of nasal deletion. This fact can be derived from two markedness constraints in MC, the first militating against superheavy syllables (*3μ), and the second militating against light syllables in prosodically stressed position (*σ[stressed]-LIGHT). However, it should be noted that in MC disyllabic words, when syllables with nasal rhymes are unstressed, their tones are reduced to the light tone, and their weight is reduced accordingly. For example, /ʂen.ʂen/[214-214] "aunt" surfaces as [ʂẽn.ʂẽ]²¹⁻⁵ in connected speech because the first syllable is stressed whereas the second one is unstressed. Hence, we propose *σ[unstressed]-HEAVY to capture this distribution pattern in MC.

(32) a. *3μ: assign a violation to any candidate that has super-heavy syllables.

b. *σ[stressed]-LIGHT: assign a violation to every candidate that has light syllables in a prosodically stressed position.

c. *σ[unstressed]-HEAVY: assign a violation to every candidate that has heavy syllables in a prosodically unstressed position.

The three constraints in (32) are never violated in MC. The result is that all syllables with nasal rhymes are heavy in MC unless they are unstressed. This distribution pattern can be predicted from an interaction of three constraints: *3μ, MINDIST=μ:1 and MAX-μ-CONTRASTS:

(33)

a. MINDIST=μ:1: assign a violation to any candidate which has pairs of syllables whose weight difference is smaller than one mora.

b. MAX-μ-CONTRASTS: for a candidate with x members, assign a value according to syllable weight. Higher values are better than lower values.

The constraint *3μ ranks highest because it is never violated in MC. Since the weight difference between MC syllables is at least one mora apart (no syllables are 0.5 or 1.5 morae apart), MINDIST=μ:1 ranks higher than MAX-μ-CONTRASTS. The interaction between the constraints in (32) and (33) is illustrated as follows:

(34)

	*3μ	MINDIST=μ:1	MAX-μ-CONTRASTS
a. ãn ɑ̃ŋ		*!	✓
b. ãn ɑ̃ŋ	*!*	*	✓
☞c. ãn ɑ̃ŋ ã ɑ̃			✓✓

Nasal place assimilation and deletion essentially neutralise the coronal-velar distinction of nasals in coda position and enhance the place contrast in C₂. The result is a wider range of place contrast in the coda nasals, because MC consonantal onsets are distributed across eight places of articulation including the so-called "zero onset", *i.e.,* bilabial (/p, pʰ/), labiodental (/f/), dental (/ts, tsʰ, s/), alveolar (/t, tʰ/), palatal (/tɕ, tɕʰ,ɕ/), retroflex (/tʂ, tʂh, ʂ/), velar (/k, kʰ/), and the zero onset (Duanmu 2000). MC nasal codas in connected speech are thus more numerous than just the /n-ŋ/ pair, including pairs such as [m-n], [n-ɲ], [n-ŋ], and [ŋ-ŋ], with smaller dispersion distances along the F2 dimension (which is a major phonetic correlate of the place feature (Ladefoged 2006)) than that of /n-ŋ/, and pairs like [Ø-m], [Ø-n], and [Ø-ŋ], which have wider dispersion distances than that of /n-ŋ/. This distributional pattern can be derived from the interaction of two DTC constraints: MAXIMISE NF2 CONTRASTS and MINDIST=NF2:(n-ŋ).

To account for more diversified contrasts along the dimension of the second nasal formant than just the coronal-velar contrast, MAXIMISE NF2 CONTRASTS outranks MINDIST=NF2: (n-ŋ). The diversification is not random but observes the CODACON constraint. Since the nasal coda undergoes place assimilation, either partial or complete, within morphological word boundaries, CODACON ranks higher than MAXIMISE NF2 CONTRASTS. Thus:

(35) CODACON>> MAX-NF2-CONTRASTS>> MINDIST=NF2: (n-ŋ)

The constraint ranking in (35) can be illustrated as follows:

(36)

	CODAC ON	MAX-NF2-CONTRASTS	MINDIST = NF2:(n-ŋ)
a. n.T n.K n.P n.Tɕ n.Tʂ n.(G)V ŋ.T ŋ.K ŋ.P ŋ.Tɕ ŋ.Tʂ ŋ.(G)V	*****!* ****	✓✓	
b. n.T ŋ.K m.P ɲ.Tɕ ɳ.Tʂ m.T n.P ɲ.K ɳ.Tɕ m.Tʂ ø.(G)V	***!**	✓✓✓✓✓	***10
☞c. n.T ŋ.K m.P ɲ.Tɕ ɳ.Tʂ ø.(G)V		✓✓✓✓✓	***

As has been mentioned in section 2, in slow-rate speech in MC, the velar nasal coda undergoes partial place assimilation and becomes a variety of complex nasal codas, whereas the coronal nasal coda undergoes complete place assimilation. The result is a co-existence of complex nasal codas with simple nasal codas. This distribution pattern can be predicted from the interaction between two place harmony constraints in (32) and one well-formedness constraint below.

(37) *COMPLEX NASAL CODA: Assign a violation to any complex nasal coda in the candidate.

The ranking of these three constraints is as follows:

(38) RHYME HARMONY-Ṽ[+back]ŋ >> *COMPLEX NASAL CODA >> RHYME HARMONY-Ṽ[-back]n

Remember that the nasal place of articulation changes as a result of the CODACON constraint, so CODACON dominates RHYME HARMONY-Ṽ[+back]ŋ. However, although both simple and complex codas are allowed in MC, complex coronal codas are disallowed. Therefore, *COMPLEX NASAL CODA dominates MAXIMISE NF2 CONTRASTS, which in turn dominates MINDIST=NF2:(n-ŋ) and RHYME HARMONY-Ṽ[-back]n. To sum up, the relative ranking between constraints in (35) and (37) in slow-rate speech is as follows:

(39) CODACON >> RHYME HARMONY-Ṽ[+back]ŋ >> *COMPLEX NASAL CODA >> MAXIMISE NF2

---

[10] Here for simplicity's sake, one violation mark indicates one nasal coda other than [n] or [ŋ]. The same is true with the MINDIST=NF2: (n-ŋ) constraint in all the tableaux that follow.

CONTRASTS >> MINDIST=NF2:(n-ŋ), RHYME HARMONY-Ṽ[-back]n

In fast speech, however, velar nasal codas undergo complete assimilation. Some (markedness) constraints are promoted at the expense of other (faithfulness) constraints, *i.e.* *COMPLEX NASAL CODA dominates both RHYME HARMONY-Ṽ[+back]ŋ and RHYME HARMONY-Ṽ[-back]n.

(40) CODACON >> *COMPLEX NASAL CODA >> MAXIMISE NF2
       CONTRASTS >> MINDIST=NF2:(n-ŋ), RHYME HARMONY-
       Ṽ[+back]ŋ, RHYME HARMONY-Ṽ[-back]n

Tableau (41) and (42) below are the illustrations of the constraint ranking in (39) and (40), respectively.

(41)

	CODACON	R-H -Ṽŋ	*CPLXNASAL CODA	MAX-NF2-CNST	MINDIST= NF2:(n-ŋ)	R-H -Ṽn
a. ãn.T ãn.K ãn.P ãn.Tɕ ãn.Tʂ ãn.(G)V ũŋ.T ũŋ.K ũŋ.P ũŋ.Tʂ ũŋ.(G)V	******! ******			✓✓		
b. ãn.T ãŋ.K ãm.P ãɲ.Tɕ ãn.T ʂã.(G) V ũn.T ũŋ. K ũm.P ũɲ.Tɕ ũn.Tʂ ũ.(G)V		**!***		✓✓✓✓	***	******
☞ c. ãn.T ãŋ.K ãm.P ãp.Tɕ ãn.Tʂ ã.(G)V ũ͡ŋm.P ũ͡ɲn.T ũn.Tɕ ũ͡ɲn.Tʂ ũ.(G)V		*	****	✓✓✓✓✓✓✓	********	******
d. ãn.T ãn͡ŋ.K ãnm.P ãŋn.Tɕ ãn͡ŋ.Tʂ ũŋm.P ũŋn.T ũŋŋ.T eũŋ.T ʂũŋ.K ã.(G)V		*	*****!*****	✓✓✓✓✓✓✓✓✓	*********	*

(42)

	CODACON	*CPLX NASAL CODA	MAX-NF2-CONTRASTS	MINDIST= NF2: (n-ŋ)	R-H -Ṽŋ	R-H -Ṽn
a. ãn.T ãn.K ãn.P ãn.Tɕ ãn.Tʂ ãn.(G)V ũŋ.T ũŋ. Kũŋ.P ũŋ.Tʂ ũŋ.(G)V	******! ******		✓✓			
☞ b. ãn.T ãŋ.K ãm.P ãɲ.Tɕ ãn.Tʂ ã.(G)V ũn.T ũŋ.K ũm.P ũɲ.Tɕ ũn.Tʂ ũ.(G)V			✓✓✓✓✓	***	*****	******
c. ãn.T ãŋ.K ãm.P ãp.Tɕ ãn.Tʂ ã.(G)V ũ͡ŋm.P ũ͡ɲn.T ũn.Tɕ ũ͡ɲn.Tʂ ũ.(G)V		*****!	✓✓✓✓✓ ✓✓	********	*	******
d. ãn.T ãn͡ŋ.K ãnm.P ãŋn.Tɕ ãn͡ŋ.Tʂ ũŋm.P ũŋn.T ũŋŋ.Tɕ ũ͡ŋn.Tʂ ũŋ.K ã.(G)V ã.(G)V		*****! *****	✓✓✓✓✓ ✓✓✓✓	*********	*	*

Last but not the least, although speech rate has great influence on the nasal coda, it does not affect the vowel preceding the nasal coda. The result is that in fast-rate speech, MC front vowels and back vowels occur in exactly the same environment; in slow-rate speech, on the other hand, front vowels only occur before simple nasal codas whereas back vowels only occur before complex nasal codas. This distribution pattern can be predicted from the different ranking of the two RHYME HARMONY-ṼN constraints mentioned earlier in this section, *i.e.* in slow-rate speech, RHYME HARMONY-Ṽ[+back]ŋ ranks higher than RHYME HARMONY-Ṽ[-back]n; whereas in fast-rate speech, both constraints rank lowest in the constraint hierarchy.

In summary [11], the distribution pattern of MC nasal rhymes within morphological word boundaries is influenced deeply by the speech rate. To be more specific, in slow-rate speech, the velar nasal coda only assimilates partially in place to the following onset consonant and takes on the form of a complex nasal; in fast-rate speech, the velar nasal coda assimilates completely in place to the following onset consonant and takes on the form of a simple nasal. These distributional patterns can be derived from different rankings of the same set of constraints, illustrated as follows:

(43)   in slow-rate speech:

ΔVF1(nasal-nonnasal), RHYME HARMONY (manner of articulation), MINDIST=ṼF2:2, *$\sigma_{[stressed]}$-LIGHT, *$\sigma_{[unstressed]}$-HEAVY, *3µ, CODACON >> **RHYMEHARMONY-V$_{[+back]}$ŋ**, MAX-ṼF2-CONTRASTS, MINDIST=µ:1 >> ***COMPLEX NASAL CODA** >> MAX-NF2-CONTRASTS >> MINDIST=ṼF2:1, MAX-µ-CONTRASTS, MINDIST=NF2:(n-ŋ), **RHYMEHARMONY-V$_{[-back]}$n**

(44)   in fast-rate speech:

ΔVF1(nasal-non-nasal), RHYME HARMONY (manner of articulation), MINDIST=ṼF2:2, *$\sigma_{[stressed]}$-LIGHT, *$\sigma_{[unstressed]}$-HEAVY, *3µ, CODACON >> ***COMPLEX NASAL CODA**, MAX-ṼF2-CONTRASTS, MINDIST=µ:1, >> MAX-NF2-CONTRASTS >> MINDIST=ṼF2:1, MAX-µ-CONTRASTS, MINDIST=NF2:(n-ŋ), **RHYMEHARMONY-V$_{[+back]}$ŋ, RHYME HARMONY-V$_{[-back]}$n**

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[11] There is the logical possibility of a mixture of partiality and completely assimilated velar nasal coda. This could happen in casual everyday speech, but this can be seen as a result of a mixture of different speech rates and not a distinct case. Therefore, we ignore the possibility here.

The tableaux in (45) and (46) illustrate the analyses in (43) and (44), respectively: The tableaux in (45) and (46) illustrate the analyses in (43) and (44), respectively:

(45) in slow-rate speech[12]:

	AVFI	R-H (manner)	MD=ṼF2:2	*3µ	CODACON	R-H-Vŋ	M-ṼF2-C	*CPX-N	M-NF2-C	MD=ṼF2:1	M-µ-C	MD=NF2:n:ŋ	R-H-Ṽn
a. A.C AG.C An.T An.K An.P An.Tɕ Aɳ.Tʂ An.(G) Aŋ.T Aŋ.K Aŋ.P Aŋ.Tɕ Aɳ.Tʂ Aŋ.(G)	*!	*!			4*!	6*			2✓		2✓		6 *
b. A.C AG.C Ãn.T Ãɲ.K Ãm.P Ãɲ.Tɕ Ãɳ.Tʂ Ã(G)			*!			*	✓		5✓	*	2✓	3*	*
c. A.C AG.C ãn.T ãŋ.K ãm.P ãɲ.Tɕ ãɳ.Tʂ ã.(G) Ãn.T Ãɲ.K Ãm.P Ãɲ.Tɕ Ãɳ.Tʂ Ã.(G) ãn.T ãŋ.K ãm.P ãɲ.Tɕ ãɳ.Tʂ ã.(G)			*!			5*	3✓		5✓		2✓	3*	5 *

---

[12] In order to save space, Arabic number is used to manifest the number of violations or contrasts under a specific constraint, if it is greater than one, in the Tableaux (47) and (48). Constraints that are not violated in the tableaux illustration, such as MINDIST=µ:1, *σ[stressed]–LIGHT, *σ[unstressed]–HEAVY are not included in the tableaux.

	5✓	5*	2✓		3*	5*
d. A.C AG.C ân.T âɲ.K âm.P ãɲ.Te ãɲ.Tʂ ã.(G) ĩn.T ãɲ.K ûm.P ãɲ.Te ĩɲ.Tʂ ã̰.(G)		5*	2✓	5✓	3*	5*
e. A.C AG.C ân.T âɲ.K âm.P ãɲ.Te ãɲ.Tʂ ã.(G) ĩn.T ãɲ.K ûm.P ãɲ.Te ĩɲ.Tʂ ã̰.(G)		5*	2✓	5✓	3*	5*
☞ f. A.C AG.C ân.T âɲ.K âm.P ãɲ.Te ãɲ.Tʂ ã.(G) ã̰ɲn.T ãɲ.K ã̰ɲm.P ã̰ɲm.Te ã̰ɲ.Tʂ ã̰.(G)	10 *!	4 *	2✓	10✓	7*	5*

(46)　in fast-rate speech:

	ΛVFI	R-H (manner)	MD= ΥF2:2	*3μ	CODACON	M-ΥF2-C	*CPX-N	M-NF2-C	MD= ΥF2:1	M-μ-C	MD= NF2:n-ŋ	R-H-Ṽŋ	R-H-Ṽn
a. A.C AG.C An.T An.K An.P An.Te An.Tʂ An.(G) Aŋ.T Aŋ.K Aŋ.P Aŋ.Te Aŋ.Tʂ Aŋ.(G)	*!	*!			4*!			2✓		2✓		6*	6*
b. A.C AG.C Ãn.T Ãɲ.K Ãm.P Ãɲ.Te Ãɲ.Tʂ Ã.(G)			*!			✓		5✓	*	2✓	3*	*	*
c. A.C AG.C ãn.T ãɲ.K ãm.P ãɲ.Te ãɲ.Tʂ ã.(G) Ãn.T Ãɲ.K Ãm.P Ãɲ.Te Ãɲ.Tʂ Ã.(G) an.T ãɲ.K ãm.P ãɲ.Te			*!			3✓		5✓		2✓	3*	5*	5*

A Perceptually-based OT Approach to Opacity in Mandarin Chinese Nasal Rhymes

ãɳ.Tʂ ã.(G)

☞ d. A.C AG.C ãn.T ãŋ.K ãm.P ãɲ.Tɕ ãɳ.Tʂ ã.(G) ãn.T ãɳ.K ãm.P ãɳ.Tɕ ãɳ.Tʂ ã.(G)			2✓		5✓	2✓	3*	5*	5 *
e. A.C AG.C ãn.T ãŋ.K ãm.P ãɲ.Tɕ ãɳ.Tʂ ã.(G) ãn.T ãɳ.K ãm.P ãɳ.Tɕ ãɳ.Tʂ ã.(G)	10*!		2✓		5✓	2✓	3*	5*	5 *
f. A.C AG.C ãn.T ãŋ.K ãm.P ãɲ.Tɕ ãɳ.Tʂ ã.(G) ãɲɲ.T ãɳ.K ãɳm.P ãɲɲ.Tɕ ãɲɲ. Tʂ ã.(G)			2✓	4*!	10✓	2✓	7*	5*	5 *

As can be seen from the above analysis, PB-OT approach bypasses the derivation process by paying attention only to the distributional pattern of the surface form, and thus avoids the necessity to cope with opacity, which emerges naturally from the derivational process. To be more specific, traditional OT derives the output form through the evaluation of the input form by the constraint hierarchy, and therefore, must face up squarely with opacity. In contrast, PB-OT recognises all possible contrasts in the surface form and provides perceptually-based constraints to derive the distributional patterns of the contrasts. In the case of MC nasal rhymes, PB-OT recognises that there is nasality contrast and backness contrast in MC vowels, as a result of the constraints ΔVF1(nasal-nonnasal) and MAX-VF2-CONTRASTS, irrespective of whether the contrasts are phonemic or allophonic. In this way, it "skips" the derivation procedures that derive the nasal vowels and the front-back vowels from the underlying input forms and looks directly at the derived output forms. Opacity is thus non-existent from the PB-OT perspective.

5. Conclusion

In this paper, we first illustrated how opacity arises in MC nasal rhymes as a result of vowel and nasal-related processes. The opacity is caused by the deletion of the place features of the nasal coda after the nasal has determined the backness feature of the nuclear non-high vowels. That is typical of the counter-bleeding type of opacity: nasal deletion takes place "too late" to bleed rhyme harmony.

We then showed how both classical and modified OT approaches, specifically Output-Output Correspondence and OT with Candidate Chains, address the problem of opacity in MC nasal rhymes. These two approaches typically resort to additional constraints that directly (OT-CC) or indirectly (OO-Correspondence) imitate the serial derivation process, which is common in rule-based phonology but abandoned in the OT framework. These constraints are neither phonologically-based nor phonetically-based, and thus have often been criticised as "unnatural".

We then introduced the framework of Perceptually-based OT and showed how it tackles the problem of opacity in MC nasal rhymes. This approach consists of two major approaches: the P-map and the Dispersion Theory of Contrast (DTC). Whereas conventional OT approaches typically derive generalisations about possible words in a language by evaluating complete words, PB-OT evaluates sets of contrastive sounds in particular environments. Furthermore, conventional OT approaches use the grammar

to derive possible words, but PB-OT focuses on the phonetic properties of sets of words derived by that grammar (Flemming 2004), which seems a more explanatory approach. Moreover, conventional OT approaches are based primarily on Input-Output correspondence in evaluation, whereas PB-OT focuses mainly on the distribution patterns of output forms. Different as the two types of OT approaches may be, they share the common goal of formalising grammars that generate all and only possible expressions in a language.

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Chapter Three

Presentational Sentences:
A Study on the Information Structure
of Path Verbs in Spoken Discourse

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Abstract

This chapter deals with the presentational pattern of Chinese, focusing on the "(dis)appearance" sentence type. The PATH verb category, usually included in this group, will be my case study. Adopting a corpus linguistics approach based on authentic spoken Chinese data, I observe the instances of the [(NP$_{GROUND}$+)V$_{PATH}$+NP$_{FIGURE}$] pattern, where the verbs include the deictic motion verbs *lái* 来 "come" and *qù* 去 "go", PATH verbs such as *jìn* 进 "enter" *chū* 出 "exit" *etc.*, and their compounds. The sentences are analysed within the broad context they belong to in order to determine the pragmatic function they convey. It will be shown that, in spite of its apparent structural uniformity, the linguistic format under inquiry may be used to put forward different functions (entity-foregrounding, encoding of events, enumerative focus), which in turn are closely related to the verb types and the structure of the post-verbal NP (bare vs quantified noun). I argue that an information-structure analysis can account more adequately for this diversity than the usual semantic notions of "appearance" or "disappearance". That is, in all cases the Figure NP occurs post-verbally to signal that it is not to be interpreted as the topic with respect to which the clause is asserted. Finally, when motion verb *qù* 去 "go" appears in the [(NP$_{GROUND}$+)V$_{PATH}$+NP$_{FIGURE}$] pattern, in most cases the whole utterance does not fall into the "presentational sentences" category.

Key words: presentational sentences, PATH verbs, spoken Chinese, information structure

1. Introduction

This study is concerned with a syntactic pattern in Chinese known in the Chinese linguistics literature as the "existential sentence" (Zhu 1982, 184; Nie 1989; Huang1987) or "presentational/presentative sentence" (Li and Thompson 1981; Hu 1995). The latter label is motivated by the functional property of the construction, since such sentences typically serve to introduce new referential entities into discourse (Zhang 2009, 243). The general pattern is [NP$_G$+V+NP$_F$] [1], whereby the first noun phrase (hereafter NP) expresses the Locus (Li and Thompson 1981, 511) and the post-verbal NP denotes the entity introduced by the sentence. As the Chinese term *cún-xiàn jù* [sentences of existence/appearance] (Song,1987) suggests, two sub-groups are generally distinguished: the existential and the (dis)appearance sentences (Lü 1946[2]; Chao 1968; Zhu 1982). Beside the semantics, some syntactic properties distinguish the (dis)appearance group from the existential one: in the former, the Locus can be omitted and often is; and the verb is suffixed by the perfective marker *-le* instead of imperfective marker *-zhe*. The semantic tag "(dis)appearance" indicates that the entity coded by the Figure NP (*i.e.* the moving entity) appears or disappears in the scene of discourse (or with reference to the Locus denoted by the preverbal NP, if expressed) through verbs such as *chūxiàn* "appear", *fāshēng* "occur" (appearance), and *xiāoshī* "disappear", *sǐ* "die" (disappearance).

PATH verbs (hereafter V$_P$), or verbs of inherently directed motion (Levin 1993, 263), are also included in the verbs listed as typically used in (dis)appearance sentences. For example, Lü (1946) characterizes sentences of appearance by the fact that the verb is basically the deictic verb *lái* "come", a compound PATH verb in V$_P$-*lai* such as *jìn-lai* [enter-come] "come in", or a compound verb taking one of these directional verbs as its directional component. Tai (1989) also considers that the verbs of appearance sentences are mainly *lái* "come" and *chū* "exit, appear" and any compound verbs including these morphemes. Disappearance sentences, on the other hand, normally involve motion verbs as *qù* "go" or *zǒu* "leave"

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[1] G stands for GROUND while F stands for FIGURE. The Figure/Ground distinction is used in literature on the typology of motion events initiated by Leonard Talmy to refer, respectively, to the located and to the locating entity. "The Figure is a moving or conceptually moveable object whose site, path, or orientation is conceived as variable, the particular value of which is the salient issue. The Ground is a reference entity, one that has a stationary setting relative to a reference frame, with respect to which the Figure's site, path, or orientation is characterized" (Talmy, 2000, 184).
[2] To be exact, Lü (1946) distinguishes appearance sentences and disappearance sentences in two separate subgroups.

(Lü 1946; Huang 1987; Hu 1995) and V$_P$-*qu* PATH verbs (Li and Thompson, 1981, 518). However, no prior research has specifically studied the PATH verb category in presentational sentences. At the same time, previous works lack an analysis based on spoken data – but see Xuan (2016) for a brief account on the different features of (dis)appearance sentences in the written and the spoken register.

In this study, I investigate the occurrence of the [(NP$_G$+)V$_P$+NP$_F$] structure involving a PATH verb in contextualized natural language uses, with special attention to its pragmatic functions. Given the importance of context for the analysis of pragmatically motivated phenomena, corpora provide a particularly useful means of analysis, instead of isolated, decontextualized sentences. In addition, when dealing with structures that are allegedly linked to specific discourse functionalities (*i.e.* the "presentational" function in this case) we should be aware that the organization of linguistic information follows different constraints in speaking, compared to writing. That is, in spontaneous speech, ideas tend to be activated as a conversation proceeds: there is little time for elaborate preplanning and new ideas and topics must be activated quickly (Chafe 1994, 42). This is particularly true for the introduction of new entities into discourse, since the processing of such referents requires a higher cognitive effort from the hearer. As a consequence, I assume that the linguistic phenomenon under investigation has distinctive properties in the oral register at both the formal and functional levels of analysis.

Throughout this paper, I will employ the label "presentational" as a cover term to denote any occurrence of the [(NP$_G$+)V$_P$+NP$_F$] pattern[3]. As the discussion goes on, I will argue that three subtypes should be distinguished: the entity-foregrounding, the eventive and enumerative subtypes. It will be shown that the prototypical presentative function (*i.e.* entity-foregrounding) is closely connected to the full expression of quantified post-verbal NPs. On the other hand, the [(NP$_G$+)V$_P$+NP$_F$] format can be used to express an eventive proposition (in which the event is conceived as an unanalysed whole) and to realise an enumerative function as well – focusing on a specific number of instances belonging to a set of entities previously established in the discourse. Finally, in some cases the PATH verb within the [(NP$_G$+)V$_P$+NP$_F$] structure clearly entails a causative reading; hence, I will

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[3] Following Li (2014) I operate a distinction between *existential constructions* (including verbs of existence, posture and placement) and *presentative constructions* (including verbs of motion or emergence). Since this study focuses on the PATH verbs category, *de facto* it is limited to the second group.

argue that such examples do not fit the "presentational sentence" category. My main research questions are:

(1) What is the distribution of path verbs and NP types within the $[(NP_G+)V_P+NP_F]$ pattern in authentic spoken data?

(2) Which pragmatic functions can the $[(NP_G+)V_P+NP_F]$ pattern realise in discourse?

The remainder of the paper is organised as follows. The next section introduces the methodology adopted and the corpora that were consulted for the current study. Section 2 presents the results of my corpus inquiry. Namely, the verb types and the formal structure of post-verbal NPs are considered. Section 3 analyses the findings in establishing a relation with the pragmatic functions that the $[(NP_G+)V_P+NP_F]$ pattern can express. At this point, it will be necessary to take into account the broad context in which those sentences appear. Finally, section 4 concludes the paper and summarizes its contribution.

2. Methodology and corpus

The present study is based on a spoken corpus of Beijing Mandarin Chinese (Beijing Mandarin Spoken Corpora, hereafter BJKY[4]) released by the Research Institute of Linguistics of Beijing Language and Culture University. The corpus consists of approximately 1.7 million characters and was built up through an interviews collection of about 380 individuals living in the Beijing metropolitan area in the 1980's. The persons surveyed were randomly selected and display a representative sample of sociolinguistic characteristics. Each interview lasted about one hour on average, covering a wide spectrum of familiar topics such as Beijing everyday life, housing, education, culture, public transport, child-rearing and generational changes. The interviews were transcribed into texts by trained transcribers, who carefully attempted to capture the original spoken Chinese features. Special attention was placed on transposing the phonological and syntactic specificities found in the oral language. As a result, all fillers, colloquialisms, repetitions and broken sentences were faithfully recorded (for a detailed presentation of the BJKY corpus see Zhang, 2014).

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[4] BJKY corpus: http://app.blcu.edu.cn/yys/6_beijing/6_beijing_chaxun.asp.

Table 3-1 shows the sequences extracted from the corpus for the current study, in which a PATH verb is followed by at least one lexical item:

Table 3-1. The syntactic pattern studied within the BJKY corpus for the current research

V_{PATH}+[0-10 characters]+	*yī* 一
	numeral "one"
	ge 个
	general classifier (obtaining any Num-*ge* and ø-*ge*)
	jǐ 几 ; *xiē* 些
	plural indefinite classifiers ("some")
	rén 人
	generic bare noun for HUMAN referents ("someone")

The preverbal NP denoting the Locus is optional in the query because, as previously noted, it is not always expressed in presentational ("(dis)appearance") sentences. The predicate is a PATH verb: either one of the deictic verbs *lái* "come" or *qù* "go", or a non-deictic PATH verb such as *shàng* "go up", *xià* "go down", *jìn* "enter"; or it may also be a combination of both, like *shàng-lai* ["go.up-come"], *xià-qu* ["go.down-go"] *etc*. (Lamarre 2007). The term "complex PATH verbs" is used to designate bimorphemic verbs (as in *jìn-lai* ["enter-come"] "enter – toward the speaker") composed of a directional (here: *jìn-*) plus a deictic (here: *-lai*) morpheme. I label "simple PATH verbs" the monomorphemic verbs, either not including the deictic morpheme (ex. verb *jìn* "enter" alone) or motion verbs *lái* "come" and *qù* "go". For the sake of convenience, the latter will be referred to as "deictic PATH verbs", given that they denote a motion with respect to the deictic centre – which usually is the speaker's position – without specifying the direction. Table 3-2 illustrates the different morphological forms of Chinese PATH verbs.

Table 3-2: Chinese PATH verbs overview

Simple PATH verbs				Complex PATH verbs		
Deictic		Directional (non-deictic)		V_PATH-*lai*		V_PATH-*qu*
lái 来 "come"		*shàng* 上 "go up"		*shàng-lai* 上来 ["go.up-come"]		*shàng-qu* 上去 ["go.up-go"]
qù 去 "go"		*xià* 下 "go down"		*xià-lai* 下来 ["go.down-come"]		*xià-qu* 下去 ["go.down-go"]
		jìn 进 "enter"		*jìn-lai* 进来 ["enter-come"]		*jìn-qu* 进去 ["enter-go"]
		chū 出 "exit"		*chū-lai* 出来 ["exit-come"]		*chū-qu* 出去 ["exit-go"]
		huí 回 "return"		*huí-lai* 回来 ["return-come"]		*huí-qu* 回去 ["return-go"]
		guò 过 "pass"		*guò-lai* 过来 ["pass-come"]		*guò-qu* 过去 ["pass-go"]
		qǐ 起 "arise"		*qǐ-lai* 起来 ["arise-come"]		--

It should be noted that in Chinese the PATH verbs presented in Table 3-2 have grammaticalised into a closed class of directional complements. In this case, they are used after a co-event verb (such as *pǎo* "to run") to denote the direction in which the movement specified by the main verb is carried out. Generally speaking, PATH directionals may be either monomorphemic (as in *pǎo-lai* [run-**come**] "run over") or bimorphemic (*pǎo-chu-lai* [run-**exit-come**] "run out – towards the speaker") and, as verbal complements, they lose their tonal features (Lamarre, 2008). The corpus inquiry I operated allows the possibility to obtain examples of the [(NP$_G$+)V$_P$+NP$_F$] pattern involving both PATH verbs (*chū-lai* "come out") and PATH complements (as in *pǎo-chu-lai* "run out" above). However, since only 3 tokens fit the second category, they were not analysed separately.

Importantly, self-motion events were selected (referring to Talmy's [2000, 28] *self-agentive* motion events): I assume that if the Figure's motion originates from an external input, we cannot speak in terms of "presentational sentences". In fact, the structure no longer provides an alternative way of coding the Figure – Ground relationship; instead it is more similar to a regular transitive construction where the NP$_G$ plays the semantic role of an agent. It will be shown in section 3.4 that motion verb *qù* "go" tends to carry this connotation.

After the extraction, every occurrence was checked manually in order to retain those instances that syntactically and semantically fitted the pattern [(NP$_G$+)V$_P$+NP$_F$]. This resulted in a total of 124 sentences. To be precise, apart from motion verb *lái* "come" that presents a set of occurrences within the pattern [(NP$_G$+)V$_P$+NP$_F$] large enough to generalise the relevant findings, results concerning other PATH verbs are indicative and should be tested on a broader data set. This is especially true for complex PATH verbs including *-qu* "go" – only 7 relevant occurrences were found in the whole corpus, a fact which *per se* is indicative of their scarce usage. On the other hand, the sentences were further elicited with native speakers. Quantitative data for simple non-deictic PATH verbs are excluded from the analysis since they mostly appear with specific inanimate bare nouns[5] (*e.g. hàn* "sweat" for the verb *chū* "exit", *yǔ* "rain" for *xià* "descend", and *shuǐ* "water" for *jìn* "enter").

At certain points of the discussion, I will need to adduce examples taken from the larger corpus released by the Centre for Chinese Linguistics

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[5] Hereafter: BN.

(hereafter: CCL corpus) of Beijing University[6]. While this is mainly based on written texts, it still makes for a valuable addendum in the sections concerned.

Finally, it should be highlighted that the current study is in essence *qualitative*: its objective is to provide an analysis of the [(NP$_{GROUND}$)+V$_{PATH}$+NP$_{FIGURE}$] pattern of Chinese on the basis of authentic spoken instances.

3. Data overview

3.1. General distribution of path verbs and their collocations

The general distribution of PATH verbs within the pattern [(NP$_G$+)V$_P$+NP$_F$] is represented in Table 3-3.

Table 3-3 General occurrence of PATH verbs within the [(NP$_G$+)V$_P$+NP$_F$] pattern

Verb types			N of occurrences within the corpus
lái "come"			72 (58%)
qù "go"			18 (14%)
complex PATH verbs	V$_{PATH}$-*lai*	27 (22%)	34 (28%)
	V$_{PATH}$-*qu*	7 (6%)	
Total			124 (100%)

To begin with, an asymmetry can be observed: motion verb *lái* "come" is strongly preferred over the other PATH verbs within the structure under scrutiny. Furthermore, between the complex PATH verbs, those including the morpheme -*lai* "come" are far more frequent than their counterparts including -*qu* "go".

This is not surprising considering the general preference towards -*lai* as a deictic morpheme in Chinese (see Liu, 1998, 51). More specifically, the

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[6] CCL corpus: http://ccl.pku.edu.cn/corpus.asp.

semantics of a motion oriented towards the deictic centre expressed by LAI[7] better fit the presentational function[8]. In addition, as a deictic verb, *lái* "come" can serve a wider range of communicative situations since it does not specify the DIRECTION of the motion – which is expressed by the directional element (*jìn* "enter", *chū* "exit" *etc.*) in complex PATH verbs.

Given that the different functions that the pattern [(NP$_G$+)V$_P$+NP$_F$] can express are closely related to the internal structure of the Figure NP, the next section considers in greater detail the characteristics of such post-verbal NPs denoting the moving entity.

3.2. NP$_F$ internal structure

In what follows, I present the distribution of the post-verbal NPs in relation to each type of PATH verb. Then in the next section I analyse the findings, where the characteristics of the NP$_F$ will be linked to the discourse status of its referent. Evidence will come from the previous and the subsequent text.

Table 3-4. Characteristics of the NP$_F$ within the [(NP$_G$+)V$_P$+NP$_F$] pattern

	BN	Num+CL+NP	Ø+CL+NP	Num+CL+ø	Total
lái "come"	39	23	10	--	72
qù "go"	5	13	--	--	18
V$_P$-*lai*	--	21	1	5	27
V$_P$-*qu*	--	2	--	5	7
Total	44	59	11	10	124

First of all, when *lái* "come" is the verb within the [(NP$_G$+)V$_P$+NP$_F$] pattern, the NP$_F$ is either a BN or a quantified nominal. Moreover, in approximately one third of the NPs of the latter group, the numeral "one" is omitted, leaving only the classifier in front of the noun. Similarly, the NP$_F$ following non-deictic simple PATH verbs can be a BN or a quantified noun – with or without the numeral.

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[7] I employ capital letters to denote both the bounded morpheme -*lai* and the deictic verb *lái*.
[8] This is consistent with crosslinguistic findings; see Lena (in preparation) for a discussion on the subject.

(1) *Érqiě*   *wū-li*   *yě*   *jìn-le*   *diǎnr*   *shuǐ,*

     moreover   house-in   also   enter-PFV some   water

     yě   *jìn*   *shuǐ,*   *nèi*   *tiáojiàn*   *hěn*   *chà*[9]

     also enter   water   that   condition   very   bad

     "Moreover, some water also entered (=leaked) in the house; the housing
     quality was really poor!"

(2) *Shàng cì*   *zánmen*   *zhe*   *Yǒngdìng lù*   *zhèr,*

     last   time 1PL   this   Yongding Road   here

     chū-le   *yí-ge*   *tānr*

     exit-PFV   one-CL   stand

     "Last time, here on our Yongding Road appeared a stand."

(3) *Hěn cháng shíjiān*   *cái*   *guò*   *yì*   *liǎng-ge*   *rénr*

     very long   time   only   pass   one   two-CL   people

     "In a long time only one or two persons passed by."

Even though quantified Figure NPs are attested (1-3), simple PATH verbs
strongly tend to co-occur with post-verbal BNs. Besides *jìn shuǐ* [enter water]
in (1), expressions such as *xià yǔ* [go.down rain] "to rain", *chū hàn* [exit
sweat] "to transpire", are commonly seen in daily conversations. We shall
return to this point in section 3.2.

Motion verb *qù* "go" also introduces post-verbal BNs or quantified nouns.
In addition, in 11 occurrences of the latter case, the numeral is different from
yī "one" and the remaining two occurrences have a classifier distinct from
the general classifier *ge* (namely: *yì-bāng rén* and *yì-pī rén*: "a *group of*
people"). This means that no occurrence of the *yí-ge*+NP sequence – likely
to denote an indefinite quantified referent rather than a quantized referent –
is found within the corpus. Since the pattern [(NP$_G$+)V$_P$+NP$_F$] including *qù*
displays an agentive connotation, it will be treated separately in section 3.4.

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[9] When no source is mentioned, the examples come from the BJKY corpus, with the
sole exception of (4-5) that were elicited with native speakers.

As for complex PATH verbs including a deictic directional, they never introduce BNs within the corpus. This feature is shared by V~P~-*lai* and V~P~-*qu* PATH verbs. Compare the following pairs:

(4)   a.   *Wàibian   jìn-lai   yí-ge   rén.*

             outside   enter-come   one-CL   people

             "A person came in from the outside" (speaker is inside).

       b.   ??*Wàibian   jìn-lai   rén.*

             outside   enter-come   people

             Intended meaning: "Someone came in from the outside."

(5)   a.   *Wū-li   jìn-qu   yí-ge   rén.*

             room-in   enter-go   one-CL   people

             "A person entered the room" (speaker is outside).

       b.   ??*Wū-li   jìn-qu   rén.*

             room-in   enter-go   people

             Intended meaning: "Someone entered the room."

In addition, as we can see from Table 4, in sentences with V~P~-*lai* PATH verbs the full sequence [Num(-CL)+NP] is strongly preferred, as in (4a); that is, the numeral is rarely omitted before the classifier (only 1 occurrence). As noted earlier, Li and Thompson (1981) include V~P~-*qu* PATH verbs in the group of intransitive motion verbs "which do allow the noun phrase signalling the entity in motion to occur post-verbally" (*ibid.*, 518). They give the following example:

(6)   *Huí-qu-le   wǔ bǎi-ge   rén.*

       return-go-PFV   five hundred-CL   people

       "Five hundred people returned."

                                              (Li and Thompson, 1981, 518)

For the time being, bear in mind that Li and Thompson's example reported in (6) involves a specific number (*i.e. five hundred*). It will be shown that

this is a characteristic of V_P-*qu* PATH verbs. Let us now first analyse some examples taken from the BJKY spoken corpus. As previously noted, BNs are not attested in the pattern. In addition, the numeral is always expressed. In example (7), the complex PATH verb *chū-qu* [exit-go] "go out" is followed by two quantified juxtaposed NPs, namely *yí guīnǚ* "one(-CL) daughter" and *liǎ xiǎozi* "two(-CL) sons"[10]:

(7) *Yě*   *chū-qu-le*   *yí*   *guīnǚ*   *liǎ*   *xiǎozi*   *le*

   also   exit-go-PFV   one.CL   daughter   two.CL son   CRS

   "[He] also had one daughter and two sons that went out (=left the country)."

However, when V_P-*qu* PATH verbs appear within the [(NP_G+)V_P+NP_F] pattern investigated here, the NP_F is fully expressed in only 2 of the 7 results. The following sentences include *jìn-qu* [enter-go] "go in" (8) and *-hui-qu* [return-go], the latter being a directional complement after the main verb *tuì* "go backwards" (9).

(8) *Jìn-qu*   *liǎng-ge,*   *sān-ge*   *zài*   *wàibianr*   *děng-zhe*

   enter-go   two-CL   three-CL   at   outside   wait-DUR

   "Two [of them] would get in, three would be waiting outside."

   (The speaker is complaining about the size of her apartment.)

(9) *Zhōngtú*   *ne,*   *yòu*   *tuì-hui-qu*   *yí-ge,*

    halfway   PAU   again   go.back-return-go   one-CL

   yīnwèi   *shēntǐ*   *bù*   *hǎo*

   because   health   not   good

   "Halfway one [of us] returned, because [his] health was not good."

At first glance, (8-9) imply a partitive reading on the NP_F that cannot remain implicit in the English translation. Only by analysing the context in which

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[10] Here the classifier incorporation in spoken Beijing dialect is made manifest by numeral two, which takes the phonetic form *liǎ* – as a contraction of *liǎng* "two" and the general classifier *ge* – and is written with a different character, namely ⬚ , also discussed in Chirkova (2004).

the sentence appears can we know what the post-verbal constituent refers to.

In the following section, I will provide an analysis of these facts by considering the pragmatic status of the referent denoted by the post-verbal element. It will be argued that the pattern [(NP$_G$+)V$_P$+NP$_F$] is not restricted to the kind of information structure which is typical of presentational sentence (*i.e.* entity-foregrounding), but may realise several pragmatic functions. In my view, Lambrecht's concept of *detopicalization* (2001, 624) can account for this diversity. In a nutshell, in order to show that an NP does not denote a regular topic, the speaker will assign it object-like properties, such as post-verbal position – the default position of focal objects in SV(O) languages[11]. It will be shown that the common motivation determining the NP Figure's post-verbal position in Chinese is to indicate that its referent is not to be interpreted as a regular topic with respect to which the clause is asserted. I begin by discussing the entity-foregrounding function generally attributed to the Chinese presentational pattern.

4. Pragmatic functions of the pattern [(NP$_G$+)V$_P$+NP$_F$]

4.1 The entity-foregrounding function

The most straightforward function linked to the [(NP$_G$+)V$_P$+NP$_F$] pattern is highlighting the post-verbal element to make it available for elaboration in the following text; that is, the *presentational* function generally discussed in the relevant literature (see the introduction). My data suggest that in Chinese, prototypical presentational sentences must involve a quantified NP in the post-verbal domain, which is in line with Sun's (1988) and Chen's (2003) findings about the pragmatic value of the [Num+CL] sequence[12] (see

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[11] "In an SF [sentence focus] construction, the subject tends to be grammatically coded with some or all of the prosodic and/or morphosyntactic features associated with the focal object in the corresponding PF [predicate focus] construction" (Lambrecht, 2001, 626).

