Plurality and definiteness in Chengdu Chinese

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The authors identify a plural marker -ɕiɛ in Chengdu Chinese that can apply to both count and mass nouns, encoding plurality as well as definiteness. This post-nominal -ɕiɛ differs from the pre-nominal ɕiɛ, as the latter is purely plural but not inherently definite. Our analysis shows that the pre-nominal ɕiɛ functions as a quantifier, which occupies the [Spec, NumP] position, whereas the suffixal -ɕiɛ, by virtue of being a plural marker, is base-generated in the Num^0 position and move to D^0 to encode both plurality and definiteness. Moreover, the two ɕiɛs can co-occur in one and the same nominal phrase, exhibiting the DOUBLE DEFINITENESS EFFECT. The syntactic analysis of ɕiɛ in Chengdu Chinese, coupled with the study of *di* in Cantonese, has theoretical impacts on nominal phrase structures, in particular, on "plurality" and "definiteness". First, plural markers in classifier languages contrast with those in number languages, as the former, but not the latter, defies numerical modification. Second, definiteness can be expressed by a non-D element, which may check its [+DEF] feature either by undergoing an upward movement to D (or [Spec, DP]) or by agreeing with the [+DEF] feature of a demonstrative. Third, the DP-NP distinction is strongly supported by our account of Chengdu Chinese.

Keywords: plurality, definiteness, ɕiɛ, Chengdu Chinese, *di*, Cantonese

1. Introduction

In this study, we mainly investigate ɕiɛ 'some; PL' in Chengdu Chinese, including its morphological, semantic and syntactic features. Morphologically speaking, ɕiɛ 'some; PL' can be a free morpheme as well as a suffix, which are associated with the function of a quantifier and that of a plural marker, respectively. The quantifier ɕiɛ 'some', as a free morpheme, carries the plural meaning, whereas the plural marker -ɕiɛ 'PL', in the form of a suffix, encodes both plurality and definiteness.

The data of these two types of *ɕiɛ* 'some; PL' in Chengdu Chinese are presented in § 2.1 and § 2.2, and their syntactic analyses are shown in § 3.1 and § 3.2, respectively. Syntax-wise, these two types of *ɕiɛ* occupy the syntactic positions of [Spec, NumP] and Num^0, representing a numeral-like quantifier and a plural marker, respectively. Furthermore, we find that, on a par with *ɕiɛ* 'some; PL' in Chengdu Chinese, *di* 'some; PL' in Cantonese exhibits its dual function as a quantifier and as a plural marker, the data of which are presented in § 4.1 and the syntactic analyses of which are illustrated in § 4.2. Both the similarities and the differences between *ɕiɛ* 'some; PL' in Chengdu Chinese and *di* 'some; PL' in Cantonese are summarized in § 4.3. Then, we present the theoretical impacts of this study on nominal phrase structures, in particular, on plurality and definiteness, in § 5.1 and § 5.2. And § 6 concludes this paper.

2.   Data presentation

In this section, we shall present the data of *ɕiɛ* 'some; PL' in Chengdu Chinese. We identify two different uses of *ɕiɛ* 'some; PL', one being a quantifier and the other a plural marker. These two types of data are presented in § 2.1 and § 2.2, respectively.

2.1   The quantifier *ɕiɛ* in Chengdu Chinese

The word *ɕiɛ* in Chengdu Chinese can serve as a quantifier to modify nouns, regardless of whether the noun is conceptually countable or not, as exemplified by the countable noun *su* 'book' in (1) and the non-countable noun *suei* 'water' in (2). Semantically, *ɕiɛ* refers to an approximate quantity of 'some'. Moreover, it is indeterminate between an indefinite and a definite reading, depending on whether a demonstrative is present or not, as shown below.

