A Prosodic Analysis of Mandarin Classifiers

Shuyan Wang
University of Connecticut

This paper discusses the distribution of Mandarin classifiers and proposes the Verb Proximity Condition (VPC), which requires NP-initial classifiers in Mandarin to stay within the same intonational phrase as the verb. That is why Mandarin Cl-N phrases are restricted in terms of their distribution. Finally, the VPC can explains why Cl-N phrases are banned from the subject/topic positions in Mandarin. Mandarin subject/topic positions generally disallow non-specific expressions, so that non-specific Cl-N phrases cannot appear in these positions (cf. Chao 1968; Huang et al. 2009; Li & Thompson 1981). Additionally, elements in subject/topic positions generally form separate I-phrases by themselves, so that in these positions, a Cl-N phrase with a NP-initial classifier cannot stay within the same I-phrase with the verb, violating the VPC. This also explains why Cl-N phrases as subjects are even worse than numeral expressions with overt numerals other than *yi* 'one'. The former involves a double violation (the specificity requirement on subjects and the VPC), while the latter only violates one requirement (the specificity requirement on subjects).

1. Introduction

Numerals phrases in Mandarin usually refer to Numeral (Num)-Classifier (Cl)-Noun (N) expressions. A classifier in Mandarin usually requires the presence of a numeral, as shown in (1). However, there are some exceptions. When the numerals is *yi* 'one', it may be covert, resulting in Cl-N phrases (e.g., Lü 1944; Chao 1968; Li & Thompson 1981; Cheng & Sybesma 1999; Li & Bisang 2012; Jiang 2012). As in (2), a classifier sometimes can appear at the initial position of a noun phrase (NP), without any numerals.

(1). *(san)-ben shu   (2). Wo mai-le   ben shu.
     three-Cl book   I   buy-ASP Cl book
     'three books'   'I bought a/one book.'

Since Cl-N phrases are interpreted as singular, some works argue that they contain a deleted numeral *yi* 'one'. In other words, Cl-N phrases are derived from *yi*-Cl-N phrases by deleting the numeral (e.g., Lü 1944; Wang 1989; Yang 2001; Zhu 1982). However, interpretational and distributional differences between *yi*-Cl-N phrases and Cl-

N phrases have been observed and thus some works have argued against the deletion analysis (e.g., Cheng & Sybesma 1999; Li & Bisang 2012; Wang 2019; Zhang 2013, 2019). For example, Cl-N phrases are prohibited from the sentence-initial position. As in (3), a *yi*-Cl-N phrase can occur in the sentence-initial position, while Cl-N cannot.[1] This paper will present some new observations of the distribution of Mandarin classifiers and propose that Mandarin classifiers are prosodically deficient in the sense that the classifiers in NP-initial positions have to be parsed within the same intonational phrase (I-phrase) as the verb.

(3). *(Yi)-ge xuesheng jinlai-le.
  a-Cl student enter-ASP
  'A student came in.'

   The outline of this paper is as follows. Section 2 will summarize some previous analyses and discuss the remaining questions. Section 3 will propose a new analysis. Section 4 will conclude the paper.

2. Previous analyses

   Regarding the distributional restrictions of Cl-N phrases in Mandarin, some works have argued for a lexical government condition (Cheng & Sybesma 1999; Li & Bisang 2012; Li & Feng 2015). According to the government condition, Cl-N phrases must be c-commanded by a head element without any intervening clausal or nominal node (see Li & Feng 2015). For example, the Cl-N phrase in (4a) is c-commanded by the verb *song* 'give', and the Cl-N phrase in (4b) is c-commanded by the focus phrase head *lian* 'even'.

(4). a. Wo hui <u>song</u> tamen <u>ge liwu</u>.   (Li & Feng 2015)
   I will give they Cl gift
   'I will give them a gift.'
  b. Ta <u>lian</u> <u>zhang zhi</u> dou bu gei xuesheng. (Li & Feng 2015)
   he even Cl paper even not give students
   'He did not give the students even a piece of paper.'