[12] A few counter-examples exist:

(I) a. *Bǐrú xīngqítiān, <u>wǒmen jiā lái-le kèrén</u>,*
        tā *yì shuō nǐ gōngzī duōshǎo, wǒ shuō wǒ gōngzī qīshí,*
        tā gōngzī ne bǐ wǒ duō wǔ-kuài qián

        "For instance, on Sunday, <u>guest(s) came to our house</u>, once **he** asked how much is your salary, I said my salary is 70, his salary is 5 yuan higher than mine."

also Li2000). The function of those sentences is to introduce foregrounded entities into discourse – that is, referents of high thematic importance (Givón 1984). Hence, the post-verbal position of the NP is given by the fact that its referent is not (yet) a topic but will become one in the subsequent text. In this respect, I do not fully agree with Wang and Zhou (2014), who consider that the (dis)appearance sentences group is more closely related to the expression of events, rather than promoting new referential entities into discourse.

In order to verify this hypothesis, I will now consider my examples within the broad context they belong to. In (10), the NP *yí lǎotóur* "an old man" is introduced into discourse in post-verbal position. It can then be coded by a noun modified by the proximal demonstrative *zhè* "this" and by the personal pronoun *tā* – denoting accessible referents. Similarly, since the NP *sān-ge xuéshēng* "three students" (11) is introduced post-verbally, it can remain implicit in the following text – the default form for a topic expression, typically expressed in unaccented or phonologically null constituents.

b. *Suǒyǐ <u>wàidì lái rén na</u>,*
   *yīdìng yào tíxǐng **tā**, nǐ dào Běijīng lái, yào duō hē shuǐ,*
   yào zhùyì zhè-ge Běijīng de gānzào qíngkuàng

   "So [when] people come from other areas, one certainly has to remind **them** (lit. him): when you come to Beijing, you should drink much water, you should pay attention to this dry condition in Beijing."

A clarification is needed at this point of the discussion. When a new referential entity is introduced into discourse, speakers will tend to assign local marking (*i.e.* the [numeral+classifier] sequence) to referents that will play a central role in the development of discourse and conversely encode referents of lower importance with bare nominals. However, this is not to say that once a referent is firstly encoded as an unimportant/peripheral entity it *cannot* be picked up in the following discourse. In some cases, speakers can refer anaphorically even to incorporated objects and uninstantiated thematic arguments of the predicate, with some crosslinguistic variation (Modarresi, 2015). Hence, the existence of cases like (Ia-b) does not invalidate the general tendency to "present" a foregrounded entity with a specific linguistic format. Incidentally, the example reported in (Ia) is the only one in which *lái* "come" followed by verbal suffix *-le* introduces a BN within an assertive main clause. Finally, in (Ib) the personal pronoun *tā* – actually undetermined with regard to gender in spoken Chinese – does not refer to a specific individual but to "anyone coming from a different area"; that is, the utterance is in an irrealis modality. This issue will be discussed in section 3.2.4.

(10) *Zhènghǎo*   *tóuli*   *guò-lai*   *yí*   *lǎotóur,*

      just   ahead   pass-come   one.CL   old.man

      zhè   lǎotóur,   *tā*   *zhàn-zhe*   *hái*   *bú*   *dònghuó*

      this   old.man   3S   stand-DUR   still   not   move

      "Right then an old man came by, this old man, he was standing without
      moving."

(11) *Xīlihútú*   *yòu*   *shàng-lai*   *sān-ge,*   *sān-ge*   *xuéshēng,*

      confusedly   also   go.up-come   three-CL   three-CL   student

      shì   *biéde*   *wàidì*   *rén*   *dào*   *Qīngdǎo*   *qù xuéxí*

      be   other   elsewhere   people   arrive   Qingdao   go study

      "Confusedly, three.. three students came up, they were people from other
      parts of the country who went to study in Qingdao."

In (12), in the second occurrence of NP *yí xiǎo fángzir* "a small house" the
[numeral(-classifier)] sequence can be deleted and the BN receives a
definite reading "the small house" (Cheng and Sybesma 1999; Yang 2001):

(12) *Xiànzài*   *kàn*   *gège*   *yuànr*   *a,*

      now   look   every   courtyard   SFP

      chū-lai   *yí*   *xiǎo*   *fángzir,*

      exit-come   one.CL   little   house

      xiǎo   fángzir   *dā*   *xiǎo*   *péngr*   *de,*

      little house   set.up   little   shed   FOC

      zhè,   *zhè*   *bǐjiào*   *duō,*   *a*

      this   this   quite   many   SFP

      "And now, in each courtyard appeared a cabin, extended with a little
      shed… this, this is quite common."

Thus, at the post-verbal NP position, the full sequence (*i.e.* [Num-CL])
seems to be a necessary (though not a sufficient) condition to promote a new
topical element into discourse. Even though some simple PATH verbs,

especially *chū* "exit" (2)*,* can also express this function, entity-foregrounding presentational sentences mainly involve *lai,* owing to the deictic anchoring to the "here-and-now" of the discourse it implies.

Now we will turn to the other pragmatic functions that the [(NP$_G$+)V$_P$+NP$_F$] pattern can put forward, namely the encoding of event-reporting propositions (3.2) and a list-reading focus (3.3).

4.2. The encoding of event-reporting propositions

The distinction between *event-central* (or *event-reporting* [Lambrecht, 2001]) sentences and *entity-central* sentences comes from Sasse (1987). An *entity-central* proposition "introduces an entity but fails to report an event about it" (Sasse 1987, 527). Conversely, an *event-central* sentence states the existence of the event and attributes the participant to it – its prototypical examples being the impersonal constructions ("it is raining"). This kind of proposition "fails to contain a referential NP, and thus fails to tell something about an entity" (Sasse 1987, 526). In Lambrecht's (1996, 144) terms, "[w]hat both functions have in common is that the sentence […] introduces a new element into the discourse without linking this element either to an already established topic or to some presupposed proposition."

LaPolla (1995) applies Sasse's (1987; further elaborated in Lambrecht, 1996) theoretical framework to Chinese. He considers Chinese word order to be essentially guided by pragmatic relations. Hence, in Chinese, event-central presentational sentences are not only weather expressions such as *xià yǔ* [fall rain] but may even involve post-verbal proper names. I think that this claim is too strong, and that a distinction should be made between backgrounded events and event-central propositions[13].

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[13] LaPolla proposes that, in Chinese, pragmatic relations are always coded by specific syntactic means, *i.e.* the [VP+NP] form denoting an "event-central construction" would be used regardless of the identifiability of the NP's referent. According to my native informants, however, sentences such as *Suiran lai-le Lisi/nage ren,* ... "Although Lisi/that person has come, …" (example [31] in LaPolla, 1995, 320) are unnatural. Even though the definiteness effect does not result in a categorical restriction (and speakers' judgment may vary in this regard), we cannot deny that Chinese counterparts of Italian examples such as *è arrivato Giovanni* lit: "arrived John" would result in a "regular" S-V order. In fact, definite NPs are not easily tolerated in post-verbal position, regardless of the presuppositional structure of the utterance. It seems that, in Chinese, referential identifiability makes the use of proper names (or any NP with unique reference) redundant in presentational

Importantly, LaPolla also states that in Chinese "an unanchored unidentifiable referent which is to become a topic in the discourse will generally be introduced as a lexical noun preceded by a numeral (usually *yi* "one") plus a classifier" and that, contrariwise, "an unanchored referential-unidentifiable referent which is not to become a topic (is incidental to the discourse) will often either not have the numeral plus classifier, or will have the classifier, but not the numeral" (LaPolla 1995, 306). I will argue in section 3.2.4 that NPs of the second kind appearing within the presentational pattern are strongly connected to the encoding of quantified referents in irrealis contexts.

Li (2009) puts forward the term "occurrence clause" (*fāshēngjù*) embracing clauses of (dis)appearance, meaning that "some events occur in some place". Wang and Zhou (2014) propose the term *event-existential* in contrast to *thing-existentials*, to capture those clauses whose "existents are obviously events". However, in their analysis, all clauses of (dis)appearance are event-existential [14]. My data suggest that within the so-called (dis)appearance sentences group – at least those involving a PATH verb – some sentences are associated with the expression of events while others clearly intend to introduce new entities into discourse. This can be verified by observing (if and) how the post-verbal Figure NP's referent is encoded in the following text (3.1). Secondly, the verbal semantics as well as the NP_F internal structure are both linked to the expression of eventive propositions.

Finally, Wang and Zhou (2014) also argue that the clause initial Locus is necessary for the whole clause to be considered an *event-existential*. In my view, while event-reporting utterances generally do include some kind of here-and-now anchoring, this is not always achieved by means of the preverbal Locus. In fact, the Ground NP is not necessarily expressed (as in 18-19 below) and other factors, such as deixis and aspect, come into play (see Lena in preparation). Considering all this, in what follows, I will discuss in greater detail event-reporting sentences involving PATH verbs.

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structures – V-S order as well as presentational *yǒu* "exist, have" structures, with of course some exceptions (see for instance Zhang 2006).

[14] However, they do acknowledge that "the two types of existentials form a continuum, each occupying a pole. Within each category, the members are not homogeneous. They contain different sub-categories, showing different degrees of eventuality and thingness." (Wang and Zhou 2014).

4.2.1. Event-reporting sentences involving simple PATH verbs

Unlike their bimorphemic counterparts, simple PATH verbs are ideal candidates to express an event-reporting proposition, in which the NP$_F$ and verb are presented as an unanalysed, single unit and appear in the lexically simplest form. Given that the entity is not singled out from the event, typically, the post-verbal constituent is a *weak* NP (Milsark 1977, 46); that is, one characterised by low referentiality [15]. The following examples include simple PATH verbs *qǐ* "arise" and *jìn* "enter":

(13) *Tā   yì   shàng.huǒ   ba,*

3S   once   suffer.from.internal.heat   SFP

zuǐ   ya,   jiù   qǐ   pào

mouth   SFP   then   arise   cold.sores

"As soon as he gets excessive internal heat, on his mouth rise cold sores (= he gets cold sores on his mouth)."

(14) *Ěrduo   yě   jìn   shuǐ   le*

ear   also   enter   water   CRS

"Water has entered my ears."

Event-reporting expressions such as *xià yǔ* [fall rain] "to rain" are very frequent – this being the only way in Chinese to verbalise the event of "raining", since the verb does not incorporate the moving entity as it does in English (see LaPolla 1995, 318), and I am aware that it is often controversial to decide whether they should be considered as quasi-lexicalized items or syntactic constructions. Note however that this item does not appear in standard Chinese dictionaries such as the *Xiàndài hànyǔ cídiǎn* 2016 edition, and nor do *chū hàn* [exit sweat] and *jìn shuǐ* [enter water]. Besides, given that there exist cases where the NP appears preverbally, it is not uncontroversial to assume that the NP changes its grammatical status either. For instance, in (15), *yǔ* "rain" denotes an evoked referent and hence it can be coded in preverbal position. Compare this with

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[15] In many languages, "the numeral 'one' is used to mark referential-indefinite arguments, while nonreferential indefinites are most commonly left unmarked." (Givón 1984, 123).

English (16): the event of "raining" which is usually verbalised by the verb, may under appropriate conditions appear in an analytic form.

(15) *Nà   shíhòur,   yǔ   hái   zài   xià*

       that time   rain   still   PROG fall

       "It was still raining then." (lit.: the rain was still falling)

(16) *(…but outside Gatsby's window it began to rain again…)*

       <u>*The rain was still falling*</u>*, but the darkness had parted in the west…*[16]

The same phenomenon can be observed from constructions such as *chū hàn* [exit sweat] "to sweat". In the following example, expressing a predicating proposition, the NP occupies its "regular" preverbal position. The speaker is talking about his activities with friends during vacations. A look at the previous context will tell us that he has already evoked the difficulty of climbing and the "perspiring" that may result.

(17) *Āiyā   wǒmen   zǒu-zou   nàme   jǐ   bù   a,*

       INT   1PL   walk-RED   so   some   step   SFP

       jiùshì   nèi   nèi   hàn   na,   chū   de

       then   that   that   sweat SFP   exit   FOC

       Lit: "Ah! We just walked a few steps and that sweat came out."

When the sentence expresses a predicating proposition, morphologically complex verbs (such as V$_P$-*lai*) are often preferred and the NP is likely to receive a definite encoding (as in 17). Conversely, an event-reporting utterance, which indicates a unitary event, will tend to involve a monomorphemic (PATH in this case) verb and a bare nominal. However, that does not mean that any occurrence of this kind of pattern represents an instance of an event-reporting sentence. In my view, the possibility to permit a reverse construction is a syntactical criterion to identify a presentational sentence (intended in a broad sense – including all its subtypes), given that its main characteristic is indeed to provide an alternative way to encode the Figure–Ground relationship[17]. At the same

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[16] Francis Scott Fitzgerald, *The Great Gatsby*.
[17] Following Creissels (forthcoming), "[the] common property that will be retained here as criterial for identifying a predicative construction as existential is their ability

time, a semantic criterion of non-agentivity must be present as well, as stated in the introduction of this paper.

Finally, I acknowledge that the boundary is not always clear-cut in Chinese. As Chao (1968) already pointed out, some intransitive verbs also occur transitively in constructions like *shàng cài* "serve courses of dishes", *chū qián* "put out money" and the already discussed *chū hàn* "perspire". It seems that occurrences of a monomorphemic PATH verb including a BN are likely to be reanalysed as a verb-object compound. Cross-linguistically, verbs involved in the formation of lexical causatives are those expressing a change of state/motion, such as oriented motion verbs ENTER, EXIT *etc.* (Novakova 2015, 157).

Therefore, each instance of a [V$_{PATH}$+NP$_{FIGURE}$] structure should be analysed individually, to determine whether it functions as a verb-object construction or an event-reporting sentence. What interests us here is the equivalence of such kinds of structures with event-reporting sentences involving the motion verb *lái* "come". This will be discussed thoroughly in the following section.

4.2.2 Event-reporting sentences involving deictic verb *lái* "come"

Contrary to simple PATH verbs which tend to appear with post-verbal NPs denoting inanimate entities, "direction-neutral" deictic verb *lái* focuses on human referents. Chao (1968, 672) equates sequences like *qǐ wǔ* [arise fog] and *lái kè* [come guest], which are both seen as V-O constructions. Within a different framework, authors such as Li (1990, 142) also recognise a similarity between weather sentences and existential/presentative sentences, both considered unaccusative constructions. However, Chao further remarks that these post-verbal NPs are not real objects since they do not permit the pretransitive construction: **bǎ wù qǐ, *bǎ kèrén lái-le* (1968, 672). As noted, given that those post-verbal NPs can freely appear in a preverbal position and that, semantically, their motion is autonomous, an information-structure analysis seems more appropriate as it does not require recourse to a relation-changing operation in order to account for those sentences where the NP$_F$ appears in preverbal position.

Owing to its semantic neutrality (focusing on the deictic function) and its morphological simplicity, *lái* can easily fulfil different pragmatic needs, *i.e.* that of introducing a new referential entity or asserting the occurrence of an

to provide an alternative way of encoding the prototypical figure-ground relationships".

event. In (18-19), the concept of "coming" denoted by *lái* is not activated separately from the concept of "people" denoted by *rén*. There is only a single, independent idea of the event *lái rén* "people coming".

(18) *Dìèr*   *tiān*   *zǎoshang*   *qǐ-lai*   *chàbùduō*

     second   day   morning   get.up-come   about

     jiù   <u>*lái*   *rén*   *le*</u>

     then   come   people   CRS

     "The second day, when I woke up, people started to come in."

(19) *Yī*   *lái-le,*   *qīnqi*   *lái-le,*

     once   come-PFV   relative   come-PFV

     jiù   *nà-ge*   *chuī-lǎbā*   *jiù*   *gàosu nǐ*   *le,*

     then   that-CL   play-trumpet   then   inform 2SG   CRS

     shuō   <u>*lái*   *rén*   *la*</u>

     say   come   people   CRS.SFP

     "As soon as your relatives come, the trumpet-player will inform you, saying: someone has come!"

Event-reporting sentences are often included in backgrounded discourse units. Note that even though the concepts of "event-reporting proposition" and of "backgrounded event" are closely connected, they do not necessarily overlap. The former refers to a logical concept that is not always reflected formally in the language[18]. In addition, an event-reporting proposition can denote a foregrounded event. Conversely, a backgrounded event may involve a referentially prominent entity. Operating at a different level, the distinction between foregrounded and backgrounded units enables the speaker to advance the flow of discourse while establishing its reference points (Li 2014).

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[18] For instance, the English event-reporting sentence *it is raining* has a "regular" form in the same way as the sentence *it is leaking* involving the referential pronoun *it* (see Lambrecht 2001).

4.2.3. The encoding of backgrounded events

Sometimes an event is encoded by being part of a sequence; that is, after this event has taken place, another one will happen. "In such cases, the first event is of interest as an unanalysed whole; the speaker signals that its occurrence is bounded by the subsequent event" (Li and Thompson 1981, 198). Hence, foregrounded and backgrounded information can be distinguished according to the sequentiality of events, since foregrounded clauses record major events in the plotline while backgrounded units provide the reference frame (Li 2014). In the examples below, syntactically the event of "people coming" is included in a dependent clause, namely an adverbial clause of time (20a), reason (20b) and condition (20c), and constitutes the background setting for some further information to be added:

(20) a. _Lái-le   rén   yǐhòu,_ xiànzài wǒ wǔ   suì   de   háizi,

come-PFV people after   now   1S five   year   GEN   child

jìn-lai   wǒ   jiù   děi   xùnchì   tā

enter-come 1S   then   must   reprimand 3S

"After people came, now my five-year-old child, [when he] comes I have to reprimand him."

b. _Yīnwéi lái   rén   le,_   zán   bùnéng   méi   lǐmào a

since   come   people CRS   1PL   cannot   NEG   polite SFP

"Since someone came, we can't be impolite."

c. _Lái-le   kèrén   dehuà,_   ǹg,

come-PFV   guest   if   INT

háizi   gēnběn   jiù   bù   xǔ   zài   gēnqiánr

kid   basically   then   not   allow   stay   nearby

"If guest(s) have come, uhm, then the kids can't be nearby."

As a matter of fact, _lai_+BN often appears in backgrounded units, while _lai_+Num-CL in foregrounded ones. Compare this with (21) where the [(NP$_G$+)V$_P$+NP$_F$] pattern is used to encode a major event in the plotline, in turn involving a prominent entity:

(21) *Nèi*   *tiān*   *túránjiān*   *ne,*

that   day   suddenly   PAU

lái-le   *hǎoxiē-ge*   *fēijī,*

come-PFV   quite.a.few-CL   airplane

dào   *nàr*   *zhàqū*   *mén*

arrive   there   blow.up   door

"Suddenly that day, quite a few airplanes came and blew up the door over there."

Notice that in (20c) the event is presented as hypothetical: the NP$_F$ *kèrén* "guest(s)" does not identify a particular individual but rather denotes "any possible guest". NPs of this kind are weakly referential since we are dealing with irrealis modality. This aspect will be investigated in the following section.

4.2.4. Irrealis modality

The [(NP$_G$+)V$_P$+NP$_F$] pattern may involve a Figure NP that is weakly referential. Formally, such NPs are BNs or quantified nominals entailing the omission of the numeral[19]. Besides the constructions involving simple PATH verbs (*xià yǔ* [fall rain], *chū hàn* [exit sweat] *etc.* discussed in 3.2.1, where the post-verbal NPs denote an entity that is non-individuated, *i.e.* not pointing to some specific "rain" or "sweat", see LaPolla 1995, 318[20]), this is also the case of irrealis contexts, given the strong correlation between a lack of factuality and a lack of referentiality (Chafe 1994, 104)[21]. Note that

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[19] I set aside non-referential NPs with a generic reading. If the omission of the numeral is closely connected (as suggested also by my data) to the expression of weakly referential NPs in irrealis utterances (23), it is not restricted to such situations. More generally, *yi* "one" within the "*yi*+classifier" sequence can be omitted when the semantic component of quantification is bleached. Please refer to Chen (2003/2004) for an insightful discussion of this issue.

[20] On the correlation between individuation and referentiality see also Hopper and Thompson's transitivity scale (1980, 253).

[21] "Referents of irrealis clauses […] may be said to exist in some fashion once they have been mentioned (since it is possible to refer to them anaphorically), but they do not occupy a particular spatio-temporal region in the world of discourse – at least not yet (it is impossible to say where or when they are occurring or have occurred)." (Rijkhoff and Seibt 2005).

in (22) – and in (23) below – the non-actual character of the event is highlighted by the form *shénmede* "whatever":

(22) *Suǒyǐ   yì   lái   rén   shénmede*

therefore once   come   people whatever

jiù   yǐngxiǎng zìjǐ   de   zhèngcháng shēnghuó,   wǒ   juéde

then influence   oneself GEN   regular   life   1SG   think

"So, when people come and so on, that will influence your daily life, I believe."

Recall from section 2.2 that the post-verbal NP$_F$ can be represented by the sequence [ø-*ge*-NP] and that this phenomenon, in my data at least, mainly concerns motion verb *lái* "come". As Chen (2003) points out, the omission of the numeral *yī* "one" is linked to the expression of weak-referential entities: "the less referential a nominal is, the more likely it is for *yi* to be omitted" (*ibid.*). Post-verbal NPs of this kind often appear within a hypothetical structure similar to that in (22) above:

(23) *Nǐ   qiáo, <u>lái   ge   rén   shénmede,</u>*

you   see   come CL   people   whatever

méi   cài   bù   xíng   ya

NEG   food   not   ok   SFP

"You see, if someone comes, or there is something like that, and you don't have food, it won't work."

Hence, there is a strong relation between the expression of event-reporting sentences and the encoding of non-referential participants. In turn, the latter are expressed by bare nominals (non-referential, non-quantified NPs) or by nominals following the [ø-*ge*] sequence (non-referential, quantified NPs).

To conclude this section, I discuss an apparent exception to the general tendency identified so far, namely that complex PATH verbs tend to be followed by post-verbal quantified NPs and do not co-occur with post-verbal BNs. In section 2.2., I mentioned the awkwardness of examples such as *??jìn-lai rén* [enter-come people] and *??jìn-qu rén* [enter-go people]. Actually, the sentences are felicitous if the verb phrase is in the potential

(negative) form (*i.e. jìn-bu-lái rén* [enter-not-come people] and *jìn-bu-qù rén* [enter-not-go people])[22]. I suggest the following explanation. Given that complex PATH verbs with a deictic component are strongly linked to the presentational entity-foregrounding function as a result of their inherent semantics (*i.e.* deictic and therefore space and person anchorage) and aspectual features, they are by default incompatible with post-verbal bare nouns, because the latter fail to put forward a prominent referential entity. However, if the verb is modified by the insertion of the negation particle to express impossibility, the utterance becomes modalised, and the post-verbal BN is interpreted as non-referential (*cf.* the English negative pronoun *no one*[23]). Consider the following examples, from the CCL corpus:

(24) (About the house conditions after an earthquake)

Jǐ   fēnzhōng hòu,   dāng   dìèr   bō   dìzhèn   xí-lai

some minute   later   when   second wave   earthquake attack-come

shí, tā jiā   de   wūzi   yǐjīng   qiángtǐ sì   liè

time he house GEN   room   already   wall all.around break

gēnběn   jìn-bu-qù   rén   le

basically   enter-not-go   people CRS

"A few minutes later, when the second earthquake came, the walls of his house were already in pieces. Basically no one could enter (=It was just impossible for anyone to get in)."

In (25), as *shàng-bu-qù rén* is introduced by complement marker DE, it clearly does not record an actualized event. Rather it denotes a property of the "boat" by intensifying the degree of expression of the adjective *tàng* "hot":

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[22] I thank an anonymous reviewer for pointing this possibility out to me.
[23] Negative pronouns like *no one* are a typical example of nonreferentiality: the fact that they have no referent is intrinsic to their meaning. As there is no lexical counterpart of such negative pronouns in Chinese, the same meaning is achieved by means of the negation scope on the generic human referent *rén* "person, people".

(25)   (About a fire on a boat)

Zhè shí,	chuán	tàng	de	shàng-bu-qù	rén
this time	boat	hot	COMP	enter-not-go	people

"At that time, the boat was so hot that no one could get on board."

Finally, as a reviewer pointed out to me, the unacceptability of (4b) and (5b) – *i.e.* of an appearance sentence consisting of a complex PATH verb with a deictic component such as *jìn-lai* [enter-come] followed by a BN – can be solved by adding the final particle LE to the sentence (again, since such forms were not found in the spoken BJKY corpus, the following examples are taken from the CCL corpus):

(26) a. *Wū-li*	*de*	*rén*	*jiù*	*zhīdào*	wàijiān
room-in	SUB	people	then	know	outer.room

wū-li	jìn-lai	rén	le
room-in	enter-come	people	CRS

"The people inside the room then knew that someone came in."

b. *Tā*	*gāng*	*yào*	*gǎn-shàng*	*qu,*	*yòu*	*tīng*	*nà*
he	just	will	catch-up	go	again	listen	that

nǚrén	*jiāojí-de*	*shuō:*	*"Nǐ*	*bié*	*lái,*
woman	worried-ADV	say	2SG	PROH	come

kuài	pā-xià,	cūn-li	chū-lai	rén	la²⁴!"
quick	lie.prone-down,	village in	exit-come	people	CRS.SFP

"When he was about to run after [them], he heard that woman said worriedly: 'Don't come! Lie down quickly! Someone just came out of the village!'"

As indicated by Li and Thompson, sentence final LE always treats an event signalled by the sentence as a "state of affairs" rather than an action (1981, 243). It can be argued that it does so by indicating an event boundary

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²⁴ Notice that particle LA is the fusion of Current Relevant State LE and sentence final particle A.

(Thompson 1968, 73), and that this event is included in a background unit (see Andreasen 1981 who considers that aspect marking in Chinese is used to signal background and foreground distinctions)[25]. For reasons that need to be investigated further, it seems that sentence final LE helps to neutralise the presentational (entity-centred) reading and thus licenses BNs in the post-verbal position[26].

Regarding the frequency of use, as we saw (section 2.2), no occurrences of complex PATH verbs followed by a BN were detected in the spoken corpus BJKY. In addition, in the CCL corpus only 9 occurrences of *jìnlai rén (le)* (vs 63 occurrences of *jìnlai* +Num-CL+*rén*) and 2 occurrences of *chūlai rén (le)* (*vs.* 65 occurrences of *chūlai* +Num-CL+*ren*) were found. Therefore, the former seldom occur in actual texts.

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[25] The treatment of sentence final LE obviously goes beyond the scope of the present article. I just mention a few concepts that might be pertinent to the discussion. As noted earlier, Andreasen (1981) argued that particle LE signals something in the "background" rather than an activity. By taking into account the cognitive structure of events, Chang (2001) proposes that sentence-final LE is used to focus on the "post-event state". From a discourse construction perspective, Van den Berg and Wu (2006) analyse particle LE as a *common ground coordinator* between discourse participants "used to request a 'background', or 'common ground' reset" (*ibid.*, 168).
[26] A few examples of [V$_P$-*lai*+BN] (non-modalised and without sentence final LE) exist in the CCL corpus:

(II) a. *Lǐbian de fūnǚmen yì tīng, zhēn shì hǎoxiàng zuò-mèng yīyàng,*
          wàn yě méiyǒu xiǎng-dào, zhè-ge shíhòu jìn-lai rén jiù tāmen.

          "Once the women inside heard [it], it was really like dreaming, they didn't expect at all that in this moment someone would enter to rescue them."

      b. *Tā yě zhí kàn niú péng de ménkǒu, guāng pà cóng lǐbian chū-lai rén dǎ-sǐ*
          tā

          "… he was afraid that someone would come out from the inside to kill him…"

In those cases, the sequence [V$_P$-*lai*+*rén*] is immediately followed by a verb phrase; it becomes bounded by the subsequent event and the NP$_F$ acts simultaneously as the agent of the second predicate. Probably, in the spoken language a more natural way to express the propositional content in (IIa-b) would be that of using the presentational *yǒu* "have, exist" structure. Nevertheless, as stated at the beginning of this paper, I assume that the information flow in the spoken and in the written discourse is governed by different constraints and that the present study focuses on the oral register.

In sum, even though in some specific (and rare) cases illustrated above complex PATH verbs with a deictic component can occur in event-reporting utterances, they are principally devoted to the encoding of foregrounded referential entities, and therefore mainly combine with quantified post-verbal NPs.

4.3. The enumerative function

So far, two main functionalities linked to the [(NP$_G$+)V$_P$+NP$_F$] pattern were discussed, *i.e.* the entity-foregrounding function and the encoding of events, and I defined their specific selection in terms of PATH verbs and post-verbal NPs according to my spoken Chinese data. Let us now discuss another function that the [(NP$_G$+)V$_P$+NP$_F$] pattern can express in Chinese and that, to the best of my knowledge, has gone unnoticed so far, namely that of enumerating instances of a class (the enumerative or "listing" function)[27]. Recall from section 2.2 that in the case of complex -*qu* PATH verbs, the post-verbal constituent often consisted of the [Numeral+Classifier] sequence alone[28]. Moreover, the numeral always indicates a specific quantified reference. That is, even in the case of "one" or "some", it refers to a certain QUANTITY. It is useful to consider now the context of the examples:

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[27] The enumerative function has been discussed in literature on existential sentences, as having the role of drawing "the attention of the addressee towards some entity (or a set of entities) that is relevant for some purpose under discussion" (Lumsden, 1988, 150).

[28] This is not to say that the omission of the noun is *impossible* with the other PATH verbs; the point is that in the case of complex PATH verbs including morpheme -*qù* this is the most common situation.

(27) *Nà   èr   xiǎozi ne   yě   shì   sā   xiǎozi*

    that second son   PAU   also   be   three.CL   son

    yí   guīnǔ.   Yě   chū-qu-le   yí   guīnǔ

    one.CL   daughter also   exit-go-PFV one.CL   daughter

    liǎ   xiǎozi le. (=7)

    two.CL son   CRS

    "That second son of mine, he also has three sons and one daughter. And [between them] one daughter and two sons also went out (=left the country)."

(28) *Yào qù   wǔ-ge   rén,   jìn-qu   liǎng-ge,*

    if   go   five-CL   people enter-go   two-CL

    sān-ge   zài   wàibianr   děng-zhe. (=8)

    three-CL in   outside   wait-DUR

    "If five people went there, two [of them] could get in, and the other three could wait outside."

It turns out that the referent denoted by the Figure NP has previously been evoked in the discourse; that is, the entity it points to is part of a referential group already present in the speakers' consciousness. In the following example, the speaker is explicitly talking about the number of individuals participating in the event: post-verbal constituent *yí-ge* "one-CL" denotes a specific person in the group.

(29) *Wǒmen* *yígòng* *bào-le* *shì* *bā-ge,*

1PL total register-PFV be eight-CL

dào *zhèr* *lái* *de* *ne,* *shì* *sì-ge,*

arrive here come NOM PAU be four-CL

zhōngtú *ne,* *yòu* *tuì-hui-qu* *yí-ge,*

halfway PAU again go.back-return-go one-CL

yīnwèi *shēntǐ* *bù* *hǎo,*

because health not good

shuō *hái* *shèng* *wǒmen* *sān-ge* *rén* (=9)

say still remain 1PL three-CL people

"In total [the ones between] us [who] registered were eight, [the ones] who came here were four, <u>halfway, one [of them] returned</u>, because of health issues, so three of us remained."

Since the nominal is not expressed, the numeral-classifier sequence no longer acts as a determiner but has instead a pronominal function. This is the reason why the numeral always has to be specific in such sentences. The referent denoted by the NP$_F$ is not entirely new to the discourse: it is precisely the fact that the nominal head represents "old information" that justifies its omission. In my view, the post-verbal position of the Figure NP in those cases is due to its non-topical status: given the referential group its referent belongs to, the focus is on the QUANTITY expressed by the numeral. Hence, if we want to consider this structure as "presentational", we should be aware that the post-verbal constituent has a distinguished characteristic; that is, it holds a whole-part relation with a previously evoked referential group.

4.4 The agentivity feature conveyed by the verb *qù* "go"

As previously discussed, the motion verb *qù* "go" is traditionally included in the (dis)appearing sentences group. In this view, existential sentences involving *qù* "go" (30) and those involving *lái* "come" (31) are both considered as "(dis)appearance sentences", whereby the post-verbal NP appears or disappears with reference to the preverbal Locus:

(30) *Wǒmen*   *yǐjīng*   *qù-le*   *liǎng-ge*   *rén*   *le*

      1PL   already   go-PFV   two-CL   people CRS

      "Two of us (lit. two people) already went (lit. from us)."

(31) *Wǒ* *lái-le*   *liǎng-ge*   *péngyou*

      1SG come-PFV two-CL   friend

      "Two friends of mine came to [visit] me."

There is, however, a fundamental difference between the two deictic verbs when appearing in a presentational sentence. When we compare *qù* "go" with its basic antonymic pair *lái* "come", an asymmetry will stand out[29]:

(32) *Qiánmiàn*   *lái(*qù)-le*   *yí-ge*   *rén*

      ahead   come(*go)-PFV   one-CL   people

      "Someone is coming (*going) from ahead."   (Xu 2008, 177)

Xu notes that if the locative noun *qiánmiàn* "ahead" is replaced by a *place word* such as *jiāli* "at home"*,* the sentence becomes grammatical with both motion verbs: "the locative noun *qiánmiàn* 'ahead' excludes the use of the verb 'go'. Actually, the sentence is grammatical if *qiánmiàn* is replaced by a place word" (2008, 178). However, the main reason for those facts seems to lie elsewhere. In most cases, the verb *qù* requires that its preverbal Locus be a person or a personified place able to perform the semantic role of an agent; it then can be glossed as "to send". Such a constraint accounts for the impossibility of (32). Based on my spoken corpus inquiry, it turns out that in 13 out of 18 results, *qù* is preceded either by an NP denoting a human referent (33) or by a personified Locus (34). In addition, when the NP$_G$ is not expressed, generally it can be linked to referents of this kind.

(33) *Dāngshí*   *wǒmen*   *qù-le*   *wǔ-ge*   *dàibiǎo*

      that.time   1PL   go-PFV   five-CL   representative

      "At that time, [from us] five representatives went [there] (= we sent five representatives)."

---

[29] See also Lu Jianming's (2002) article.

(34) *Dānwèi* *bú* *dàn* <u>*qù* *rén,*</u> *érqiě* *hái*

unit   not   only   go   people   but.also   still

tígōng *jiāotōng* *gōngjù,* *shì-bu-shì?*

provide   transportation   means   be-not-be

"The unit did not just send someone but also provided means of transportation, wasn't it so?"

As a matter of fact, most of the time, *qù* occurring within the [(NP$_G$+)V$_P$+NP$_F$] pattern expresses a caused motion according to my corpus results (16 out of the 18 occurrences). For instance, in (35) the preverbal NP *wǒmen* "we" is followed in succession by the modal verb *kěyǐ* "can" and by the reflexive pronoun *zìjǐ* "ourselves", both indicating an active control exerted by the NP$_G$ over the motion denoted by the verb *qù*.

(35) <u>*Wǒmen*</u> *kěyǐ* *zìjǐ* <u>*qù* *rén*</u> *yàn-zhì*

1PL   can   oneself   go   people   check-quality

yàn-liàng *děngdeng*

check-quantity   *etc.*

"We can send someone (on our own) to inspect the quantity and quality, *etc.*"

To summarise, when appearing within the similar surface pattern [(NP$_G$ +)V$_P$+NP$_F$], the two basic deictic verbs *lái* and *qù* have different features. Namely, when the verb *qù* "go" is involved, the strong tendency is that the NP$_G$ acts as the agent that causes the motion and the NP$_F$ as the patient who performs the motion[30]. Recall that the semantic criterion I retained for identifying a presentational sentence excludes any external input on the Figure. Now, in the case of *qù* "go", this condition is not always met, and therefore I excluded those sentences from my analysis.

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[30] Notice that marginally *qù* may express a non-causative motion (*i.e.* its core meaning "to go") within the [(N$_G$ +)V$_P$ +N$_F$] pattern, as in (28) above. The important point to be made here is that we just cannot equate "presentational" sentences with those involving *qù* when the latter carry an agentive connotation.

5. Concluding remarks

In this contribution, I studied the [(NP$_{\text{GROUND}}$+)V$_{\text{PATH}}$+NP$_{\text{FIGURE}}$] pattern of Chinese on the basis of its authentic spoken occurrences. It has been shown that the structure under scrutiny may be triggered by several motivations: the promotion of a new referential entity; the encoding of an enumerative kind of focus, whereby the moving entity systematically belongs to a referential group previously evoked and the QUANTITY expressed by the numeral is always specific; the expression of event-reporting sentences, in which the event is conceptualised as an analysed whole and the entity as its necessary participant.

The common motivation underlying the post-verbal position of the NP$_{\text{F}}$ can be subsumed by the necessity to mark its referent as non-topical. In turn, prototypical presentational sentences involve *lái* "come" and V$_{\text{P}}$-*lai* PATH verbs, event-reporting sentences include simple PATH verbs and *lái* "come", while V$_{\text{P}}$-*qu* PATH verbs mostly appear in enumerative sentences.

In addition, I discussed the close connection between the encoding of eventive propositions and nominals of weak referentiality, either including inanimate non-individuated entities (as *yǔ* "rain" in *xià yǔ* [fall rain]) or the generic human referent (*rén* "people" in *lái rén* [come people]).

Finally, when the verb appearing within the pattern [(NP$_{\text{G}}$+)V$_{\text{P}}$+NP$_{\text{F}}$] expresses a causative motion – as the verb *qù* "go" does in most cases, the construction does not satisfy the basic semantic requirement that identifies a "presentational sentence".

List of abbreviations

ACC	Pretransitive marker *bǎ* 把
ADV	Adverbial particle *de* 地
CL	Classifier
COMP	Complement marker *de* 得
CRS	Current Relevant State particle *le* 了
DUR	Durative marker 着
FOC	Narrow focus marker *de* 的
GEN	Genitive particle *de* 的
INT	Interjection
NEG	Negation
NOM	Nominalizing particle *de* 的
PAU	Particle indicating pause *ne* 呢
PFV	Perfective aspect marker
PROG	Progressive aspect marker
PROH	Prohibitive adverb
RED	Verbal reduplication
SFP	Sentence final particle
SUB	Subordinative particle *de* 的

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CHAPTER FOUR

THE SYNTACTIC AND SEMANTIC PROPERTIES OF THE QUANTITY EXPRESSION *YIDIANR* IN CHINESE

XIAOSHI HU AND WEI XIANG

Abstract

The followings examples all contain the quantity expression *yidianr*, which is interpreted as "any".[1] (1a) shows that *yidianr* is licensed in the domain of the grammatical negation *mei*. (1b) shows that it can also be licensed by pragmatic negation expressed by a rhetorical positive question. (1c) and (1d) involve respectively the focus construction *lian…ye/dou* "even" and the conditional construction of *jiu* "then".

(1) a. 张三　　　没　　喝　　一点儿　　红酒。

    Zhangsan　　mei　　he　　yidianr　　hongjiu.

    Zhangsan　　NEG　drink　a little　　wine

    "Zhangsan didn't drink any wine."

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[1] The following abbreviations are used in this paper: 1st: 1st person; 2: 2nd person; 3: 3rd person; ASP: Aspect; CL: Classifier; DE: *de*; M: Masculine; NEG: Negation; NPI: Negative Polarity Item; PL: Plural; PPI: Positive Polarity Item; PRT: Particle; Singular: SG.

b. 我 有 困难 的 时候，你 借过 我一点儿 钱 吗?

Wo you kunnan de shihou, ni jie-guo wo yidianr qian ma ?

1SG have difficulty DE time 2SG lend-ASP 1SG any money PRT

"When I have difficulties, have you ever lent me any money?"

c. 张三 连 一点儿 红酒 也/都 没 喝。

Zhangsan lian yidianr hongjiu ye/dou mei he.

Zhangsan even a little wine also NEG drink

"Zhangsan didn't drink any wine (at all)."

d. 一点儿 声音 就 能 把 张三 吵醒。

yidianr shengyin jiu neng ba Zhangsan chaoxing.

a little noise then can BA Zhangsan wake up

"If there is any noise, Zhangsan will be woken up."

In this article, we argue that *yidian* functions as a minimiser "any" when it occurs in a restricted set of constructions. We will conclude from (1) that the minimiser function of *yidianr* "any" is determined by the scalar inferencing property denoted by the relevant constructions.

Key words: *yidianr*, minimiser, scalar inference, Chinese

1. Introduction

This article concentrates on the syntactic and semantic properties of *yidianr* in Chinese, which will be analysed as a polarity item. The notion of polarity item refers to those expressions which require an adequate licenser within a certain domain (Klima 1964; Ladusaw 1979, 1980; among many others). Two subtypes can be further distinguished: negative polarity items (henceforth NPIs) which are licensed in a negative environment, and positive polarity items (henceforth PPIs) which are excluded from the domain of negation. In (2b), *lever le petit doigt* "lift the little finger" counts as a fixed expression, which must be licensed an as an NPI by a negator. But when it appears in a positive context, it can be assigned a non-negative interpretation as a PPI, as in (2a).

(2) a. *Il   a   levé le petit doigt.*

    3MSG has lifted the little finger

    "He has lifted the little finger."

   b. *Il   n'a pas   levé le petit doigt.*

    3MSG NEG-has-NEG lifted the little finger

    "He has done nothing (to help)."

It can be noticed that *yidianr* in Chinese is also assigned such an interpretational property: in a positive context, *yidianr* is literally interpreted as "a little", whether it occurs in object positions or in the subject position of an existential construction (see (3a, b)); however, *yidianr* is interpreted as "any" in the domain of a negative marker such as *mei* or in the focalised position in the construction of *lian…ye/dou* (see (3c, d)).

(3) a. 张三   喝了   一点儿   红酒。

    Zhangsan he-le   yidianr   hongjiu.

    Zhangsan drink-ASP   a little   wine

    "Zhangsan has drunk a little wine."

   b. 有 一点儿   油   溅到了   我   的   裤子   上。

    You yidianr   you   jiandao-le wo   de   kuzi   shang.

    have a little   oil   spill-ASP 1SG   DE   trousers   on

    "A little oil spilled onto my trousers."

   c. 张三   没   喝   一点儿   酒。

    Zhangsan   mei   he   yidianr   jiu.

    Zhangsan   NEG   drink   any   wine

    "Zhangsan hasn't drunk any wine."

d.　张三　　　连　　　一点儿　　酒　　也/都　　没　　喝。

    Zhangsan　*lian*　*yidianr*　*jiu*　*ye/dou*　*mei*　*he*

    Zhangsan　even　any　　　wine　even　　NEG　drink

    "Zhangsan hasn't drunk any wine."

Generally speaking, when excluded from a negative context, *yidianr* is literally interpreted as a typical indefinite quantifier "a little", which only modifies mass nouns. However, we argue that it functions as a minimiser when occurring in a limited set of contexts, as shown in (3c, d). In order to justify our hypothesis, we will examine the syntactic-semantic properties of *yidianr*. This article is organised as follows: in section 2, we introduce the previous analysis of polarity items. In section 3, we present the diachronic development of *yidianr*, by looking into the relation between its morphological properties and its polarity interpretation. In section 4, we focus on the licensing of *yidianr* as a minimiser "any". The conclusion follows in section 5.

2. Previous analyses of polarity items

Ever since Klima (1964), polarity items have received a lot of attention (i.e. Baker 1970; Linebarger 1980, 1987; Progovac 1992, 1994; Ladusaw 1979, 1980; Zwarts 1991, 1993; Giannakidou 1998, 1999, 2006, 2011; Kadmon & Landman 1993; Krifka 1995 and Israel 2011; among others). The elements in question are not grammatical in all linguistic environments, i.e., they are restricted to some linguistic environments for acceptability. All polarity items can be divided into two basic classes: PPIs, which are unacceptable within the scope of negation, and NPIs, which are unacceptable in simple affirmative contexts. The most famous negative and positive polarity items are English *any* and *some,* respectively. As shown in (4), *any* is said to be an NPI, since it is restricted to negative contexts; while *some* is taken as a PPI, since it is forbidden in negative contexts.