(1) a. *i   ɕiɛ   su*   [indefinite]
         one some book
         'some books'
     b. *tse (i) ɕiɛ   su*   [definite]
         this one some book
         'these books'

(2) a. *i   ɕiɛ   suei*   [indefinite]
         one some water
         'some water; some (bottles of) water'

b. *nei (i) ɕiɛ suei* [definite]
    that one some water
    'the water; those (bottles of) water'

In this study, we do not treat *ɕiɛ* as part of a plural demonstrative, such as *tse-ɕiɛ* 'this-some; these' or *nei-ɕiɛ* 'that-some; those', on the grounds that the word *i* 'one; indefinite' can stand between *tse/nei* and *ɕiɛ*, as shown in (1b) and (2b). If *tse-ɕiɛ* 'this-some; these' and *nei-ɕiɛ* 'that-some; those' are plural demonstratives, the insertion of *i* 'one' may violate the Principle of Lexical Integrity (Anderson 1992). Thus, we take *tse* and *nei* as a proximal and a distal demonstrative, respectively, which are number-neutral. The presence of *ɕiɛ* can enforce a plural reading. Moreover, *ɕiɛ*-encoded plurality does not hinge on individuation, as evidenced by its incompatibility with [numeral + classifier] or [numeral + measure word], as illustrated in (3a–b).

(3) a. **san ɕiɛ pən su*
    three some CL book
    intended: 'three books'
  b. **niaŋ ɕiɛ p'in suei*
    two some bottle water
    intended: 'two bottles of water'

Given this, we analyze *ɕiɛ* 'some' as an approximate quantifier, which stands in contrast with numbers in terms of their quantificational functions. In particular, approximate quantification and numerical quantification exhibit complementary distribution. As shown in (3), *ɕiɛ*-induced quantification is applicable to both countable and non-countable nouns, excluding the presence of a classifier or a measure word. By contrast, numerical quantification requires the presence of individual classifiers or measure words, as typical of classifier languages. Furthermore, *ɕiɛ*-induced quantification can coerce non-countable reading out of countable nouns, as illustrated in (4). A similar case is reported to be present in Mandarin Chinese, as cited in (5) from Liao (2011: 207).

(4) a. *t'a du-go (i) ɕiɛ su.* (Chengdu Chinese)
    he read-ASP one some book
    i. 'He read some books.' [count]
    ii. 'He received some education.' [mass]
  b. *Tsaŋsan ts'ɿ-ne (i) ɕiɛ p'ingo.*
    Zhangsan eat-ASP one some apple
    i. 'Zhangsan ate some apples.' [count]
    ii. 'Zhangsan ate some apple (part).' [mass]

(5) a. *ta du-guo yi xie   shu.*   (Mandarin)
   he read-ASP one some book
    i. 'He read some books.'   [count]
    ii. 'He received some education.'   [mass]
  b. *Zhangsan chi-le   yi xie   pingguo.*
   Zhangsan eat-ASP one some apple
    i. 'Zhangsan ate some apples.'   [count]
    ii. 'Zhangsan ate some apple (part).'   [mass]

2.2   The plural marker -*ɕiɛ* in Chengdu Chinese

Apart from enforcing an approximate quantification, *ɕiɛ* exhibits a special use in Chengdu Chinese, which is noted as [NP-*ɕiɛ*]. This usage is not attested in Mandarin, when it comes to the Mandarin counterpart *xie* 'some'. The plural usage of [NP-*ɕiɛ*] is exemplified in (6a–c), indicating that -*ɕiɛ* is virtually applicable to all kinds of nouns, regardless of its countability and/or animacy.

(6) a. *ɕosən-ɕiɛ*   [+count, +human, **+plural, +definite**]
   student-some
   'the students'
  b. *su-ɕiɛ*   [+count, −animate, **+ plural, +definite**]
   book-some
   'the books'
  c. *suei-ɕiɛ*   [−count, −animate, **+plural, +definite**]
   water-some
   'the water'

[NP-*ɕiɛ*] encodes both plurality and definiteness. This semantic property sets [NP-*ɕiɛ*] apart from bare NPs, with regard to both number and definiteness, as bare NPs in Chinese are underspecified in these two features (Cheng & Sybesma 1999; Yang 2001; Rullmann & You 2006). Before we make a comparison between [NP-*ɕiɛ*] and bare nouns, we first examine the syntactic functions that [NP-*ɕiɛ*] can perform, as below:

First, [NP-*ɕiɛ*] can serve as topics, as shown in (7a–b).