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[1] Note that Individual-denoting numeral expressions in Mandarin are generally considered to be indefinite non-specific expressions (e.g., Huang et al. 2009). They usually do not appear in subject or topic positions, since these positions in Mandarin do not allow non-specific readings (e.g., Chao 1968; Li & Thompson 1981; Lee 1986; Li 1996). However, *yi* 'one'-Cl-N phrases are different in this respect. They can be either specific or non-specific. Thus, Tsai (1996) noted that numeral expressions with *yi* 'one', but not other numerals like 'two' or 'three', can be specific (see also Huang 1987). As a result, *yi*-Cl-N phrases, unlike other numeral expressions, can occur in subject positions, as in (3). More discussion will be given below.

On the contrary, the Cl-N phrase in (3), as the subject, is not c-commanded by any element, violating the government condition. Hence it is prohibited in Mandarin. The Cl-N phrase in (5) does have a c-commanding head element (i.e., *ruguo* 'if'), but there is a clausal node intervening between the c-commanding head and Cl-N phrase. Therefore, it is again prohibited in Mandarin.

(5). Ruguo [IP [*(yi) ge xuesheng] bing-le]   (Zhang 2019)
    if   one Cl student   ill-ASP
    'If a student gets ill'

However, as noted by Zhang (2019), the government condition cannot explain the whole picture (see also Li & Feng 2015). As in (6), the Cl-N phrase is c-commanded by the post-modifier element *de*, but it is still unacceptable.

(6). Houhou de *(yi)-ben shu   (Zhang 2019)
    Thick   DE one-Cl book
    'a thick book'

Zhang (2019) argues that in addition to the lexical government condition, the c-commanding head and the Cl-N phrase have to be able to form an interpretable semantic complex. The examples in (4) are compatible with this semantic requirement. In (4a), the head *song* 'give' and the Cl-N phrase *ge liwu* 'a gift' form a meaningful complex 'send a gift', and in (4b), the focus phrase *lian zhang zhi* 'even a piece of paper' is interpretable. In contrast, *de ben shu* in (6) does not form a semantic complex and is not interpretable (Zhang 2019). Thus, it violates the semantic requirement and is disallowed in Mandarin.

Another analysis is proposed by Yang (2001). Yang (2001) proposes that a classifier in Mandarin is either a lexical suffix directly attached to a numeral forming the Num+Cl complex or an enclitic clitizing onto the preceding host word in the absence of a numeral. [2] Yang (2001) suggests that in the absence of a numeral, demonstratives, quantifiers, and verbs can be the host for a classifier. Thus, a classifier is still licit without a numeral in the examples of (7). But the sentence in (8) shows that adjectives do not qualify as a host for a classifier.

(7). a. Na (yi)-ben shu   hen gui.   (Yang 2001)
      that one-Cl book very expensive
      'That book is very expensive.'

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[2] Yang (2001) proposes that a numeral and a classifier together form a morphological complex which is a D head. As shown in (i), Num+Cl is a single head for Yang, rather than two separate syntactic heads.

i.   [DP every [D' Num-Cl [NP book]]]

    b. Mei (yi)-ben shu   dou yao san-kuai qian.   (Yang 2001)
       every one-Cl book all   cost three-dollar money
       'Every book costs three dollars.'
    c. Yuehan mai-le   (yi)-ben shu.   (Yang 2001)
       John   buy-PAST one-Cl   book
       'John bought a book.'
(8). Na houhou-de *(yi)-ben shu   hen gui.   (Yang 2001)
     that thick-DE   one-Cl book very expensive
     'That very thick book is expensive.'

      Nevertheless, there are both conceptual and empirical issues with Yang's analysis (2001). The conceptual question is that clitics usually either are very picky about their hosts, or allow anything to be their hosts. Compare here the common distinctions between verbal clitics, whose host must be a verb (as in e.g. Romance languages) and 'second position' clitics as in Serbo-Croatian, whose host can be anything. From this perspective, it is unclear why Mandarin classifiers, as clitics, can cliticize onto verbs, demonstratives, and quantifiers, but not adjectives, relative clauses, possessives, or other elements. Verbs, demonstratives, and quantifiers do not form a natural class. This is a strange situation which is otherwise not found with clitics.

      Furthermore, a clitic and its host cannot be separated by any non-clitic elements. Therefore, the only way (9) can be grammatical is if the pronominal indirect object (i.e., *tamen* 'them') is also a clitic which has already cliticized onto the verb. Only this way can the classifier *ben* in the direct object be able to cliticize onto the verb. However, there is evidence that a pronominal indirect object is not a clitic in Mandarin. Consider (10), which contains a proper name as the indirect object. The element intervening between the verb and the *yi*-Cl-N phrase is clearly not a clitic, but *yi* 'one' can still be covert here.