(4) *a. He didn't read any/#some books*.

    b. *He has read #any/some books*.

Klima (1964) confirms that NPIs must be governed by negative markers, or generally speaking, occur in a negative context. He further claims that all polarity contexts share a common syntactic-semantic property in terms of affectivity, which is absent in other non-polar contexts. The analysis of

Klima (1964) offers a fundamental basis for other analyses that follow, according to which two essential ideas are suggested: one of which deals with the polarity sensibility in terms of dependency between the polarity items and their licensers on syntactic representations; the other treats the polarity sensibility as a purely semantic question by generalising all polarity contexts with the semantic property of affectivity.

2.1 Syntactic proposals

The syntactic approach (Baker 1970; Linebarger 1980, 1987, 1991; Progovac 1992, 1994, etc.) builds on Klima's idea that NPIs must occur "in the construction with negation". In other words, NPIs must be c-commanded by a negative element. According to those syntactic analyses, the constraints on polarity items depend solely on the syntactic structure of their licensing contexts whereas the semantic interpretation takes little importance. From this perspective, the fundamental issue in the study of polarity items is concerns syntactic licensing. The important issue here is not the nature of polarity items are, nor why they exist, or what makes some construction a polarity licensor, but rather what the structural relation between a polarity item and its licensor can tell us about the nature of syntactic structure.

Baker (1970) claims that an adequate descriptive mechanism for NPIs must make use of logical entailment. That is, NPIs are licensed by negation. However, the negation need not always be syntactically present. An NPI is acceptable either if it is within the scope of negation or if it is in an affirmative sentence which entails a negative entailment. For example, *any books* in (5a) is licensed in terms of the negative entailment in (5b).

(5) a. *Paul is surprised that Anne has read any books.*

   b. *Paul expected that Anne would not have read any books.*

Although Baker first provides a treatment for the cases where there is no overt negation, his approach has been confronted with some considerable criticism (Ladusaw 1979, Linebarger 1980, Zwarts 1996). Since every positive proposition (P) entails its double negation, that is, P entails "NOT NOT P", Baker's approach predicts that all NPIs could appear in positive contexts, which is not true.

(6) a. **Anne reads any book*.

    b. *It is not the case that Anne doesn't read any book*.

The gist of Baker's proposal is adopted by Linebarger (1980, 1987). She proposes that polarity items are licensed primarily by negation, but they may be triggered secondarily by an appropriate negative implicature in non-negative contexts. She also proposes the following Immediate Scope Constraint, which states that

A negative polarity item is acceptable in a sentence S if in the LF of S the sub-formula representing the NPI is in the immediate scope of the negation operator. An element is in the immediate scope of NOT only if (i) it occurs in a proposition that is the entire scope of NOT, and (ii) within this proposition there are no logical elements intervening between it and NOT (Linebarger 1987:338).

In her analysis, it is predicted that the negation in a matrix clause cannot license NPIs in a subordinate clause, as in (7), because the proposition containing the NPI does not constitute the entire scope of NOT. It also predicts that certain logical elements, like quantifiers and adverbials, will render NPIs unacceptable by intervening between NOT and NPIs. As in (7), the NPI *a red cent* is not in the immediate scope of the negator, since *every charity* intervenes between negation and *a red cent*.

(7) a. **Paul didn't stay home so that he could lift a finger to help to me*.

    b. **Paul didn't give a red cent to every charity*.

    c. [*Paul did NOT* [*give to every charity* [*a red cent*]]].

Moreover, the analysis explains how NPIs are licensed in non-negative contexts. According to Linebarger, in non-negative contexts, the NPI is licensed because it does occur in the immediate scope of negation in the LF of an implicature. Thus, the NPI *have a hope in hell* is licensed with the exclusive operator *only* in (9a) by virtue of the negative implicature in (9b). The use of the notion of negative implicatures rather than negative entailment in Linebarger's analysis avoids the problem of an infinite number of equivalent propositions, as we mentioned for Baker's analysis.

(8) a. *Only John has a hope in hell of passing*.

    b. Negative implicature: Whoever is not John does not have a hope in hell of passing.

However, Linebarger's proposal is problematic as well: the suggestion that all NPIs offer a negative conversational implicature appears too strong. Specifically, not all environments in which NPIs are licensed have a negative implicature, as in (10). Furthermore, as Israel (1996) points out, since negative implicatures are a pragmatic notion and LF is a syntactic representation, the presentation of negative implicature at LF is not clearly explained.

(9) a. *Did you buy anything yesterday?*

     b. *Every student who had ever read anything on linguistics attended the lectures.*

     c. *If you want to buy anything, please tell me.*

2.2 Semantic proposals

The semantic approaches (e.g. Ladusaw 1979, 1980; Zwarts 1996; Giannakidou 1998, 1999, 2006, 2011) start with Klima's idea that polarity contexts are united by a common grammatico-semantic property, which Klima himself did little more than name. On these accounts polarity licensing depends directly on a sentence's semantic representation, and only incidentally on the syntactic structure of a licensing context.

The most important semantic theory of polarity sensitivity is that of Ladusaw (1979, 1980), which is the starting point for the semantic approach to polarity. Ladusaw notices that polarity sensibility is in essence a sensibility to the logical monotonicity. NPIs are only licensed in the domain of a downward entailing operator, while PPIs are excluded in such a context. A downward entailing operator licenses inferences from general properties to specific instances. Negation in (11) is a downward entailing operator because it licenses the inference from the general *vegetables* to the specific *carrots*.

(10) a. *Mary does not like vegetables.*

      b. →*Mary does not like carrots.*

The examples in (12) suggest that expressions like the quantifier *no,* the first argument of *every,* the first argument of conjunctions *if* or *before,* and the negative predicate *deny* all define environments which are DE. Therefore, an NPI like *anything* is allowed in their scope, as shown in (12).

(11) a. *No men came. →No fathers came.*

   b. *Every man came. →Every father came.*

   c. *If you have a car, you can come. →If you have a BMW, you can come.*

   d. *Before Paul ate chocolates, his mother came back.→Before Paul ate white chocolates, his mother came back.*

   e. *Paul denied that he had stolen a car.→Paul denied that he had stolen a BMW.*

(12) a. *No student had ever read anything on linguistics.*

   b. *Every student who had read anything on linguistics attended the lectures.*

   c. *If you want to buy anything, please tell me.*

   d. *Before Paul ate anything, his mother came back.*

   e. *Paul denied that he had stolen anything.*

For Ladusaw, the inferencing which defines polarity licensors is a formal semantic property of linguistic expressions, and the licensing specifically relies on the representation of a sentence's conventional truth-conditional meaning. A positive aspect of his proposal is its unifying power. A single semantic notion of downward entailment allows to identify licensers even in these cases where no overt negator is present, as in (13c, 13d, 13e). However, it is not all NPIs that can be licensed by downward entailing operators. The distribution of some NPIs, such as English *one bit*, is more limited than that of *any,* as shown in (14). Therefore, the notion of downward entailment itself is not enough to explain the heterogeneity of NPIs.

(14) a. **Few people were one bit happy about these facts.*

   b. **No linguist was one bit happy about these facts.*

   c. *The men weren't one bit happy about these facts.*

Taking the analysis of Ladusaw (1979, 1980) as a starting point, Zwarts (1991, 1993) suggests a monotonicity hierarchy in order to explain the diversity of the polarity sensibility among NPIs, and he argues that the polarity sensitivity is a lexical phenomenon. The monotonicity hierarchy distinguishes three degrees of downward monotonicity. The downward

entailment is the weakest negative environment, which can be defined in terms of implication reversers. *Few N*, *seldom, rarely* and *hardly* are typical downward entailing operators. The next level in the hierarchy is anti-additivity. Anti-additivity represents a stricter standard of negativity than does simple downward entailment. Therefore, anti-additive operators have more licensing power than downward monotonic ones in general. The negative quantifiers and adverbs such as *nobody*, *nothing* and *never* are typical anti-additive operators. It is worth noting that anti-additive operators include most of the non-negative licensing contexts, such as questions, conditionals, and comparatives. The strongest negative environment in the hierarchy is the antimorphic. Almost all the antimorphic operators in natural languages are the expressions of sentential negation.

The distinction among licensing contexts is then brought to bear on the classification of NPIs themselves, as summarised in (15).

> (15)   a. Weak NPIs are licensed in downward monotonic contexts.
>
>   b. Strong NPIs can be licensed in anti-additive contexts but not in downward monotonic ones.
>
>   c. Super-strong NPIs are licensed only in antimorphic contexts.

In (16)-(18), *anything, lifts a finger,* and *one bit* are the representatives of these types of negative polarity items, respectively. All antimorphic and anti-additive operators are also downward entailing operators, but some downward entailing operators fail to be either anti-additive or antimorphic. That is why the strong NPI *lift a finger* and the super-strong NPI *one bit* cannot be licensed by the simple downward monotonic operator *few* in (17a) and (18a). The same logic applies to the example in (18b). As the negative quantifier *no* is an anti-additive operator, it cannot license the super-strong NPI *one bit* which can only be licensed by an antimorphic operator.

> (16)   a. *Few people gave Mary anything.*
>
>   b. *No student gave Mary anything.*
>
>   c. *John didn't give Mary anything.*
>
> (17)   a. **Few people lifted a finger.*
>
>   b. *No people lifted a finger.*
>
>   c. *John did not lift a finger.*

(18)   a. **Few people were one bit happy about these facts.*

     b. **No linguist was one bit happy about these facts.*

     c. *The men weren't one bit happy about these facts.*

The monotonicity hierarchy forms the basis for a logical approach to various problems. Since different polarity items differ in the sorts of licensors they require, it is reasonable to hypothesise that polarity items may be sensitive to the different levels of the monotonicity hierarchy. However, this analysis is not exploited in full. Although Zwarts claims that polarity sensitivity is a lexical phenomenon, his analysis is focused on the semantic characteristics of the class of licensers. With respect to NPIs, it reduces to attributing them features like *weak* or *strong*, which are grounded on distinctions defined outside the class itself. Zwarts does not offer a semantic analysis of the NPIs themselves which would make the lexical distinction clear.

Based on the fact that the Modern Greek NPI *kanenas* is excluded from affirmative assertions but licensed in a wide variety of contexts without a downward entailing operator, Gianniakidou (1998, 1999, 2006, 2011) replaces the notion of DE context by non-veridicality as licensor for NPIs. Similarly, English *any,* unlike other NPIs in English, can be licensed in several contexts which are not downward entailing, e.g., with certain modal verbs and in habitual and generic contexts. Therefore, Gianniakidou argues that the monotonicity hierarchy cannot account for the full diversity of sensitivity constructions. She claims that polarity items in general are not sensitive to the monotonicity properties of their licensing contexts, but rather to the status of these contexts as veridical, nonveridical, or antiveridical. Veridical operators entail the truth of propositions in their scope, nonveridical operators lack this entailment, and antiveridical operators entail the falsity of propositions in their scope. Given this, Giannakidou suggests that NPIs are licensed only in the scope of a nonveridical operator or of an anti-veridical operator.

Following this idea, the examples in (19) containing NPIs are grammatical for being non-veridical, even though they are not decreasing monotonic. Neither the modal *may* in (19a), nor the question in (19b), nor the conditional in (19c), nor the complement of the verb *hope* in (19d) can imply the truth of the sentence "Paul has eaten the spinach".

(19) a. *Paul may have eaten anything.*   ↛   *Paul has eaten the spinach.*

  b. *Did Paul eat anything?*   ↛   *Paul ate the spinach.*

  c. *If Paul wants to eat anything, please tell me.*   ↛   *Paul eats the spinach.*

  d. *I hope that Paul has eaten anything.*   ↛   *Paul has eaten the spinach.*

However, Falaus (2009) and Israel (2011) notice that the analysis in terms of non-veridicality may involve over-generalisation. For example, *yet* in English can be licensed in interrogatives while excluded in non-veridical contexts such as the complement of the volunteer verb *want* or the domain of the adverb *perhaps*. Furthermore, even though the non-veridicality characterises the unreal context, taking the notion of veridicality as a basis is problematic since each language disposes its proper expression of unreality. The veridicality hypothesis itself is not sufficient to account for the diversity of polarity sensibility in different languages.
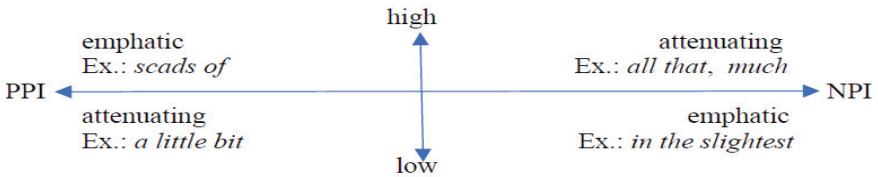
2.3 Pragmatic proposals

While the syntactic approach primarily treats NPI-licensing as a syntactic relation between a polarity item and some (usually abstract) negative element, the semantic approach seeks the essence of affectivity in a single abstract semantic property. These two approaches account for polarity licensing, but they do not explain polarity sensitivity. What is missing in those analyses is an explanation of why NPIs should be so sensitive. Toward a more pragmatic approach, Israel (2011) provides an analysis focused on the lexical semantic properties of the polarity items themselves and on the special contributions that they make to their occurring sentences. He argues that polarity items are a special class of scalar operators and that their sensitivity reflects their conventional scalar semantics. Therefore, the contexts which license grammatical polarity items are defined precisely by the scalar inferences they support, where a polarity item makes a meaningful and coherent contribution to the use of a well-formed sentence.

To distinguish different types of polarity items, Israel (2011) turns to a scalar model and two semantic properties. The scalar model is built to define pragmatic entailments, which normally include two types of scalar inferences depending on the direction of how an inference supports a given proposition. The first one concerns scale preserving which licenses inferences from high to low values, and the second one concerns scale

reversing which licenses inferences from low to high values. Israel further proposes two semantic properties which are conventionally encoded in polarity items, that is, Quantitative value (q-value) and Informative value (i-value). Q-value is determined by the relative or absolute position of a polarity item on a certain scale, while the i-value determines the inferential value of a proposition with respect to other propositions in the scalar modal. A high i-value is found when propositions entail the scalar norm, whereas a low i-value is observed in the situation where propositions are entailed by a scalar norm. The two values together with the scalar model give rise to four types of polarity items, as shown in (20), the longitudinal axis stands for the q-value scale, with the scalar reversing at its right and the scalar preserving at its left.

(20)

```
                              high
                               ↑
       emphatic                              attenuating
       Ex.: scads of                         Ex.: all that,  much
PPI ←──────────────────────────┼──────────────────────────→ NPI
       attenuating                           emphatic
       Ex.: a little bit                     Ex.: in the slightest
                               ↓
                              low
```

The minimisers, such as *a wink, lift a finger* and *a red cent* are typical examples of one basic type, combining low q-values with high i-values. NPIs like *much* and *all that* form a second type, combining high q-values with low i-values. As NPIs, these expressions have roughly the same distributional constraints, but their pragmatic purpose is quite different. The contrast in (21) between the NPIs *much* and *a wink* illustrates the difference. (21a) makes a strong claim by denying that Mary slept even the smallest amount, while (21b) makes a weak claim by only denying that Mary slept for a long time. *A wink* expresses a minimal q-value and produces an emphatic sentence, whereas *many* marks a relatively high q-value and produces an understatement.

(21)   a. *Mary did *(not) sleep a wink before her big test.*

      b. *Mary did *(not) sleep much before her big test.*

When polarity is reversed, the division of NPIs into low-scalar emphatics and high-scalar attenuators is mirrored by a division of PPIs into high-scalar emphatics and low-scalar attenuators. Emphatic PPIs include quantificational idioms like *scads of* and *tons of*, and degree modifiers like *utterly* and

amazingly. These expressions encode high q-values and high i-value, and their use tends to express a speaker's high level of confidence in the content of an expressed proposition. The last of the four types, attenuating PPIs, include a great number of quantifiers such as *some, several* syllable and degree modifiers like *pretty.* They encode a relatively low q-value and low i-value. Their use tends to signal a desire not to insist strongly on one's point. The difference between these two types of PPIs is clear: the example (22a), with the high i-value PPI *scads of*, makes an emphatic assertion that *Mary* won a very large quantity of money, while (22b), including the low i-value PPI *a little bit*, modestly asserts the winning of only a small quantity.

(22) a. *Mary* (*rarely) *won scads of money at the races.*

b. *Mary* (*rarely) *won a little bit of money at the races.*

The analysis of polarity items as scalar operators helps explain both what it is that makes polarity items so sensitive and what it is that polarity items are sensitive to. Polarity items are sensitive to scalar inferencing, and they are sensitive because of the interaction between their scalar semantic properties. Therefore, from this perspective, polarity licensing is not a matter of well-formed representations but one of coherent conceptualisations: polarity items are licensed in contexts where they make sense and fulfill their conventional expressive functions. This tells why, as in (23), *a bit* and *a nibble* both denote a small quantity of food, but *a bit* can appear freely in both sentences while *a nibble* is only limited in positive contexts. On the scalar account, the difference between these two forms is that while *a bite* is lexically unspecified for informative value, *a nibble* is conventionally specified as attenuating and functions as a PPI because of its low quantitative value. As a result, those pure syntactic or semantic approaches, which are based on external factors, cannot properly explain the distinction between the contrast.

(23) a. *I think I'll have just a bit/a nibble of the cake.*

b. *I haven't had even a bit/*nibble to eat all day.*

In the following two sections, based on the proposal of Israel (2011), we will explain how the quantifier *yidianr* in Chinese can function as an NPI in a restricted set of constructions.

3. Diachronic development of *yidianr* in Chinese

In this part, from a diachronic perspective, we will illustrate, the syntactic construal of *yidianr* and its various semantic functions. *yidianr* is composed of three elements, the numeral *yi* "one", the noun *dian* "point" and the diminutive suffix *-r*. We start with the essential element *dian* which determines the denotation of a minimal quantity of *yidianr*. In classical Chinese, *dian* is a proper noun referring to a kind of small ink dot in calligraphy (see (24a)), and it can also function as a verb denoting the drawing of such a point in calligraphy (see (24b)).

(24)   a. 点，   小   黑   也。

        Dian,   xiao   hei   ye.

        point,   small   black   Part.

        "Dian, is a small and black point."

    b. 马   字   少   一 点。

        Ma   zi   shao   yi dian.

        horse   character lack   a   point

        "The character of horse lacks a point."

As pointed out by Lü (1985) and Chen (2015), in Middle Chinese, *dian* developed some usages other than as a proper noun or a verb in calligraphy. Basically, *dian* is extended to refer to things with a round shape not necessarily related to calligraphy (see (25a)). Moreover, it began to be used as a unit word in a numeral phrase, as shown in (25b) where it combines with the numeral to modify a noun. Later, in Early Mandarin Chinese, *dian* combined with the numeral *yi* "one" was used to express an imprecise small quantity. In this case, the numeral cannot be replaced by other numerals. As shown in (26a), when *dian* combines with the numeral *yi* "one" ambiguity between a dot shape unit and a small quantity may arise; whereas the ambiguity disappears if the numeral is larger than the numeral one. In addition, in this period, the diminutive suffix *-r* appeared to attach to *dian*. The appearance of *-r* not only strengthens the smallness of quantity, but also helps to distinguish the use of an approximative quantity from that of counting, since the diminutive suffix cannot attach to the unit-counting *dian*, as shown in (26b).

(25) a. 泪痕　　　点点　　　　寄　　相思。

      Lei-hen　diandian　　　ji　　xiangsi.

      tear-trace　point point　　send　sickness

      "The marks of teardrops testify lovesickness."

    b. 一点　　　　浓岚　　　在　　　　深井。

      Yi-dian　　　nonglan　　zai　　　shenjing.

      one-point　　deep mist　at　　　deep well

      "a dot of thick mist in the deep well"

(26) a. 如 红　　　炉　　上　　一点 雪。

      Ru　hong　　lu　　shang　yi-dian　xue.

      as　　red　　　furnace　on　　a-point　snow

      "Like a bit of snow /a flake of snow on the red-hot furnace"

    b. 临风　　　千点-（*儿）　　雪。

      *Lin-feng　　qian-dian-(*r)　　xue.*

      Face-wind　thousand-point　　snow

      "Braving the wind and a thousand flakes of snow"

The other usage of *yidianr* was also observed in Early Mandarin Chinese. In some negative contexts, *Yidianr* is interpreted as a minimiser NPI. In this usage, it appeared always in the sequence of numeral-unit word-noun, which makes a difference from its quantifier usage where the numeral *yi* "one" can be omitted (see (27b)).[2] The obligatory presence of the numeral *yi* for the minimiser *yidianr* is due to the fact that *yi* establishes a minimal quantity for the atomic unit denoted by *dian*. The combination of these two

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[2]As pointed out by one of the reviewers, it is *yi* "one" that functions as a quantifier, with *dian* functioning as a classifier. However, in some cases *yi* can be omitted, but *dian* cannot. The fact that *dian* functions as a classifier and the claim that *dian* is a quantifier are not contradictory: the former is a semantic notion while the second is a syntactic notion. *Dian* can be analysed as a quantifier when it occurs in the position of the classifier, since *dian* and classifiers are in complementary distribution.
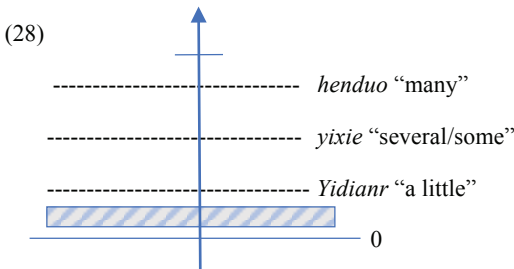
elements guarantees that y*idianr* can denote a minimal quantitative value in its minimiser use.

(27) a. 张三　　　　没　　喝*　　（一）点儿　酒。

       Zhangsan　　*mei*　*he*　　*yi-dian-(r)*　*jiu.*

       Zhangsan　　NEG　drink　any-r　　　wine

       "Zhangsan didn't drink any wine."

    b. 张三　　　　喝了　　（一)点儿　　酒。

       Zhangsan　　*he-le*　　*(yi)-dianr*　*jiu.*

       Zhangsan　　drink-ASP　a-little　　wine

       "Zhangsan drank a little of wine."

In sum, *Yidian(r)* is assigned several functions along in the evolution of Chinese in different periods in history. In contemporary Chinese, it keeps the double functions as either an indefinite quantifier or a minimiser. In the following section, we concentrate our work on three types of contexts which license the minimiser function of *yidianr* but block the quantifier one.

3.1 Licensing *yidianr* as a minimser

When observing the grammaticalisation process of *dian*, the denotation of the small quantity of *yidianr* is narrowly linked to the denotation of *dian* which refers to a small atomic unity. We can thus form a quantity scale by comparing the small quantity of *yidianr* to other quantity expressions. As in (28), the vertical axis represents the amount; *yidianr* occurs near the bottom of the axis, but it does not mean "nothing".

(28)

--------------------------------- *henduo* "many"

--------------------------------- *yixie* "several/some"

--------------------------------- *Yidianr* "a little"

                   0

Meanwhile, when *yidianr* appears in a negative context, it functions as a minimiser "any" and negates even the smallest quantity. As pointed out by

Horn (1989), small quantity denoting expressions are usually used in negative clauses to reinforce the negative meaning and hence produce a more emphatic effect than simple negation. According to the taxonomy in Israel's (2011) proposal, minimisers combine a minimal quantitative value and a high informative value in the scale at the same time. We have shown in (1a) that the minimiser *yidianr* "any" should appear in the domain of a negative context. However, there are also some contexts in which the minimiser *Yidianr* "any" is not licensed, as illustrated in (29):

(29) a. 张三　　　今晚　　连 一点　　　酒　　　也/都 没　　　喝。

　　　Zhangsan jinwan lian yidianr jiu　ye/dou mei　he.

　　　Zhangsan tonight even any　wine　even NEG　drink

　　　"Tonight Zhangsan didn't drink any wine."

　　b. 一点　油　　碰到　　　火　　　就　　会　　　燃烧。

　　　Yidianr you pengdao huo　jiu　hui　ranshao.

　　　any　oil　touch　　fire　then　will　burn

　　　"Any oil will burn with fire."

　　c. 我 有　困难　　的 时候，你们　借过　　我 一点　钱　吗？

　　　Wo you kunnan de shihou, nimen jie-guo wo yidianr qian ma?

　　　1SG have difficulty DE time　2PL　lend-ASP 1SG any　money PRT

　　　"When I met difficulties, did you ever lend me any money?"

Nevertheless, there are also some cases where *yidianr* "any" occurs in the domain of a negative expression while bearing a quantificational interpretation instead of the negative polarity interpretation, as in (30):

(30) 张三　　　不是　　吃了　　一点　　牛肉。

　　Zhangsan bushi chi-le yidianr niurou.

　　Zhangsan NEG　eat-ASP a little　beef

　　"It is not the case that Zhangsan ate a little of beef."

In the following sections, we will examine the essential environments which are responsible for the licensing of NPI *yidianr* "any".

4.1 Negation

Since NPIs are usually proposed to be licensed by negation, it is thus important to explore the relation between *Yidianr* "any" and negative markers in Chinese.

4.1.1 Grammatical negation

We firstly investigate the properties of grammatical negations. As pointed out by Li and Thompson (1981), there are four negative markers in Chinese, namely *bu*, *bie*, *mei* and *mei-you*. *Bu* is the most general negative marker used on state and unaccomplished predicates (see (31)). *Bie* is used on imperatives to indicate an interdiction (see (32)). *Mei* is for negating the accomplish aspect (see (33)), and *mei-you* can be viewed as the negative existential marker (see (34)).

(31) a. 张三　　　不　　　聪明。

　　　Zhangsan bu   congming.

　　　Zhangsan NEG   clever

　　　"Zhangsan is not clever."

　　b. 张三　　　不　　　去　　　美国。

　　　Zhangsan bu   qu   meiguo.

　　　Zhangsan NEG   go   America

　　　"Zhangsan does not go to the America."

(32) 别　　说话!

　　Bie   shuohua!

　　NEG   speak

　　"No speaking!"

(33) 张三   没   去   美国。

    Zhangsan   *mei*   *qu*   *meiguo.*

    Zhangsan   NEG   go   America

    "Zhangsan have not been to the America."

(34) 张三   没(有)   钱。

    Zhangsan   *mei*-(*you*)   *qian.*

    Zhangsan   NEG-have   money

    "Zhangsan has no money."

In Chinese, negative markers precede the verb (Huang 1982, Aoun and Li 1993), and the minimiser *yidianr* "any" is licensed by negative markers in the surface structure, as in (35). This is in line with the characterisation of Baker (1970), Linebarger (1980, 1987) and Progovac (1992, 1994), according to which the licenser must locally precede the NPI.

(35) a. 张三   不   浪费   一点   粮食。

      Zhangsan bu   langfei yidianr liangshi.

      Zhangsan NEG   waste   any   food

      "Zhangsan does not waste any food."

    b. 别   浪费   一点   粮食！

      Bie   langfei yidianr liangshi!

      NEG   waste   any   food

      "Don't waste food!"

    c. 张三   没   浪费 过   一点   粮食。

      Zhangsan mei   langfei-guo   yidianr   liangshi.

      Zhangsan NEG   waste-ASP   any   food

      "Zhangsan has never wasted any food."

d. 张三　　家里　　没有　　一点　　粮食。

   Zhangsan jiali   meiyou   yidianr   liangshi.

   Zhangsan home   NEG-have   any   food

   "Zhangsan does not have any food in his house."

In addition, following the proposal of Huang (1982), Li (1985), Ernst (1994), Paul (2002), Lin (2011, 2015) that Chinese does distinguish finite and non-finite clauses, it can be noticed from (36) that a finite clause boundary in Chinese will block the licensing of NPI by negative markers, while infinitive clauses do not show the blocking effect. In (36), the embedded clauses of the verb *zhidao* "know" are finite while in (37) the embedded clauses of the verb *quan* "persuade" are non-finite. When the negative marker occurs in the embedded finite clause in (36a), *yidianr* "any" is licensed by the negator as a minimiser, but when the negative marker occurs in the matrix clause in (36b), *yidianr* "any" in the embedded finite clause is interpreted as a quantifier. However, regardless of whether the negative marker resides in the embedded non-finite clause in (37a) or the matrix clause in (37b), *yidianr* "any" in the non-finite embedded clauses in (37) is always interpreted as a minimiser. Therefore, we see that the minimiser function of *yidianr* can be influenced by the syntactic position of negative markers with respect to different predicates.

(36) a. 张三　　知道　[李四 昨天　　没　喝 一点　　酒]。

      Zhangsan zhidao [*Lisi   zuotian   mei   he   yidianr   jiu*].

      Zhangsan know   Lisi   yesterday NEG drink any   wine

      "Zhangsan knows that Lisi didn't drink any wine yesterday."

    b. 张三　　不　　知道　[李四 昨天　　喝了　　　一点　　酒]。

      Zhangsan bu   zhidao [*Lisi zuotian   he-le   yidianr   jiu*].

      Zhangsan NEG   know   Lisi   yesterday drink-ASP a-little   wine

      "Zhangsan didn't know that Lisi drank a little wine yesterday."

(37) a. 张三   劝   李四   [别   喝   一点   酒]。

　　　Zhangsan quan   Lisi   [bie   he   yidianr jiu].

　　　Zhangsan persuade   Lisi   [PRO NEG   drink   any   wine

　　　"Zhangsan persuades Lisi not to drink any wine."

　　b. 张三   没   劝   李四   喝 一点   酒。

　　　Zhangsan mei quan   Lisi   he   yidianr   jiu.

　　　Zhangsan NEG persuade   Lisi [PRO   drink any   wine]

　　　"Zhangsan didn't persuade Lisi to drink any wine."

In addition to the four negative markers that we have presented, there is another negative form in Chinese, namely *bushi*, which refuses a prior discourse. In this case, the negator scopes over the act instead of the truth value of a sentence:

(38) 他   不   是   在   大学   工作。

　　　Ta   bu   shi   zai   daxue   gongzuo.

　　　3SG NEG   be   at   university work

　　　"He is not working at the university."

It can be further noticed that *bushi* cannot create a decreasing-monotony context, contrary to the other four negative markers. As shown in (39), *bushi* cannot license inferences from general *vegetables* to the specific *tomato*, the example (39a) cannot implicate (39b). However, if *bushi* is replaced by other negative markers such as *bu* and *bie*, the decreasing-monotony implication can be established. In (40) and (41), this inference from the general to the specific can be easily made. That is, the truth of 40(b) can be inferred from (40a), and likewise, (41a) implicates (41b).

(39) a. 张三   不是 喜欢   吃 所有   种类   的   蔬菜。

　　　Zhangsan   bushi xihuan chi suoyou   zhonglei de   shucai.

　　　Zhangsan   NEG like   eat all   kind   DE   vegetable

　　　"It is not the case the Zhangsan likes eating all kinds of vegetables."

b. 张三　　　　不是　　　喜欢　吃　西红柿。

Zhangsan   bushi   xihuan chi xihongshi.

Zhangsan   NEG   like   eat   tomatoes

"It is not the case that Zhangsan likes eating tomatoes."

(40) a. 张三　　　不　　喜欢　吃　　所有　　　种类　　　的 蔬菜。

Zhangsan bu   xihuan chi   suoyou   zhonglei   de   shucai.

Zhangsan NEG like   eat   all   kind   DE vegetable

"Zhangsan does not like eating all kinds of vegetables."

b. 张三　　　　不　　喜欢　　吃　西红柿。

Zhangsan   bu   xihuan   chi   xihongshi.

Zhangsan   NEG   like   eat   tomatoes

"Zhangsan does not like eating tomatoes."

(41) a. 别　喜欢　　所有　　　种类　　　的 蔬菜!

Bie   xihuan   suoyou   zhonglei   de   shucai!

NEG like   all   kind   DE   vegetable

"Don't like all kinds of vegetables!"

b. 别　　喜欢　　西红柿!

Bie   xihuan   xihongshi!

NEG   like   tomatoes

"Don't like tomatoes!"

4.1.2 Pragmatic negation

In this section, we investigate the case of pragmatic negation obtained by the pragmatic inferences in bias or rhetorical questions, which in fact express a negative (presupposition) assertion, neglecting their question forms.

Diller (1984) points out two types of linguistic acts: one uses interrogative forms to express a non-question act, which is subject to rhetorical questions; the other refers to typical questions which require a proper answer. According to Sadock (1971, 1974), a positive rhetorical question bears an illocutionary force of a negative assertion, and a negative rhetorical question bears an illocutionary force of a positive assertion. The syntactic form of the rhetorical question does not correspond to its pragmatic function. Li & Thomson (1981) observe that such a distinction exists in Chinese as well. As shown in (42), such a question can be analysed as a rhetorical question with the second interpretation.

(42) 你   喝   酒   吗？

     Ni   he   jiu   ma?

     2SG drink   wine   PRT

     Interpretation 1: "Do you drink some wine?"

     Interpretation 2: "Is it the case that you drink some wine?"

Chan (2011) further uses the interrogative adverb *nandao* "really" to distinguish the two kinds of question: only the rhetorical one allows the appearance of such an adverb.

(43) 你   难道   不   喝   酒   吗？

     Ni   nandao   bu   he   jiu   ma?

     2SG isn't it the case NEG   drink   wine   PRT

     "Really? Do you drink?"

     Negative assertion: You don't drink.

Therefore, we can conclude that when *yidianr* "any" occurs in a positive rhetorical question, as in (44), it is interpreted as a minimiser since the question bears a pragmatic negative implication.

(44) 我   有   困难   的 时候，你们   借过   我 一点   钱   吗？

     wo   you   kunnan   de shihou, nimen jie-guo wo yidianr   qian   ma?

     1SG have   difficulty DE   time 2PL   lend-ASP 1SG   any   money PRT

     "When I met difficulties, did you ever lend me any money?"

On the contrary, when *yidianr* "any" occurs in a negative rhetorical question, it is licensed by the grammatical negative marker. Since the grammatical negation and the pragmatic one will cancel the negative force of each other, *Yidian* "any" is actually interpreted in the domain of a pragmatic positive implication, and hence it can only have the quantificational force in this case.

(45) 在 你 困难 的 时候， 谁 没 借 你 一点 钱?

Zai ni kunnan de shihou, shui mei jie ni yidianr qian?

at 2SG difficulty DE time who NEG lend 2SG a-little money

"When you meet difficulties, who haven't lent you some money?"

4.2 The preverbal position and focalisation

We have shown that *yidianr* in the postverbal position may not always be interpreted as a minimiser. However, the ambiguity between a minimiser/a quantifier disappears when *yidianr* occurs in a preverbal position in Chinese, as shown below. It is worth noting that in the case of (46b), when the focus marker *lian…ye/dou* "even" does not appear in the sentence, then the preposed element must bear phonetic stress to support the focus force.

(46) a. 张三 （连） 一点 酒 也/都 不 喝。

Zhangsan (lian) yidianr jiu ye/dou bu he.

Zhangsan even any wine even NEG drink

"He doesn't even drink any wine."

b. 张三 一点 酒 没 喝 吗?

Zhangsan yidianr jiu mei he ma?

Zhangsan any wine NEG drink PRT

"Zhangsan hasn't even drunk any wine?"

Several remarks can be made concerning the preverbal position. Firstly, such a position cannot authorise the occurrence of non-specific indefinite expressions, if the relevant preposing element is not focalised:

(47) a. 张三　　　　喝了　　　　一杯　　酒。

　　　Zhangsan　　*he-le*　　　*yi-bei*　　*jiu.*

　　　Zhangsan　　drink-ASP　　one-CL　　wine

　　　"Zhangsan drank a cup of wine."

    b.　*张三　　　一杯　　酒　　喝了。

　　　*Zhangsan　*yi-bei*　　*jiu*　　*he-le.*

　　　Zhangsan　　one-CL　　wine　drink-ASP

　　　"Zhangsan drank a cup of wine."

    c.　*一杯　　酒　　张三　　　喝了。

　　　*Yi-bei　*jiu*　　*Zhangsan*　　*he-le.*

　　　one-CL　wine　　Zhangsan　　drink-ASP

　　　"Zhangsan drank a cup of wine."

Secondly, as it is pointed out by Ernst and Wang (1995), Tsai (2004), Zhang (2000) and many others, preverbal positions are considered to be linked with focus. Zhang (2000) suggests that there are three types of focus in this position, namely contrastive focus, the additive focus and the restrictive focus. In the contrastive focus, the focus marker *shi* "is" is used in the sentence presented in SVO order, while focalisation can also be directly achieved via SOV order with the preposed element bearing a phonetic accent. In additive focus, two different focus markers are employed to achieve the same kind of focus, namely *shenzhi* "even" and *lian…ye*/*dou* "even". Such a sentence is always in SOV order. In parallel, in the case of restrictive focus, two different focus markers *zhi* "only" and *zhiyou* "there be only" are used respectively in those sentences with SVO and SOV order.

(48) Contrastive focus

    a. 张三　　是看了　　这本书，　　不是　　看了　　那本书。

　　　Zhangsan shi kan-le　　zhe ben shu,　bushi　　kan-le　　na ben shu.

　　　Zhangsan　is read-ASP this-CL book NEG is read-ASP that-CL book

　　　"It is this book that Zhangsan has read, not that one."

b. 张三　　这本　　书 看了，　那本　书　　没　看。

Zhangsan　zheben　shu kan-le,　naben　shu　mei　kan.

Zhangsan　this-CL　book read-ASP that-CL book　NEG　read

"Zhangsan has read this book, not that book."

Additive focus

c. 张三　　甚至　　看了　这本　书。

Zhangsan　shenzhi　kan-le　zhe-ben　shu.

Zhangsan　even　　read-ASP　this CL　book

"Zhangsan has even read this book."

d. 张三　　连　这本　书　也/都　看了。

Zhangsan　lian　zhe-ben　shu　ye/dou　kan-le.

Zhangsan　even　this-CL　book　even　read-ASP

"Zhangsan has even read this book."

Restrictive focus

e. 张三　　只　看了　这本书。

Zhangsan　zhi　kan-le　zhe ben shu.

Zhangsan　only　read-ASP　this-CL　book

"Zhangsan has only read this book."

f. 张三　　只有　这本　书　看了。

Zhangsan　zhi-you　zhe ben　shu　kan-le.

Zhangsan　only-have　this-CL　book　read-ASP

"Zhangsan has only read this book."

Thirdly, Ernst & Wang (1995) and Shyu (1995) remark that the sentences in the canonical SVO order can be used independently, while the inner topicalisation construction presenting the SOV order usually requires a parallel sentence for the contrastive purpose, as shown in (48a, b). When

the object is topicalised in the left periphery of the clause, its parallel contrastive sentence becomes optional. See (49).

(49) 红酒， 我 喜欢 喝 （啤酒， 我 不 喜欢 喝）。

Hongjiu, Wo xihuan he (pijiu, wo bu xihuan he).

red-wine 1SG like drink (beer 1SG NEG like drink

"Red wine, I like to drink (beer, I don't like to drink)."

Fourthly, in typical positive focus constructions, the focus marker is optional when the SVO order is present, while is obligatory when the focus sentence involves preposing.

(50) a. 张三 没 喝过 任何 酒。

Zhangsan mei he-guo renhe jiu.

Zhangsan NEG drink-ASP any wine

"Zhangsan hasn't drunk any wine."

b. 张三 任何酒* 都/也） 没 喝过。

*Zhangsan renhejiu *(dou/ye) mei he-guo.*

Zhangsan any wine even NEG drink-ASP

"Zhangsan hasn't even drunk any wine."

Jackendoff (1972) suggests that focus is the identification of the presupposition or of a set of the presuppositions in the context, and Rooth (1985) claims that focus establishes a link between the focalised expression and a set of alternatives. The semantic value for a focused phrase is the set of propositions obtainable from the ordinary semantic value by making a substitution in the position corresponding to the focused phrase. Therefore, given the example with inner topic in (51), the sentence is interpreted as "Zhangsan has read x where x = this book in contrast to other potential alternatives".

(51) 张三   这 本 书   看了。

   Zhangsan   zhe ben shu   kan-le.

   Zhangsan   this-CL book   read-ASP

   "Zhangsan this book has read."

Now, the question remains concerning how the minimiser *yidianr* is linked to the preverbal position. Krifka (1995) claims that polarity items are associated with a set of alternatives of the same type, and the set of alternatives introduces a scale in which the polarity item may be linked either to the highest point (in the case of PPIs) or to the lowest point (in the case of NPIs). Israel (2011) suggests that polarity items are scalar operators and that polarity sensitivity is a sensitivity to scalar inferencing. If a scalar model exists in the context formed by a set of alternatives, a scale will be created and thus the licensing condition of the polarity items are satisfied. As a result, considering that focus positions create alternatives and that minimisers are strong polarity items, preverbal negative focus positions in Chinese can perfectly offer the contexts where minimisers are licensed and fulfil their pragmatic functions. *yidianr* "any", when functioning as a weak quantifier by its lexical meaning, bears a reduced quantificational value but a high informational value. In (52), when *yidianr* "any" occurs in a negative context, negating the minimum point will then imply that all other points along the scale are negated. Consequently, the interpretation of (52) implies that the quantity of the wine that *Zhangsan* has drunk cannot even be equivalent to the minimal quantity. Thus, a polarity interpretation is achieved.

(52) 张三   连   一点   酒   都   没   喝。

   Zhangsan   lian   yidianr   jiu   dou   mei   he.

   Zhangsan   even   any   wine   even   NEG   drink

   "Zhangsan didn't drink any wine."

According to Badan (2008), Huang (1996), Li & Thomspon (1981), Tsai (2004), Xiang (2008) and many others, the construction *lian…ye/dou* "even" is a scalar construction in Chinese. Many other analyses are proposed in the literature (for example, Horn 1989, Fauconnier 1975, Rooth 1985, 1992, Krifka 1995, etc.) on "even" in English.

In the scalar construction of *lian…ye/dou* "even", as a focus marker, *lian* introduces a set of alternatives to the context, to which *dou* "all" can apply. *Dou* chooses the maximal degree from the classed alternatives in the scale introduced by *lian*. If the degree chosen by *dou* can make the proposition be true, then all other alternatives can also offer the value of truth. As a result, *dou* demonstrates a scalarity, while *lian* introduces additivity. As it is proposed by Israel (2011), the property of introducing alternatives is a necessary condition for encoding scalar inference, and hence, the construction *lian…ye/dou* "even" corresponds perfectly to the inquiry on the minimiser *yidianr*.

4.3 Conditionals

The other context permitting the minimiser *yidianr* "any" is conditionals with *jiu* "then".

(53) 一点   声音   就   会   把   张三   吵醒。

Yidianr   shengyin   jiu   hui   ba   Zhangsan   chaoxing.

any   voice   then   will   BA   Zhangsan   wake

"(If) there is any voice, then it can wake up Zhangsan."

Big (1984, 1988) classed four types of *jiu* "then" in Chinese, namely the temporal use (see (54a)), the restrictive use (i.e (54b)), the conditional use (i.e. (54c)) and the emphatic use (see (54d)). Among the four usages, (54b) is analogous to the *jiu*-conditionals in which *ruguo* "if" can be viewed as omitted.

(54) a. 张三   两点   就   在   办公室   了。

Zhangsan   liang-dian jiu   zai   bangongshi   -le.

Zhangsan   two-clock   then   at   office   PRT

"Zhangsan is at the office at two o'clock."

 b. 张三   吃了   三个   苹果   就   饱 了。

Zhangsan chi-le   san-ge   pingguo   jiu   bao -le.