(7) a. *ɕosən-ɕiɛ,   ŋo təu zəntɛ.*   [+animate]
   student-PL I   all know
   'I know all the students.'
  b. *su-ɕiɛ,   ŋo təu k'an-uan no.*   [−animate]
   book-PL I   all read-ASP SFP
   'I finish reading those books.'

Second, [NP-*ɕiɛ*] can function as subjects, as illustrated in (8a–b).

(8) a. *uaua-ɕiɛ xən toŋsʅ.*   [+animate]
         child-PL very considerate
         'The children are considerate.'

     b. *ti-tsən   tsʅxəu, faŋtsʅ-ɕiɛ təu k'ua   no.*   [−animate]
         earthquake after   house-PL all collapse SFP
         'After the earthquake, all the houses collapsed.'

Third, [NP-*ɕiɛ*] can function as post-*ba* objects, as exemplified in (9a–b).

(9) a. *ŋo pa ɕosən-ɕiɛ   tɕiau pi-ie   no.*   [+animate]
         I BA student-CL teach graduate SFP
         'I taught the students until their graduation.'

     b. *ta   pa suei-ɕiɛ xo-uan   no.*   [−animate]
         s/he BA water-PL drink-finish SFP
         'S/he finished the water.'

Fourth, [NP-*ɕiɛ*] can be employed as a form of address. This is called the vocative use, which is illustrated in (10).

(10) *nausʅ-ɕiɛ, k'ai xuei   no!*
     teacher-PL start meeting SFP
     'Hello, dear teachers, let us start our meeting!'

[NP-*ɕiɛ*] is incompatible with some syntactic functions. For example, [NP-*ɕiɛ*] cannot be licensed in the object position, as evidenced by the unacceptability of (11a–b).

(11) a. **ŋo zəntɛ ɕosən-ɕiɛ.*   [+animate]
         I   know student-CL
         Intended: 'I know the students.'

     b. **ŋo tɕint'ian mai no su-ɕiɛ.*   [−animate]
         I   today   buy ASP book-PL
         Intended: 'I bought the books today.'

The acceptability of (11a–b) can be greatly improved by the addition of a demonstrative, as shown in (12a–b).

(12) a. *ŋo zəntɛ tse-ɕiɛ   ɕosən-(ɕiɛ).*   [+animate]
         I   know this-some student-CL
         'I know these students.'

     b. *ŋo tɕint'ian mai no nei-ɕiɛ   su-(ɕiɛ).*   [−animate]
         I   today   buy ASP that-some book-PL
         'I bought those books today.'

(11) and (12) contrast in their grammaticality, even though both [NP-ɕiɛ] and [DEM + ɕiɛ + NP-ɕiɛ] are definite. In fact, the object position also allows indefinite nominal phrases, as shown in the examples of (13a–b).

(13)   a.   *ŋo zəntɛ i-ɕiɛ   ɕosən.*   [+animate]
            I   know one-some student
            'I know some students.'
       b.   *ŋo tɕint'ian mai no i-ɕiɛ   su.*   [−animate]
            I   today   buy ASP one-some book
            'I bought some books today.'

The examples of (12) and (13) show that an object position can accommodate both definite and indefinite nominal phrases. However, [NP-ɕiɛ], which is unambiguously definite, cannot be licensed in the object position.

 Upon scrutiny, we further find that [NP-ɕiɛ] is not completely barred from occurring in the object position. Specifically, in the case of DOUBLE OBJECT CONSTRUCTIONS, as in (14)–(16), [NP-ɕiɛ] can function as indirect objects, but not as direct objects.

(14)   a.   *ŋo soŋ   uaua-ɕiɛ i-ko   t'ankau.*   [indirect object]
            I   send child-PL one-CL cake
            'I sent the children a cake.'
       b.   **ŋo soŋ   no mama su-ɕiɛ.*   *[direct object]
            I   send ASP mother book-PL
            Intended: 'I sent the books to my mother.'

(15)   a.   *ŋo tɕie   no naosɿ-ɕiɛ xənto su.*   [indirect object]
            I   borrow ASP teacher-PL many book
            'I borrowed many books from the teachers.'
       b.   **ŋo tɕie   no t'a su-ɕiɛ.*   *[direct object]
            I   borrow ASP s/he book-PL
            Intended: 'I borrowed the books from him/her.'