(9). Yuehan song-le   tamen ?(yi)-ben shu.
     John   give-PAST them   one-Cl   book
     'John gave them a book.'
(10). Yuehan song-le   Zhangsan (yi)-ben shu.
     John   give-PAST Zhangsan one-Cl book
     'John gave Zhangsan a/one book.'

In addition, the example in (11) shows that the intervening element can be quite long. With a relative clause between the verb and the *yi*-Cl-N phrase, *yi* still can be covert. These facts are not expected under Yang's (2001) clitic analysis.

(11). Yuehan song-le   biaoxian zuihao de   xuesheng (yi)-ben shu.
     John   give-PAST perform best   DE student   one-Cl book
     'John gave the student who performed the best a/one book.'

More interestingly, if the relative clause in (11) is replaced with an appositive, *yi* 'one' cannot be covert, as shown by (12). Apparently, the acceptability difference between (10), (11), and (12) cannot be explained by the clitic analysis proposed by Yang (2001) or the semantic analysis by Zhang (2019).

(12). Yuehan song-le   Zhangsan, biaoxian zuihao de xuesheng, *(yi)-ben shu.
      John   give-PAST Zhangsan perform bes   DE student   one-Cl book
      'John gave Zhangsan, the student who performed the best, a/one book.'

3. A New Analysis: Verb Proximity Condition

There is an obvious prosodic difference between a relative clause and an appositive which distinguishes (11) and (12). Appositives form separate intonational phrase (I-phrases). This means that a distinct I-phrases intervenes between the verb and *(yi)-ben shu* in (12), but not in (11). Nespor and Vogel (1986), Selkirk (1986), and Hayes (1989), among many others, have proposed a hierarchical structure for the prosody of utterances, which is partially determined by the syntactic structure of the sentences. This prosodic hierarchy includes: syllable, foot, prosodic word (ω), phonological phrase (φ), and intonational phrase (ι) (Selkirk 1986). In this paper, following standard assumptions, I assume that each clause corresponds to a single intonational phrases (I-phrase), unless the clause is interrupted by elements that form separate I-phrases.[3] Such elements include appositives and heavy fronted elements. They form separate I-phrases and are usually followed by pauses (Bošković 2001).

Capitalizing on this, I propose that classifiers are prosodically deficient in the sense that when they occur in NP-initial positions, they have to be parsed within the same intonational phrase as the verb. I will refer to this constraint as the Verb Proximity Condition (VPC), as in (13). [4]

(13). Verb Proximity Condition (VPC)
In Mandarin, when a classifier occurs in the initial position of a traditional nominal phrase, it has to be parsed within the same I-phrase as the verb.

According to the VPC, elements that form separate I-phrases cannot be inserted between a NP-initial classifier and the verb, because these elements will prevent the NP-initial classifier from staying within the same I-phrase as the verb. [5] In (12), the

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[3] There are some exceptions but they need not concern us here.

[4] For a similar prosodic condition, see Sener (2006), who proposes a prosodic condition regarding focused *wh*/focused phrases and the verb in Turkish.

[5] Note that I focus on NP-initial classifiers in this section. A potential analysis for classifier that are not NP-initial is that they are also phonologically deficient and phonologically depend on the word that immediately precedes them within the nominal phrase. Under this analysis, Num-Cl-N

appositive, which has to be followed by a pause, forms a separate I-phrase, and thus the classifier in the direct object is not parsed in the same I-phrase as the verb. Therefore, without *yi* 'one', the sentence violates the VPC, since the NP-initial classifier (i.e., *-ben*) does not stay with the same I-phrase as the verb.

Also, when a pause is inserted after the indirect object in (10) and (11), *yi* 'one' must surface. In (14), a pause, indicated by the double hash mark, is inserted between the indirect object and the direct object. In this case, *yi* 'one' cannot be null. Following the VPC, the unacceptability of a Cl-N phrase in (14a) and (14b) is expected. The NP-initial classifier needs to stay within the same I-phrase as the verb, but the inserted pause disrupts the prosodic phrasing (since it introduces an additional I-phrase). Therefore, with an inserted pause, *yi* 'one' has to surface in (14).