Zhangsan eat-ASP   three-CL   apple   then   full ASP

"Zhangsan is full after having eaten three apples."

c. 星期天　　张三　　　　就　　去 跑步。

   Xingqitian Zhangsan　　jiu　　qu paobu.

   Sunday　　Zhangsan　　then　　go run

   "If it is Sunday, then Zhangsan will do some running."

d. 张三　　　就是　　我　　想要　　的　　人。

   Zhangsan　jiu-shi　　wo　　xiangyao　de　　ren.

   Zhangsan　just-be　　1SG　　want　　DE　　person

   "Zhangsan is just the person that I want."

Lai (1999) suggests that the four usages of *jiu* "then" are strictly linked to the semantics of scale. According to her analysis, *jiu* "then" expresses that the asserted value is lower than the expected value on the scale. For example, in (54a), the state changes from "Zhangsan is not at the office" to "Zhangsan is at the office" and it occurs prior to the speaker's expectation. In (4b), the quantity "three apples" is smaller than expected. Lai argues that "scalar" is the abstract semantic structure linking various uses of *jiu* and that *jiu* is associated with different sets of alternatives. The important claim of her study is that conditionals are considered to be related to protases that are informationally ordered, and hence protases form a set of alternatives based on their informativeness.

In conditional constructions, *jiu* "then" indicates that expected alternatives that are ranked lower than the asserted condition may or may not cause the consequence clause proposition to come true. The alternatives other than Sunday in (54c) may lead to an interpretation that *Zhangsan* does some running, while the alternative of Sunday surely can affirm the same consequence interpretation. Considering the relation between the domain at the left of *jiu* "then" and the scalar caused by *jiu* "then", we can confirm that the position at the left of *jiu* "then" is relevant to minimisers. As *jiu* "then" is always the focus marker and indicates that the asserted condition ranks lower than some other expected alternatives, we can confirm that the *jiu*-conditionals are appropriate for licensing the minimiser *yidianr* "any".

5. Conclusion

In this article, we have argued that the quantity expression *yidianr* "any" in Chinese functions as a minimiser when occurring in certain constructions. Following Israel's (2011) approach that polarity sensitivity is a lexical semantic property of the relevant items, we have argued that the following environments are appropriate for the minimiser *yidianr* "any" since they all denote a scalar inference: the domain of syntactic negative expressions; rhetorical questions which create pragmatic negative contexts; focus constructions such as the preverbal position and *lian…ye/dou* "even"; and the conditional construction with *jiu* "then". Each of these offer a scalar context, in which *yidianr* "any" can fulfill its conventional expressive function as a minimiser.

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CHAPTER FIVE

TWO CRITERIA FOR DEFINING SERIAL VERB CONSTRUCTIONS: A CROSS-LINGUISTIC PERSPECTIVE

TIANYU LI

Abstract

This research discusses two criteria for defining the Serial Verb Construction (SVC for short): "monoclausality" and "single eventhood", and argues that a lack of clarity about these two criteria has led to contradiction between them and therefore weakens their usefulness as evidence for the study of SVCs. Based on Aktionsarten, this research proposes that the "single event" expressed by SVCs be defined as an accomplishment, and further analyses its various compositional possibilities through cross-linguistic investigation. Furthermore, the scope of "monoclausality" is narrowed down to the corresponding syntactic unit, therefore reconciling these two criteria. This research explores the nature of the SVC and is helpful for a further definition of this phenomenon.

Key words: Serial Verb Construction, monoclausality, single eventhood, accomplishment

1. Introduction

For serial verb constructions (SVC[1] in short), Aikhenvald (2006, 58-59) holds that the earliest statement can be found in the studies about such

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[1] Apart from SVC, other abbreviations are used in this paper. MEP stands for macro event property, NEG for negation, NS for a verbal particle in a new situation, OBJ for object, PST for past tense, R for realis, REDUP for reduplicated, REM for remote, and V for copying vowel, *etc*.

Western African languages as Akan and Ewe where "a row of verbs one after the other... (in which) the verbs stand next to each other without being connected" (Westermann 1907). This phenomenon is then defined by Balmer and Grant (1929) as a "serial verb construction", a term that gained wide acceptance after its reintroduction by Stewart (1963). However, under the cross-linguistic investigation, there have emerged definitions of SVCs both in a broad sense and narrow sense.

The broad definition of an SVC is from Bisang (1995, 145-154), who inherits the elaboration of Westermann, and considers it to be constituted by "two verbs, verbal phrases or serial units... merely juxtaposed" with "the (semantic) relation between the two items being unmarked". A typical example of this broad sense definition can be found in the following Chinese sentence (Chao 1968, 326):

(1) *Ta   tiantian   xie   xin   hui   ke.*

he/she   every day   write letters   receive   callers

"He writes letters and receives callers every day."

For the narrow SVC definition, Bisang has proposed the idea of "serial unit", which can be judged by these six types of words: resultative verbs, directional verbs, tense-aspect-mood markers, converbs, causative verbs, and conjunctional verbs. The broad sense and narrow sense respectively correspond to two criteria for defining an SVC: "single clause" and "single event". However, these two criteria on the one hand are not clearly defined themselves, and on the other hand clash with each other occasionally. We will introduce previous descriptions of these two criteria along with deficiencies for each of them in section 2 and show how these deficiencies will lead to the corresponding clash in section 3. In section 4 we will re-define these two criteria, where "single event" will be identified as an accomplishment based on the classifications of aktionsarten. And further we will incorporate "single clause" and "single event" after the redefinitions of them. In section 5 we will exemplify these two criteria from the cross-linguistic perspective, with a focus on the sub-events possibly encoded by the internal verbs of SVCs.

2. Two criteria for defining serial verb constructions:
A review

2.1 Criterion 1: single clause

Foley and Olson (1985) have defined SVCs from the perspective of a single clause. They divide clauses into three layers according to their constituents: nucleus, core, and peripheral, which can be respectively marked by tense and aspect, core arguments, as well as non-core arguments.[2] Verbs of those three layers can combine to form complex predicates, and those complex predicates composed of verbs from nucleus and core layers are considered to be monoclausal structures for the reason that their internal components share the same tense and aspect, or core arguments. Foley and Olson then go further to suggest the complex predicate of this monoclausal structure creates an SVC, and they illustrate their point with the Yimas example in sentence (2) (p. 43):

(2)   *Kaykut   na-   n   -ma -bi -yara   -bi -wambay -k*

       Hornbill 3SG(U) -3SG(A)-other -bi   -get   -bi -throw -REM.PST

       "He got a hornbill again and threw it down."

In sentence (2) the verbs *yara* "get" and *wambay* "throw" share the same tense of "REMOTE PAST" (as marked by -k) on the nucleus layer, and share the same core arguments of agent *n* "3SGA" and patient *na* "3SGU" on the core layer. Therefore, these two verbs are considered to be within the same clause, and are, thereby, judged to form an SVC by Foley and Olson.

Aikhenvald (2006, 59) regards Foley and Olson (1985) to be "the first consistent and cross-linguistically informed line of argument for the monoclausal analysis of serial verb construction". And for this monoclausal criterion we can see that it corresponds to the broad sense of SVC: if several verbs share the same tense and aspect or core arguments, they are in the same clause and then form an SVC in the broad sense. The theoretically broad sense of an SVC can include unlimited numbers of verbs, such as in

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[2] According to Foley and Olson, core arguments are those that are directly related to the valency of the verb; for example, one core argument is required by "run", two by "open", and three by "give". In contrast, non-core arguments have nothing to do with the valency of the verb, like adverbials of place.

sentence (3). For this reason, we think defining SVCs in this broad sense with the criterion of single clausality is too broad to be practical.

(3) *Ta*   *tiantian*   *paobu*   *youyong*   *xizao*   *chang ge...*

he/she every day ru<u>n</u>   swim   take a bath   sing song…

"He runs and swims, takes a bath and sings songs every day."

In addition, it is worth mentioning that Haspelmath (2016, 299) also treats monoclausality as one of the criteria needed to define SVCs. His monoclausal standard comes from the "lack of independent negation as a cross-linguistically applicable test for clausehood" (Bohnemeyer et al. 2007, 501), which means that, according to Haspelmath, "there is only one way to form the negation, usually with scope over all the verbs". Haspelmath further states that the negation marker of SVCs usually precedes the first verb or follows the last verb (p.309). However, this idea is not so workable for Chinese. Chen and Guo (2009, 1751) regard SVCs in Chinese to be a V1V2 structure, such as *pao* (run) *chu* (exit): run out. Correspondingly, we can find two kinds of negation for this structure: NEG+V1V2 and V1+NEG+V2, like *mei* (NEG) *pao* (run) *chu* (exit) and *pao* (run) *bu* (NEG) *chu* (exit). Normally speaking, the scope of negation in the first case is not over all of the verbs, but only V2, *i.e.* "run but not exit". Moreover, the latter case of "V1 NEG V2" does not accord with Haspelmath's description about the place of the negation marker. Therefore, we deem that negation itself is a complex phenomenon and is not suitable to be the monoclausal standard, so that in this research we do not follow Haspelmath's definition of single clause.

2.2 Criterion 2: single event

Another criterion for the definition of SVCs is single eventhood. An early statement that SVCs encode a single event can be found in Lord (1974, 196-197), where it is claimed that the verbs in the construction in Yoruba "all refer to sub-parts or aspects of a single overall event". From then on single eventhood as one criterion identifying SVCs has been re-emphasised in a series of cross-linguistic studies (e.g. Aikhenvald and Dixon 2006). Bisang (2009, 793) even considers eventhood to be the only common property shared by SVCs cross-linguistically, noting that "an SVC as a whole covers one single event". Moreover, Bisang (p.805) combines this idea of a single event with the macro event property (MEP) from Bohnemeyer et al. (2007).

The "macro event property" can be traced back to Talmy's investigation of motion events (Talmy 1972), and it has been extended to the five event types, including change of state (Talmy 2000). Bohnemeyer et al. (2007, 497) argue that "a construction has the MEP if temporal operations such as time adverbials, temporal clauses, and tenses necessarily have scope over all subevents encoded by the construction". From this perspective, we deem that the MEP from Bohnemeyer et al. shows little difference from the monoclausal illustration of SVC from Foley and Olson (1985), for the former also allows unlimited numbers of verbs sharing the same tense and aspect within an MEP construction as indicated by the temporal operations. Croft et al. (2010, 209) have criticised Bohnemeyer et al. (2007) as being "methodological opportunism", because their idea of MEP focuses on temporal operations but not the construction itself. In addition, as acknowledged by Bisang (2009, 805), although the internal verbs within an SVC can attain the MEP by sharing the same tense and aspect, "not all the constructions that have the MEP are SVCs". As a result, we may conclude that the MEP is not appropriate for the definition of a single event.

Therefore, single event, as one of the criteria to define SVC, should not be combined with MEP; for a clearer description, the discussion should focus on the constructional event. We will illustrate more about this in section 4.

3. Clashes between the two criteria

In section 2 we introduced previous descriptions of the two criteria for defining SVCs as well as the deficiency for each of them. The "single clause" criterion might generate too broad an idea of SVCs, while "single eventhood" lacks a clear description as it is very likely to be confused with MEP. However, previous definitions of SVCs often refer to these two criteria without any detailed illustration. For instance, Comrie (1995) has considered "single clause" and "single event" as the two defining properties of an SVC but did not elaborate on it. Aikhenvald (2006, 1) has made the following statement as well:

> A serial verb construction (SVC) is a sequence of verbs which act together as a single predicate, without any overt marker of coordination, subordination, or syntactic dependency of any other sort. Serial verb constructions describe what is conceptualized as a single event. They are monoclausal...

In fact, reference to these two criteria without detailed illustration will yield clashes between them. Here we turn to the example sentence from Watam quoted from Foley (2010, 97-98):

(4) *Min   ma   mo   ndo-r   aŋgi-r   agiga-r   rugu-r   minik-ri.*

     3PL   3SG O   see-R   get-R   take.up-   Rhit-R   die-PST

     "They saw him, got him, carried him up and beat him to death."

Those five verbs in sentence (4) are within the same clause, as suggested by the evidential marker *-r* and the past tense suffix *-ri*. However, Foley points out that conceptually those five verbs encode three events as below:
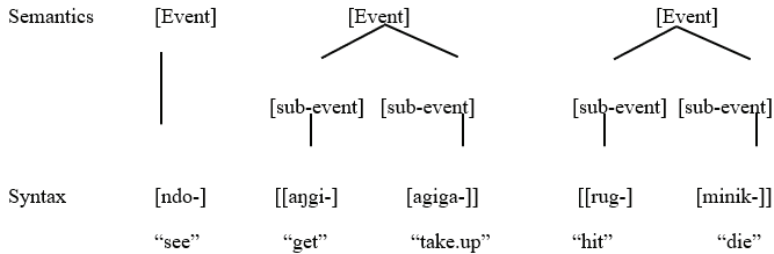
The above tree diagram shows the clash between the two criteria of "monoclausality" and "single eventhood". According to Foley, those five verbs make the monoclausal structure and therefore, should be treated as SVC; however, this structure violates the criterion of "single eventhood" as often suggested by SVC studies. This clash even leads to a pessimistic view from Foley, who concludes that there are not any universal defining properties of SVCs (Foley 2010, 107). In order to solve this clash, we have two options: either to narrow down "single clause" to the smaller syntactic unit corresponding to every conceptual event, or to enlarge "single event" to be a macro event that corresponds to the whole morphosyntactically marked clause. As for these two options we are not inclined to the latter, for the reason that there usually exists a closer internal relationship within the "single event" constructions compared with the MEP structures, and this difference is also reflected at the syntactic level. We illustrate this further with reference to Watam. In Watam, apart from the SVC construction, there is also another kind of clause chaining construction (CCC), which differs from the so-called "SVC" in sentence (4) in that every internal constituent within a CCC should be marked by the copying vowel (-V). Sentence (5) is

monoclausal like sentence (4) (as indicated by the same evidential marker -r and the past tense marker -ri), but it includes three internal constituents that are separated by the copying vowels -o and -a (Foley 2010, 97):

(5)   *Min*   *ma mo   ndo-r-o aŋgi-r agiga-r-a   rugu-r   minik-ri.*

     3PL   3SG DAT see-R-V get-Rtake.up-R-V hit-R   die-PST

     "They saw him, got him, took him up, and beat him to death."

Foley (2010, 98) regards the "SVC" in sentence (4) and the CCC in sentence (5) as sharing the same MEP, but each event within the "SVC", such as *aŋgi-agiga-* "get and take up" and *rugu-minik-* "beat to death" cannot be torn asunder and put into smaller constituents. In other words, Foley feels that there is an essential difference between a single event and a macro event. Though he does not give a clear definition of a single event, Foley regards the semantic relationship within the single event (like *rugu-minik* "hit-die") as closer, while the multiple events sharing the MEP are only "in the unfolding sequence" (101-102).

Since the clash between those two criteria cannot be solved by enlarging the scope of a "single event", what we can do is only to redefine "single event" according to the fact that there is a closer relationship between its internal components. We will discuss this more in section 4.

4. Ways to solve the clash: A redefinition of the two criteria

From the above discussion we can see that the reason that "monoclausality" and "single eventhood" clash with each other is mainly due to the fact that these two criteria, especially "single eventhood", are not clearly defined. Therefore, in order to solve this clash, we need to make explicit what a "single clause" is and the nature of a "single event".

4.1 What is a single clause?

We hold that to define a "single clause", we can refer to the viewpoint of Foley and Olson (1985) and judge several verbs that share the same tense/aspect and core arguments as monoclausal. The same tense/aspect can be marked by affixes in synthetic languages, such as the past tense suffix -*ri* in Watam as mentioned in section 3; and it can be identified by the tense/aspectual markers in isolating languages, such as *le* in Chinese as we

shall see later. In addition, we will incorporate the definition from Aikhenvald (2006), and exclude phrases containing any syntactic dependency markers from our description, so that we can differentiate SVCs from other multi-verbal predicates like coordination, subordination, *etc.*

This definition of a "single clause" can be conceived either in a broad or narrow sense. For example, in sentence (4), all five verbs are within the same clause. Meanwhile, the verbs with a closer relationship like "hit-die" can also be considered to make a monoclausal structure. Therefore, with the criterion "single clause" only, we cannot achieve a definite description of SVCs, and so we need the second criterion of "single eventhood".

4.2 What is a single event?

In section 2 we have pointed out that in order to make a clear definition of "single event", we need to focus on the event itself. And for this, aktionsarten (also known as "Vendlerian aspectual classes") offers a suitable starting point for our analysis.

According to Dowty (1979, 52-55), aktionsarten originates from Aristotle's *Metaphysics*, and was developed into a four-way classification by the American philosopher Zeno Vendler: states, processes/activities, achievements, and accomplishments. Here we refer to Kearns (2011, 156-173) to explain those event classes. States depict atelic and static situations, like "The light is on". Processes/activities describe atelic and dynamic behaviours, like "John walked in the garden". Achievements are telic and they express some activities realised at certain time points, such as "They reached the summit". Accomplishments express the atelic activities along with their results, such as "Jones ran a mile". In addition, there seems to be a fifth type of event: semelfactives, which are brief but produce no results. Typical semelfactives include "kick", "rap", "cough" *etc.* and they can be understood as bounded but atelic achievements.

Among the above five event types, states, processes/activities, achievements, and semelfactives are simple events, while accomplishments are complex events. For accomplishments Kearns (2011, 158) argues that accomplishments consist of "a process or activity with forward movement, leading up to a specified finishing point of telos". And that description can also be illustrated by our above-mentioned examples. Once the process/activity sentence "John walked" terminates at the telos "one mile", it will acquire telicity and become the accomplishment expression "John walked one mile". Based on Kearns' description as well as our exemplification, we can

decompose the complex accomplishment event into two simple sub-events, as demonstrated by the following formula:

$$\text{Accomplishment} = \text{Process/Activity} + \text{Telos}$$

One prerequisite of an SVC is that it is a structure that contains a series of verbs. Its internal verbs can correspond to the several sub-events within an accomplishment. Moreover, the "forward movement + finishing point of telos" relationship within an accomplishment also satisfies the intuition from the early SVC researchers like Lord (1974, 196-197), who claims that in an SVC "the second verb phrase represents a further development, a consequence, result, goal, or culmination of the action named by the first verb". Based on the above analysis, we can conclude that the only complex event type in the "single event" of an SVC is expressed by accomplishments. For example, "hit-die" in section 3 is an accomplishment that can be further decomposed into the process/activity "hit" as well as the following result "die".

To sum up our analyses of the two criteria—"monoclausality" and "single eventhood"—we can see that, the former criterion corresponds to the broad sense of SVC from Bisang (1995), while the latter criterion corresponds to Bisang's narrow sense of SVC. Since the broad sense of SVC satisfies only one criterion ("monoclausality"), and "single eventhood" essentially differs from a macro event, our definition of the SVC will choose Bisang's narrow sense. Under this perspective the scope of a "single clause" is narrowed down to the smaller syntactic unit that corresponds to every single event, and the "single event" is judged to be the only complex event type—an accomplishment—among all the five types of aktionsarten. Next, we will exemplify these two criteria with cross-linguistic evidence.

5. Cross-linguistic evidence of those two criteria

In section 4 we have argued that the "single event" expressed by an SVC should be an accomplishment that can be further decomposed into two sub-events. The first sub-event is often the atelic and dynamic process/activity, and later in this section we will provide some other cases. The second sub-event is treated as a telos by Kearns, yet it includes some other possibilities. In this section, we offer detailed exemplifications of these two sub-events, with SVCs underlined, and the internal verbs represented as V1 and V2 respectively.

5.1 Event types of V2

Achievements can be the results of their preceding processes/activities, and therefore function as the telos of the accomplishments. One example can be found in the Igbo sentence from Lord (1975, 22-24):

(6) *Ó*   <u>*tí*   *-gbù*   *-rù*</u>   *nwóke*   *áhù.*

he   <u>hit   -kill   -TENSE</u> man   that

"He beat that man to death."

It is noteworthy that V1 *tí* "hit" in sentence (6) can be interpreted either as the continuous process event of "hitting", or as the one-off semelfactive event of "hit". And this shows the fuzzy boundary between these two kinds of event. In addition, V2 in this structure expresses the fact of "entering death" at a certain point, which is a typical achievement.

What is more, achievements can function not only as the terminating points of their preceding processes/activities, but also as the starting points of the following states or processes/activities. Examples of the latter two possibilities can be found respectively in "starting knowing" (Vendler 1957, 154) and "John began to walk" (Dowty 1979, 124). And this also leads to the fact that V2 within an SVC can express either the state or another process/activity, both of which are generated after the realisations of their preceding achievements. Example sentences for these two possibilities can be found in Alamblak sentence (7) from Bruce (1984, 166), and in sentence (8) (Mwotlap) from François (2006, 231).

(7) *Wifërt*   <u>*fir-*   *gënngi-*</u> *më-*   *t-*   *a.*

Wind   <u>blow-   cold-</u>   REM.   PST-3SGF(S)-   1SG(O)

"The wind blew, and I was cold."

(or: The wind blew on me and I was cold.)

(8) *Tali* <u>*mi* *-tit*   *tenten*</u>   *Kevin.*

Tali <u>ASP-punch   cry:</u> REDUP   Kevin

"Tali made Kevin cry by punching him."

V2 can even express another accomplishment. Dowty (1979, 125) regards the structure "John forced Bill to build a house" as a smaller accomplishment

(Bill build a house) embedded within a bigger accomplishment (John force Bill to do sth.), and the former is the telos of the latter. Accordingly, we can find similar usages within SVCs, such as sentence (9) (Eastern Kayah Li) from Solnit (2006, 151). In this sentence "cut" can be understood, in the same way as "build a house" mentioned above, to contain a finishing point of achievement, *i.e.*

"cut down".

(9) *ʔa*   *nɔ*   *pa*   *phúcè*   *meklɯ.*

3SG   command cut   child   rhythm.pipe

"She told the children to cut rhythm-pipes."

5.2 Event types of V1

Usually, V1 expresses the atelic and dynamic process/activity or semelfactive, as suggested by sentences (6), (7) and (8). In addition, it can express the static event of state, as in another example from Solnit's account of the Eastern Kayah Li language (2006, 149):

(10) *Hō*   *co*   *pjá*   *lɔ*   *ʌ*

Hulled uncooked rice   wet   ruined   use.up   NS

"The hulled rice got all wet and was ruined."

A similar case can be found in another Mwotlap sentence from François (2006, 232), where both V1 and V2 express the static states:

(11) *Nek*   *mi-tig*   *melemleg*   *na-lo*   *den*   *kemem.*

2SG   ASP-stand   black   ART-sun from   1EXC:PL

"Standing as you are, you're hiding the sun from us."

(lit. You're standing dark the sun from us.)

However, it is very rare for V1 to express the state event, and sentences (10) and (11) are the only two cases we have found throughout the whole research. No matter whether the aktionsart is process/activity, semelfactive, or state, they are all atelic events. Then we wonder: can V1 express a telic event? The aspectual marker *le* after V1 in sentence (12) offers an

interesting example, [3] where "*pao* (run) *le* (ASP)" seems to be a telic accomplishment. However, we will show that actually it is not so.

(12) *Ta*   *pao*   *le*   *jin*   *qu.*

     he/she   run   ASP   enter   go

     "He/she has run into (certain place)."

Li (2012) introduces two kinds of aspect on the basis of Smith (1997): viewpoint aspect and situation aspect. Viewpoint aspect is usually indicated by the grammatical markers, and for this reason it is also termed grammatical aspect. Situation aspect is aktionsarten as we have noted above. Smith regards "what information a viewpoint presents" as being "affected, and limited, by the structure of the situation talked about". Or in other words, when the two aspects conflict with each other, the situation aspect should win. As for sentence (12), we deem that even though the process/activity encoding *pao* is followed by the aspectual marker *le*, its situation aspect still remains the same, *i.e. pao le* should be considered as expressing an atelic event. This assumption can be confirmed by the In-PP and For-PP tests. It is usually considered that atelic events can be modified by In-PP but not For-PP, while it is the opposite for telic events (Kearns 2011, 159). For this, the sentences in (13a) and (13b) offer an illustration.

(13) a. i. *He has run for an hour.*

      ii. **He has run in an hour.*

    b. i. **He has run a mile for an hour.*

      ii. *He has run a mile in an hour.*

It is obvious that in sentences (13a) the grammatically perfective "has run" can only be followed by a For-PP but not an In-PP phrase, and this shows that despite its grammatical aspect being perfective, "has run" still maintains the atelicity from the situation aspect of "run". The same exemplification can be found in the Chinese example *pao le*.

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[3] This sentence came to my attention through a talk with Chen Zhishuang at the ISOCTAL-1 conference held at Newcastle University in 2015, when she was a PhD student at York University. Special thanks to her!

(14) a. *Ta   pao   le   chixu   yi   xiaoshi.*

   he/she   run   ASP   continuous   one   hour

   "He/she has run for one hour."

   b. **Ta   pao le   yi xiaoshi nei / ta   yi   xiaoshi nei   pao   le*

   *he/she   run ASP one hour   in /   he/she one   hour   in   run   ASP

   "He has run in an hour." (intended meaning)

Sentences (14) illustrate that *pao le* can be modified by a For-PP but not an In-PP phrase, and this supports Smith's analysis of the relationship between grammatical aspect and situation aspect, *i.e.* the latter dominates when these two aspects clash. To be specific for our discussion, the expression *pao le* will not be affected by the grammatical aspect from *le* but maintains the situation aspect from *pao* to encode the atelic event of process/activity.

In this section, we have considered cross-linguistic evidence concerning the "single event" expressed by SVCs and investigated various possibilities of sub-events encoded within its internal verbs. We have found that V2 can express an achievement, a process/activity, a state, or even a smaller accomplishment, while V1 usually expresses the dynamic process/activity or semelfactive, and occasionally the static state, but never a smaller telic accomplishment. The sub-event expressed by V2 constitutes the telos of the forward movement from the sub-event expressed by V1, and together these two sub-events make an accomplishment, which is the "single event" encoded within an SVC. In addition, on the basis of the discussion of "single eventhood", the above example sentences also satisfy the criterion of "monoclausality", as can be suggested by the shared tense/aspect and core arguments among the internal verbs.

6. Conclusion

In this research, we have discussed two criteria for defining SVCs in accordance with the two senses of SVCs, among which the criterion of "monoclausality" accords with the broad sense of SVCs while "single eventhood" accords with the narrow sense of SVCs. We have further pointed out that why these two criteria clash with each other is due to the fact that neither was clearly described in previous research. As a solution to the problem, we have proposed that the "single event" expressed by SVCs be defined more narrowly as an accomplishment in terms of aktionsartern

and provided cross-linguistic discussion of the possibilities for its sub-events. After the identification of a "single event", the scope of a "single clause" has also been mapped to the corresponding syntactic unit. With the clash between these two criteria solved, we have narrowed down the scope of the SVC in accordance with Bisang's description of SVCs in the narrow sense, and the exploration will be helpful for further research defining serial verb constructions.

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CHAPTER SIX

ON THE DISTRIBUTION OF THE VARIANTS OF LAQ- IN SHANGHAI CHINESE

RUYI DAI

Abstract

This study investigates a specific syntax topic in *Shanghai* Chinese: the set of elements *laq/laqlaq/laqhae/laqkae*, and can be seen as an attempt to solve the puzzle that the short form *laq* has a different distribution from the three long forms. The L marker has different phonological variant forms: the short form *laq* and the long forms *laqlaq/laqhae/laqkae*. This is sensitive to its syntactic context: the short form *laq* is blocked when it is the sister of an empty category. In our interface approach, the blocking rule applies at PF level (the mapping between syntax and phonology).

Key words: *Shanghai* Chinese, the L markers, distribution of *laq*, Interface Approach, PF level

1. Introduction

This study aims to explore a specific topic in *Shanghai* syntax: the set of elements *laq/laqlaq/laqhae/laqkae*. Although the main difference between the *Shanghai* dialect spoken by the old generation and young people rests on phonetics and phonology, the "new" variety and the "old" variety are sometimes different from each other in other respects. Thus, it is necessary to point out that our study is based on the "new" variety that emerged in the late 20th century, as normal usage is usually judged very differently in accordance with age. The basic word order in *Shanghai* Chinese is SVO, which is the same in Mandarin Chinese.

1.1 The Distribution of Short Form *laq* and Long Forms *laqlaq/laqhae/laqkae*

In *Shanghai* Chinese, there is one element (L hereafter) that can be represented as four phonetically/phonologically variant forms: *laq*, *laqlaq*, *laqhae* and *laqkae*:[1]

(1) a. *ngu   laq/laqlaq/laqkae/laqhae   zonghae.*   *(Shanghai)*

    1SG L   *Shanghai*

    "I am in *Shanghai.*"

  b. *ngu   laq/laqlaq/laqkae/laqhae   chiq   mipo.*   *(Shanghai)*

    1SG L   eat   bread

    "I am eating bread."

The short form *laq* behaves differently from the other three long forms. First, it cannot be used alone, whereas the long forms suffice to be a predicate (Yang 1999; Xu and Shao 1998):

(2) *Liubei:*   *Tsangfii   laqlaq/laqkae/laqhae/*laq va?*   *(Shanghai)*

      Zhangfei   L   PRT

      "Is Zhangfei in/there?"

    Guanyu: *laqlaq/laqkae/laqhae/*laq.*   *(Shanghai)*

      L

      "(He) is in/here."

  OR *laq laqhae/lakae/*laqlaq.*   *(Shanghai)*

      L   L

      "(He) is in/here."

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[1] This study is based on the assumption that *laq/laqlaq/laqhae/laqkae* are the same morpheme, not only because this is the consensus among studies on Shanghai syntax, but also as there is no evidence to suggest otherwise. Many thanks to an anonymous reviewer for pointing out this assumption.

> *laqlaq/laqhae/laqkae laqhae/laqkae/laqlaq.   *(Shanghai)*
>
> L   L
>
> "(He) is in/here."

Note that *laq* and *laqhae/laqkae* (but not *laqlaq*) are sometimes found to co-occur in (2). The short form *laq* followed by the long forms *laqhae/laqkae* (but not vice versa) has the same meaning as *laqlaq/laqhae/laqkae* "(He) is in / (He) is here". Nevertheless, in the only example in which the short form and long form can co-occur, the short form *laq* has to precede the long form, and it can only precede *laqhae/laqkae* but not the duplicate form *laqlaq*. Moreover, it is impossible for two long forms to co-occur, as is also shown in (2). See the table below (the column represents the first element that appears in the sentence, and the row represents the second element; ×️ represents prohibited combinations, ✓ represents allowed combinations):

Table 6-1. Prohibited and Allowed Combinations

	Laq	*Laqlaq*	*Laqhae*	*Laqkae*
Laq	×	×	✓	✓
laqlaq/laqhae/laqkae	×	×	×	×

As this usage is rarely found (it is only found in this very example), we will consider this as an exception and will not discuss it in detail in our current analysis.

Second, the short form *laq* cannot be used following a verb or VP when it appears at the end of a sentence (Yang 1999):

(3) a. *ngu zu laqkae/laqhae/laqlaq/*laq. (Shanghai)*

   1SG sit L

   "I am sitting."

   b. *Laotsang: xii laqlaq/laqkae/laqhae/laq   tsu sa?   (Shanghai)*

      he L   do what

      "What is he doing?"

Sjiaolin: *tzaq*   *iizong*   *laqkae/laqhae/laqlaq/*laq.*

put.on   clothes L

"(He) is putting on clothes."

1.2 The Puzzle: Why is the Short Form *laq* Blocked?

We may ask what gives rise to the mysterious behaviours of the set of elements *laq/laqlaq/laqhae/laqkae*. What is it that blocks the short form *laq* in these examples? The reason why the short form *laq* has a different distribution from the long forms has not been discussed intensively so far. There are, however, some potential approaches that can be taken into consideration. Some researchers (*e.g.* Xu and Shao 1998) refer to the short form *laq* as an "object-affixal verb" (originally *nian-bin dongci* in Chinese) in a syntactic approach. On the other hand, one may argue that the short form cannot occur at the end of a breath-group in respect to phonology. We will analyse these approaches as alternative views in the following sections; in Section 3 we will make our fundamentally different proposal that the short form *laq* is blocked when it is the sister of an empty category, which applies at the PF (Phonetic Form) level.

Before we proceed to our solution, the first part of Section 2 compares the set of elements *laq/laqlaq/laqkae/laqhae* with their potential equivalents in Mandarin Chinese. This comparison will help us understand and analyse the behaviours and the nature of the L marker.[2]

2. A Comparative Study and Analysis of L

2.1 *Zai* and *Zhe* as Aspectual Markers

In Mandarin, there are two candidates which may correspond to *laq/laqlaq/laqkae/laqhae* in *Shanghai* Chinese: *zai* and *zhe*. These two markers have been studied intensively as imperfective aspectual markers over the past decades (*e.g.* Huang 1987; Huang, Li, and Li 2009; Smith 1997; amongst many others). Indeed, aspect is not our central question in this study, but it helps explain the behaviours of *laq/laqlaq/laqkae/laqhae*. The

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[2] As an endangered Chinese dialect, Shanghai syntax is a very underdeveloped research area, with extremely limited resources. Shanghai syntax is similar to Mandarin syntax in most respects (Zhu 2006); we therefore resort to studies on Mandarin Chinese to make comparisons with the more familiar aspectual markers in Mandarin. Many thanks to an anonymous reviewer for pointing this out.

parallel between L and its potential equivalents in Mandarin helps in understanding to which category L belongs and its basic position before movement occurs. This section will be a brief summary of the literature on *zai* and *zhe*, followed by a comparative study and analysis of the L marker.

In contrast to English, the concept denoted by tense is lexicalised in Chinese, *i.e.* indicated by content words like adverbs of time; therefore Chinese grammatically marks aspect but does not grammatically mark tense (Xiao and McEnery 2004). An event and time can be related by 1) focusing on when the event happens while ignoring its temporal distance and length; and 2) focusing on its time duration and whether it starts or finishes while ignoring when it happens. The first approach is taken by Romance languages while the second is typical of Chinese (Wang 1943).

There is no consensus among linguists with respect to the treatment of the prefixal *zai*. *Zai* was historically a locative verb and a locative preposition (meaning "at") which are only spatially defined. In modern Chinese, it still has the option of being used alone as a verb, and therefore cannot be treated simply as a preposition. Furthermore, the class of prepositions is poorly defined in Chinese, because the so-called prepositions in Chinese all have their historical origins as verbs, and because Chinese has no inflectional morphology to mark verbs (Huang, Li, and Li 2009). There are four main usages of *zai* in modern Chinese. Examples follow:

(4) a. *ta*   *zai*   *lundun.*   (Mandarin)

　　　he   ZAI   London

　　　"He is in London."

　　b. *mingtian*   *wo yinggai*   *zai*   *tushuguan li.*   (Mandarin)

　　　tomorrow   I   should   ZAI   library   LOC

　　　"I should be in the library tomorrow."

(5) a. *ta*   *zai*   *zuo*   *gongke.*   (Mandarin)

　　　he   ZAI   do   homework

　　　"He is doing homework."

b. *mama*   *huilai*   *de*   *shihou* *Xiaoming* *hai*   (Mandarin)

mum   come.back PRT   time   Xiaoming still

zai   *kan*   *dianshi.*

ZAI   watch   TV

"Xiaoming was still watching TV when (his) mum was back."

(6) a. *ta*   *zai*   *lundun*   *gongzuo.*   (Mandarin)

he   ZAI   London   work

"He works in London."

b. *ta*   *zai*   *lundun*   *gongzuo*   *guo.*   (Mandarin)

he   ZAI   London   work   ASP

"He has worked in London."

(7) a. *ta*   *zhu*   *zai*   *lundun.*   (Mandarin)

he   live   ZAI   London

"He   lives   in   London."

b. *wo*   *ba shu*   *fang*   *zai*   *le*   *zhuozi* *shang.*   (Mandarin)

1SG BA book   put   ZAI   ASP   table   LOC

"I put the book on the table."

In example (4), *zai* serves as a full verb meaning "exist/be". Whether it also contains the meaning of a preposition "at/in" will be discussed in the following sections. *Zai* in (5) represents the typical usage as an aspectual marker. The situation in (6) is a bit more complicated. In the literature it is either regarded as a verb and the whole predicate as a serial verb construction (Chao 1968), or as a locative preposition (Tai 1973). Xiao and McEnery (2004) suggest that *zai* in (6a) should have the double function of a preposition and a progressive aspect marker. When there is another perfective aspect marker -*guo* in the sentence, *zai* only functions as a locative preposition, as shown in (6b). We will analyse *zai* in (7) simply as a post-verbal element for the present purposes, and this will be discussed in

the following sections. [3] However, the co-occurrence of the perfective aspect marker -*le* and *zai* shows that *zai* is clearly not an aspectual marker when occurring in the post-verbal position.

The suffixal -*zhe* has two main functions: to occur with a verb or adjective to indicate the durativity of a continued dynamic or static situation, as is shown in (8); it can also be used in the locative inversion construction and indicate existential status as in (9a) (Xiao and McEnery 2004)[4]. For example:

(8) a. *ta   dai   zhe   yi-fu   taiyangjing.*   (Mandarin)

   He   wear   ZHE   one-CLF   sunglasses

   "He is wearing a pair of sunglasses."

   b. *wo   hui   yizhi   deng   zhe   ni*   (Mandarin)

   1SG   will   always   wait.for   ZHE   2SG

   "I will be always waiting for you."

(9) a. *chuang   shang   zuo zhe   yi-ge   xiaohai.*   (Mandarin)

   bed   on   sit ZHE   one-CLF   kid

   "A kid is sitting on the bed."

   b. **chuang   shang   zai   zuo   yi-ge   xiaohai.*   (Mandarin)

   bed   on   ZAI   sit   one-CLF   kid

   "A kid is sitting on the bed."

   c. *chuang   shang   zuo le   yi-ge   xiaohai.*   (Mandarin)

   bed   on   sit ASP   one-CLF   kid

   "A kid is sitting on the bed."

If we compare the acceptability of (9a) and (9b), we can see the apparent syntactic difference between *zai* and *zhe*: only the suffixal *zhe* not the prefixal *zai* can appear in locative inversion constructions. Interestingly, in

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[3] In (7b) the object is moved to the pre-verbal position with the help of the *ba* marker, which is well known as the
ba-construction in Chinese Syntax.
[4] There are other usages which will not be discussed in detail here.

some contexts *zhe* can be replaced with the perfective marker *-le*, as is shown in (9c). However, this is only possible when *zhe* indicates existential status (Xiao and McEnery 2004). Sentence (9c) designates the continuance of a state resulting from the completion of an action manifested by the same verb (Huang 1987). This may explain the fact that *zhe* (the continuance of a state) and *-le* (the completion of an action) are interchangeable without causing any significant change in meaning. Similarly, Smith (1997) also argues that *zhe* indicates a state or condition which is the remaining result of the action indicated by the verb and refers to *zhe* as the marker of resultative aspect. Nevertheless, Xiao and McEnery (2004) point out that the resultative account fails to explain some phenomena, but this will not be discussed in detail here.

When *zai* functions as an aspect marker, it is syntactically different from all the other aspectual markers (including *zhe*): *zai* precedes a verb whereas *zhe* and the others always follow a verb. Semantically, *zai* focuses on progressiveness whereas *zhe* focuses on durativity. This point is illustrated well by posture and positional verbs. For instance, verbs like *chuan* "put on/wear" or *na* "pick up/hold" can co-occur with *zai* and *zhe*, which result in different meanings as in (10a) and (10b):

(10) a. *ta zai   chuan   yifu.*   (Mandarin)

        he ZAI   put.on/wear   clothes

        "He is putting on clothes."

    b. *ta chuan   zhe   yifu.*   (Mandarin)

        he put.on/wear   ZHE   clothes

        "He is wearing clothes."

The verb *chuan* "put on/wear" is a positional verb. Like other positional and posture verbs, it typically denotes a stative situation (*i.e.* wear) where it takes *zhe* in (10b), though only the dynamic reading (*i.e.* put on) is possible when it takes *zai* in (10a) (Huang 1987; Xiao and McEnery 2004).

(11)   a. *ta   zai   na   baozhi.*   (Mandarin)

       he   ZAI   pick.up/hold   newspaper

       "He is picking up newspapers."

       b. *ta   na   zhe   baozhi.*   (Mandarin)

       he   pick.up/hold   ZHE   newspaper

       "He is holding newspapers."

Example (11b) with *zhe* implies that the newspapers were continuously in his hands, whereas (11a) marked by *zai* does not have this implication. Rather, it indicates that the situation of picking up newspapers was ongoing and in progress. In other words, while *na* in (11a) with *zai* indicates an active event "picking up", *na* in (11b) with *zhe* designates a resultant state from the active action "picking up" and therefore the English gloss "holding" (Huang 1987; Xiao and McEnery 2004).

The choice between *zai* and *zhe* is determined by verb classes: *zai* can only co-occur with active verbs, whereas a wider range of verbs can take *zhe*. Linguists have different ways in classifying Chinese verbs. Vendler (1967) classifies verbs into four types, namely, Activity, Accomplishment, Achievement and State. Vender's analysis basically works at the lexical level. Smith (1997) proposes a classification based on Vendler's, which does not appear to differ much from Vendler's, except that Semelfactives are separated from Vender's Activities to reflect the distinction between Achievements and Accomplishments. Vender's analysis basically works at the lexical level, whereas Smith's approach works well at the sentential level. Only Activity and Accomplishment verbs but no Achievements nor States can occur with *zai*. In contrast, Activities appear with *zhe* felicitously. Accomplishments, Achievements and States are rarely found to be compatible with *zhe*. However, posture and positional verbs form a special class in that they can either indicate an activity or the state resulting from that activity. When verbs of this class take *zhe*, *zhe* selects their stative reading, as was shown in (10) and (11) (Huang 1987; Xiao and McEnery 2004).

The prefixal *zai* and the suffixal *zhe* can actually co-occur in the same sentence:

(12) *ta   zai   feijingde   zuo zhe fujian   lianxi.* (Mandarin)

 he   ZAI   strenuously   do   ZHE rehabilitation exercise

 "He is strenuously doing the rehabilitation exercise."

As can be shown in (12), there is a semantic connection between *zai* and *zhe* and they may complement each other even though they have their own focuses: while *zai* denotes that the event is in progress, *zhe* designates the continuation of the progressive event. The co-presence of these two markers is regarded as expressing emphasis and forming the complex viewpoint of the progressive durative (Huang 1987; Xiao and McEnery 2004).

In summary, the two markers *zai* and *zhe* have generally been regarded as imperfective aspect markers, although linguists have been using different terms in analysing them (Huang 1987). While the suffixal *zhe* has long been treated as an aspect marker, the prefixal *zai* is not as well established as *zhe*. It is either treated as an adverb (Henne, Rongen, and Hansen 1977) or conflated with *zhe* (Li and Thompson 1981).