(16)   a.   *ˀŋo ɕiaŋ mai su   kɛ uaua-ɕiɛ.*   [indirect object]
            I   want buy book to child-PL
            'I want to buy some books for the children.'
       b.   **ŋo ɕiaŋ mai su-ɕiɛ   kɛ ŋo mama.*   *[direct object]
            I   want buy book-PL to I   mother
            Intended: 'I want to buy the books for my mother.'

The above data show that the licensing condition of [NP-ɕiɛ] lies in the requirement for definiteness of a syntactic function. Specifically, [NP-ɕiɛ] can be licensed in a syntactic position which unambiguously requires its nominal phrase to be

definite, such as topic, subject and post-*ba* positions. The object position cannot accommodate [NP-*ɕiɛ*], as an object is compatible with both definite and indefinite nominal phrases. This generalization can be further supported by ditransitive cases, given the fact that [NP-*ɕiɛ*] can occur in an indirect object position but not in a direct object position. Crucially, an indirect object position obligatorily requires its nominal phrase to be definite, as exemplified in (17a–c), whereas a direct object position prefers an indefinite nominal phrase than a definite nominal phrase, if the latter case is possible at all, as illustrated in (18a–c).

(17) a. *ŋo soŋ   *i/tse-ɕiɛ   uaua i-ko   t'ankau.*
         I   send   one/this-some child one-CL cake
         'I sent the children a cake.'
         Intended: 'I sent some children a cake.'

   b. *ŋo tɕie   no *i/tse-ɕiɛ   naosˠ xənto su.*
         I   borrow ASP one/this-some teacher many book
         'I borrowed some books from these teachers.'
         Intended: 'I borrowed some books from some teachers.'

   c. *ŋo ɕiaŋ mai su   kɛ *i/tse-ɕiɛ   uaua.*
         I   want buy book to   one/this-some child
         'I want to buy some books for these children.'
         Intended: 'I want to buy some books for some children.'

(18) a. *ŋo soŋ no mama i/ˀnei-ɕie   su.*
         I   send ASP mother one/that-some book
         'I sent some/ˀthose books to my mother.'

   b. *ŋo tɕie   no t'a i/ˀnei-ɕie   su.*
         I   borrow ASP s/he one/that-some book
         'I borrowed some/ˀthose books from him/her.'

   c. *ŋo ɕiaŋ mai i/ˀnei-ɕie   su kɛ ŋo mama.*
         I   want buy one/that-some book for I   mother
         'I want to buy some/ˀthose books for my mother.'

Furthermore, we find that [NP-*ɕiɛ*] can be used neither generically (Krifka 1995; 2003) nor predicatively (Szabolcsi 1983, 1992, 1994; Stowell 1989, 1991; Longobardi 1994; Li 1998, 1999; Tang 2001; Wei 2007). As shown in (19a–b), generic expressions with an exhaustive reading should be expressed by bare nouns, as opposed to [NP-*ɕiɛ*]. Likewise, kind-referring expressions with a non-exhaustive reading, as illustrated in (20a–b), allow bare nouns but not [NP-*ɕiɛ*].

(19) a. *ɕoŋmɚ-(*ɕie) sˠ p'uzu   toŋvu.*   [generic; exhaustive reading]
         panda-PL   be mammal animal
         'Pandas are mammals.'

b. *ɕoŋmɚ-(*ɕiɛ) iəu si t'iau t'uei.*   [generic; exhaustive reading]
     panda-PL   have four CL   leg
     'A panda has four legs.'

(20) a. *kəu-(*ɕiɛ) pi   mau-(*ɕiɛ) ta.*   [kind; non-exhaustive reading]
     dog-PL   compare cat-CL   big
     'Dogs are bigger than cats.'

b. *su-(*ɕiɛ), ŋo ɕixuan t'oŋxua.*   [kind; non-exhaustive reading]
     book-PL I   like   fairy tales
     'As for (different types of) books, I like fairy tales.'

However, it seems that another type of generic expressions can be encoded by [NP-ɕiɛ] as in (21), even though bare nouns are still preferred, as reported by our informants.