(14). a. Yuehan song-le   Zhangsan ## *(yi)-ben shu.
      John give-PAST Zhangsan   one-Cl book
      'John gave Zhangsan a/one book.'
   b. Yuehan song-le   biaoxian zuihao de xuesheng ## *(yi)-ben shu.
      John   give-PAST perform best DE student   one-Cl book
      'John gave the student who performed the best a/one book.'

Recall now that Cl-N phrases cannot occur in subject or topic positions, as in (15). This can also follow from the Verb Proximity Condition, given that subjects and topics are generally assumed to form separate I-phrases, which means that a NP-initial classifier within a topic or a subject could not be parsed in the same I-phrase as the verb.

(15). *ge nanhai chi-le dangao.
    Cl   boy eat-PAST cake
    Intended: 'A boy ate the cake.'

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phrases, Dem-Cl-N phrases, and *mei* 'every'-Cl-N phrases are allowed because the phonologically deficient classifiers within them have a word preceding them within the same nominal phrase. However, a classifier cannot directly follow a possessor or an adjective, as in (i) and (ii).

i.   Zhangsan de *(yi)-ben shu   ii. hongse de *(yi)-ben shu
    Zhangsan DE one-Cl book   red   DE one-Cl book
    'Zhangsan's book'   'a/one book which is red'

The issue here could be that the element immediately preceding the classifier in (i) and (ii) is *de*. It is possible that *de* cannot support phonologically deficient classifiers within nominal phrases. I will leave this issue open for future research.

However, such cases may also be ruled out independently, given that subject and topic positions in Mandarin disallow non-specific expressions (cf. Chao 1968; Li & Thompson 1981), and that numeral expressions in Mandarin are generally interpreted as non-specific (cf. Huang et al. 2009). In (16), a non-specific numeral expression occurs in the subject position, so the sentence is degraded.

(16). ??san-ge xuesheng chi-le   dangao.
      three-Cl student   eat-PAST cake
      'Three students ate the cake.'   (Huang et al. 2009)

Importantly, note that (15), with a Cl-N phrase as the subject, is even worse than (16), with a non-specific numeral expression as the subject. This contrast can be explained under the current analysis. The example in (16) violates the 'specificity' requirement on the subject position, while (15) violates both the 'specificity' requirement on the subject position and the Verb Proximity Condition on NP-initial classifiers. According to Wang (2019), a Cl-N phrase, which involves a covert numeral *yi* 'one', is interpreted as non-specific. The Verb Proximity Condition requires the NP-initial classifier in a Cl-N phrase to be parsed within the same I-phrase as the verb. However, as noted above, a subject forms a separate I-phrase. Then, the NP-initial classifier in (15), which is in the subject position, cannot be parsed in the same I-phrase as the verb. Therefore, (15), which has a non-specific Cl-N phrase as the subject, involves a double violation and is worse than (16), which involves only one violation.

4. Conclusion

To sum up, this paper has discussed the distribution of Mandarin classifiers. I have proposed the Verb Proximity Condition (VPC), which requires NP-initial classifiers in Mandarin to stay within the same intonational phrase as the verb. That is why Mandarin Cl-N phrases are restricted in terms of their distribution. Regarding the distribution of Cl-N phrases, the Verb Proximity Condition (VPC) displays advantages, compared with the government condition (Cheng & Sybesma 1999; Li & Bisang 2012; Li & Feng 2015), the semantic analysis by Zhang (2019), and the clitic analysis by Yang (2001). Finally, the VPC, together with the observations that Cl-N phrases lack specific readings, explains why Cl-N phrases are banned from the subject/topic positions in Mandarin. Mandarin subject/topic positions generally disallow non-specific expressions, so that non-specific Cl-N phrases cannot appear in these positions. Additionally, elements in subject/topic positions generally form separate I-phrases by themselves, so that in these positions, a Cl-N phrase with a NP-initial classifier cannot stay within the same I-phrase with the verb, violating the VPC. This also explains why Cl-N phrases as subjects are even worse than numeral expressions with overt numerals other than *yi* 'one'. The former involves a double violation (both the specificity requirement on subjects and the

VPC), while the latter only violates one requirement (i.e., the specificity requirement on subjects).

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