2.2 The Comparison between *zai/zhe* and *laq/laqhae/laqkae/laqlaq*

Armed with the analysis of the two markers *zai* and *zhe* in Mandarin, now we have a much clearer idea: the L markers are separated into L1 and L2 in syntax. Although phonologically represented as the same set of elements *laq/laqhae/laqkae/laqlaq* in *Shanghai* Chinese, syntactically L1 and L2 are different. In Mandarin, L1 corresponds to the prefixal *zai*, whereas L2 corresponds to the suffixal *zhe*, as is shown in Figure (i). See the two figures below:
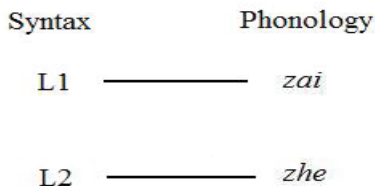
Syntax   Phonology

L1 ——————— zai

L2 ——————— zhe

Figure (i)   (Mandarin)

Syntax   Phonology
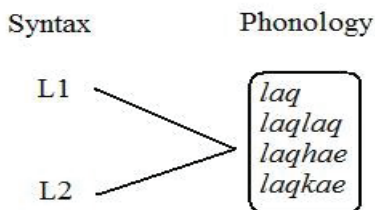
L1

L2

laq
laqlaq
laqhae
laqkae

Figure (ii)   (Shanghai)

Now it is time for us to compare Shanghai *laq/laqlaq/laqhae/laqkae* to their equivalents in Mandarin. Consider the three sentences below:

(13) a. *xii laqkae/laqhae/laqlaq/laq   ten   nung.*   *(Shanghai)*

     he L   wait.for   2SG

     "He is waiting for you."

     b. *xii ten   nung   laqkae/laqhae/laqlaq/*laq.*   *(Shanghai)*

     he wait.for   2SG   L

     "He is waiting for you."

   c. *xii*   *ten*   *laqkae/laqhae/laqlaq/?laq*   *nung.*   *(Shanghai)*

      he   wait.for   L   2SG

      "He is waiting for you."

The examples above show that *laqkae/laqhae/laqlaq/laq* can be used before the verb *ten* "wait for" in (13a), after the VP *ten nung* "wait for you" in (13b), and between the verb *ten* "wait for" and the noun *nung* "you" in (13c), respectively. As all three sentences have the same meaning ("He is waiting for you"), we cannot easily differentiate which one is L1 (the prefixal *zai*) and which one is L2 (the suffixal *zhe*), nor can we identify which sentence is the basic word order. However, it becomes clearer if we replace the VP *ten nung* "wait for you" in (13) with another VP *tzaqiizong* "put on/wear clothes":

  (14) a. *xii laqkae/laqhae/laqlaq/laq*   *tzaq*   *iizong.*   *(Shanghai)*

       he L   put.on/wear   clothes.

      "He is putting on clothes."

     b. *xii tzaq*   *iizong laqkae/laqhae/laqlaq/*laq.*   *(Shanghai)*

       he put.on/wear   clothes L

      "He is putting on clothes."

     c. *xii tzaq*   *laqkae/laqhae/laqlaq/laq* *iizong.*   *(Shanghai)*

       he put.on/wear   L   clothes.

      "He is wearing clothes."

The semantic difference between examples (14a, 14b) and (14c) shows that when *laq/laqlaq/laqhae/laqkae* precedes or follows the VP, the verb *tzaq* "put on/wear" selects the dynamic reading "put on". In contrast, only the stative reading "wear" is possible when the L marker appears between the verb *tzaq* and the noun (or NP). Recall that the stative reading is selected when the verb takes suffixal *zhe*, whereas it has the dynamic reading when the verb takes prefixal *zai*, we can conclude that the L marker in (14a) and (14b) is L1 which corresponds to *zai*, whereas the one in (14c) is L2 which corresponds to *zhe*. We may draw a further conclusion that while (14a) is the basic word order, (14b) is derived through VP-fronting.

2.3 Focus Movement

Note that the VP *tzaqiizong* "put on clothes" bears a contrastive or focus interpretation when it is fronted. Many researchers (*e.g.* Shyu 1995, 2001, 2014) have found that focus movement is evident in Chinese. Consider the following Mandarin example from Shyu (1995):

(15) a. *Zhangsan mai   le   zhe-ben   shu.*   (Mandarin)

        Zhangsan buy   ASP   this-CLF   book

        "Zhangsan bought this book."

    b. *Zhangsan lian   zhe-ben   shu   dou/ye   mai   le.* (Mandarin)

        Zhangsan even   this-CLF   book   all/also   buy   ASP

        "Zhangsan bought this book."

    c. *Zhangsan zhe-ben   shu   mai   le.*   (Mandarin)

        Zhangsan this-CLF   book   buy   ASP

        "Zhangsan bought this book."

Although SVO is widely considered to be the canonical word order in Chinese, SOV and OSV are also allowed. We will only discuss SOV here. In Mandarin, assuming the SVO structure in (15a) is the canonical word order, the SOV word order in (15b) and (15c) is derived through focus movement. Shyu (1995, 2001) suggests that the object *zhe ben shu* "this book" can be preposed to a preverbal position in the *lian…dou/ye* "even…all/also" structure, as is shown in (15b). Furthermore, Shyu proposes a unified account for both (15b) and (15c). Example (15c) is also derived from (15a): the object *zheben shu* "this book" in (15c), in which no overt *lian* or *dou/ye* occurs, undergoes a similar movement mechanism. The object *zheben shu* "this book" in both (15a) and (15c) bears a focus interpretation. By the same logic, we assume that our *Shanghai* example (14b) has also undergone a similar focus movement.

2.4 To Differentiate between L1 and L2

Examples (14a-c) are repeated as (16a), (17a) and (18a) below, except this time compared to Mandarin examples (16b), (17b) and (18b):

(16) a. *xii laqkae/laqhae/laqlaq/laq*   tzaq   *iizong.*   *(Shanghai)*

  b. ta *ZAI*   *chuan*   *yifu.*   (Mandarin)

   he L   put.on/wear   clothes.

   "He is putting on clothes."

(17) a. *xii*   *tzaq*   *iizong laqkae/laqhae/laqlaq/*laq. (Shanghai)*

  b. **ta*   *chuan*   *yifu   ZAI*   (Mandarin)

    he   put.on/wear   clothes L

   "He is putting on clothes."

(18) a. *xii tzaq*   *laqkae/laqhae/laqlaq/laq   iizong.*   *(Shanghai)*

  b. *ta chuan   ZHE*   *yifu*   (Mandarin)

   he   put.on/wear L   clothes.

   "He is wearing clothes."

It looks at least from the surface that the L marker in (18a) is L2 (a counterpart of *zhe*), whereas the one in (16a) and (17a) is L1(a counterpart of *zai*). This is consistent with Zhu (1996) who suggests that the set of preverbal elements *laq/laqlaq/laqhae/laqkae* indicates the progressive aspect, and this same set becomes another aspectual marker indicating resultativeness when occurring in the post-verbal position.

However, it must be pointed out that although L1 in most respects is parallel to *zai* in Mandarin, L1 and *zai* are not completely equivalent. Neither are L2 and *zhe*. The most apparent difference is that it is ungrammatical for *zai* to appear after the VP in Mandarin Chinese, as is shown in (17b). Moreover, *zai* itself suffices to be a predicate in (19a), whereas the short form *laq* certainly cannot be used alone in (19b).[5]

(19) a. *Liubei: Guanyu*   *zai*   *ma?*   (Mandarin)

    Guanyu   ZAI   PRT

   "Is Guanyu in/there?"

---

[5] Example (2), repeated as (19b), is compared with Mandarin example (19a) here.

> *Zhangfei: zai.*   (Mandarin)
>
>   ZAI
>
>   "(He) is in/here."
>
>   b. *Liubei: Tsangfii   laqlaq/laqkae/laqhae/*laq va?*   (Shanghai)
>
>   Zhangfei   L   PRT
>
>   "Is Zhangfei in/there?"
>
>   *Guanyu: laqlaq/laqkae/laqhae/*laq.*   (Shanghai)
>
>   L
>
>   "(He) is in/here."

Xu and Shao (1998) argue that the short form *laq* is not sufficient to be the predicate unless it is followed by a place/location. This includes place names and noun-localiser compounds. For instance:

(20) *Laotsang:*   *nung*   *laq sa*   *diifong?*   (Shanghai)

           2SG   L   what   place

           "Where are you?"

   Sjiaolin: *ngu*   *laq*   *uq*   *liixiang.*   (Shanghai)

           1SG   L   home   LOC

           "I am at home."

(21) *xii*   *laq zonghae.*   (Shanghai)

   he   L   *Shanghai*

   "He is in *Shanghai.*"

Thus, as mentioned in the introduction, Xu and Shao name the short form *laq* the "object-affixal verb" (*nian-bin dongci* in Chinese). Nevertheless, this is clearly not appropriate if we consider (22):

(22) *xopoenjiq*   *ngu*   *laq*   *xieuxiung.*   (Shanghai)

   afternoon   1SG   L   swim

   "I was swimming this afternoon."

These examples clearly show that the short form *laq* can be either followed by place/location or used to signal a progressive event/action. The term used in Xu and Shao (1998) fails to explain all the syntactic behaviours of *laq*.

2.5 The Locative Inversion Construction

It is worth pointing out that the pronunciation of *laq* is similar to the perfective aspect marker *leq* (*le* in Mandarin). Although in most cases it is easy to distinguish between *laq* and *leq* if we consider the aspect situation of the sentence, there are still a few cases which are confusing. Among them, the most typical and most relevant one to our study is the locative inversion construction:

(23) a. *iq-xeq   xiaonjin   zu laq zong   longxiang.   (Shanghai)*

      one-CLF   kid   sit L   bed   LOC

      "A kid is sitting on the bed."

    b. *zong   longxiang   zu laq/leq iq-xeq   xiaonjin.   (Shanghai)*

      bed   LOC   sit L/ASP one-CLF   kid

      "A kid is sitting on the bed."

Example (23b) is the locative inversion construction that indicates the existential status. Recall the fact that in (9) only the suffixal *zhe* but not the prefixal *zai* can be used in the locative inversion structure, and the interchangeability between the imperfective *zhe* and perfective *le* in some situations as mentioned above, so things become clearer: the element following the verb *zu* "sit' in (23a) is the imperfective *laq*, whereas in the locative inversion (23b) the following element could be either *laq* or the perfective *leq*. Therefore, *laq* and *leq* are also interchangeable without significant change in sentence meaning. As a result, there is no need to make a distinction in colloquial speech. Similarly, consider the examples below:

(24) a. *jiaokue caophiao zen   laq/laqhae/laqkae/laqlaq   njinhong lii.*

      a.lot.of money   save   L   bank   LOC

      "A lot of money is saved in the bank."   *(Shanghai)*

   b. *njinhong   lii   zen   laq/laqhae/laqkae/laqlaq   jiaokue caophiao*

     bank   LOC save   L   a.lot.of   money

     "A lot of money is saved in the bank."   *(Shanghai)*

   c. *njinhong   lii   jiaokue   caophiao   zen*

     bank   LOC   a.lot.of   money   save

     laqhae/laqkae/laqlaq/*laq.   *(Shanghai)*

     L

     "A lot of money is saved in the bank."

Example (24a) is parallel to (23a), the same order of which can also be found in English. We are also familiar with (24b), which is the locative inversion structure like (23b). Interestingly, (24c) is different from both (24a) and (24b). Recall that (14b) is derived from (14a) through VP fronting, which gives rise to a focus/contrastive interpretation, we can also find that (24c) is derived through movement. We may ask whether (24c) is derived from (24b) or from (24a). It is possible for either the constituent of NP *njinhong* "bank" + LOC *lii* or the NP *jiaokuecaophiao* "a lot of money" to be raised. Furthermore, it is also possible that both have undergone movement. As is mentioned above, the fronted VP in (14b) requires a contrastive/focus interpretation. Similarly, the NP "a lot of money" in (24c) also bears a focus/contrastive interpretation, although it is not necessarily the moved one. However, the sentences with the same meaning in Mandarin may offer a clue:

  (25) a. *henduo   qian   cun   zai   yinhang   li.*   (Mandarin)

       a.lot.of   money save   ZAI   bank   LOC

      "A lot of money is saved in the bank."

      b. *yinghang li   cun   zhe   henduo qian.*   (Mandarin)

       bank   LOC   save   ZHE   a.lot.of money

      "A lot of money is saved in the bank."

c. *yinghang   li   henduo qian   cun   zhe/*zai.*   (Mandarin)

   bank   LOC   a.lot.of money save ZHE/*ZAI

   "A lot of money is saved in the bank."

In Mandarin, only *zhe* but not *zai* can occur in the final position in (25c). Intuitively, the NP *henduoqian* "a lot of money" in (25c) also bears a contrastive interpretation, whereas this same NP in (25b) does not bear a contrastive interpretation. Therefore, it is evident that (25b) is the basic order of (25c). For the same reason, we assume that (24b) is the basic order of (24c) in *Shanghai* for present purposes. It is plausible to consider that the NP *henduoqian* "a lot of money"has been moved across the verb, giving rise to the focus interpretation. Notice that in (24c) it is only possible for three long forms *laqhae/laqkae/laqlaq* to appear at the end. Once again, it is impossible for the short form *laq* to occur at the end of the sentence.

2.6 Summary

The parallels between *Shanghai* Chinese and Mandarin Chinese have shed some light on our puzzle: in some of the *Shanghai* examples it is evident that movement occurs, which brings out the contrastive/focus interpretation.[6] Thus, there is obviously some link between the movement and the blocked short form *laq*. We will discuss this in detail in the next section. Now that this puzzle is partly understood, it is time for us to consider the part that we have not understood yet. In the next section, we will try to look more closely at the examples in which focus movement is not evident; before we suggest our interface approach, we will also go over some of the alternative approaches which are fundamentally different from our theory.

3. An Interface Proposal

3.1 The English Contracted/Weakened Auxiliary

King (1970) observes that in English the contraction of auxiliaries is blocked immediately preceding a phrase juncture or the site of ellipsis. For example:

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[6] See variant evidence from example (16) and (17), example (24) and (25), respectively.

(26)   I wonder where Gerard is/*Gerard's

What is it that blocks the contraction? The traditional rule is that the contracted or weakened form cannot be used at the end of a breath-group. This is strictly a matter of phonological conditioning operating on certain lexical element at the most superficial layer of structure, whereas no reference is required to any underlying structure or syntactic rules. However, King suggests that this kind of rule does not cover the following example:

(27)   Who's hungry? John is/*John's most of the time.

(28)   You'll need some, and I will/*I'll too.

(29)   There's less trouble this spring than there is/*there's usually at
          this time.

As is shown in (29), the juncture between *is* and *usually* is no greater than the one between *there's* and *less*. Based on this, King argues that a purely phonological condition is not adequate to cover both the fact of the permitted contraction preceding *less* and the prohibited contraction preceding *usually*.

King further points out that it is the presence of a zero substitute immediately following the weakened form that prevents the contraction, marked by the underline as follows:

(27)   Who's hungry? John is/*John's __ most of the time.

(28)   You'll need some, and I will/*I'll __ too.

(29)   There's less trouble this spring than there is/*there's __ usually
          at this time.

Now let us recall (26), which is similar but not the same to (27-29). The critical difference is that in (26) the empty place left in surface syntax of a clause when the WH-element is raised to the initial position. The blocking effect is retained by such unpronounced traces left behind. Examples follow:

(30)   I wonder where$_i$ Gerard is/*Gerard's t$_i$ today.

(31)   Someday he'd like to be what$_i$ you are/*you're t$_i$ now.

King concludes that some of the most abstract and unsubstantial syntactic elements have to be carried along in some forms to the very end of the

generative process, in order to make the phonological rules operate in a way that will yield the correct final result (King 1970).

3.2 The Parallel between the English and *Shanghai* Data

Similarly, in *Shanghai* Chinese, we cannot simply consider the blocking condition of the short form as at the end of a breath-group. Although from the surface, most of the time the short form *laq* seems to be impossible to occur at the end. Consider the two examples below:

(32) *xii   jintsao laqlaq/laqhae/laqkae/*laq (xeq).*   (*Shanghai*)

     he   today   L   PRT

     "He is in today."

The short form *laq* is prohibited regardless of whether the declarative particle *xeq* is present or not. The blocking effect will still be retained if we replace *xeq* with other particles, such as interrogative *va*. Needless to say, Chinese grammar is very different from English. For instance, in contrast to the English word order "where Gerard is today" in (30), the corresponding word order in Chinese would be "today Gerard is where". Thus, we are not able to run the ellipsis test like (27-29) here, as this kind of usage is considered to be either ungrammatical or ambiguous in Chinese.

However, we still have the evidence from the examples with focus movement to prove the existence of trace in our *Shanghai* example. Recall that the VP *tzaqiizong* "put on the clothes" is fronted in (14), which will be slightly modified with the marked position of trace as follows:

(33) a. *xii laqkae/laqhae/laqlaq/laq   tzaq   iizong.*   (*Shanghai*)

       he L   put.on/wear clothes.

     "He is putting on clothes."

     b. *xii [tzaq   iizong]ᵢ laqkae/laqhae/laqlaq/*laq tᵢ.* (*Shanghai*)

       he put.on/wear   clothes L

     "He is putting on clothes."

We assume that there is some certain relation between the unacceptable short form *laq* and the following trace in this example. There is consensus among linguists (Xu and Shao, 1998; Yang, 1999) that *laqhae* and *laqkae* are allomorphs: (i) they vary in sound but not in meaning; (ii) *laqhae* (which is used in both old varieties and new varieties) emerged earlier than *laqkae* (which is mainly used in new varieties); and (iii) their morphological origins are the same. Therefore, we will treat *laqhae* and *laqkae* as the same unit in our analysis. Xu and Shao (1998), on the other hand, argue that although *laq* is a simplified form of both *laqlaq* and *laqhae/laqkae*, *laqlaq* behaves differently from *laqhae/laqkae*: the elder generation barely uses *laqkae/laqhae* before a place/location. However, this is obviously not the case in the new variety of *Shanghai* Chinese:

(34) *ngu laq/laqlaq/laqhae/laqkae zonghae.*   *(Shanghai)*

  1SG L   *Shanghai*

  "I am in *Shanghai.*"

Xu and Shao (1998) conclude that *laqlaq* and *laqhae/laqkae* are more freely interchangeable in the new variety than in the old. The overall trend is that the younger the speakers are, the more freely they use them. We may anticipate that these three forms will be completely interchangeable in the near future. As mentioned at the very beginning, our study is based on the new variety, so we consider *laqlaq* and *laqhae/laqkae* as the long forms. The three long forms are phonetically/phonologically different, but semantically/syntactically they do not differ much from each other. Thus, the insignificant difference will not be discussed in detail here.

Zhu (2006) suggest that *laq* is the basic form, whereas *laqlaq* and *laqhae/laqkae* are derived. When preceding a place/location, they are verbs rather than prepositions:

(35) a. *xii laq/laqlaq/laqhae/laqkae uq   lii.*   *(Shanghai)*

   he L   home   LOC

   "He is at home."

b. *ngu   mentsao veq   iqdin   laq/laqlaq/laqhae/laqkae*

1SG   tomorrow not   certainly   L

xuqdong lii.   *(Shanghai)*

school   LOC

"I may not be in the school tomorrow."

Note that in examples like (34) and (35a), the set of elements *laq/laqlaq/laqhae/laqkae* are considered to be verbs rather than prepositions when they precede a place/location (Zhu 2006). Zhu considers them to have the meaning of a preposition "in/at...", because the preposition is absent here. However, we tend to consider the L marker as a verb followed by an empty preposition, which brings out the whole sentence meaning "I am in…" in (34) and "He is at…" in (35a). Bear this in mind, as this is crucial in our approach.

When occurring in the pre-verbal position, the L markers indicate the progressive aspect:

(36) a. *xii laq/laqlaq/laqhae/laqkae   tsu kungkhu.*   *(Shanghai)*

he L   do homework

"He is doing homework."

b. *mama xueleq   xeq   zenkuong   sjiaomin*   *(Shanghai)*

mum   come.back PRT   time   Xiaoming

xae   laq/laqlaq/laqhae/laqkae   khoe   dizir.

still   L   watch TV

"Xiaoming was still watching TV when (his) mum was back."

Part of Zhu's proposal (2006) is consistent with our analysis so far. Nevertheless, Zhu points out that in (36), the short form *laq* phonologically bonds to the preceding subject to form a single metrical foot or prosodic word, whereas syntactically and semantically it is part of the VP. The discrepancy between phonology and syntax is also found in the example below:

(37) a. *xii zir   laq/?laqlaq/*laqhae/*laqkae zen   lii.   (Shanghai)*

      he live   L   town   LOC

      "He lives in the town."

     b. *ngu   nae   sir   ba laq/?laqlaq/*laqhae/*laqkae (Shanghai)*

      1SG   NAE   book   put L

      daetsir long.

      table   LOC

      "I put the book on the table."

Zhu (2006) considers this *laq* to be a preposition and L-NP-(LOC) as a prepositional phrase. Moreover, syntactically, *laq* is the head of the prepositional phrase; phonologically, it is bonded to the preceding verb to form a single tonal domain.[7] The long forms *laqlaq/laqhae/laqkae* are considered to be either unacceptable or marginally acceptable. Is the short form *laq* a preposition? Is it a clitic or an affix? This puzzle remains a mystery at the moment: a solution to this may need further research.

3.3 Our Interface Proposal

Rather than using Zhu's term, we will simply consider *laq* as the short form and *laqlaq/laqhae/laqkae* as the three full forms. The basic assumption is that there are three different phonological realisations of the L marker in *Shanghai*: the full/overt forms *laqlaq/laqhae/laqkae*, the short form *laq*, and the zero form. In examples like (33), the VP is raised across the L marker, leaving a trace behind. This trace, however, has to be licensed in syntax. Therefore, we suggest the solution to the puzzle should lie in the mapping between syntax and phonology (the PF level). We assume that only the overt forms, not the short form, are able to license the trace. Therefore, the long forms are triggered by the movement of the VP. The short form *laq*, on the other hand, fails to license the trace and thus it is blocked in a VP-fronting sentence.

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[7] *Nae*-construction in (37b) is comparable to the *ba*-construction in Mandarin Chinese Syntax that the object is moved to the pre-verbal position with the help of the marker; also see (7b).

One may argue that only lexical heads can license empty categories (Aoun et al. 1987), and this seems to contradict the fact that *laq/laqlaq/ laqhae/laqkae* is often treated as a functional verb in the literature when it serves as an aspect marker. However, the class of licensers has been a long-lasting debate. It is more important to see the parallel between English data and the *Shanghai* Chinese data, namely the blocking effect on the contracted/short form. Moreover, due to the fact that *laq/laqlaq/ laqhae/laqkae* has a very different semantic property from the English *be*, we cannot simply consider it as a purely functional verb.

3.4 Evidence from Examples with Focus Movement

We have concluded that only the overt forms can occur after the VP. Similarly, only the overt forms can be found following the adjective phrase in the final position, like (38a):

(38) a. *ngu   zjiachii naeku   laqhae/laqkae/laqlaq/*laq.*   (Shanghai)

      1SG   very   sad   L

  "I am very sad."

    b. *ngu   zjiachii naeku.*   (Shanghai)

      1SG   very   sad

    "I am very sad."

As is shown in (38b), the sentence is also acceptable without the L marker. We may assume that in (38b) the zero form occurs at the end of the sentence, although it is phonetically empty. Notice that intuitively, (38b) is not completely equal to (38a) due to the lack of the focus or contrastive interpretation in (38b). This usage is *Shanghai*-specific compared to Mandarin Chinese, in which the adjective is sufficient to be the predicate. In Mandarin, the sentence becomes ungrammatical if we add the prefixal *zai* or the suffixal *zhe*. Examples follow:

(39) a. *wo   hen   nanguo.*   (Mandarin)

      1SG   very   sad

    "I am very sad."

b. *wo*   *(*zai)*   *hen*   *nanguo (*zhe).*   (Mandarin)

1SG   ZAI   very   sad   (ZHE)

"I am very sad."

It is well known that Chinese adjectives or adjective phrases can function as the predicate without the help of a copular verb. In fact, it is precisely this ability that makes many researchers treat adjectives as a subcategory of verbs in Chinese (Huang, Li and Li 2009). They normally take adverbials of degree to support the structure (*e.g. zjiachii* "very" in *Shanghai, hen* "very" in Mandarin). We assume that in *Shanghai* example (38) the AP is lifted across the L marker: it also undergoes focus movement. Although adjectives behave differently to verbs in some respects, it does not change the fact that the trace left behind always has to be licensed, regardless of its category. The position of the trace is marked below:

(38) a. *ngu*   *[zjiachii   naeku]ᵢ*   *laqhae/laqkae/laqlaq/*laq* *tᵢ.*

1SG   very   sad   L

"I am very sad."   *(Shanghai)*

Whether the AP has undergone movement in Mandarin is debatable, as there is no overt marker co-occurring with the adjectives. We assume it is spelled out for some reason, which may need further research. However, in *Shanghai* Chinese, it is clear that in these examples APs and VPs do share certain properties, namely, the contrastive interpretation which is absent in (38b). We consider this as the evidence that focus movement occurs in examples like (38a).

Nouns, on the other hand, typically require the copular *zir* "be"(*shi* in Mandarin), with the option of omitting it (*Shanghai* dialect is mainly colloquial, and Mandarin also allows *zir* to be omitted in highly colloquial speech). The L marker as a copula is not compatible with nouns. Examples follow:

(40) a. *jintsao*   *(zir)*   *liipasae.*   *(Shanghai)*

today   (be)   Wednesday

"Today is Wednesday."

b.*_jintsao_   _liipasae_   _zir._   _(Shanghai)_

  today   Wednesday   be

  "Today is Wednesday."

c.*_jintsao_   _laq/laqhae/laqkae/laqlaq_   _liipasae_   _(Shanghai)_

  today   L   Wednesday

  "Today is Wednesday."

It is common wisdom in modern linguistics that nouns and verbs are two basic categories: they differ in many ways reported in various grammar books. Huang and his colleagues (2009) suggest that nouns have the feature [+N, -V] and verbs are [-N, +V]; adjectives are [+N, +V]. This may explain the fact that the rule does not apply to nouns in this case: the L marker which has the [+V] feature is completely incompatible with noun fronting as they carry the [-V] feature. Huang and his colleagues also argue that when used as prepositions, the equivalent of _laq/laqlaq/laqhae/laqkae_ in Mandarin are [-V], which will not be discussed in detail here as we are mainly concerned with their usage as verbs.

Now let us recall the examples of locative inversion constructions which indicate existential status. We suggest that NP can undergo focus movement in locative inversion construction. Examples (24b, c) slightly modified with marked position of trace as following examples (41a, b):

(41) a. _njinhong_ _lii_   _zen_   _laq/laqhae/laqkae/laqlaq_   _(Shanghai)_

    bank   LOC   save   L

    jiaokuae   _caophiao_

    a.lot.of   money

  "A lot of money is saved in the bank."

    b. _njinhong_   _lii_   _[jiaokue_   _caophiao]ᵢ_   _(Shanghai)_

    bank   LOC   a.lot.of   money

    zen   _laqhae/laqkae/laqlaq/*laq_ t_i.

    save   L

  "A lot of money is saved in the bank."

According to our analysis above that the NP *jiaokuecaophiao* "a lot of money" has been moved across the verb which brings out the contrastive interpretation, it goes without saying that the trace of the NP needs to be licensed. Obviously, this is the very reason that the short form *laq* occurs in (41a) but not in (41b). The movement triggers the overt forms and thus they are found at the end of (41b).

3.5 Evidence from Examples without Focus Movement

When followed by place/location, the L markers are considered to be verbs rather than prepositions. As is mentioned above, in some literature they are considered to contain the meaning of a preposition "in/at...'in order to fill the gap of the missing preposition (Example (21) repeated here as (42)):

(42) *xii*   *laq/laqlaq/laqhae/laqkae*   *zonghae.*   (*Shanghai*)

    he   L   *Shanghai*

    "He is in *Shanghai.*"

Similarly, the overt forms can be used alone as verbs to express the whole sentence meaning "somebody is in/here/there" (Example (2) repeated here as (43)):

(43) *Liubei:*   *Tsangfii*   *laqlaq/laqkae/laqhae/*laq va?*   (*Shanghai*)

        Zhangfei   L   PRT

        "Is Zhangfei in/there?"

    Guanyu: *laqlaq/laqkae/laqhae/*laq.*   (*Shanghai*)

        L

        "(He) is in/here."

We assume that in (42), the set of elements *laq/laqlaq/laqhae/laqkae* serves as a verb, followed by an empty preposition preceding the place/location, whereas there is a phonetically empty category following the overt forms in (43). In fact, (43) is independent evidence that only the overt forms, not the short form *laq*, are able to license empty categories. However, why is the blocking effect only found in (43) but not in (42)? With this in mind, let us consider the example below (example (3a) repeated here as (44)), in which the short form *laq* is also prohibited:

(44) a. *ngu   zu   laqkae/laqhae/laqlaq/*laq.*   *(Shanghai)*

       1SG   sit L

       "I am sitting."

    b. *wo   zuo   zhe.*   (Mandarin)

       1SG   sit   ZHE

       "I am sitting."

    c. **wo   zai   zuo.*   (Mandarin)

       1SG   ZAI   sit

       "I am sitting."

We may ask why only the overt forms, not the short form, are allowed to appear here. According to our analysis in Section 2, this *laq/laqlaq/laqhae/laqkae* is L2 which corresponds to *zhe* in Mandarin, as is shown in (44b). The pre-verbal *zai* is not allowed to be used here, as is shown in (44c). In Mandarin (44b) is often treated as the basic word order, therefore (44a) is considered to be the basic word order in *Shanghai* Chinese. Therefore, it is not as clear whether this is derived through movement. Thus, we may ask why the blocking effect is still retained. If we compare (44) with (42) and (43), it is not difficult to see the parallels between them.

Let us analyse the sentence structures of (42) and (43) first. In (42), the L marker is the sister of a partially empty PP, according to our hypothesis that L functions as the verb and it is followed by an empty preposition which precedes the place name *zonghae* "Shanghai". If we assume that in (43) the L marker is the sister of an entirely empty PP, we will easily see the link as well as the difference between (42) and (43). As is shown in both (42) and (43), the L marker precedes a preposition phrase. However, the PP following L in (42) is partially empty – it has an empty head, whereas the PP in (43) is completely empty.

With this in mind, we will first repeat (17) as (45) below and analyse it, before we can re-analyse (44).

(45) a. *xii tzaq*   *laqkae/laqhae/laqlaq/laq iizong.*   *(Shanghai)*

     b. *ta chuan*   *ZHE*   *yifu*   (Mandarin)

        he put.on/wear   L   clothes

     "He is wearing clothes."

In (45), the L marker (L2) is widely treated as an affix. Traditionally, a verb plus its affix is regarded as a form of the verb (Huang, Li, and Li 2009). However, rather than lexicalism (verb-affix cluster is created in the lexicon), we assume the formation of verb-affix cluster relies on the syntactic movement. In our theory, the verb *tzaq* "wear" is raised across the L marker and then merged with L in (45). As a result, the L marker in (45) is followed by a partially empty VP, which has an empty head.

By the same logic, we assume that in (44) the verb *zu* "sit" has undergone the same merging process: it is lifted across the L marker and finally landed in the current position. This gives rise to the result that the L marker in (44) precedes an entirely empty VP. Once again, there is some certain relationship between (44) and (45): the L markers in both (44) and (45) are the sister of a verb phrase. Obviously, the difference between (44) and (45) is that the VP following L in (45) is partially empty, whereas the VP in (44) is completely empty.

Moreover, we can find that the short form *laq* is prohibited in both (43) and (44), which contain an entirely empty PP/VP. In contrast, the short form *laq* is allowed in both (42) and (45), which does not contain an entirely empty PP/VP. The PP/VP in (42) and (45) is partially empty, because only the head of the phrase is empty. Therefore, we assume that the overt forms are triggered only when their sister is an entirely empty PP/VP. To put it differently, the blocking will not be triggered unless the condition that the sister of L is an empty category is fulfilled.

Xu and Shao (1998) consider the *laqhae/laqkae* at the end of a sentence to be different from the *laqhae/laqkae* following a VP. This is partially consistent with our approach that L1 and L2 are syntactically different, albeit phonologically represented as the same set of elements *laq/laqhae/laqkae/laqlaq*. However, it is clear that our approach is fundamentally different from Xu and Zhao's analysis. The difference is obvious: in our theory, the focus interpretation is present when the movement occurs, namely, the VP/AP/NP is raised across the L markers; while Xu and Zhao argue this is due to *laqhae/laqkae* being used as a

complementiser (or a contrastive marker). Moreover, their main argument is based on the contrastive marker *laqhae/laqkae* not being interchangeable with the duplicate form *laqlaq* in the old variety of *Shanghai* Chinese. As is mentioned above, this difference has been weakened among the younger generations, which means it does not apply in our framework.

4. Conclusion

As mentioned at the very beginning, the set of elements *laq/laqlaq/laqhae/laqkae* is not very well established, because *Shanghai* Syntax has attracted little research interest. This study can be seen as an attempt to solve the puzzle that the short form *laq* has a different distribution from the three long forms.

Our main argument is based on the comparative study of the set of elements *laq/laqlaq/laqhae/laqkae* with its equivalents in Mandarin. In addition to Chomsky (1973), Shyus (1995, 2001, 2014) theory and the concept of Verb Movement (Emonds, 1978; Pollock, 1989) also provide crucial theoretical foundations for our proposal. We, in return, hope that our solution to the puzzle in this study will provide some dialectal evidence for Trace Theory, Verb Raising, and Focus Movement.

In Section 2, we have concluded the similarities and differences between the L markers and their equivalents (the prefixal *zai* and the suffixal *zhe*) in Mandarin. Consequently, it becomes easier for us to understand the distribution of *laq/laqlaq/laqhae/laqkae*. When preceding a verb/adjective/empty preposition, the L marker is always L1 (in the case of empty preposition, it is either used alone as the predicate, or before a place/location); when following a verb/adjective, it is not as straightforward: sometimes it is L1, sometimes it is L2. This depends on whether it bears a contrastive/focus interpretation: it is L1 in most cases when the verb/adjective bears a focus interpretation. It must be pointed out that in a locative inversion construction the L marker is always L2, as *zai* is not allowed in this kind of structure.

Our central question is why the short form *laq* is prohibited in some cases, whereas the long forms are allowed? In respect of phonology, the L marker has different phonological realisations, namely, the short form *laq* and the long forms *laqlaq/laqhae/laqkae*.This is sensitive to its syntactic context: the short form *laq* is blocked when it is the sister of an empty category. Thus, in our theory, the blocking rule applies at PF level (the mapping between syntax and phonology).

The first part of our analysis examined the examples in which focus/contrastive interpretation is present. In Mandarin Chinese, focus movement is evident: although SVO is the canonical word order, an object can be preposed to a preverbal position, either in the *lian…dou/ye* "even…all/also" or by bare object preposition. As a result, the object bears a focus/contrastive interpretation (Shyu 1995, 2001). Therefore, we assume that the fronted VP/AP/NP also undergoes similar focus movement in *Shanghai* Chinese. In English, the contraction of auxiliaries is blocked immediately preceding a phrase juncture or the site of ellipsis. It is the presence of a zero substitute immediately following the weakened form that prevents the contraction (King 1970). As can be seen from the parallel between English and *Shanghai* Chinese data in Section 3, only the overt forms are able to license the trace of VP/AP/NP. This also explains why the short form *laq* is always blocked whenever the focus interpretation is present: the VP/AP/NP has undergone focus movement across the L marker, giving rise to the focus interpretation and triggering the long forms. Note that although the focus interpretation is also present in the case of NP discussed here, this link between NP and the L marker is only found in a locative inversion structure, due to the fact that L as a copula is incompatible with nouns. In summary, the short form *laq* is blocked when it is the sister of an empty category, because the trace left behind needs to be licensed.

The second part of our analysis examined the examples in which focus movement is not evident. According to some examples, sometimes the short form *laq* is also blocked when the focus interpretation is absent. One case would be that the short form *laq* is prohibited when the L marker (L1) is used alone as the predicate which contains an entirely empty preposition/PP. Another case is that the blocking effect is also retained when the L marker (L2) follows a verb/VP. It is not as clear what blocks the short form in both cases. However, we assume that this is independent evidence that the blocking is triggered by a following empty category. In the first case (the L1 case), the L marker is obviously followed by an entirely empty PP, according to our assumption. In the second case, we assume that the verb-affix clusters are not created in the lexicon: the verb and affix (L2) have undergone a merging process through syntactic movement. In fact, the verb is raised across the L marker (L2), giving rise to a following empty category (an entirely empty VP). Therefore, the short form *laq* is prohibited when the sentence contains an entirely empty PP/VP. In contrast, the short form *laq* is allowed when the sentence does not contain an entirely empty PP/VP. (We consider the phrase in which only the head is empty to be partially empty.) Therefore, we assume that the overt forms will be triggered only if their sister is an entirely empty PP/VP. Once again, we have found that the

blocking rule applies when the sister of L is an empty category, which is consistent with the first part of our analysis.

In summary, we hope our proposal has shed some light on the distribution of the short and long form of *laq/laqlaq/laqhae/laqkae* in *Shanghai*. However, a fuller solution to the puzzle will require further research.

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PART TWO

CHAPTER SEVEN

THE PRODUCTIVE ACQUISITION OF DENTAL OBSTRUENTS BY DANISH LEARNERS OF CHINESE

RASMUS PUGGAARD

Abstract

Standard Chinese has phonemic dental stops and affricates /t tʰ ts tsʰ/, while the aspiration of the Danish alveolar stop is manifested as affrication /tˢ/. This paper tests whether Chinese dental obstruents are particularly problematic to acquire for Danish L1 speakers, as suggested by Wang (2014). It also tests whether Danish /tˢ/, assumed to be problematic for the acquisition of the corresponding Chinese phoneme, is transferrable to Danish L1 speakers' pronunciation of English. 25 students of Chinese at different levels were asked to utter short sentences in Danish, English, and Chinese. The results unequivocally show that the participants of the experiment transfer affrication to their production of English, and that most Danes learning Chinese have problems with the production of the dental obstruents. The results also show that Danish L2 learners of Chinese pronounced /ts/ as a fricative, which is clearly distinct from Chinese /tʰ tsʰ/ and that the duration is significantly longer than for L1 speakers of Chinese. The primary distinguishing feature between /tʰ tsʰ/ appears to vary in learners' perception of duration but not in affrication. Moreover, for most first and second year students, and among half of the participating third year students, affrication is prominent in the production of Chinese phonemes /tʰ tsʰ/. To further complicate the picture, the students were also found to gradually develop fortis before they were able to pronounce Chinese /tʰ/. This paper argues that if their pronunciation is purely aspirated this does not cause problems, but if affrication is retained in their pronunciation it only serves to make their production of /tʰ tsʰ/ more similar.

Keywords: Second language acquisition, Chinese as L2, L2 phonology, acoustic phonetics

1. Introduction

The minor phonetic differences between otherwise similar phonemes in two different languages often lead to difficulty in second language (L2) acquisition. In a paper presented at Fudan University in October 2014 (Wang 2014), some specific production and perception difficulties were predicted for Danish speakers learning Standard Chinese (SC) as an L2. These predictions were based on existing theoretical models for the acquisition of L2 phonology, and specifically the acquisition of SC dental obstruents was emphasised. There is plenty of literature on L2 acquisition of SC phonology, particularly on the acquisition of tones (*e.g.* Yang 2015). But the study of SC acquisition by native speakers of Danish is a new field, albeit one that has been active as of late. Recent work on Danes' acquisition of SC includes a study by Sloos et al. (2015) on the acquisition of speech rhythm. Sloos et al. find that native speakers of Danish do not observe SC intrinsic tone duration, and do not have the characteristic final syllable lengthening of SC. Sloos et al. (2016) tested the pitch range and tone realization of SC, and found that the pitch variability of native Danish speakers was significantly lower than that of native SC speakers, and that tone realisation was often fairly poor, presumably due to the small pitch range of Danish. Yan and Sloos (2019) tested Danish learners' perception of the SC dental stops and affricates and found that native (L1) speakers of SC and Danish L2 learners rely on different cues when distinguishing them. Teachers of Chinese at Aarhus University also reported that productive acquisition of these sounds could be problematic. By comparing the phonologies of Danish and SC, this paper sets up a hypothesis for what problems Danish speakers may have when producing SC consonants in general, and tests whether the dental stops and affricates cause particular problems by analysing recordings of students at different levels producing them. As predicted by Wang (2014), it was found that a specific quirk of Danish phonology, namely the prominent affrication of alveolar stops, results in difficulties with the production of the SC dental obstruents. The problem is tenacious and is still found among some 3rd year students.

In Section 2 below, three models accounting for the perception of L2 sounds will be presented, before Section 3 uses these models to make predictions of difficulties Danish learners may meet when acquiring the simple onset consonants of SC. Section 4 will present the speakers, stimuli and procedure

used in the recordings for this paper, before Section 5 gives the method used for analysing the recordings. In Sections 6 and 7 the recordings are analysed, with Section 6 being a small experiment testing Danes' pronunciation of aspirated alveolar stops in English. The results are discussed in relation to the predictions in Section 8, while Section 9 sums up and concludes.

2. Theoretical background

Developing productive competence in the phonological system of an L2 as an adult is never easy, and Flege (1980, 119) notes that the development of a new phonological system appears slow compared to more abstract linguistic competences such as development of lexicon and syntax. When learning an L2 as an adult, the L1 phonological system interferes with that of the L2 in complex ways, both in perception and production of the L2. There are three well-known models accounting for how L2 sounds are filtered through the phonology of the L1: Kuhl's Native Language Magnet model (NLM; *e.g.* Kuhl *et al.* 1992); Best's Perceptual Assimilation Model (PAM; *e.g.* Best *et al.* 2001); and Flege's Speech Learning Model (SLM, *e.g.* Flege 1995).

The NLM proposes that listeners develop acoustic prototypes for L1 phonemes very early in life. These acoustic prototypes serve as "magnets" in the surrounding perceptual space, making it harder to perceive variation surrounding L1 prototypes. Different non-prototypic members of a category will be perceived as more similar to the prototype than to each other, regardless of the actual acoustic difference between them (Kuhl *et al.* 1992, 607). Likewise, according to the NLM, L2 phones that are similar to L1 prototypes will be dragged into the perceptual space of the prototypes, and listeners will not develop prototypes for novel L2 categories (Best *et al.* 2001, 776). As evidence opposing the NLM, Lively and Pisoni (1997) report that the results supporting the NLM are much more robust for small children than for adults, and also find that phoneme prototypes are not stable across different phonetic contexts.

PAM was originally developed to account for the fact that speakers of American English were found to discriminate Zulu clicks surprisingly well; according to PAM, this is because the clicks were not perceived as speech sounds by L1 speakers of English, in which case the L1 phonology neither aids nor hinders discrimination (Best *et al.* 1988). L2 sounds that are not similar to any L1 sounds are deemed non-assimilable speech sounds, and discrimination among them is expected to be as good as the actual difference between the acoustic cues allows. Given that there is no interference from

L1 phonology in these cases, discrimination is expected to range from good to excellent. Discrimination between two L2 sounds is expected to be accurate when they are separated by phonological boundaries that also exist in L1, or if one L2 phoneme is similar to an L1 phoneme while the other cannot be easily identified with a specific L1 phoneme. When two L2 sounds are equidistant to one L1 phoneme, however, discrimination is expected to be poor. This is referred to as Single Category assimilation. Two L2 sounds may also be like one L1 phoneme, albeit with one being more similar than the other; this is termed a Category Goodness difference. Here, discrimination is also expected to be poor, but not as poor as in Single Category discrimination (Best *et al.* 2001, 777).

Of the three models, the SLM is the only one with primary focus on production of L2 sounds as opposed to perception, although the two aspects are assumed to be closely linked. The model mainly focuses on the production of fairly advanced L2 learners. The SLM assumes that L2 sounds are classified based on perceptive similarity to the nearest native category. The further the distance is from an L2 sound to the nearest L1 category, the better the chance is for a new stable sound category to develop. If an L2 sound is reasonably close to the nearest L1 sound, there is a good chance of it being perceived as part of the L1 category, which may result in production like a good exemplar of the L1 category, even though that may be a poor exemplar of the L2 sound (Flege 1995, 239). If any phonetic differences are discerned by the learner, a new phonetic category can be developed; however, the learner's category may not be similar to the corresponding category of a native speaker, since it may be based on different phonetic cues. An example of this is the production of English stops by native speakers of Canadian French: the English aspirated stops /p t k/ have a much longer release duration than the corresponding French unvoiced stops. Caramazza *et al.* (1973, cited from Flege 1981, 450) report that L1 speakers of French produce English stops with a release duration somewhere in between that of their own French stops and that of an L1 speaker of English, indicating that while they have different categories for English and French /p/, their English /p/ category is still different from that of a native speaker. Besides, the SLM maintains that some L2 production errors are not perceptually motivated, but due to motoric output constraints from the L1 (Flege 1995, 238). PAM and SLM will both be used as predictors and explanatory models in the coming sections.

Apart from the interference of one phonological system with another, there is also evidence that there is an influence of L1 orthography-phonology correspondences when learning an L2. For example, Bassetti (2006a, cited

in Bassetti 2008, 197) found that Italian learners of SC were likely to pronounce SC unvoiced unaspirated stops /p t k/ as voiced /b d g/ due to Pinyin's use of <b d g> for these. Meng (1998, cited in Bassetti 2006b, 100) made a similar case for English learners of SC. This explanation should only be used when an observed problem cannot be explained using a phonological model; this problem can just as easily be explained using PAM or SLM.

3. Phonology of Danish and SC

There are many challenges for the Danish learner wishing to learn SC as an L2: a complex tone system has to be developed from scratch; in spite of the huge vowel phoneme inventory of Danish, there are still new ones to be learned; the learner must acquire retroflex consonants; and the learner must master a prohibitively complex new writing system, among other challenges. These will recur for speakers of most European languages, but there is one aspect of the Danish phonology that poses a unique challenge: the Danish alveolar stop is highly affricated in simple onsets.

Given that SC syllables only allow simple onsets (and a very restricted coda of either /n ŋ ɹ/), and given Flege's (1995, 239) hypothesis that L1 and L2 sounds are related to each other at a position-sensitive allophonic level and not a phonemic level, only the simple onset allophones of Danish will be taken into account here. In Section 3.1 and 3.2 below, consonants allowed in simple onsets of Danish and SC will be presented. In Section 3.3 the mapping possibilities of the phonemes will be analysed, highlighting the problem of the dental obstruents.

3.1 Danish

3.1.1 Danish consonants in onset position

The initial consonant allophones of Danish can be seen in Table 1, following Grønnum (1998, 39):

Table 7-1. Initial consonant allophones of Danish

	Labial	Alveolar	Palatal	Velar	Uvular	Glottal
Unaspirated plosive	b̥	d̥		g̊		
Aspirated plosive	pʰ	tˢ		kʰ		
Fricative	f	S				h
Nasal	m	N				
Approximant	ʊ		j		ʁ	
Lateral		L				

Grønnum generally uses the less specific transcriptions /b d g p t k/ for the stop phonemes because their realizations differ in coda position; the above are the onset-specific realizations. The exact position and manner of articulation of the Danish rhotic is hard to describe, as it is not static at any point and has elements of both a glide and a trill (Grønnum 2007, 115).

Unlike *e.g.* English, Danish stops do not have a voicing distinction, but are exclusively voiceless – and nor is there a distinction between fortis and lenis in Danish stops, which are exclusively lenis (Grønnum 1998, 107, 263). This gives the set /b̥ d̥ g̊ pʰ tˢ kʰ/, though narrowly the simple onset allophones of the aspirated set can be given as [b̥ʰ, d̥ˢʰ ~ d̥ˢ, g̊ʰ]. The "voiced voiceless" symbols are used because lenis pronunciation of the unaspirated stops makes them acoustically similar to voiced stops in other languages (Grønnum 1998, 16).

3.1.2 Danish alveolar obstruents

As shown above, Danish has three phonemic alveolar obstruents /d̥ tˢ s/. /tˢ/ is of primary focus in this paper: as opposed to the other aspirated plosives, the majority of its release phonetically consists not of aspiration, but of affrication. It is not analysed as a phonological affricate, as that would result in an awkward gap in the phoneme inventory, and because that is hardly assumed to be in accordance with the cognitive organization of sounds. Instead, it is analysed as an aspirated consonant in which the majority of the aspiration occurs with the tip of the tongue in close proximity to the alveolar ridge, acoustically resulting in affrication. The affrication is sometimes followed by a short period of regular aspiration (glottal frication) after the tongue leaves the alveolar ridge, depending on the quality of the following vowel. As mentioned above, the shift from affrication to aspiration is gradual. Nothing in the recordings made for this paper (see Section 4) or the existing literature suggests that this affrication is currently a dialectal,

regiolectal, or gender-specific feature, although it was missing in some traditional Danish dialects (Puggaard 2018). Likewise, nothing in the recordings or the existing literature suggests that affrication of /tˢ/ in simple onset is dependent on the phonetic environment.

In the recordings made for this paper, the mean voice onset time (hf. VOT) of Danish /tˢ/ in simple onset (henceforth DA-*t*) was 94ms. For the average token, this consisted of 72ms of affrication followed by 21ms of aspiration. Approximately half of the tokens (50%, n=138) consisted of no or only very short aspiration. In contrast, only 1% (n=3) of tokens had no affrication, and these tokens were all uttered by the same speaker. These numbers are similar to the results of Mortensen and Tøndering (2013, 52), who found an average VOT of between 83.8ms and 86.8ms depending on subsequent vowel height. The relatively shorter VOT found in that paper is assumed to be due to Mortensen and Tøndering's data consisting of spontaneous speech, as opposed to the data basis of this paper.

Table 7-2. DA-*t* VOT

Mean VOT	Mean frication	Mean aspiration	%w/o frication	% w/o aspiration	Range
93ms	72ms	21ms	1	50	3-17cs

3.2 Standard Chinese

3.2.1 Standard Chinese consonants in onset position

Following Duanmu (2007, 24) the initial consonant phonemes of SC can be seen in Table 3. When Pinyin transcriptions differ from the phonetic symbols, they will be given in *italics* after the phoneme. Palatals are given as phonemes here, even though Duanmu does not consider them to be phonemic.

Table 7-3. SC consonant phonemes in onset position

	Labial	Dental	Retroflex	(Palatal)	Velar
Unaspirated plosive	p, *b*	t, *d*			k, *g*
Aspirated plosive	pʰ, *p*	tʰ, *t*			kʰ, *k*
Unaspirated affricate		ts, *z*	tʂ, *zh*	tɕ, *j*	
Aspirated affricate		tsʰ, *c*	tʂʰ, *ch*	tɕʰ, *q*	
Fricative	f	s	ʂ ʐ, *sh r*	ɕ, *x*	x, *h*
Nasal	m	n			
Lateral		l			

Duanmu proposes a minimal phonemic inventory of SC, as he considers the glides [w j ɥ]to be allophones of the high vowels. Chao (1968, 21) describes the velar fricative as a uvular /χ/. Chao also describes /ʐ/ as a voiced continuant but considers it to be a rhotic /r/ phonologically. This makes sense from the point of view of phonological economy, since /ʂ ʐ/ otherwise make up the only phonemic set in SC distinguished by voicing. /ʐ/ is used here as it most closely resembles the phonetic realization.

Like Danish, SC stops are not distinguished by voicing, but by aspiration. Unlike Danish, SC has a lenis-fortis distinction. The phonological status of the palatals [tɕ tɕʰ ɕ] is unclear; while Cheng (1973, 40) gives them phonological status, they have also been identified as allophones of the dental affricates (Hartman 1944, 38) and the velar stops (Chao 1968, 21) respectively, while Duanmu (2007, 31) analyses them as consonant-glide combinations, specifically combinations of the dental sibilants and palatal glide. Kratochvil (1968, 25) furthermore describes the dental stops as alveolars /t tʰ/, but his claim appears to be unfounded, while a dental place of articulation is backed up by x-ray and palatographic data (Zhou and Wu 1963, cited in San 2007, 25).

3.2.2 SC dental obstruents

The focus of this paper is the dental obstruent series /t̪ t̪ʰ ts̪ ts̪ʰ s/, and particularly /t̪ʰ ts̪ ts̪ʰ/. Henceforth the Pinyin letters for the aspirated dental stop and dental affricates SC-*t*, SC-*c*,SC-*z* will be used instead of phonetic symbols.

In the recordings of native SC speakers made for this paper, the mean VOT of SC-*t* lasted 86ms, consisting either of purely glottal frication, or velar frication before back vowels. This is slightly shorter than for Danish, but longer than for English (Lisker and Abramson 1964, 394), even though all three languages are sufficiently similar in this respect to be grouped together in Cho and Ladefoged's VOT typology (1999, 223). The VOT mean is similar to that found by Chao and Chen (2008, 223), who measured a mean VOT of 81ms for SC-*t*, but markedly shorter than that found by Rochet and Fei (1991, 105), who measured a mean VOT of 98.7ms for SC-*t*. This difference is presumably due to Rochet and Fei measuring elicited single syllable utterances. The mean VOT of SC-*z* in the recordings for this paper lasted 73ms, consisting solely of coronal frication. These numbers are similar to those of Liu and Jongman (2013, 4) who report a release between 60ms and 70ms. The mean VOT of SC-*c* in the recordings for this paper was 152ms, consisting of roughly two thirds affrication and one third aspiration

(99ms and 53ms on average, respectively). Similar to SC-*t*, the aspiration often consisted of velar frication before back vowels. 11% of the tokens had no audible aspiration; these were the tokens occurring in syllables with a syllabic voiced continuant /ʐ/ in the rhyme, which is to be expected, as the place of articulation of the continuant is homorganic to that of the affricate (*e.g.* Hartman 1944, 31). The mean VOT measured for SC-*c* is similar to that found by Liu and Jongman (2013, 4). The VOT values in the recordings made for this paper are generally similar to previously findings.

Table 7-4. SC phonemes VOT

Phoneme	Mean VOT	Mean frication	Mean asp.	% w/o frication	% w/o aspiration	Range
SC-*t*	86ms	0ms	86ms	100	0	3-15cs
SC-*z*	73ms	73ms	0ms	0	100	2-15cs
SC-*c*	152ms	99ms	53ms	0	11	8-29cs
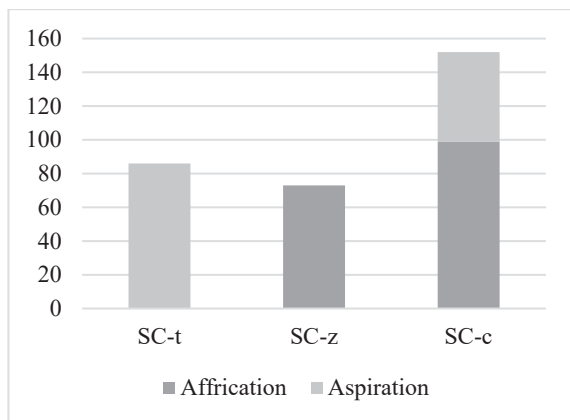
Figure 7-1. Illustration of the duration and contents of the releases of SC dental aspirated stops and affricates

3.3 Mapping expectations

There are plenty of minor differences in the Danish and SC simple onset consonants. Many of these are likely to lead to different degrees of accented pronunciation of SC by native speakers of Danish.

SC /p k m f/ are expected to map to the corresponding sounds in Danish with no or only minor problems, as the sounds are highly similar. /pʰ kʰ/ are also

expected to map to the corresponding sounds in Danish, the only difference being that the Danish stops have lenis pronunciation. Given that the respective VOTs are similar (Mortensen and Tøndering 2013; Chao and Chen 2008), fortis pronunciation is not expected to be adopted during SC acquisition. /t s n l/ are alveolar in Danish and dental in SC, which should also be unproblematic, as the acoustic differences are minimal. Following SLM, it is likely that an alveolar place of articulation will be retained. Regarding the stop /t/, Cho and Ladefoged (1999, 220) find that dental and alveolar places of articulation are not in themselves expected to result in differences in VOT, but Danish /d̥/ has been found to be up to 10ms longer than Chinese /t/ (Mortensen and Tøndering 2013, 51; Chao and Chen 2008, 223).

The nearest Danish equivalent to both the retroflex and palatal sets /tʂ tʂʰ ʂ tɕ tɕʰ ɕ/ is the alveolopalatal set [dz tɕ ɕ], phonologically considered to be /tˢj d̥j sj/ by Grønnum (1998, 264-266). In PAM terms the difference here is assumed to be one of Category Goodness, with the SC palatals being the better match. Lai (2009, 1268) found that perceptive discrimination of retroflex and palatal affricates was generally unproblematic for native speakers of Malay and Burmese, both of which only have postalveolar affricates.

The SC velar/uvular fricative /x/ does not fit neatly into any Danish phoneme category. Pinyin interference may trigger /h/ for some Danish learners, particularly since /h/ is phonetically the most similar Danish segment, although a very poor fit. /x/ is expected to be sufficiently dissimilar to any Danish sound to form a novel category. Alternatively, many learners may already have formed a category /x/ due to experience learning German as an L2.

SC-*t*, SC-*z*, and SC-*c* are all fairly close to DA-*t* in different respects, making acquisition either a case of Single Category assimilation or a Category Goodness difference in PAM terms. SC-*t* is the closest to DA-*t* in duration. The complete lack of affrication makes it initially seem very different from DA-*t*, but since the affrication is presumably of low cognitive significance to the native speaker of Danish, it may not be of much importance to the transfer. Danish native speakers are also assumed to normally maintain the feature of strong affrication when pronouncing aspirated alveolar plosives /tʰ/ in other L2s (see Section 6). Orthographic interference from Pinyin may also trigger affricated realization.

Inspecting only VOT, SC-*z* appears very similar to DA-*t*. The mean VOTs are reasonably similar and considering that 50% of DA-*t* tokens have no audible pure aspiration, those tokens should be very similar to the native SC-*z* pronunciation. However, there are reasons why they are less similar than these numbers indicate: SC-*z* never has aspiration, and the affrication of SC-*z* and that of DA-*t* are dissimilar, due to the gradual shift of DA-*t*'s affrication to more aspiration-like noise. The affrication noise of DA-*t* peaks immediately after the plosive release, while the affrication noise of the SC-*z* release is more constant. The affrication noise of SC-*z* also generally peaks at a higher frequency than that for DA-*t*. An unrelated reason for Danish speakers to be more likely to recognise SC-*z* as a separate category is that German has a similar alveolar affricate /ts/ in syllable-initial position (Antonsen 2007, 26). Finally, the relatively weak plosive release and short duration of SC-*z* means that it may be perceived as closer to Danish /s/ than DA-*t*. In this case both SC-*z* and SC /s/ would compete for the Danish /s/ category, with SC-*z* being the weaker fit. The results of the current paper point towards the latter analysis.

SC-*c* is much longer than DA-*t*, but the phonetic realization is otherwise much more similar than the other contenders, as it is the only one of the consonants in which both affrication and aspiration are important cues. Aspiration proper is more prominent in SC-*c*, and unlike DA-*t*, the shift from affrication to aspiration in SC-*c* is not gradual. But the distribution of affrication and aspiration makes SC-*c* phonetically very similar to Danish DA-*t*.

SC-*t* and SC-*c* are more or less equidistant to DA-*t*, being similar to it in different respects. An outcome of this could be that the early SC interlanguage of Danish L1 speakers will have SC-*t* and SC-*c* grouped in a single L2 category, /t^s/, which must then be split at a later stage. Otherwise, both SC-*t* and SC-*c* are expected to retain unwanted features from DA-*t*, *i.e.* affrication is assumed to be retained in SC-*t* and a gradual shift from affrication to aspiration is assumed to be retained in SC-*c*, which would make the two L2 categories highly similar. SC-*z* is not assumed to be an equally good candidate, but could turn out to be grouped with the other two in the early interlanguage, especially considering Yan and Sloos' (2019) findings that the phonetic cues of affrication and aspiration are weighted differently for Danish learners than for L1 SC speakers when distinguishing between SC-*t*, SC-*c*, and SC-*z*.

4. Materials

4.1 Speakers

25 undergraduate students were recorded for this paper. All students were native speakers of Danish and enrolled in the Chinese Studies program at Aarhus University. The students were between 20 and 42 years old, though all except two participants were between 20 and 25. More than half of the participants were from Central Jutland, the remainder coming from all across Denmark. 11 were male and 14 were female, which reasonably reflects the gender distribution of the study program. All of the participants spoke English, all except two had studied German for at least three years in elementary school, and approximately half had studied French in high school. 10 of the participants had studied Chinese in high school, 9 more reported having some knowledge of Chinese before starting university, and 6 reported having no previous knowledge of Chinese whatsoever prior to university. The subjects were unpaid and did not receive credit for participating. None of the participants reported hearing, vision, or reading deficiencies. They were unaware of the particular hypothesis being tested. The subjects were at three different stages of their studies:

1st year students (henceforth Y1). Seven of the participants had begun their studies approximately five weeks before the recordings took place. At this point they were reasonably proficient at using *Pinyin but* had only a small inventory of Chinese characters and a small SC vocabulary.

2nd year students (henceforth Y2). 12 of the participants had begun their studies a little more than one year previously. At this point they had a reasonably large inventory of Chinese characters and vocabulary. They had been introduced to all characters and words used in the recordings.

3rd year students (henceforth Y3). Six of the participants had begun their studies a little more than two years previously. As part of their studies they had recently finished a semester at Peking University, where teaching had been done solely in SC, so they had been exposed to a large amount of both spoken and written Chinese.

In addition to the Danish participants, 7 native speakers of SC were recorded, 4 males and 3 females. They were all studying in Aarhus as exchange students. They were from different areas of China, but all spoke SC as their native variety of Chinese. No factor other than study level resulted in major differences in the results for the Danish students.

4.2 Stimuli

The stimuli consisted of 64 simple sentences of 6 syllables each. The sentences contained the same number of syllables to control for speech rate. 12 of the sentences were in Danish to get samples of the participants' L1 speech; 12 were in English; and 40 were in SC. The Chinese participants were only asked to read the SC sentences. The Danish and English sentences were both designed to include the aspirated alveolar stop in front of a broad variety of vowel combinations. For both sets, 9 sentences included the alveolar stop and 3 were filler sentences. The SC sentences were designed to include the dental obstruents in focus before a broad variety of vowel and tone combinations. 30 of the sentences included one or more of these consonants while 10 were filler sentences.

4.3 Procedure

The participants were asked to read the sentences presented above from slides of a Microsoft PowerPoint presentation. All sentences were presented on single slides, the Chinese ones in both characters and Pinyin. The recordings were self-paced and lasted 3-6 minutes on average. The speech was recorded with either a Zoom APQ3HD or a Sony PCM-D50. The recordings mostly took place in the Interacting Minds Centre lab at Aarhus University, but also in three other empty, quiet meeting rooms at Aarhus University and VIA University College respectively.

5. Analysis methodology

To investigate how L1 Danish speakers' pronunciation of dental obstruents differed from native pronunciation in SC, the Praat speech processing software (Boersma and Weenink 2016) was used to measure and analyse the release portion of the stops and affricates. The term VOT will be used to broadly signify the period from the plosive release until the beginning of voicing, thus covering the entire release of plosives and affricates. For each of the obstruents in focus, the VOT was measured and, if applicable, split into an affrication segment and an aspiration segment, which were measured independently. If either affrication or aspiration lasted less than 1cs they were considered inaudible, and thus given as 0. If consonants were mispronounced in a manner that suggested that they were speech errors, they were excluded from the analysis. This mainly covers consonants pronounced at an entirely wrong place of articulation, *e.g.* dentals that were pronounced as retroflexes or velars.

VOT, affrication segments, and aspiration segments were measured in cs. For SC speakers, delimitation of affrication and aspiration was generally clear and unproblematic, and could reasonably have been given in ms, but for Danish speakers, more precision proved problematic, due to the gradual transition from affrication to aspiration in Danish pronunciation. This gradual transition was prominent among Danish participants in both their L1 and their L2s. Delimitation of affrication and aspiration was based on spectrographic and auditory inspection of the individual tokens; if possible, high-pitched irregular noise was taken to mean affrication while pre-voicing formant traces was taken to mean aspiration. However, in the Danish speaker tokens, these frequently overlapped, in which case delimitation was based mainly on auditory judgment. An example of this can be seen in Figure 1, where unvoiced vowel formants can clearly be seen simultaneously with diminishing high-pitched irregular noise. When voicing did not start simultaneously for all formants, voice onset was taken to be at the beginning of voicing at F1. Fischer-Jørgensen and Hutters (1981) make a good case for considering everything until voicing at F2 and F3 aspiration, but this approach is better suited for measuring the duration of the whole release portion of a stop, and not for analysing different aspects of the release.

| ts | e | v | e |
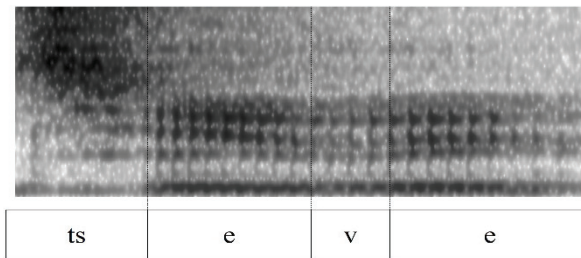
Figure 7-2. Unvoiced vowel formants simultaneous with diminishing fricative noise

6. Affrication in L2 English

As noted above, it has often been mentioned, but not tested, that Danes often pronounce /tʰ/, fortis /t/ and similar phonemes in different L2s as [tˢ], even in languages which they are very proficient in. If true, this is assumed to increase the likelihood for CH-*t* to be pronounced as [tˢ]. To test this hypothesis, a subpart of the current experiment tested the pronunciation of the English aspirated alveolar stop by L1 speakers of Danish. The participants all spoke English with a high degree of proficiency. 25 students of Chinese can naturally not be said to be representative of the whole

population of English-speaking Danes, so work is still needed on this topic, but the results are sufficiently clear to have some merit. No native English speakers were recorded for comparison, so comparison of VOT will be made to the values reported in Docherty (1992, 116) and Klatt (1975, 689). They find mean VOTs for /tʰ/ at 63ms and 65ms for British English and American English respectively. Neither of them refers to affrication in these stops, and such a feature is generally not mentioned in the literature.

It turned out that there was a small but significant difference in the VOT of DA-*t* and English /tʰ/ as pronounced by L1 Danish speakers (henceforth EN-*t*), with t(523)=2.6, p<0.01. The mean EN-*t* had a VOT of 88ms, which is just 6ms shorter than DA-*t*, and still around 20ms longer than native pronunciation of EN-*t*. Likewise, affrication was slightly less prominent in EN-*t* than in DA-*t*; EN-*t* had a mean affrication duration of 66ms, thus taking up an average of 74% of the release (compare 77% for DA-*t*). In total, affrication was avoided in 6% (n=16) of EN-*t* tokens, which is a lot more frequent than DA-*t*, but still means that there is affrication in most tokens. Half of the tokens with no affrication (n=8) were spoken by only two of the study participants. 48% (n=120) of EN-*t* tokens had no period of aspiration proper, which is roughly similar to DA-*t*. In support of SLM, it appears that at least some of the speakers are aware of an acoustic difference between EN-*t* and DA-*t*, and have developed a separate category for EN-*t* which is based on their perceived difference between the two.

Table 7-5. EN-*t* vs DA-*t* VOT

Phoneme	Mean VOT	Mean frication	Mean asp.	% w/o frication	% w/o aspiration	Range
EN-*t*	88ms	66ms	23ms	6	48	4-16cs
DA-*z*	93ms	72ms	21ms	1	50	3-17cs
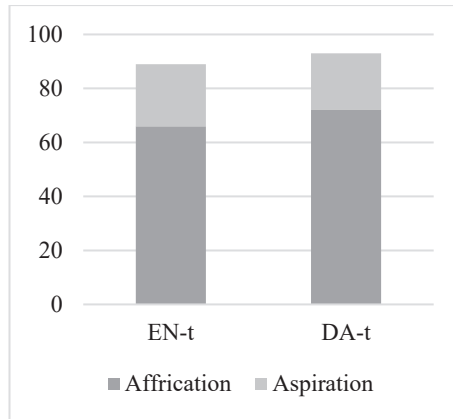
Figure 7-3. Illustration of the duration and contents of the EN-*t* and DA-*t* release.

In conclusion, EN-*t* is remarkably close to DA-*t* in pronunciation, and it can safely be said that affrication has been retained as a prominent feature in EN-*t*. As with DA-*t*, the feature is prominent for all recorded speakers – including those who consistently avoided it in their pronunciation of Chinese SC-*t* (see below). This means that even those students who had successfully established /t̪ʰ/ as a stable category in SC retained [t̪ˢ] in their pronunciation of English.

7. Results

7.1 SC-*t*

Unlike SC-*z* and SC-*c*, SC-*t* can appear before /i/ and can be palatalized, and both /t̪ʰi/ and initial /t̪ʰj/ were involved in the experiment. They were, however, left out of the final analysis for two reasons: 1) since the dental affricates cannot appear before high front vowels, SC-*t* will most likely not be perceived as an affricate whether pronounced with affrication or not, and 2) aspiration preceding a high front vowel is acoustically very similar to affrication, making delimitation of either very difficult and ultimately too random. The latter proved true for both Danish and native SC speakers.

SC-*t* was the only analysed consonant in which the participants' total VOT became progressively less native-like as they advanced in their studies. The mean total VOT for Y1 students was 92ms and 95ms for Y2 students, and while both were longer than the mean VOT for native Chinese speakers, neither differed significantly from it. The Y3 students, however, had a mean

total VOT of 112ms, which was significantly longer than that of native speakers, with t(205)=5.34, p<0.001. It should be mentioned that the Y1 and Y2 students' VOTs were not significantly different than the VOT of DA-*t*, while those of the Y3 students' were, with t(368)=5.49, p<0.001. It should also be mentioned that the long VOT for Y3 students can be partially explained by one of the participants of this group having a particularly long mean VOT of 152ms, raising the Y3 mean by a fair amount. However, if the outlier participant is excluded, the Y3 mean VOT is at 104ms, which remains significantly higher than both the Y1, Y2, and native SC groups.

The average Y1 SC-*t* consists of 41ms of affrication followed by 50ms of aspiration. None of the actual tokens look like this; this average is a product of highly variant pronunciation. More than half (65%, n=73) of the tokens had affrication, and among those the mean affrication duration was 64ms. Out of the Y1 participants, 4 out of 7 affricated all or almost all of their tokens, 1 affricated approx. half of their tokens, and 2 almost never affricated. A third (30%, n=34) of the tokens had less than 10ms of or no aspiration. The majority of Y1 SC-*t* releases consisted of a fairly long period of affrication sometimes followed by a fairly short period of aspiration.

The average Y2 SC-*t* consists of 24ms of affrication and 71ms of aspiration. This is also a product of variant pronunciation, but clearly shows that by this stage of study, affrication has become much less prominent in the production of SC-*t*. Less than half (43%, n=83) of Y2 tokens had affrication, while only 9% (n=18) lacked aspiration. None of the Y2 students affricated all of their tokens, but only 2 out of 12 consistently avoided it. The majority of the Y2 SC-*t* releases consisted either only of aspiration or of a fairly short period of affrication followed by a longer period of aspiration.

The average Y3 SC-*t* consists of 31ms of affrication and 81ms of aspiration. Similar to Y2, 44% (n=42) of tokens had affrication, and 11% (n=10) lacked aspiration. These numbers are less native-like than the Y2 ones. There are two explanations to account for this development: 1) a longer VOT makes affrication a less prominent part of the release and 2) a longer VOT is a product of the students developing fortis pronunciation of the phoneme. A more fortis pronunciation of a Danish affricated SC-*t* would acoustically result in a longer release retaining both affrication and aspiration. A possible adverse effect of this strategy is that the prolonged VOT could simply cause these tokens to resemble SC-*c* more than SC-*t*. For an extreme example of this, see Figure 4, which is a SC-*t* token with a very long release (29cs) that has both affrication and aspiration. Presumably the prolonged VOT is an attempt to stress the aspiration of the release, but in doing so, affrication

also becomes more prominent, and the token comes to altogether resemble native SC-*c* more than SC-*t*.

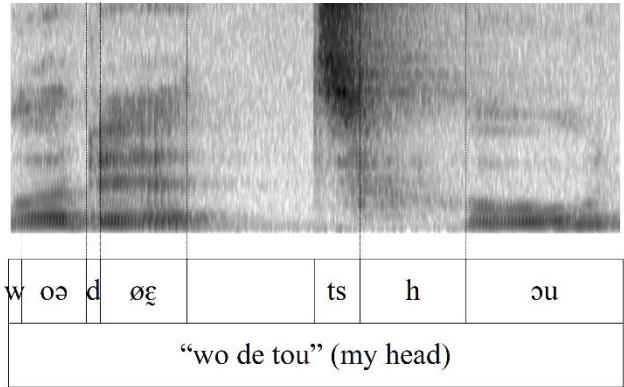| w | oə | d | øɛ | | ts | h | ɔu |

"wo de tou" (my head)

Figure 7-4. Example of a very lengthy SC-*t* token with both affrication and aspiration being prominent

Half of the Y3 students consistently or near-consistently avoided affrication, which is a clear improvement from Y2. The majority of the Y3 SC-*t* releases had no affrication, while some consisted of both affrication and aspiration, but with fairly long VOTs, which both stresses the aspiration of these tokens, and results in a less native-like release duration.

Table 7-6. SC-*t* VOT

| Group	Mean VOT	Mean frication	Mean asp.	% w/o frication	% w/o aspiration	Range
Y1	92ms	41ms	50ms	35	30	4-21cs
Y2	95ms	24ms	71ms	57	9	3-19cs
Y3	112ms	31ms	81ms	56	11	5-29cs
L1	86ms	0ms	86ms	100	0	3-15cs
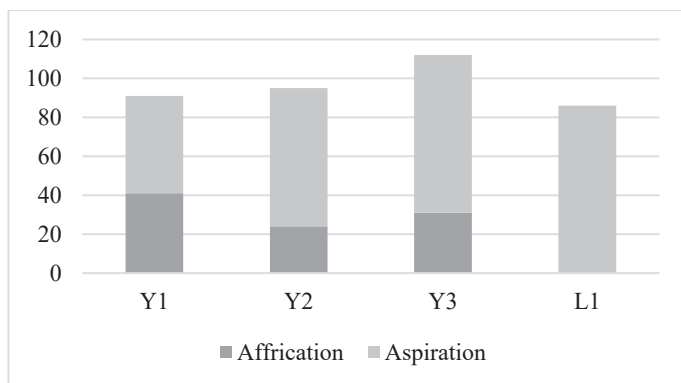
Figure 7-5. Illustration of the duration and contents of the SC-*t* release at different stages of study and for L1 speakers

7.2 SC-*z*

The pronunciation of SC-*z* became progressively more native-like as the students advanced in their studies. The mean total VOT for Y1 students was 131ms. The Y2 students' VOT was significantly shorter at 119ms with t(239)=2.64, p<0.01. Likewise, the Y3 students' VOT was significantly shorter than the Y2 students at 106ms with t(231)=2.06, p<0.05. However, the Y3 students' VOT was still significantly longer than that of the native SC speakers, with t(179)=6.10, p<0.001. Except for a few mispronounced tokens, the participants never produced it with aspiration, and it is clearly pronounced distinctly from SC-*t* and SC-*c*. The only difference across the stages of study is the duration of the affrication. Note that while the duration gradually improves, the Y3 mean duration is still much longer than the native mean.

Danish production of SC-*z* often has no plosive release at all, making it phonetically very similar or identical to /s/. This was a very frequent issue, happening in 25% (n=84) of all Danish tokens. Some speakers never made this error, but more than half of the participants made it at least once. There was no significant improvement as their studies progressed: between 20% and 30% of all tokens for a given group lacked plosive release. For an example, see Figure 6 showing a SC-*z* token with no plosive release as said by a Y3 speaker. At 11cs, the token is near the average duration for Y3 students.

| m | eɪ | tsʰ | j | ɛ | n | s | uə |

"meitian zuo (ditie)" (ride the subway every day)
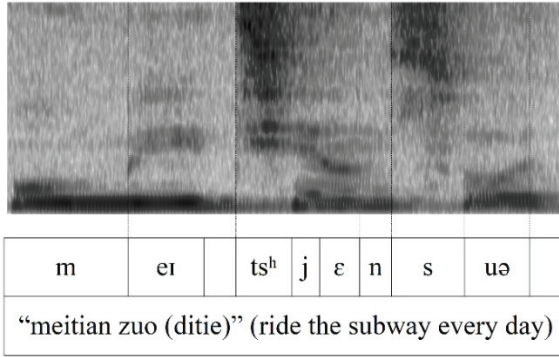
Figure 7-6. Example of a SC-*z* token with no plosive release

It should be noted that a few of the native SC tokens also lacked plosive release, but these cases can all be accounted for by rapid speech, which cannot be said for the Danish speakers.

Table 7-7. SC-*z* VOT

Group	Mean VOT	Mean fr.	Mean asp.	% w/o fr.	% w/o asp.	% w/o pl.rel.	Range
Y1	131ms	131ms	1ms	0	99	23	5-23cs
Y2	119ms	118ms	1ms	1	98	27	5-29cs
Y3	106ms	105ms	1ms	0	99	22	4-23cs
L1	73ms	73ms	0ms	0	100	4	2-15cs
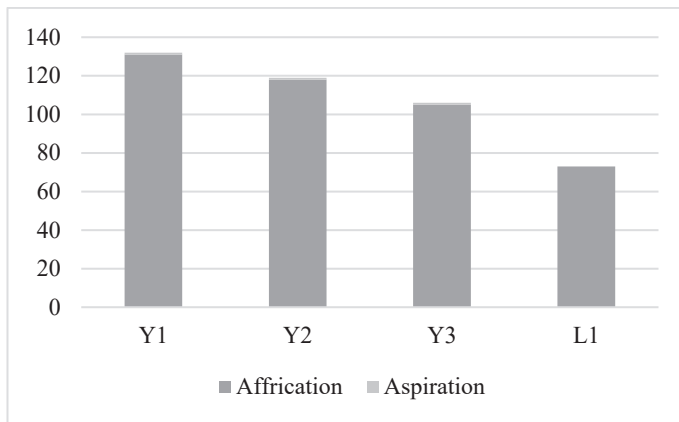
Figure 7-7. Illustration of the duration and contents of the SC-*z* release at different stages of study and for L1 speakers

7.3 SC-*c*

The pronunciation of SC-*c* became progressively more native-like as the students advanced in their studies. The VOT is not significantly different between Y1 and Y2 at 110ms and 109ms respectively. The Y3 mean VOT is significantly longer at 125ms, with $t(171)=3.13$, $p<0.01$. While still much shorter than the native pronunciation, it is a clear improvement.

The average Y1 SC-*c* consists of 72ms of affrication followed by 38ms of aspiration. The mean distribution is like the L1 SC production, with 65% of the release consisting of affrication, but once again the average is a result of very variant pronunciation. This early in their studies, the participants clearly had troubles with the pronunciation of SC-*c*; 14% (n=10) of the tokens were mispronounced to the point of exclusion, frequently as a velar stop /k/ which can only be explained by orthographic interference from Danish or English. 45% (n=27) were pronounced with no or minimal aspiration, though a clear fortis pronunciation typically distinguished these from SC-*z*. To further complicate the picture, 13% (n=8) were pronounced with no affrication, making these tokens more like native SC-*t*, while still typically longer. This is presumably a form of hypercorrection, demonstrating the students' problems with keeping SC-*t* and SC-*c* separate. An example of this can be seen in Figure 8, where a Y1 student pronounces a SC-*c* token with no signs of affrication, but a fairly long period of aspiration (13cs).

tʂh	øə		th	ao
"chi cao" (eat grass)				
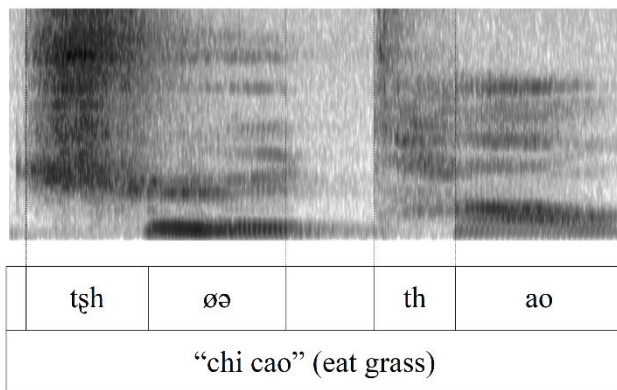
Figure 7-8. Example of lengthy SC-*c* token with no affrication

The average Y2 SC-*c* consists of 64ms of affrication followed by 45ms of aspiration. This means that the mean distribution is less native-like than at Y1, with only 59% of the average VOT consisting of affrication. This is actually a result of the pronunciation becoming more stable, and aspiration becoming more prominent: only 27% (n=31) of tokens were pronounced without aspiration. Along with much fewer tokens discarded due to mispronunciation (6%, n=7), it is clear that SC-*c* production has stabilized and become less problematic. Lack of affrication was still surprisingly prominent, occurring in 17% (n=19) of Y2 SC-*c* tokens.

The average Y3 SC-*c* consists of 86ms of affrication followed by 39ms of aspiration. Along with duration, the distribution has also grown more native-like, with affrication lasting an average of 69% of the total duration. Lack of aspiration is still a significant issue, seen in a third (33%, n=20) of tokens. Lack of affrication has, however, ceased to be a significant issue (3%, n=2).

Table 7-8. SC-*c* VOT

Group	Mean VOT	Mean frication	Mean asp.	% w/o frication	% w/o aspiration	Range
Y1	110ms	72ms	38ms	13	45	3-25cs
Y2	109ms	64ms	45ms	17	27	5-20cs
Y3	125ms	86ms	39ms	3	33	6-23cs
L1	152ms	99ms	53ms	0	11	8-29cs
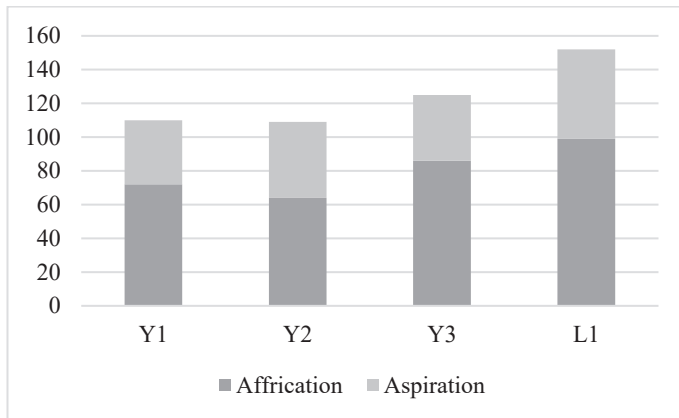
Figure 7-9. Illustration of the duration and contents of the SC-*c* release at different stages of study

8. Discussion

The results of the experiment presented in Section 6 showed that at least some participants had developed a novel category EN-*t* separate from DA-*t*, and that for all of these participants the difference between the two categories was one of duration and not one of affrication. It appears that affrication is a very stable feature of the DA-*t* category, which should pose a problem to SC acquisition; in some ways it does, but in some respects it does not. Looking at the data in Section 7, it appears that different categories for SC-*t*, SC-*z* and SC-*c* are established early on in SC acquisition.

The category for SC-*z* is established as distinct early on, being much longer than SC-*t* and SC-*c* and never having aspiration. This may be because SC-*z* is more likely to be perceived as Danish /s/ rather than DA-*t*. In any case, plosive release in SC-*z* is not as important a cue for Danish speakers as it is for L1 speakers. Danish speakers may use other acoustic cues to distinguish the SC-*z* from /s/; the recordings indicate that an initially very narrow constriction of SC-*z* may be an important cue. The possibility that SC-*z* might be categorically closer to /s/ than to DA-*t* was not taken into account when the experiment was designed, but a detailed comparison of SC-*z* and SC /s/ as pronounced by Danish speakers would be very enlightening, and could also help provide a solid explanation for the extremely long release of SC-*z* among Danish speakers. It would also be very interesting to see whether SC /s/ sometimes gets plosive release when pronounced by Danish speakers, which is likely to be the case.

SC-*t* and SC-*c* are also more or less established as separate categories for most or all speakers even by the 5th week of studying Chinese. This is corroborated by the fact that SC-*c* is 18ms longer than SC-*t* on average for the Y1 group. But both categories show very differing pronunciation patterns within-group, and there is a significant overlap of SC-*t* and SC-*c* pronunciation. The SC-*t* category appears to still be identical to DA-*t* for some Y1 speakers. For many speakers at Y1 level, the distinguishing feature between SC-*t* and SC-*c* appears to be one of intensity, and not affrication. Affrication is typically a stable feature of both categories, so they are distinguished instead by a more fortis pronunciation in SC-*c*, which results in a longer release duration. Of course, in native SC, both SC-*t* and SC-*c* are fortis, but that is presumably hard for Danish listeners to perceive if SC-*t* is assimilated with DA-*t*. The categorization strategy may work well for perceptual distinction, but for productive distinction it is problematic, considering the significant overlap it is likely to create between the two categories in casual speech.

At Y2 and Y3 level, SC-*c* becomes progressively more native-like as its release duration increases, but it does not necessarily become progressively more distinct from SC-*t*. Generally, SC-*t* gradually develops a more fortis pronunciation, causing an increase in release duration, even though it was already long compared to native pronunciation. This is true for almost all participants in the experiment; at Y3, the individual participants have average release durations ranging from 97ms to 152ms for SC-*t*, meaning that even the speaker with the shortest average VOT has a longer VOT than the average for all Y2 participants. For some speakers, affrication ceases to be a feature of SC-*t*, and for some it does not. As far as productive distinction goes, this makes all the difference: if SC-*t* is pronounced with a prolonged release duration but with no affrication, a native speaker of SC is expected to readily perceive it as SC-*t*. But if it is pronounced with both a prolonged release duration and affrication, what is left to distinguish it from SC-*c*? The release of SC-*c* is only 13ms longer on average, so a very significant overlap between the two is to be expected. As mentioned above, only half of the Y3 participants consistently avoided affrication, which means that this issue is very tenacious.

While different categories for SC-*t* and SC-*c* were established early on, they were relatively unstable for at least Y1 and Y2. A significant number of SC-*c* tokens were realized simply as aspirated stops /tʰ/. There are two possible explanations for this: 1) It is due to hypercorrection among students who are particularly aware that they have to aspirate and not affricate their SC-*t*s; the fact that this transfers to SC-*c* shows that the distinction between the two is still not entirely straightforward; or 2) affrication is not a distinguishing feature of either SC-*t* or SC-*c* for the students who made the error; the non-affricate tokens typically have a long release, indicating fortis pronunciation, which is an important feature for SC-*c*. This would support the idea that affrication of coronal stops is not very cognitively salient to native speakers of Danish. It may simply be that some students distinguish SC-*t* from SC-*c* by duration or fortis pronunciation, with affrication being an optional feature of both. The reason is probably a combination of both factors.

As Flege (1981, 446) points out, it is not at all clear whether "native-like pronunciation at the level of phonetic implementation is even necessary for accent-free speech". But in this case, the difference between phonetic implementation of the Danish /tˢ/ category and the SC /tʰ tsʰ/ categories may cause significant communicative problems. Further research is needed on the extent of these communicative problems, and the extent to which these sounds are perceived as the right or wrong categories by native speakers of SC remains unknown.

A solution to the problem may lie in the early teaching of SC pronunciation. As mentioned above, affrication of DA-*t* may not be a very cognitively salient feature for the native speaker, and Danes are likely to be unaware of the feature. The feature will certainly be easier to eradicate from their SC pronunciation if they are aware of it. When teaching SC phonetics to Danish learners, teachers are advised to make students aware that affrication is a prominent feature of aspirated Danish stops and not of aspirated SC stops.

9. Conclusion

Danish phonology is poorly equipped to help categorize the SC phonemes /tʰ ts tsʰ/ in a meaningful manner, and this paper set out to test whether Danes could productively discriminate between the sounds. The findings suggest that Danes generally make a productive distinction between the sounds even at an early level of their studies, though the cues used for the productive discrimination are problematic. SC /ts/ turns out to be productively more similar to Danish /s/ than /tˢ/, and while it is certainly a category in itself, Danes fairly often produce the affricate with no initial plosive release, making it simply a fricative which sometimes has a very narrow constriction at the onset. Danish phonology makes native speakers of Danish likely to perceive and produce aspirated stops as lenis; an effect of this is that the main discriminating feature between SC /tʰ tsʰ/ for some Danes turns out not to be affrication, but duration – especially in the early Chinese interlanguage. Over time, fortis pronunciation of /tʰ/ is developed, which only results in a longer and less native like release duration, especially since some speakers fail to develop the distinction between affrication and aspiration. In the third year of their studies, some participants consistently produced /tʰ/ with no affrication, while some still struggled to pronounce it distinctly from /tsʰ/. The results are in line with the predictions made based on PAM, and SLM provides a good explanatory basis for the problems in production.

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CHAPTER EIGHT

EXPRESSING JUDGEMENT IN CHINESE L1 AND L2 NARRATIONS

LU LU AND VIVIAN LEE

Abstract

In interpersonal discourse, addressers will adopt attitudes, such as disapproval, criticism, praise and admiration, towards the subjects they are expressing and the people they are communicating with. This paper looks at Judgement, a sub-system of the Appraisal System (Martin and White 2005), in Chinese speakers' L1 and L2 narratives. Judgement refers to the meaning construing our attitudes to people and the way they behave and can be divided into two categories: Social Esteem and Social Sanction. A pilot study found that Judgement concerning Social Esteem is preferred in L1 narrations; more specifically, Tenacity and Normality have the highest frequency in our corpora, followed by Capacity. As for Social Sanctions, narrators tend to make relatively more judgements about whether certain deeds are beyond reproach or not, rather than judging the honesty of their behaviour. Compared with the L1 data, frequencies concerning the L2 English narrations drop in all categories of issue. Capacity, which includes expressions such as "capable" and "proud", surpasses Tenacity, and becomes the most frequently-expressed Judgement when narrators switch to speak in English. By examining Chinese speakers' L1 and L2 narrations, this paper aims to reveal the similarities and differences in narration in genetically distinct languages and how languages influence the roles speakers tend to adopt when narrating.

Key words: Judgement, corpus linguistics, Chinese speakers, L1 narration, L2 narration

1. Introduction

The current study investigates Judgement[1], a sub-system of the Appraisal System (Martin and White 2005), in Chinese speakers' L1 and L2 narratives. Judgement refers to the meaning construing our attitudes to people and the way they behave and can be divided into two categories: Social Esteem and Social Sanction. The judgmental properties of news reporting texts (Martin 2006) and written argumentative essays (Mei 2013) have been well-described; however, the similarities and differences regarding the lexicogrammatical patterns of Judgement in narrated spoken data between the L1 and L2 narratives of Chinese speakers are yet to be explored. This study thus attempts to address this issue with two small-scale self-compiled comparable corpora in L1 Mandarin Chinese and L2 English. Considering this, the current study sets out to answer 1) What Judgement expressions do Chinese speakers use in their L1 fictional narrations? 2) What Judgement expressions do the speakers use in their L2 fictional narrations? 3) What are the lexical and grammatical similarities and differences between their L1 and L2 narrations? To this end, the Judgmental expressions in Chinese speakers' story narration in their L1 Mandarin Chinese and in L2 English were collected and studied. It is hoped that this study would add Chinese contexts to the existing research field, as well as open up doors for new directions in the study of Appraisal System.

This paper will be organised as follows: Section 2 introduces the background of the study, including the subcategories in the Appraisal System and the genre of the study, *i.e.* fictional narratives. Methodology, including the collection and analysis of corpus data, is outlined in Section 3. Quantitative results will be presented in Section 4 to see the token frequency of each Judgmental category in both corpora. An inferential test will be conducted to examine the significant differences between L1 and their L2. Based on those quantitative descriptions, the similarities and differences of the use of Judgement in each category will be described in great detail in Section 5, followed by the discussion on a special way to express Judgement in L1 data and some initial reflection on Martin and White's original proposal on Judgement and on Appraisal at large. The preliminary implications of this pilot study on language acquisition conclude the paper.

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[1] In this study, the term Judgement and all Judgemental categories, such as Social Esteem, Normality and Veracity, will be capitalised. Otherwise, it refers to its literal meaning and thus does not denote a category.

2. Background

2.1 The analytical framework of Judgement

Judgement, a sub-system of the Appraisal System (Martin 2000; Martin and White 2005), investigates the positive or negative[2] assessments of people and the way they behave, such as their character. It can be realised through lexical items that explicitly convey the judgements of the addresser. For example, *he is very different* (from our own data, see Section 3 for details) straightforwardly depicts the speaker's attitudes to "him". In addition to conveying Judgement explicitly, *i.e.* "inscribed" into the discourse (Martin 2000, 155), Judgement can be implicitly "invoked" based on the context. For example, a narration elicited from our participants is shown in (1).

(1)   *zenme   hui   you   zheyang de   ren?*

      how   can   have   such   DE[3]   person

      "How could there be such a person as you?" (CE corpus)

Negative Judgement on this person (and possibly his behaviour) can be inferred from the rhetorical question in (1). However, as inscribed and invoked Judgements are not "clear cut", we follow Bednarik's (2006, 31) view and treat them as a continuum.

The sub-system of Judgement can be further divided into those which fit into Social Esteem and those which belong to Social Sanction. Social Esteem mainly deals with social admiration or contempt. It relates to Normality, *i.e.* how unusual one is, Capacity, *i.e.* how capable one is, and Tenacity, *i.e.* how resolute one is. Examples of positive Normality, as illustrated in Martin and White (2005), include *normal*, *natural*, and *familiar*, whereas Judgements such as *peculiar*, *eccentric* and *odd* indicate a negative judgement on Normality. To judge someone's Capability, adjectives such as *powerful*, *experienced*, *competent* can be used to show the admiration of someone, while adjectives such as *mild*, *weak* and *foolish*

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[2] In addition to negative and positive Judgement, Bednarek (2008) proposes a tripartite distinction, *i.e.* positive, negative and neutral (see also Huan 2018). The neutral Judgement refers to the evaluation in irrealis contexts, meaning that the action has not happened yet, *e.g.* the use of *brave* in *If I were Mr Bean, I should be brave at platform diving*. However, our dataset does not reveal any neutral Judgement, so we do not consider the neutral category in this study.

[3] The abbreviations used in this paper are as follows. DE: pre-nominal marker; ASP: aspectual marker; CL: classifier; SFP: sentence final particle

are adopted to criticise one's Capability (see Martin and White 2005 for more illustrations). Further, how dependable someone is can be expressed by judgmental adjectives such as *heroic*, *brave* and *cautious*, whereas speakers can use *timid*, *coward* and *impatient* to show how undependable someone is (for more examples in English, see Martin and White 2005).

As for the judgement of Social Sanction, it has to do with moral right or wrong and is divided into the categories of Veracity, *i.e.* how truthful one is, and Propriety, *i.e.* how ethical one is. The example of positive Veracity, as listed in Martin and White's (2005) monograph, includes *truthful*, *honest* and *credible*; meanwhile, *dishonest*, *deceiving* and *blunt* are used to judge someone is not trustworthy. Finally, *moral* and *ethical* are used for the judgement of being ethical, and adjectival items such as *immoral* and *arrogant* show someone being unethical. Further, as revealed in Martin and White (2005), Social Esteem tends to occur in the verbal culture, such as through chat, gossip, jokes and stories of various kinds. On the other hand, Social Sanction often occurs in writing.

An important criterion to identify the specific category of a judgmental expression is to consider its context. This is especially true for lexical items that are polysemic. For instance, the adjective *hao* "good" in the sentence *ta shi-ge hao ren* "he is a good man" have multiple meanings: he can be good because he is honest, in which case *hao* belongs to Veracity; alternatively, we could judge "him" as good if he led a moral life, and *hao* in this case indicates Propriety. In our following analysis on speakers' L1 and L2 data, the exact category of Judgment will be determined by the context where the judgmental expression occurs.

Since Martin and White's work on Judgement, a number of studies have carried out to examine the linguistic patterns in various types of discourse. Judgements (or Attitudes at large) in news articles are well studied. For example, Chen (2014) examined the shift of Attitudes (Judgements included) towards China's air pollution between 2011-2013 in *China Daily*, the official English-language newspaper in China. Air pollution was first treated as a weather phenomenon—fog—without any inscribed attitude in China's news. When foreign media reported the high PM2.5 readings in Beijing, Chinese media showed an explicit Judgement of Social Sanction, such as "Foreign embassies…do not conform to the two conventions and also violate regulations in China". Finally, China realised this problem when its own PM2.5 readings broke all historical records and shifted its attitudes towards foreign media coverage to a positive appreciation of Western experiences in dealing with air pollution. In another study, Mei, Ren and Yu

(2015) looked at how authentic English media, the *New York Times*, judge Chinese military affairs. Following Martin and White's (2005) framework, they examined the Judgements of China's military power, amongst other sub-systems of the Appraisal System. Positive evaluation through Capacity and Veracity is largely used to show China's increasingly powerful armed force. Further, categories of Social Esteem are realised explicitly whereas Social Sanction tends to be implicit (thus confined) in their corpus.

With further explorations, Martin and White's (2005) appraisal framework has proved to be robust in languages other than English. In Huan's (2018) corpus-based study of Chinese hard news reports (*i.e.* political, economic and social issues) on food safety, he investigates how news actors (*i.e.* individuals or institutions written about in a news report) of different social statuses are judged. The corpus findings demonstrate that social elites (such as, political figure, lawyers, and government officials) are likely to be judged positively in terms of their Capacity and Tenacity in dealing with risk situations, whereas ordinary risk makers (such as, workshop workers) tend to be judged negatively in relation to their Capacity and Propriety in producing risk situations. Furthermore, the same lexicogrammatical encoding of Judgement can bear distinct polarities based on the social status of news actors. Huan (2018) found that *liaojie* "discern", realised in the Subject-Predicate pattern in (2a) and (2b), encodes distinct polarity on Judgement. It denotes a positive Judgement when the news actor is a social elite in example (2a), whereas it is used to convey a negative Judgement when the new actor is of no power, see the judgement on Mr Wang, an insider of illegal workshops, in example (2b).

(2) a. *Xi Jinping… xiangxi liaojie gongcheng jianshe qingkuang.*

     "Xi Jinping… discerned in detail the construction situation."

   b. *Wang laoban cheng, ta feichang liaojie yixie dixiajiagongchang zhizuo zhuhong de zhizuo guocheng.*

     "He was quite familiar with the process of lards production in illegal workshops." (Huan 2018, 35)

Among the few studies with a cross-language perspective, the study that is most relevant to ours is Liu and McCabe (2018). They looked at Chinese English majors' writing in L1 Chinese and L2 English, as compared to Chinese non-English majors' L1 Chinese and L2 English and British university students' L1 English writing. All their participants wrote a 250-word essay on the (dis)advantages of the Internet. Their findings show that

Chinese students in general are more concerned with the Judgement of Capacity in their English writing, whereas their L1 Chinese writing is inclined to judge whether people's behaviour is morally or legally condemnable. The study further looks at the expression of Appraisal from the influences of the proficiency level of L2. They find that participants' English level does not influence their writing in L1, as shown by the similar distribution of Judgmental categories in Chinese English and non-English majors' L1 writing.

As revealed from the above brief account of current studies, Martin and White's (2005) Judgement framework, although being proved to be effective in analysing evaluations in languages beyond English, is limited in its application to different types of discourse in Mandarin Chinese. Written texts, especially news reports and editorials, have been explored in some depth, leaving speakers' language acquisition of Appraisal and the lexical, syntactic and pragmatic construal of evaluation in spoken texts largely unattended to. As such, in our following analysis, we will identify Judgmental categories according to their contexts and describe the distributions of Social Esteem and Social Sanction in Chinese narrators' L1 and L2.

2.2 Fictional narration

Fictional narratives, the focus of our study, are stories about fictional events which are elicited from non-verbal prompts, such as pictures or videos. Researchers working with bilingual adults tend to prefer short films and videos which are either silent or with a musical soundtrack (Pavlenko 2008b). According to Pavlenko, these prompts enable storytelling to be "more 'adult-like', less artificial, and more similar to spontaneous narratives" (Pavlenko 2008b, 312).

One interesting point made by Kang (2003, 2006) is the fact that East Asian narrators (Chinese, Japanese and Korean) tend to be more reserved when using evaluative (Kang 2006, 386). Leichtman, Wang and Pillemer (2003) studied cross-cultural differences in their retelling of autobiographical memory among American, Korean, Chinese and Indian children. The rationale for doing autobiographic memories is that people raised in different cultures will influence the content and style of their long-term memories. As for the Chinese and Korean participants in question, they found that both groups are less likely to use rich and fleshed-out descriptions regarding a given activity, compared with their American counterparts. Furthermore, amongst the two East Asian groups, Chinese children talked

more about activities than Korean children. Measured in the number of words they produced, Korean children tended to provide skeleton reports while American and Chinese subjects provided more detailed reports of their previous activities.

3. Method and corpora

Considering the benefits of fictional narrations in the previous section, the researchers of the current study, following Pavlenko (2008a), used *Mr Bean in the Swimming Pool* to elicit data. In the video, the comical character Mr Bean wants to go on the children's slide at a swimming pool. The lifeguard tells him off, and Mr Bean has no choice but to leave the children's area. He goes to the adult's section and spots a high diving board. Once he is up the steps though, Mr Bean becomes frightened of the height and changes his mind. However, there is no turning back for Mr Bean as two young boys are behind him, waiting their turn. In an attempt not to appear cowardly, Mr Bean makes a few comical tries to dive off, but fails each time. The video ends where one of the young boys stamps on Mr Bean's hand, who is now hanging off the board with that hand. This leads Mr Bean to fall into the swimming pool.

Twenty Chinese undergraduate students were asked to narrate as they watched the video play. All students, recruited voluntarily from a university with a well-established tradition in language education in Beijing, were studying English Language and Literature for two years with at least one-year study abroad experience[4]. That said, their English proficiency is at the C2 level[5]or above, and some of our participants would have reached the near-native speaker competence. Amongst them, ten students were asked to narrate the story in their L1 Mandarin Chinese and the other ten in their L2 English. After the narrations, four follow-up questions were then asked. Their responses to the interview questions were given in the language they had been asked to narrate in, *i.e.* Mandarin Chinese or English, respectively. Having manually annotated the transcriptions of the obtained spoken data, the researchers built two small-scale comparable corpora: the corpus on Chinese speakers' narrations in their L1 Chinese (henceforth, the CC corpus)

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[4]This fully funded study abroad experience is highly selective, which requires a TOFEL (iBT) score of at least 110 (full score: 120) with at least 27 scores in each of the four sections: Reading, Listening, Speaking, and Writing.
[5] C2 refers to the level of a proficient user (mastery or proficiency), according to *The Common European Framework of Reference for Languages*. See https://www.coe.int/t/dg4/linguistic/source/framework_en.pdf for more detail.

and the one on their narratives in L2 English (henceforth, the CE corpus). The total collected corpora consisted of 5493 L1 words[6]for the CC corpus (mean: 343.3 words, SD=25.6) and 4153 words for the CE corpus (mean: 415.3 words, SD=28.7). The relatively small SD value of the two corpora shows that there are not much intra-group variations of their narrations.

The researchers then manually annotated the raw texts with discourse categories of Normality, Capacity, Tenacity, Veracity and Propriety, based on the agreed main coding scheme. Double-checking and cross-checking of the initial coding were conducted afterwards. As for some ambiguous expressions, they were either classified into a separate category known as "others", if no consensus had been reached between the two researchers or were placed into one of the target categories when agreement was achieved. When all the checking was completed, the token and type of each Judgement category were calculated by a quantitative analysing tool and the results will be presented in Section 4.

4. Results

This section presents the findings of the study. We will start with the presentation of the general distribution of Judgement in both CE and CC corpora, and then look at each Judgmental category in detail. Table 8-1 below shows the token frequencies of Judgement expressions in the two corpora.

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[6]The basic unit of writing in Chinese is (logographic) characters, rather than words which are regarded as an independent unit in English. To be specific, several Chinese logographic characters are combined to form what in regarded as one word in English. For example, two characters *lao* and *shi* are combined to form a word unit meaning "teacher". In the current study, we used a Chinese word segmentation tool to automatically convert Chinese texts written in characters into units of words, before the texts were double checked by one of the two researchers in this study and a native speaker of Mandarin Chinese. The main reason for this conversion in this study is to enable English and Chinese texts to bear the same unit of measurement, which is the word. Following McEnery, Xiao and Mo (2003), the ratio of Chinese characters to words is 1.6: 1. As such, the CC corpus consisting of 8,789 Chinese characters roughly has 5,493 Chinese words, and this word count will be used in the following analysis, especially in the comparison with English data.

Table 8-1. The distribution of Judgement expressions in the two corpora

Category	Sub-category	CC	CE
Social Esteem	Normality	49	14
	Capacity	20	33
	Tenacity	91	22
Social Sanction	Veracity	37	0
	Propriety	10	0
Others		16	0

Results in this table indicate that the frequency and variety of Judgement expressions (except for the category of Capacity), in general, are much higher in L1 speakers' data compared to L2. Specifically, there were 49 occurrences of Normality in the L1 data, whereas only 14 were found in the L2 English data. As for Tenacity, 91 instances were found in the CC corpus whereas 22 were identified in the L2 narrations. Both Social Esteem and Social Sanction are expressed by the L1 narrations, while the L2 narrations have no judgement on Social Sanction. Note that the category of Capacity is the only Judgement that CE has more occurrences than the CC corpus. This finding is in line with Liu and McCabe's (2018) study on Chinese students' L1 Chinese and L2 English essay writing, where Capacity is the category that is favoured in their L2 data over other Judgmental categories.

It is interesting to see that the category of "Others" is only shown with the L1 data. This seems to suggest that Martin and White's (2005) original category of Judgement, although widely adopted by researchers working on Chinese data (mainly in written texts), might not fit well with L1 Chinese oral narrations (more discussion on this point will be presented in Section 5.3).

We further conducted an inferential statistical test of log-likelihood to examine if there is a significant difference between narrators' L1 from their L2 English in the expression of Social Esteem. The p values in Table 8-2 clearly show that Chinese narrators express significantly more judgements on Normality and Tenacity in their L1, whereas the narration in L2 English is likely to produce more judgement on Capacity.

Table 8-2. The log-likelihood ratio between Chinese L1 and L2 narrations

	CC	CE	LL	*Sig*	*P*	
Normality	49	14	12.0337	0.000522	***	+
Capacity	20	33	7.889613	0.004972	**	-
Tenacity	91	22	28.15051	0.000000	***	+

Note: ** refers to *p*< 0.01, statistically very significant; *** refers to *p*< 0.001, statistically highly significant

Having shown the general distribution of the Judgment expressions, we will take a close look at and illustrate the lexical encoding of each Judgmental category. The different realisations in the CC and CE corpora were summarised in Tables 8-3 and 8-4 respectively. A quick look at the total number of the frequency in the CC and CE corpora shows that the narrations in their native language have more Judgmental expressions than their counterparts in the L2.The lists of frequencies also demonstrate that each Judgmental category has different lexical realisations. Furthermore, the choice of lexical encodings varies with the categories.

Table 8-3. Lexical encoding of Judgement in the CC corpus

	Verb	Noun	Adjective	Adverb	Interjection	Total
Normality	2		35	8	4	49
Capacity	5	3	6	6		20
Tenacity	25	3	31		2	91
Veracity	12	2	7	16		37
Propriety	4		5	1		10
Total	48	8	84	31	6	207

Table 8-4. Lexical encodings of Judgement in the CE corpus

	Verb	Noun	Adjective	Adverb	Interjection	Total
Normality	1	2	10	1		14
Capacity	26	1	5		1	33
Tenacity	1	9	12			22
Veracity						0
Propriety						0
Total	27	12	27	2	1	69

For example, in the CC corpus, adjectives account for the largest portion in the category of Normality and Tenacity, compared with other means of

lexical encoding. Examples of Normality are adjectives[7], such as *kuazhang* "exaggerated" and *qipa* "weird", and instances of Tenacity can be adjectives such as *zhending* "composed" and *danxiao* "timid". However, as for the category of Veracity, Chinese narrators prefer to (43.2%) use adverbs to express truthfulness, such as *haowuyiwen* "undoubtedly", *xianran* "obviously" and *maosi* "seemingly".

In addition to adjectives and adverbs, which are generally regarded as the main lexical means to encode Judgement explicitly (Martin 2000), verbs and nouns can be adopted. Between these two means, verbs are mainly used to encode Judgement in an implicit way. For example, Mr Bean's incapability of platform diving can be inferred from the verbal expression of standing up with difficulty in (3).

(3)	*Ta*	*mianqiang*	*ziji*	*zhanli*	*qilai,*	*jiazhuang*
	he	reluctantly	self	stand	up	pretend
	zai	*bai*	*tiaoshui-de*	*dongzuo.*		
	asp	show	diving-DE	action		

"He stands up with an effort, pretending to dive."   (CC corpus)

Amongst all the Judgmental categories, Capacity, Tenacity, Veracity and Propriety tend to be coded by verbs, apart from the realisations by adjectives/adverbs. For instance, the verb *hechi* "scold" in (4) shows the coach's negative judgement on Mr Bean's immoral behaviour.

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[7] Note that Chinese is not a morphologically rich language, meaning that one morphological form may belong to different lexical categories. For example, the lexical item *kuazhang* can be used as an adjective or a noun in Chinese. The exact lexical category it belongs to is determined by the co-occurring lexical items. If it follows an adverb, it will be regarded as an adjective, *e.g. hen kuazhang* "so exaggerated"; if it follows *de* (的), an pre-nominal marker, it will be coded as a noun, such as *yishushoufazhong de kuazhang* "the exaggeration in arts". In our coding of lexical categories of the Judgemental expressions, we will use the specific co-occurring context to determine its lexical category, and translate it to English accordingly. For example, *kuazhang* in our corpora is used in examples, such as ta *kuazhang de biaoqing* "his exaggerated facial expression". Since it modifies a noun, it will be coded as an adjective and translated as "exaggerated", rather than "exaggeration" in this study.

(4) *Ranhou zai   jiaolian-de   hechi   xia,   laidao-le*

    then   under   coach-DE   scold   under   come-ASP

    chengren gai   wan-de   difang.

    adult   should   play-DE place

    "Then, being scolded by the coach, (Mr Bean) came to the section where adults are supposed to play."   (CC corpus)

Slightly different from the CC corpus, both adjectives and verbs are the lion's share of the lexical encoding in the CE corpus. As summarised in Table 8-4, they each have 27 occurrences in the CE corpus. Also different from the CC corpus, in Chinese speakers' L2 narration, Capacity is predominantly expressed by verbs, of which 11 (42.3%) are modal verbs, such as *can* and *could*, and periphrastic modals, such as *have to.* The rest of the verbs (13 out of 26) mainly encode Capacity implicitly, such as the verb phrase *can't look over the platform* in (5) implies that Mr Bean is not very skillful at platform diving.

    (5) *He can't look over the platform.*   (CE corpus)

Further, Tenacity is mainly realised as an adjective, such as *scared*, *scaring*, and *cautious*, in the English narration, while it shows a similar preference of being realised by both adjectives and adverbs in their Chinese counterparts.

Apart from the differences above, Judgement, as a universal cognitive and emotional phenomenon in human beings, demonstrates similar expressions in CE and CC narrations. This is especially true when there is a translation correspondence between L1 and L2. For example, the negative judgement of Normality can be expressed by the word *weird* in English and the corresponding *qipa* "weird" in Contemporary Chinese. The same language choice can be found in the category of Tenacity too, for instance, the L1 expression *danxiao* "cowardly" and the corresponding L2 *coward*. The details regarding the similarities and differences of each judgmental category will be shown in Section 5.

5. Discussion

This section will look at each category in detail and see how Chinese speakers express Judgements in their L1 Chinese and L2 English. After describing their L1 and L2 choices of judgmental expressions in Section 5.1,

we will look at the ways of expressing Judgements particular to their L1 (Section 5.2) and the fuzziness in the classification of Judgmental expressions (Section 5.3).

5.1 Judgmental expressions in CE and CC corpora

5.1.1 Normality

The comparison of the CE and CC corpora shows similarities regarding the expression of Normality between L1 Chinese and L2 English. Adjectives in the CE corpus include expressions such as *He looks strange* and *He is very different*; as for the CC data, adjectives such as *qiguai* "odd" were found in the data. In another example, to show something special, participants used *qiguai* and its corresponding English expression *weird*. Similarly, speakers adopted *qipa* and its corresponding *weirdo* to show their negative judgement on Mr Bean.

A closer look at the two corpora shows that speakers encode Normality with different lexical, syntactic and (in some cases) pragmatic choices. In the CE corpus, predicative adjectives, in utterances such as *He looks strange* and *He is very different*, were largely used (7 out of 10; 70%) to describe Mr Bean's eccentric behaviour at the swimming pool. In addition to this widely used syntactic choice, speakers tend to describe body movements to express Normality in an implicit way. For instance, *He noticed something wrong* shows a judgement on his special surroundings.

The description on body movements, although not used as widely as adjectives, can still be found in the CC corpus. Examples include *tamen dou kan dai le*, which means "They all stared in amazement", shows the narrator's judgement on Mr Bean's unusual behaviour. Compared with the L2 corpus, the expressions in the L1 corpus have more diversified lexical and syntactic choices. Similar to the utterances in English, speakers prefer to use adjectives to judge Normality, for example, *qiguai* "odd". However, in addition to the adjectives that are related to "being special", *i.e.* the most basic meaning in the category of Normality, speakers also use expressions such as *kuazhang* "exaggerated" to encode the unusual deviance from normality. Moreover, adverbs and neologisms were likely to be adopted by speakers in their L1 narrations. Adverbs such as *guoran* "sure enough, as expected" can be used to express a positive judgement of Normality. Newly coined words or existing words with new meaning, such as *qipa* "weirdo/weird", were popularly employed to show negative judgement of Normality by youngsters.

Apart from lexical devices, speakers in the CC corpus also adopt some pragmatic means, such as rhetorical questions, to encode someone being special. However, this pragmatic choice was not found in the CE corpora.

(6)	*zenme*	*hui*	*you*	*zheyang*	*de*	*ren?*
	how	can	have	such	DE	person

"How could there is such a person as you?"   (CC corpus)

In example (6), instead of using lexical words such as *odd*, the narrator adopted the rhetorical question to show the judgement that "you" are the odd one out is obvious to both the addresser and the addressee.

5.1.2 Capacity

To judge Capacity, our corpus data shows some similarities between speakers' L1 Chinese and L2 English narrations. Both groups of participants prefer to use short lexical words or commentary sentences, such as *A good job!* or *bucuo* "not bad" to express divers' diving ability at the pool, as illustrated in (7).

(7)	*Bucuo!*	*Zhaoshi*	*haishi*	*hen*	*you*	*yitao*	*de.*
	good	movement	still	very	have	one.set	SFP

"Good! His movements look professional."

However, in the CE corpus, participants also show their judgement on Capacity in thinking aloud sentences. For example, the string of thoughts in (8) show the speaker's judgement that Mr. Bean may not be able to dive off the board.

(8) *I think they feel like, I guess, they might feel it's kind of ridiculous and I think he'll give up.*   (CE corpus)

When Chinese speakers narrate in their native language, they adopt lexical means such as adjectives and adverbs (account for 60% of all Capacity) to express judgements in a straightforward manner. For instance, nominal phrases such as *chun da shu* "a stupid chap" were found to show Mr Bean's incapability of diving, as were adverbs *feichang fenli* "do all one can to do something". In addition, sentences on body movements can be employed to judge on Mr Bean's nervousness and capability. For example, the first two clauses in (9) shows that Mr Bean fought against the intimidation in his inner heart and stood up on the diving board right away. However, it turned

out that he was still not competent at diving, which can be inferred from this body language that "he budged to the edge cautiously" in the last clause of (9).

(9) *Zhe   shi   ta   ye   bu   xiang   bei   liang-ge xiao*

this   time   he   too   not   want   by   two-CL   little

nanhai   kanbuqi   dunshi   zhan-le   qilai,

boy   despise   straight.away   stand-ASP   up

ranhou   ta   haishi   zhansheng   buliao   gongju,

then   he   still   fight.win   not.end   fear

you   yibu   yibu   nuo   xiang   tiaotai   bianyuan.

again   step   step   budge   to   platform   edge

"Now, he doesn't want to be look down upon by the two little boys. He stands up straight away. Then he still can't fight against the fear and budges to the platform edge step by step." (CC corpus)

(10) *Zheme   da   yige   chengnianren,   dou   bugan*

such   big   one   grown.up   all   not.dare

gaotai-tiaoshui.

platform-diving.

"He is such a grown-up, but feels intimidated by the platform diving."

(CC corpus)

In the CC corpus, speakers also used comparative sentences to judge Mr Bean's abilities. For example, the speaker construed what a typical grown-up can do in his mind and contrasted him with Mr Bean in (10). It shows that Mr Bean was less capable than average grown-ups, because he felt intimidated by platform diving, a skill that, in the narrator's mind, even children would master easily.

5.1.3 Tenacity

The judgement on how dependable someone is, according to Section 2.1, is referred to as Tenacity, which can be classified into being undependable

(*e.g.* heroic) and dependable (*e.g.* timid). In the CE corpus, expressions such as *scared*, *coward*, *be a man*, and *hero*/*heroic* are mainly used. In addition, similar to Capacity and Tenacity, judgements on Tenacity can be inferred from the description of relevant non-verbal languages. For instance, the fact that Mr Bean feels intimidated at platform diving can be inferred from his body languages as described in (11).

> (11) *And he feels very curious, and he's very cautious, standing here looking*
> *at everybody.*   (CE corpus)

This implicit way of coding Tenacity by verbal phrases is widely (25/91, 28%; second to adjectival lexical items) used in the L1 narration. The action of leg-trembling in (12a) can be seen as a cue for dependence, and likewise, the peek at the water in the pool in (12b) shows that Mr Bean is too timid to look over the pool confidently at that moment.

> (12) a. *Sihu   tui   you   ruan   le.*
>
>   seem   leg   again   soft   ASP
>
>   "The legs seem to be trembling again." (CC corpus)
>
>   b. *Ta   miao-le   yi-yan   (shui-mian).*
>
>   he   peek-ASP   one-eye   water-surface
>
>   "He had a tiny peek (of the water)." (CC corpus)

Looking at the lexical choices of the CC corpus in detail, we found that Chinese speakers adopted *xiang* and its synonyms to show their positive judgement on Tenacity. Main expressions include *xiang* (want) and its synonyms, such as *changshi* "try", *zhunbei* "prepare", *xingzhibobo* "feel eager and excited to try something", *jueding* "decide", and *yi xian shen shou* "display one's talents". On the other hand, the negative judgement on Tenacity can be expressed by *haipa* "be afraid of" and its synonyms such as *konghuang* "terrified and worried", *bu gan* "dare not", *danxiao* "be intimidated", *kongbu* "terrified", *meiyou yongqi* "lack of courage", *xia dao* "feel scared", *wuzhu* "feel helpless", and *jinghuang* "feel panic". In addition to these, neologisms such as *rensong* "admit incapability of doing something in disgrace" can be used to show that someone is unable and thus unwilling to do something.

5.1.4 Veracity and Propriety

For the judgement on Social Sanction, namely Veracity and Propriety, no data was coded for the CE corpus; they can only be found in Chinese speakers' L1 narrations. As evidenced in the CC corpus, the judgement on how truthful someone is can be encoded by three different linguistic means. Firstly, truthfulness is mostly expressed by emphatic adverbs (16 out of 37 occurrences of Veracity). They can be used to judge the degree of truthfulness. Adverbs such as *xianran* "obviously", *haowu yiwen* "undoubtedly", *mingxian* "obviously" and *zhende* "it is very true that" were used to show a positive judgement on the truthfulness, whereas *maosi* "seemingly" were adopted if the speaker's judgement may not be true. In addition to this, Veracity can be expressed by modality (8 out 12 verbs are modal verbs in the CC corpus), for instance *keneng* "maybe" and *yinggai shi* "should be". The rest of verbs encode the sense of deceiving in someone or someone's behaviour. For example, verb phrases such as *guzuo jianqiang* "deliberately put on a show of toughness", *jiazhuang* "pretend", *qiangzhuangxiaoyan* "forced smile" and *baichu* "assume an expression of something" were used when a speaker has some doubt on the Veracity of a statement. Thirdly, like other Judgmental categories, speakers still prefer to, although not predominantly, adopt adjectives to explicitly convey Veracity, such as *biaoqing ziran* "a nature look" and *xixue de kouqi* "bantering voice".

As for the judgement on Propriety, speakers employed verb phrases such as *hechi "*scold" and *ezuoju cai le yixia* "stomp on the other one's feet teasingly" to condemn a behaviour. In addition, neologisms, for instance *zhuang cha* "assume the manner of being strong or being capable, which in reality is just a bluff" (*vulgar*), were popularly adopted by youngsters who wanted to condemn Mr Bean's poor performance and morally inappropriate behaviour at the pool.

To summarise the Judgement expressions, the data from the current study found that Chinese L1 speakers' English narrations contained adjectives and forms of description *i.e.* commentary-like narrative. The expressions of Judgement used in the English narrations are similar to the Chinese counterparts, *e.g.* the expression of "scared" and "impatient" can be found in both languages. Chinese narrations, meanwhile, have much more varied expressions of Judgement than the English ones. For example, beyond explicit expressions of Judgment (such as *konghuang* "terrified"), they describe the non-verbal actions (*tui fadou* "legs are trembling"), from which narrators' Judgement can be inferred. Furthermore, corpus data shows that there is a sharp contrast regarding the encoding of Social Sanction (47 in

the CC corpus *vs.* 0 in the CE corpus). When narrating in their L2, participants tend to evaluate a person's lowered or raised esteem of their community, whereas the narrations in their native language are inclined to contain (im)moral implications. Social Esteem, according to Coffin (2002, 2006), creates an "interpreter voice", meaning that it provides an interpretation of an issue, whereas an "adjudicator voice" (a voice which is more "charged", see Coffin (2006, 151)) by Social Sanction is created through greater use of inscribed values of Judgement. In this sense, speakers assume different narrating roles when speaking in different languages. In their L2, Chinese speakers tend to adopt an interpreter's role, narrating the story of Mr Bean's platform diving, whereas they are inclined to switch to the adjudicator's role to judge Mr Bean and his behaviour against the inscribed values in the society when narrating in their L1.

5.2 A Special way to express Judgement in the L1 corpus

As generalised from the above illustrations, lexical devices, such as adverbs and verb phrases, and syntactic means, for instance descriptions on body movements and rhetorical questions, were used to convey judgements in different ways. In the CC corpus, we also found a unique way to express Judgements, which seems to be particular to the Chinese narration dataset in question: the use of interjections. As shown in Table 8-3, there are altogether six occurrences of Judgements encoded by interjections in Chinese narrations. For instance, *en* in (13a) and *yi* in (13b) are both translated into "oh?" in English. The *en* in sentence (13a) seems to indicate the judgement of Normality. It shows the speakers' surprise and non-expectation that something unusual is happening. The same judgmental interpretation is also applicable to the interjection *yi* in (13b), which again indicates the judgement of Normality.

(13) a. *Ta   zhao   le   zhao,   huangusizhou.   En?   Nali   you   liang-ge*

      he   find   ASP   find   look.around   oh   there   have   two-CL

      xiao   pengyou.

      little   kid

      "He looked around. Oh? There're two kids." (CC corpus)

b. *Yi?*   *Ta*   *kandao*   *you*   *liang-ge* *haizi*   *zai*

   Oh   he   look   have   two-CL   children ASP

   wan   *huahuati.*

   play   slides

   "Oh? He found two kids playing with the slides."   (CC corpus)

c. *Aiya!*   *Xia*   *si*   *ta*   *le.*

   Blimey   scare   death   he   ASP

   "Blimey! He's scared to death."   (CC corpus)

Likewise, to evaluate that someone is timid (*i.e.* the degree of Tenacity), interjections such as *aiya*, an expression often uttered when a person gets frightened amongst some other occasions (*e.g.* when surprised or in pain), can be used, see example (13c).

5.3 Further discussion

While coding the Judgmental categories, we found that some expressions which did not appear to fit into a clear-cut category of Judgement. For example, the expression of *erbi* "(*vulgar*) used when condemn someone as silly, stupid, incapable, intimidated, and as such" denotes incapability or dependability. The exact category it belongs to varies with the interpretation of an addresser/addressee. The researchers could not reach a concrete conclusion here due to the ambiguity of the sentence. Likewise, the utterance in (14) may show the speaker's critical judgement towards Mr Bean's timid behaviour (*i.e.* Tenacity), or alternatively, on his poor capability in diving (*i.e.* Capacity). Thus, from the context, it is difficult to identify which category it belongs to exactly.

(14) *zai*   *tiaotai*   *bianyuan zhengzha*

     by   diving.board   edge   struggle

     "struggle at the edge of the diving board" (CC corpus)

(15)	*baichu*	*yi-fu*	*wu*	*suowei*	*de*	*yangzi*
	assume	one-CL	not	care	DE	appearance

"assume a manner that shows that they don't care about anything (but in reality, they do care about something)" (CC corpus)

In other examples, some phrases encode multiple Judgements at the same time. For instance, the verb phrase in (15) encodes the Judgement of negative Veracity by the phrase *baichu yifu…de yangzi* and the positive judgement on Tenacity by the adjective *wusuowei-de*.

The fuzziness in the encoding of the above Judgmental categories makes us rethink Martin and White's original classification based on the English appraisal data (although their model has been successfully extended into many other languages, such as Chinese, especially written Chinese). As evidenced from the CC corpus and briefly mentioned above, some Chinese Judgmental expressions do not seem to fit into a category. For example, the newly coined adjective *tai er* means too silly or stupid; however, whether it denotes someone being incapable or being special has to be identified from the specific context. In some other instances, the Judgement of *wusuowei* "do not care" could be the result of being very confident (*i.e.* Tenacity) or capable (*i.e.* Capacity). Therefore, expressions as such are ambiguous in their own right. Similar problems can be found in the Affective Judgement. As shown in one of our earlier studies (Lee and Lu 2015), the exact Affective category of *kunjing* "dilemma", for example, could be Disinclination (because of someone being embarrassed) or Insecurity (because of someone being feared). As such, we put forward that Judgements, instead of being fit for a particular category, may be classified along a continuum, in which overlaps between categories are allowed and the clear-cut boundaries will be blurred. The detailed proposal of this continuum approach will leave for our future studies.

6. Conclusion

The description from Chinese speakers' L1 and L2 narrations showed that they both used adjectives, commentaries, and descriptions on body languages to express Judgement explicitly and implicitly. Further, there are cases where the choice of lexical items, especially the adjective, in their L1 and L2 are simply translation correspondences. For example, the Chinese expressions of the English "scared" and "impatient" would be their translation correspondences in Chinese: *haipa* and *meiyounaixin* respectively. However,

a closer look at the CC corpus showed that, compared with their L2 English counterpart, it has much more varied expressions of Judgement. For instance, in addition to the commonly used adjectives to express Judgement, speakers in their L1 Chinese adopt varied lexical and syntactic means to convey their evaluations, such as the use of interjections, modality and rhetorical questions. Finally, the results of the current study also suggest that there could be a potential need to rethink Martin and White's categories. As mentioned in the Results and Discussion sections, some of the Judgement expressions did not fit into the categories in a clear-cut way *e.g. tai er* "too silly/stupid"—would this indicate Judgement of being incapable or abnormal? Some of the Judgement expressions were ambiguous such as *wusuowei* "do not care"-would this indicate incapability, undependability or neither of those? The researchers also encountered similar challenges when working with the Affect system (Lee and Lu 2015) *e.g. kunjing* (dilemma)–would this be disinclination or insecurity? It would be interesting to take a continuum approach to look at those data in future studies.

The findings of the current study would have some implications not only on the theoretical development of the Appraisal System, but also on the teaching and learning of L2 English at large. As briefly discussed above, the coding on Chinese Judgement data indicates that there might be a possible need for clearer-cut definitions in Martin & White's Appraisal System or a revisit of their theory from a continuum perspective. However, the sample of our study is fairly small (only 20 participants), the analyses would be more reliable if a larger scale study with more participants could be carried out. Additionally, narrated samples from other languages would be helpful in the development of a theory on Judgement (and Appraisal in general) that would fit more language datasets.

This small-scale pilot study may have some implications on the teaching and learning of L2 English. First, our findings show that there is a significant difference ($p<0.01$ or $p<0.001$ in the categories of Social Esteem in Judgement between narrators' L1 and L2, even though participants have advanced proficiency of both L1 and L2. This suggests that although Judgement is a universal in cognition, its linguistic realisations are not applicable to all languages. Chinese has some unique means to encode Judgement, such as interjections. It is hoped that future teaching could pay attention to the linguistic strategies of making judgements, and in particular, highlight the linguistic means that are particular to a given language. The other implication is related to the development of L2 English. Although participants have an advanced level of English (some can even be seen as

having near-native proficiency of English), it mainly concerns the precision of language choices, and thus cannot be seen as entirely equal to the proficiency level of a native speaker. Therefore, it would be beneficial if practitioners and researchers in the TESOL area could develop more learning resources on spoken English to help learners perceive Judgement in different languages and further to help them code Judgement in a linguistically varied and most appropriate way. Also due to this, the findings of this study would be more meaningful if the data from English Chinese bilingual speakers could be collected and analysed in the future.

Acknowledgements

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CHAPTER NINE

AGE EFFECTS ON L2 GRAMMARS: EVIDENCE FROM CANTONESE LEARNERS OF MANDARIN

YIKE YANG

Abstract

Based on the Critical Period Hypothesis (CPH), numerous studies have investigated the relationship between age of acquisition (AoA) and second language (L2) ultimate attainment. However, it is not yet clear when is the end of the critical period (CP) and how AoA affects L2 attainment. Different termini of CP have been identified in literature, and the realisation of AoA effects on L2 attainment is also under debate. This study critically reviewed the controversial issues concerning the CPH and analysed production data of Cantonese-speaking learners of Mandarin with piecewise regression modelling. The data were elicited production of Mandarin *ba*-sentences, which possess a pre-transitive construction with a unique syntactic structure and several semantic constraints. The data showed that regression models with various breakpoints were not better than a simple linear regression model, based on which we rejected the discontinuous decline hypothesis and provided evidence against the CPH. Also, our results indicated a tendency that with the increase of AoA, L2 ultimate attainment would become more divergent from target language grammar. A further comparison did not display qualitative differences in Cantonese learners' acquisition of two types of *ba*-construction. Moreover, the Cantonese learners acquired the *ba*-construction more successfully than learners with other language backgrounds, which might be attributed to the similarities between Cantonese and Mandarin.

Keywords: second language acquisition; age of acquisition; ultimate attainment; critical period hypothesis; pre-transitive construction

1. Introduction

In the context of typical language development, every child can successfully acquire their first language (L1) in a fast and seemingly effortless manner (Clark 2009; O'Grady and Cho 2001). However, it has proved to be a painful journey for adolescents and adults to learn a second language (L2), the outcome of which is always divergent in many aspects from L1 acquisition (Lardiere 2007; Meisel 2011; Sorace 2003; White 2003; Yuan 2010). Tremendous research has thus focused on the effects of age of acquisition (AoA) on L2 acquisition, particularly on L2 ultimate attainment, because such evidence can provide "upper limits" of L2 acquisition (Birdsong 2006, 10). This section starts with an introduction of related issues and the pre-transitive constructions in Mandarin and Cantonese, and then raises our research questions based on the gaps in the field.

1.1 Age Effects on L2 Attainment

Ultimate attainment of an L2 refers to the "steady-state grammars of people who have completed their L2 acquisition" (White 2003, 241). L2 learners are generally found different from native speakers in ultimate attainment of a target language (Sorace and Filiaci 2006; Birdsong 2004; Moyer 1999; Johnson et al. 1996; Bley-Vroman 1990; Coppieters 1987). Extensive studies have investigated the relationship between AoA and L2 ultimate attainment since the Critical Period Hypothesis (CPH) was put forward decades ago (Lenneberg 1967; Penfield and Roberts 1959). According to CPH, there exists a certain critical period (CP) for language acquisition, after which the ability to acquire a language disappears or declines gradually. It is suggested that if L2 acquisition starts early (within the critical period), then the attainment of nativelikeness in an L2 is possible (Birdsong and Vanhove 2016). There are, nonetheless, several controversial issues concerning the CPH, as reviewed below.

Assuming the existence of CP, the first question one would ask is when is the end of it. Different termini of CP have been proposed by researchers (See Singleton (2005) for a summary). In an earlier review, Hyltenstam and Abrahamsson (2003) proposed that the ability to learn an L2 starts to decline shortly after birth. Research on English-speaking infants' perception of native and foreign speech revealed that infants can discriminate phonetic contrasts across languages from six months onwards, but their ability to discriminate phonetic contrasts in a foreign language declines by their first year of life (Werker and Tees 1984; Werker et al. 1981). Similarly, even L2 speakers with AoA of one year old were perceived differently from native

speakers in pronunciation (Flege, Yeni-Komshian, and Liu 1999). Cheng and Tang (2016) studied the acquisition of Mandarin semantic operators by Cantonese learners, and their results showed that learners with AoA before age three outperformed learners with AoA after age six. Another study on English syntactic knowledge found that participants with AoA before age seven converged to native speakers in a test and those with AoA after age seven performed poorly in the test (Johnson and Newport 1989). Oyama (1976) provided evidence for successful acquisition of L2 English phonological system by children, and her data also verified that those who arrived in an L2 environment after age 12 were perceived as foreign-accented. Based on their findings, Granena and Long (2013) proposed multiple CPs for phonology, lexis-collocation and morphosyntax. In addition to spoken languages, the AoA effects have also been supported by data from sign languages. For instance, native signers of American Sign Language (ASL) were fastest in processing ASL lexical items in a primed lexical decision task, and early learners also had shorter reaction time than late learners (Mayberry and Witcher 2005).

Another issue under debate is the realisation of AoA effects on L2 ultimate attainment. Having taken the characteristics of the CP into account (Bornstein 1989), Birdsong (2006, 2009) summarised three patterns of possible AoA effects on L2 ultimate attainment. Figure (9-1a) represents a stretched "L" shape, where the L2 attainment declines as AoA increases, and such decline ceases at the end of the CP. The left portion of this pattern, namely the decline of L2 with the increase of AoA, has been supported in previous studies (DeKeyser and Larson-Hall 2005), but the right portion, namely the floor effect on L2, which exhibits continuous performance at the lowest limit (Hessling, Schmidt, and Traxel 2014), has not been demonstrated. Contrary to Figure (9-1a), Figure (9-1b) indicates a stretched "7" shape, which shows peak attainment within the CP and a gradual decline of attainment after the CP. Such a ceiling effect (Hessling, Traxel, and Schmidt 2004) and a gradual decrease afterwards were found in Veríssimo et al. (2017) where participants with AoA before age five exhibited nativelike performance and participants with AoA after five displayed a decrease in the performance with the increase of AoA. The "Z" shape in Figure (9-1c) is a combination of the previous two shapes, which consists of three developmental stages. A ceiling effect is hypothesised at the beginning, which reveals consistent peak attainment, followed by a gradual decrease of L2 attainment during the CP. When the CP ends, a floor effect appears, which is similar to the right portion of the stretched "L" shape.
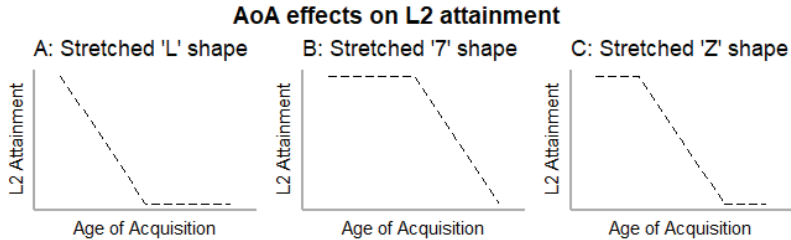
AoA effects on L2 attainment

Figure 9-1. AoA effects on L2 attainment (Adapted from Birdsong 2009, 416)

Other studies on the AoA effects, however, suggested that such discontinuity does not exist, and there might be a linear relationship between AoA and L2 attainment in the acquisition process, providing evidence against the CPH (Birdsong and Vanhove 2016). Hakuta, Bialystok and Wiley (2003) analysed census data of more than two million immigrants in the United States to test the CPH in L2 acquisition. They set ages 15 and 20 as two hypothesised cut-off points for CP, but they did not find such discontinuity in their analysis. What their data showed was a more linear relationship between AoA and degree of L2 success. Although the census-derived approach has been criticised by linguists (Muñoz and Singleton 2011; Long 2013), there are recent empirical studies that provide evidence against the discontinuous decline hypothesis. In a study on the L2 acquisition of information structure in French, Reichle (2010) observed a gradual decrease in performance with the increase of AoA till adulthood, suggesting that age effects exist even after puberty and the CPH is not favoured. More recently, data from a study on Japanese learners' English pronunciation also revealed a negatively linear relationship between AoA and L2 pronunciation in a group of participants with AoAs from 16 to 40 (Saito 2015).

1.2 Pre-transitive Constructions in Mandarin and Cantonese

The pre-transitive construction refers to the result of changing the subject–verb–object (SVO) sequence into the subject–object–verb (SOV) sequence, and is regarded as a "language-specific but dialect-universal feature in Chinese grammar" (Cheung 1992, 241). In Mandarin, the pre-transitive *ba*-construction is widely used and has been extensively discussed in literature, but there is still no consensus on the nature of *ba*-construction among linguists (Ding 2001; Zou 1993; Cheng 1988; Li and Thompson 1981; Li 1924/2007; Teng 1975; Wang 1943/1985). The canonical word order in Mandarin is SVO as is shown in (1a) (Sun and Givón 1985). The similar meaning can also be expressed with the pre-transitive *ba*-construction in

(1b), the syntactic order of which is different from the canonical SVO order, and the object *chuanghu* "window" precedes the verb *guanshang* "close". The *ba*-construction provides an alternate form where the object of the main verb occurs right after *ba* and before the verb (and hence the "pretransitive"). In general, the word order of a typical *ba*-sentence can be represented in (2), although there are variations. The *ba*-nominal phrase (*ba*-NP) is the noun phrase immediately following *ba*, and the *ba*-verb phrase (*ba*-VP) refers to the constituent of "verb + others", the characteristics of which will be introduced shortly in this section. *Ba*-construction was firstly analysed by Li (1924/2007) in his monograph, according to which the function of *ba* is to move the object forward and place it in front of the verb. Henceforth, the *ba*-construction has been studied from various perspectives (See Bender (2000) for a lexical functional grammar approach, Huang, Li, and Li (2009) for a generative approach, Liu (1997) for an aspectual approach, Lv (1955/2002) for a disposal approach, Mullie (1932) for an accusative approach, Sybesma (1999) for a syntactic-semantic approach, Thompson (1973) for a transitivity approach, and Tsao (1987) for a topic-comment approach).

(1) a. *ta*   *guanshang*   *le*   *chuanghu*

He   close   ASP   window

"He closed the window."

b. *ta*   *ba*   *chuanghu*   *guanshang*   *le*

he   BA   window   close   ASP

"He closed the window."

(2)   Subject + *ba* + object + verb + others

Apart from the distinction in word order, there are some constraints on *ba*-construction as well. The constraint on the *ba*-NP is that the NP must be either definite or generic (Mullie 1932; Liu 1997). (3a) and (3b) are almost the same except for the determiners preceding the Classifier Phrases. (3a) is not acceptable in Mandarin because *yiliangche* "one car" is an indefinite phrase, which refers to an entity (a car) that the listener does not know about previously. Meanwhile, (3b) is fine because *zheliangche* "this car" is a definite phrase referring to an entity (a certain car), the existence of which is shared by both the speaker and the listener. This illustrates the constraint of definiteness on the *ba*-NP. Unlike a canonical SVO sentence, an indefinite NP is not acceptable in *ba*-construction. The object *yan* "salt" in

(3c), however, is not a particular entity that the speaker and the listener share; rather, it is a generic concept representing a class or a type of entities. The generic *ba*-NP may be acceptable under some circumstances.

(3) a. **ta*   *ba*   *yi*   *liang*   *che*   *mai*   *le*

      he   BA   one   CL   car   buy   ASP

      "He bought a car."

   b. *ta*   *ba*   *zhe*   *liang*   *che*   *mai*   *le*

      he   BA   this   CL   car   buy   ASP

      "He bought this car."

   c. *ta*   *youshihou*   *ba*   *yan* *dang* *tang*   *chi*

      he   sometimes   BA   salt take sugar   eat

      "He sometimes eats salt thinking it is sugar."

                                    (Adapted from Li and Thompson 1981, 464-466)

Wang (1943/1985) put forward the notion "disposal", which means that the verb in a *ba*-sentence must be dealing with something, and this view has been supported by many linguists. For example, (4a) is not a good sentence because the verb *kandao* "see" does not make any change to or have any effect on the object "*Zhangsan*". The constraint on the *ba*-VP is that a bare verb is not allowed, and the *ba*-VP needs to be morphologically complex, whether it is: a) a resultative verbal complement (RVC) as in (4b), b) a verb plus an aspect marker as in (4c), or c) a verb plus a locative prepositional phrase (PP) as in (4d). Moreover, Feng (2001) argued that *ba*-construction might be under some kind of prosodic constraint, and Yang (1998a, 1998b) advocated that *ba*-construction must satisfy the feature of [+telic] and [+perfective], so the VP needs to be complex to indicate the telicity of the activity.

(4) a. **ta*   *ba*   *Zhangsan*   *kandao*   *le*

      He   BA   Zhangsan   see   ASP

      "He saw Zhangsan."

b. *kuai*   *yidian*   *ba*   *zhe*   *kuai*   *rou* *na* *zou*

   quick   a little   BA   this   CL   meat take go

   "Take this piece of meat away quickly!"

c. *wo*   *ba*   *wode*   *qiche*   *mai*   *le*

   I   BA   my   car   sell   ASP

   "I sold my car."

d. *ta*   *ba*   *biaoyu* *tie*   *zai* *qiang* *shang*

   he   BA   slogan paste at   wall   on

   "He posted the slogan on the wall."

                (Adapted from Li and Thompson 1981, 463-485)

Lv (1994) collected 1,094 *ba*-sentences from a pile of linguistic data containing 530,000 sentences, classified them into six semantic types, and calculated the proportion of each type. The disposal and the displacement types were found to be the most frequently used *ba*-sentences in native speakers' daily lives, with the former constituting 49.8% of all the speakers' sentences (546 out of 1094) and the latter 27.8% (305 out of 1094)[1]. Based on Lv's classification, this study investigates these two types of *ba*-construction: the disposal *ba*-construction as illustrated in (4c) and the displacement *ba*-construction as illustrated in (4d). The *ba*-NPs in the disposal type is affected by the action as "being sold" in (4c), and the *ba*-NPs in the displacement type undergo locational displacement as "being posted on the wall" in (4d).

Although Mandarin and Cantonese belong to Sino-Tibetan languages and they share the same word order of SVO, there are some differences between them. Unlike Mandarin, there is no *ba*-construction in Cantonese, but there is *zoeng*-construction as exemplified in (5), the usage of which is very limited.

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[1] The other four semantic types of *ba*-sentences and their frequency identified in Lv (1994) are: connectionalised *ba*-sentences (8.4%), equative *ba*-sentences (6.3%), adverse *ba*-sentences (5.1%) and causative *ba*-sentences (1.5%).

(5) *zoeng*   *nei*   *ze*   *go*   *bun syu* *bei ngo*

    zoeng   you   borrow   DET   CL book give me

    "Give me the book that you borrowed."

(Cheung 2006, 55)

Regarded as the counterpart of Mandarin *ba*-construction (Tang 2002), *zoeng*-construction shares similar syntactic properties with *ba*-construction, but it can only be used for the disposal cases, and occurs in more formal situations while rarely in colloquial contexts (Cheung 1992; Leung 2004). In a comparative study of *ba*-construction and *zoeng*-construction, Li (1993) found several differences between them. For instance, *ba* takes all kinds of nominals as subjects, but *zeong* can only take [+animate] agents as subjects; *zeong* only allows [+definite] objects while *ba* also accepts [+generic] objects like (3c). Still, the Cantonese *zoeng*-construction may have some effects on the interlanguage of Cantonese learners when they learn Mandarin.

1.3 The Current Study

As reviewed in Section 1.1, controversies exist in the literature of age effects on L2 ultimate attainment. CP was found in some studies but not in others. Within the studies that did support the CPH, different offsets of CP were proposed. Meanwhile, it is not yet clear whether age would influence language acquisition ability throughout the life span. To fill these gaps, the present study attempts to address the following research questions:

1) Is a certain CP observable in our data? Following previous studies (*e.g.* Johnson and Newport 1989), we chose ages six, eight and nine as hypothesised offsets of CP to see if there exists a CP for L2 acquisition.

    a. if our data support CPH, which pattern of the CP effects (Figure 9-1) is supported?

    b. if our data do not support CPH, is there a linear relationship between AoA and L2 attainment?

2) Is there any difference in age effects on the acquisition of two types of *ba*-construction?

3) What are the characteristics of the *ba*-sentences produced by the Cantonese speakers?

2. Methodology

The data were collected in a previous study on the L2 acquisition of the Mandarin *ba*-construction (Yang 2013, 2020). Section 2.1 and Section 2.2 briefly describe the participants and the experiment, while Section 2.3 reports how the data were analysed in the current study.

2.1 Participants

Fifty participants were recruited from the Chinese University of Hong Kong. Written informed consent was obtained from all the participants prior to data collection. The target group consists of 30 Cantonese-speaking undergraduates who were born and brought up in Hong Kong. A background questionnaire was completed before the experiment to assess the participants' language background and guarantee their proficiency in Mandarin. To test the proficiency level of Mandarin, an independent test of Mandarin proficiency was administered at the end of each experiment. The highest possible score for the independent test was 20, and participants' scores ranged from 17 to 20 (M = 18.97), from which we can conclude that the Mandarin proficiency of the participants was at the advanced level. The summary of the participants' information has been listed in Table 9-1. The Cantonese learners were aged from 18 to 22, and their AoA of Mandarin ranged from 3 to 18.

Table 9-1. Background information on the participants

Group	No of participants (Male/Female)	Age	AoA	Place of birth and growth	Score in the test of Mandarin proficiency
Can	30 (14/16)	18 - 22 (M = 19.7)	3 - 18 (M = 8.67)	Hong Kong	17 - 20 (M = 18.97)
Man	20 (9/11)	20 - 25 (M = 23.4)	N/A	Northern China	N/A

Note: Can = Cantonese-speaking learner group; Man = Mandarin-speaking control group

Twenty native speakers of Mandarin aged from 20 to 25 were recruited to form a control group. Data collected from them would provide a baseline for obligatory or preferred contexts of *ba*-construction from the native speakers' perspective. Because the Chinese spoken in Northern China is

closest to Standard Mandarin, only those who were born and brought up in Northern China were invited to participate.

2.2 Materials and Procedure

A picture-elicited production test was designed to collect *ba*-sentences from both groups of participants. Because *ba*-construction always describes the change of state, three graphs were prepared as a set to elicit an utterance of *ba*-construction. There were 24 originally designed sets of pictures in total. Among them, 12 describe one situation that involves either the case of disposal (Figure 9-2) or the case of displacement (Figure 9-3) as target sentences, and the other 12 are fillers (Figure 9-4).

Figure 9-2. An example of stimuli for target sentences (disposal)

Target sentence: *ta ba heiban ca ganjing le* "She cleaned the blackboard."

Figure 9-3. An example of stimuli for target sentences (displacement)

Target sentence: *ta ba shubao fang dao le zhuo shang* "She put her schoolbag on the table."

Figure 9-4a. An example of fillers that cannot elicit *ba*-sentences

This filler sentence has no meaning related to disposal or displacement, and the main verb, *mengjian* "to dream of", rarely occurs in native speakers' *ba*-sentences.

In the task, each participant was asked to describe the pictures with one sentence in Mandarin. If the participants failed to express themselves clearly, the investigator would ask them to repeat their sentence or describe the picture in another way. The entire task was audio-recorded to guarantee that the answers were recorded accurately. The recordings were then manually transcribed to text for further analysis. A practice session was conducted before the test to ensure that the participants fully understood the instructions.

2.3 Data Analysis

Two general approaches have been the norm in the analysis of age effects on L2 attainment. One of them is to divide the participants into two or more groups according to their AoAs and compare the means and proportions of the groups, and sometimes the comparison of correlation coefficients is also included (Johnson 1992; McDonald 2000). Another approach is to compute regression models with AoA as the predictor variable and L2 attainment as the response variable (Birdsong and Molis 2001; Granena and Long 2013). Vanhove (2013) critically reviewed these approaches and reanalysed the data from DeKeyser, Alfi-Shabtay, and Ravid (2010) using piecewise regression modelling. Also known as segmented or multi-phase regression, piecewise regression is used when the effect of the predictor variable on the response variable changes abruptly (Muggeo 2003), which is an appropriate tool for testing CPH because it allows the slope of the predictor to change at a certain point. The equation of a piecewise regression model can be

found in Equation (1)[2], where *y* is the response variable, which is a function of an overall intercept α and two slope parameters β_1 and β_2, depending on whether x_i lying below or above ψ, the breakpoint to be modelled (Baayen 2008; Vanhove 2013).

Following Birdsong and Molis (2001) and Vanhove (2013), the current study fitted piecewise regression models with R (R Core Team 2017) in R Studio (R Studio Team 2016) to tackle our research questions. The R package "stats" (R Core Team 2017) was used for the modelling and the package "ggplot2" (Wickham 2016) was used for the visualisation. We first fitted a regression model with no breakpoint. We then fitted three piecewise regression models with ages six, eight and nine as the breakpoints, and compared them with the previously fitted regression model. If none of these breakpoints were better than the fitted model, we would compute models with varying breakpoints to see if we could find an optimal breakpoint with our data. If we still could not find an optimal breakpoint, we would then adopt the first linear regression model instead. To answer our second research question, we further compared the acquisition of the two types of *ba*-construction with regression models.

Furthermore, qualitative analysis was also included in this study, where two trained Mandarin-speaking linguists (including the first author) manually coded the properties[3] of each *ba*-sentence and the error type if it was ill-formed, and this would allow us to confirm whether the Cantonese learners have difficulty acquiring the constraints on *ba*-construction. In addition, we also coded the non-*ba*-sentences produced by both groups to figure out what other structures were adopted to substitute for *ba*-construction. Both coders did the coding independently and then compared all the judgements to ensure coder reliability (Révész 2012). When there was inconsistency between the two coders, further discussion with other linguists was required to make the final decision.

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[2] Equation (1): $\hat{y}_i = \begin{cases} \alpha + \beta_1 x_i, & \text{if } x_i \leq \psi \\ \alpha + \beta_2 x_i, & \text{if } x_i > \psi \end{cases}$

[3] Several properties were considered in our analysis: types of *ba*-NP and *ba*-VP, animacy of subject and *ba*-NP, the telicity of the *ba*-sentence, *etc.*

3. Results and Discussion

An overview of the production data can be found in Figure 9-4b. It is clear that both groups produced a considerable amount of *ba*-sentences, accounting for the majority of all the sentences (252 out of 360 for the Cantonese learner group and 212 out of 240 for the Mandarin control group). An independent-samples *t*-test was conducted to compare the production of *ba*-sentences and non-*ba*-sentences by both groups of participants. There was a significant difference between the two groups ($t(596.486) = -5.751$, $p < .001$), which suggested that the Mandarin speakers outperformed the Cantonese learners in the production. This section reports the results in detail and raises issues for further discussion.
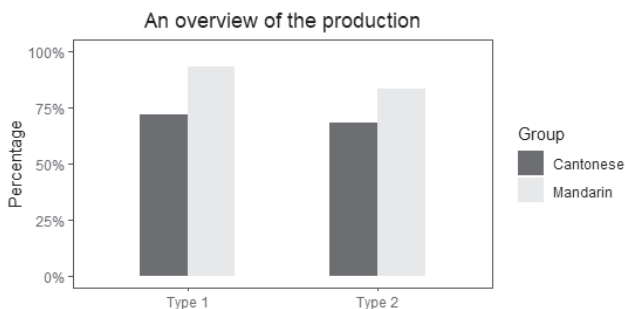
Figure 9-4b. An overview of the production

Note: Type 1 = the disposal type; Type 2 = the displacement type

3.1 Testing the CPH

A simple linear regression model with no breakpoint was fitted to predict the production of *ba*-sentences based on the AoA. A significant regression equation was found ($F(1, 28) = 4.423$, $p = .045$), with an R^2 of .136[4]. Participants' expected production of *ba*-sentences is equal to $11.030 - 0.304$ (AoA) when AoA is measured in years. The model was plotted in Figure 9-5. There is an upward curve in the middle of the line at around age 11, which was difficult to explain. A possible reason is that our sample size may not be sufficient, so with some outstanding performers at around age 11, the curve exhibited something unusual. We replotted the regression model

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[4] The raw data and R scripts have been uploaded to the author's GitHub: https://github.com/yikeyang/age_effect_piecewise_reg

without the smoother in Figure 9-6, from which a linear relationship can be observed.
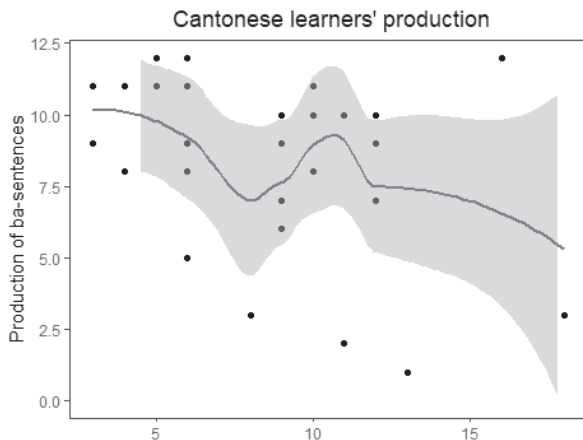
Figure 9-5. AoA and production of *ba*-sentences

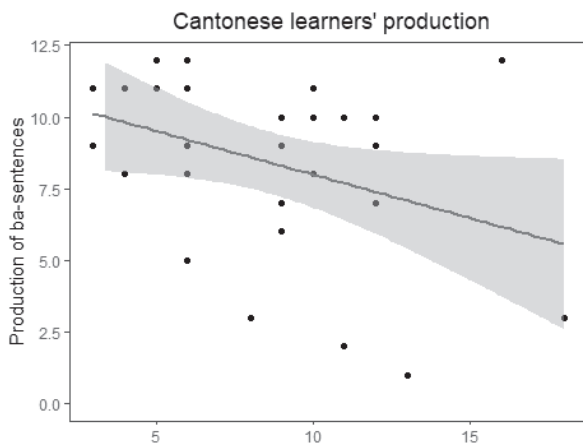Note: The trend line is a non-parametric scatterplot smoother.

Figure 9-6. AoA and production of *ba*-sentences (replotted without smoother)

For models with breakpoints, we first fitted a linear regression model with the breakpoint at age six. No significance was found in the regression (F(2,

27) = 2.151, $p = .136$), with an R^2 of .136. Moreover, no significance was reached for each age range: $p = .538$ for AoA < 6 and $p = .145$ for AoA > 6, respectively. The model was then plotted in Figure 9-7. The solid line represents the model with the breakpoint and the dashed lines indicate its 95% confidence interval. The dot-dash line represents the regression model without breakpoint, which falls well within the 95% confidence interval of the model with the breakpoint. An analysis of variance (ANOVA) also suggested no statistically significant differences between the two models ($F(28, 27) = .033$, $p = .859$). Thus, our data do not support the breakpoint at age six.

Regression with breakpoint at age six

Figure 9-7. Model with breakpoint at age six

Note: Solid line: regression with breakpoint at age six. Dashed lines: 95% confidence interval of the model. Dot-dash line: regression without breakpoint.

We then fitted linear regression models with the breakpoints at ages eight and nine. Neither of them proved better than the regression model without breakpoint: $F(2, 27) = 2.280$, $p = .111$, $R^2 = .150$ for the regression with breakpoint at eight; and $F(2, 27) = 2.251$, $p = .125$, $R^2 = .142$ for the regression with breakpoint at nine. The models were plotted in Figures 9-8 and 9-9. Again, the regression without breakpoint is within the 95% confidence intervals of both models.

Regression with breakpoint at age eight
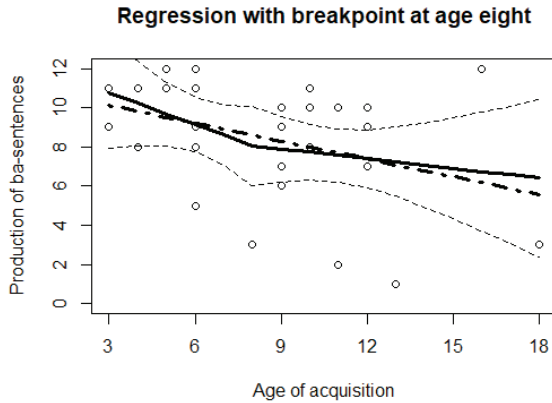
Figure 9-8. Regression model with breakpoint at age eight

Note: Solid line: regression with breakpoint at age eight. Dashed lines: 95% confidence interval of the model. Dot-dash line: regression without breakpoint.

Regression with breakpoint at age nine

Figure 9-9. Regression model with breakpoint at age nine

Note: Solid line: regression with breakpoint at age nine. Dashed lines: 95% confidence interval of the model. Dot-dash line: regression without breakpoint.

So far, our results did not favour any of the hypothesised cut-off points for the CP. To exhaust all the possibilities, we fitted regression models with

varying breakpoints (from age three to age 18, the range of our AoAs) to determine an optimal breakpoint. Following Vanhove (2013), we calculated d^2, namely, the sum of the squared differences between the actual data points and the values predicted by the model, with Equation (2)[5]. The model with the smallest d^2 would be the optimal model. The breakpoints at ages 16 and 17 were found to have the smallest values. But there are two reasons why we would not consider them as the cut-off points. First, we only have two participants with AoAs above 16 (one aged 16 and another aged 18 at the time of the test), so it is impossible for us to explore whether having age 16 or age 17 as a breakpoint would contribute to a better regression model for AoA and L2 attainment with our data. More importantly, all theories of CPH assume the CP ends by puberty. Failure to fit a model with a breakpoint age before puberty serves as counterevidence against the CPH.

To sum up, regression models with various breakpoints were computed, and the optimal one was the simple linear regression model in Figure 9-6, based on which we rejected the discontinuous decline hypothesis and provided evidence against the CPH. As indicated by Figure 9-6, L2 ultimate attainment and AoA are negatively correlated ($p = .045$), although the relationship is not very strong ($R^2 = .136$).

3.2 The Acquisition of Two Types of *ba*-construction

We then explored the acquisition of two types of *ba*-construction and age effects, if any. As suggested in Figure 9-4, both groups uttered *ba*-sentences more frequently under the disposal conditions. Paired-samples *t*-tests were employed to compare the two conditions for each group, which revealed a significant difference for both groups: $t(179) = -2.484$, $p = .014$ for Cantonese learners, and $t(119) = -3.636$, $p < .001$ for Mandarin speakers. The preference for the disposal *ba*-construction might be explained by the disposal meaning's being an obligatory factor for both the Mandarin *ba*-construction and the Cantonese *zoeng*-construction.

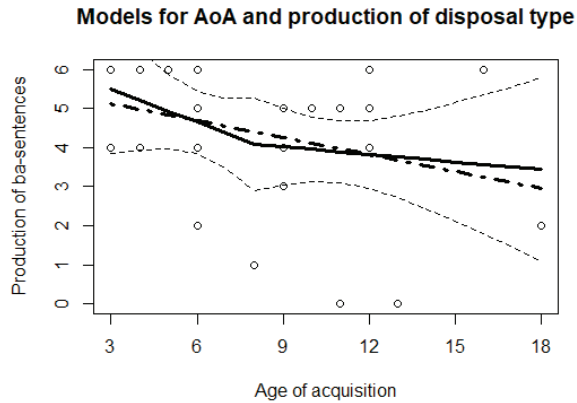[5] Equation 2: $d^2 = \sum_{i=1}^{n}(y_i - \hat{y}_i)^2$

Figure 9-10. Models for AoA and production of disposal type

Note: Solid line: regression with breakpoint at age eight. Dashed lines: 95% confidence interval of the model. Dot-dash line: regression without breakpoint.

Similar procedures were used in analysing the data. We first fitted regression models with various breakpoints (from age three to age 18, the range of our AoAs) to determine an optimal breakpoint for the acquisition of the disposal type. According to the values of d^2, age eight exhibited the least variation. We then fitted a regression model with age eight as the breakpoint, but no significance was found (F(2,27) = 1.662, p = .209, R^2 = .110; p = .224 before age eight and p = .675 after age eight). The models with and without a breakpoint were plotted in Figure 9-10, and the model without any breakpoint fall within the 95% confidence intervals of the model with a breakpoint at age eight. An ANOVA comparing two models also suggested no significance between them. For the displacement case, the models with ages 15 and 16 showed the smallest differences. As previously discussed, we would not consider having age16 as the optimal model. Nor did we have a participant with an AoA at 15. So we adopted the linear regression model without any breakpoint as the optimal one for displacement case, where F(1, 28) = 5.285, p = .029, R^2 = .159. The optimal models for each case were plotted in Figures 9-11 and 9-12.
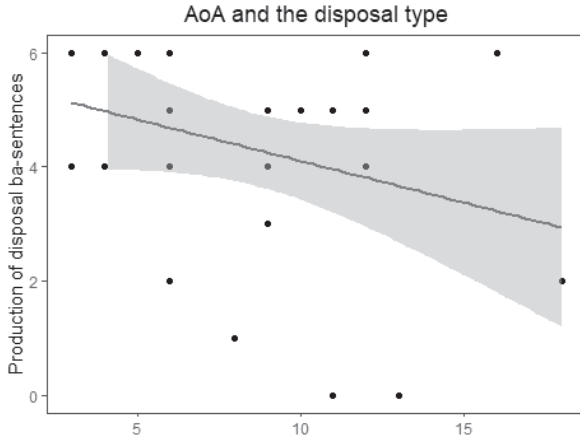
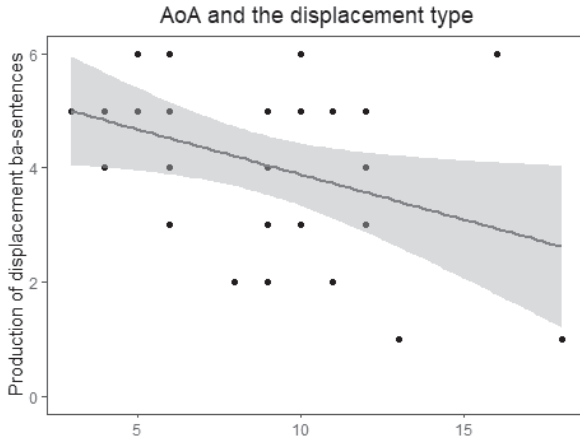Figure 9-11. AoA and *ba*-sentences of disposal

Figure 9-12. AoA and *ba*-sentences of displacement

To further compare the acquisition of the two types of *ba*-sentences, we employed a paired samples *t*-test to examine the production data under two conditions. There was no significant difference in the production for the disposal type (M = 4.3, SD = 1.745) or the displacement type (M = 4.1, SD = 1.470; *t*(29) =-1.030, *p* = .312). A very strong correlation was found

between the two variables (F(1,29) = 47.856, p < .001, R^2 = .631), suggesting that the learners actually acquired the two types of *ba*-construction without qualitative differences.

3.3 Qualitative Analysis

In this part, we first analysed the *ba*-NPs and *ba*-VPs to examine the production data in detail. Figure 9-13 presents the proportion of different *ba*-NPs produced by the two groups, from which we can find a similar distribution pattern of the two groups' data. More than half of the *ba*-NPs were bare nouns as in (6a), which normally refer to the objects already known by both the speaker and the listener, so bare nouns are well in line with the [+definite] constraint on the *ba*-NP. The two groups also adopted locative DPs as in (6b), numerical phrases as in (6c) and relative clauses to modify the head noun as in (6d). Besides, participants in both groups would replace the nouns by pronouns in multiclausal *ba*-sentences as in (6e).
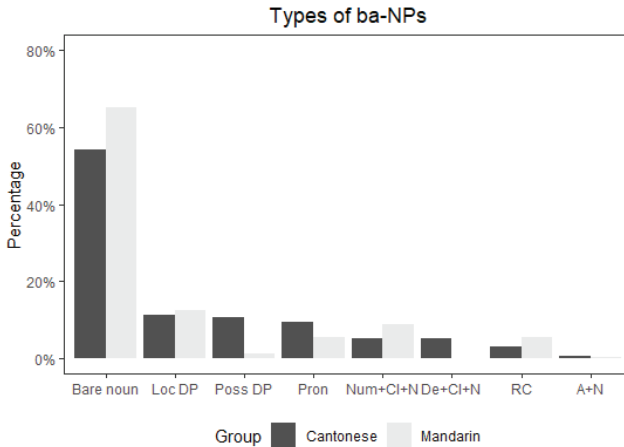

Figure 9-13. Types of *ba*-NPs in the *ba*-sentences

Note: Loc DP = locative DP; Poss DP = possessive DP; Pron = pronoun; Num + Cl + N = number + classifier + noun; De + Cl + N = determiner + classifier + noun; RC = relative clause; A + N = adjective + noun

(6) a. *xiaonanhai*   *ba*   *maozi dai*   *zai le*   *tou* *shang*

     child   BA   hat   put on at ASP head above

     "The child put on his hat."

  b. *xiaoming* *ba*   *zhuo shang de*   *pingguo chi diao* *le*

     Xiaoming BA   table above DE   apple   eat drop ASP

     "Xiaoming ate up the apple on the table."

  c. *mama*   *ba* *yi* *fu* *hua*   *gua zai le* *qiang shang*

     mother   BA one Cl picture hang at ASP wall above

     "The mother hung a picture on the wall."

  d. *you* *ge* *ren*   *ba*   *ta*   *kandao de* *tupian*

     have Cl person   BA   she   see   DE picture

     gua   *shang*   *qiang*   *shang*

     hang   *to*   *wall*   *above*

     "A girl hung the picture she saw on the wall."

  e. *zhuo*   *shang* *you*   *yi* *ge* *pingguo, xiaonanhai*

     table   above have   one CL apple   child

     ba   *ta*   *chidiao*   *le*

     BA   it   eat drop   ASP

     *"*There was an apple on the table, and a child ate it up."

Figure 9-14 shows the types of *ba*-VPs produced by the two groups. Of all the types, "RVC(+*le*)" as in (7a) was the most frequently used type of VP, followed by "V+P(+*le*)+L", "V+P(+*le*)+N" and "V+*le*+(C)" as shown in (7b-d) respectively. These four types constitute 95.07% of all the *ba*-sentences (95.26% for the L2 group, and 94.86% for the L1 group), as they clearly indicate the results or changes of the objects, which fits the semantic and pragmatic components of *ba*-construction. Thus, echoing with previous studies (Huang and Yang 2004, 2005), most of the *ba*-sentences produced by our participants perfectly met the requirement of the [+telic] feature. A

closer look at the *ba*-NPs and *ba*-VPs suggested that the L2 learners had acquired the constraint on the *ba*-NPs and *ba*-VPs and were able to produce the correct *ba*-sentences consciously or unconsciously.
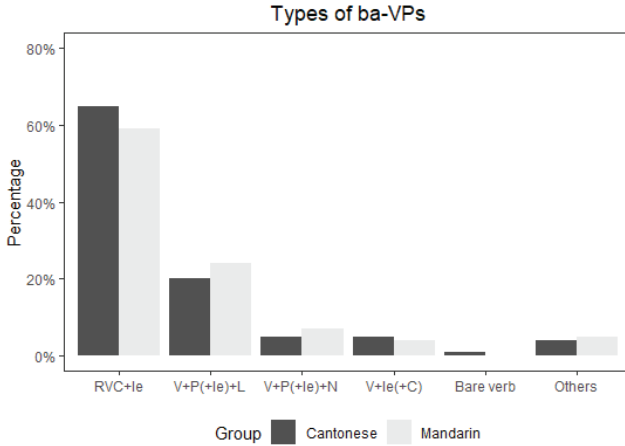

Figure 9-14. Types of *ba*-VPs in the *ba*-sentences

Note: RVC = resultative verbal complement; V + P + L = verb + preposition + location; V + P + N = verb + preposition + noun; V + *le* + C = verb + *le* + complement

(7) a. *xiaonanhai*   *ba*   *pingguo chi*   *diao*   *le*

    child   BA   apple   eat   drop   ASP

    "The child ate the apple."

  b. *wo*   *ba*   *beibao*   *fang dao*   *le*   *zhuozi shang*

    I   BA   bag   put   arrive ASP   table   above

    "I put the bag on the table."

c. *laoshi   ba   zuoye   fagei le   tongxuemen*

   teacher   BA   assignment send ASP   students

   "The teacher returned the assignments to the students."

d. *xiaopengyou ba   yumaoqiu   na   le   chulai*

   child   BA   shuttlecock take ASP   out

   "The child took out a shuttlecock."

We also examined the production data to see if there were ill-formed sentences. There were 29 sentences identified as ill-formed, but only three of them failed to meet the requirements of *ba*-construction. Specifically, these sentences were formed with bare verbs as in (8a), which did not indicate the telicity of the action "discuss", thus violating the constraints on the *ba*-VPs. We did find a sentence with a wrong *ba*-NP, but the error did not concern the constraints on the *ba*-NPs. As can be seen in (8b), the oddness was caused by the unusual noun *shengliang* "volume", which is not commonly used in Mandarin. The most frequently occurred error in our data was word collocation, which accounted for the majority of the errors (19 out of 29). For instance, the verb *zhan* "cut" in (8c) does not collocate with *shu* "tree" in Mandarin. Other errors included code-mixing as in (8d) and missing elements as in (8e).

(8) a. **tongxuemen   ba laoshi   fa   de zuoye   taolun*

       students   BA teacher   return   DE assignment discuss

       "The students discussed the assignment returned by theteacher."

    b. **ta   ba   ta   de   shengliang jiangdi*

       she   BA   it   DE   volume   turn down

       "She turned down the volume."

    c. **you   yi   ge ren   ba   shu   zhan   le*

       have   one CL man   BA   tree   cut   ASP

       "A man cut down the tree."

d. *ta   ba   zuoye   delete   diao   le

    she   BA   assignment   delete   fall   ASP

    "She deleted her assignment (on the blackboard)."

e. *ta ba yumaoqiu   cong yi ge tong (li) na chulai

    she BA shuttlecock   from   one CL barrel (in) pick   out

    "She took a shuttlecock out of the barrel."

Of all the 252 *ba*-sentences, only three of them violate the constraints on *ba*-construction, from which we can conclude that the Cantonese learners acquired *ba*-construction very well (although they did not use it as frequently as the Mandarin control group). This finding contradicts previous studies on the L2 acquisition of *ba*-construction, where L2 learners lagged far behind the native speakers in production. For example, Wen (2010) tested English-speaking learners of Mandarin at different proficiency levels. Even advanced learners in her study produced much fewer *ba*-sentences than native speakers (43.1% vs. 93.5%). However, even though the L2 learners did not produce many *ba*-sentences, their relatively good performance in the acceptability judgement tasks revealed that they actually had acquired some knowledge of *ba*-construction (Du 2006; Xu 2012). A possible explanation for such inconsistency is that the degree of distance between L1 and L2 may play a role in L2 acquisition (Kellerman 1995). The pre-transitive constructions exist in both Cantonese and Mandarin, and the similarities in linguistic features between them may have contributed to the more successful acquisition of *ba*-construction by the Cantonese learners, whereas the absence of a counterpart in the L1s may result in less successful acquisition of *ba*-construction by learners with other language backgrounds (Mai 2016). Lacking any prior knowledge of such construction in their L1s, learners would find it very difficult to fully acquire the complex structure and the constraints of *ba*-construction, and they might consequently tend to avoid using it (Yu 2000).

Lastly, we identified the patterns of the sentences produced by the Cantonese learners when *ba*-construction was not adopted. The most frequent pattern (77/108, 71.30%) was a simple declarative sentence which follows the canonical SVO order in Mandarin as in (9a). Some participants produced multiclausal sentences, where the first clause described the particular entity and in the second clause the object was dropped (19/108, 17.59%) as in (9b). There were also several passive sentences which adopted different passive markers as in (9c) and (9d) (8/108, 7.41%). The

learners' patterns were very similar to the native speakers who also adopted the SVO sentences for most of the non-*ba*-sentences (24/28, 85.71%).

(9) a. *wo   na   chu   le   yi   ge   yumaoqiu*

      I   take   out   ASP one CL shuttlecock

      "I took out a shuttlecock."

  b. *zhe   ge   maozi hen   piaoliang, wo shishi kan*

      this   CL hat   very smart   I try   see

      "This hat is very smart. Let me try it."

  c. *shu   gei   kan   diao   le*

      tree   *gei*   cut   drop   ASP

      "The tree was cut down (by someone)."

  d. *heiban   shang de zi   bei zhirisheng*

      blackboard above DE character BEI student_on_duty

      ca   diao   le

      wipe   drop   ASP

      "The characters on the blackboard were wiped off by the student on duty."

4. Conclusions

In this study, we fitted regression models with various breakpoints to test the CPH in L2 acquisition, but none of the models were better than a simple linear regression model in predicting the L2 attainment based on AoA. Our data thus did not support the claim that there exists a cut-off point for the CP. However, we did provide evidence for age effects on L2 acquisition. There is a tendency that with the increase of AoA, L2 ultimate attainment becomes more divergent from the target language grammar. We also compared the acquisition of two types of *ba*-construction, *i.e.* the disposal type and the displacement type. No qualitative difference was found in the acquisition of the two types by Cantonese learners. Finally, the Cantonese learners were demonstrated to have more successfully acquired the earlier-noted types of *ba*-construction than learners with other language

backgrounds, and this might be the consequence of the similarities between Cantonese and Mandarin.

Acknowledgements

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