(21) *ɕoŋmɚ-(ɕiɛ) ɕixuan ts'ʅ tsutsi.*   [generic; definite]
     panda-PL   like   eat bamboo
     'Pandas like eating bamboo.'

We argue that this generic reading derives from generalization over a definite set of members. Therefore, it is "genericity out of definiteness", which can be evidenced by its compatibility with *tse/nei* 'this/that', as in (22), which does not change the propositional meaning or truth value of (21).

(22) *tse/nei ɕiɛ ɕoŋmɚ-(ɕiɛ) ɕixuan ts'ʅ tsutsi.*   [definite]
     this/that some panda-PL   like   eat bamboo
     'These/those pandas like eating bamboo.'

By contrast, the addition of a demonstrative to the nouns in (19) and (20) would yield weird sentences, as shown in (23) and (24). Even though they are marginally acceptable, they are not propositionally equivalent to (19) and (20).

(23) a. ??*tse/nei ɕiɛ ɕoŋmɚ-(ɕiɛ) sʅ p'uzu   toŋvu.*
     this/that some panda-CL   be mammal animal
     '??These/those pandas are mammals.'

b. ??*tse/nei ɕiɛ ɕoŋmɚ-(ɕiɛ) iəu si   t'iau t'uei.*
     this/that some panda-PL   have four CL   leg
     '??These/those pandas have four legs.'

(24) a. ??*tse/nei ɕiɛ kəu-(ɕiɛ) pi   tse/nei ɕiɛ mau-(ɕiɛ) ta.*
     this/that some dog-PL compare this/that some cat-CL   big
     '??These/those dogs are bigger than these/those cats.'

b. *??tse/nei   ɕiɛ   su-(ɕiɛ), ŋo ɕixuan t'oŋxua.*
   this/that some book-PL I   like   fairy tales
   '??As for these/those books, I like fairy tales.'

Given that, (19) and (20) are treated as authentic generic and kind-referring expressions, respectively, both of which defy the use of [NP-*ɕiɛ*]. Apart from generic and kind-referring uses, the predicative use is also found to be incompatible with [NP-*ɕiɛ*], as exemplified in (25).

(25)   *ŋomən nausɿ-(*ɕiɛ), t'amən isən-(*ɕiɛ).*
       we   teacher-PL they   doctor-PL
       Intended: 'We are teachers while they are doctors.'

Based on the above data, we summarize the syntactic functions that [NP-*ɕiɛ*] can serve, as presented in Table 1. Specifically, [NP-*ɕiɛ*] can serve as a topic, a subject, an indirect object and a form of address, as long as the nominal phrase at issue is required to be plural and definite. Therefore, when a topic is kind-referring or when a subject is generic, [NP-*ɕiɛ*] is disallowed.

Table 1. The syntactic functions and definiteness of [NP-*ɕiɛ*]

Syntactic functions	Topic		Subject		Address	Object	DO	IO
meaning	ref.	kind	ref.	generic	vocative	ref.	ref.	ref.
[NP-*ɕiɛ*]	✓	✗	✓	✗	✓	✗	✗	✓
± DEF	DEF	N/A	DEF	N/A	DEF	DEF/INDEF	?DEF/INDEF	DEF

Next, let us summarize the contexts under which [NP-*ɕiɛ*] and bare nouns are interchangeable. As shown in Table 2, ordinary topics, referential subjects and indirect objects allow both, with [NP -*ɕiɛ*] being unambiguously plural while NP indeterminate between singular and plural readings. The vocative use clearly prefers [NP-*ɕiɛ*], whereas the kind-referring, generic, and indefinite uses opt for bare nouns.

Table 2. [NP-*ɕiɛ*] versus NP: Distributional differences

Syntactic positions	Topic		Subject		Address	Object	DO	IO
meaning	ref.	kind	ref.	generic	vocative	ref.	ref.	ref.
NP-*ɕiɛ*	✓	✗	✓	✗	✓	✗	✗	✓
DEF	DEF	N/A	DEF	N/A	DEF	N/A	N/A	DEF
Number	PL	N/A	PL	N/A	PL	N/A	N/A	PL
bare nouns	✓	✓	✓	✓	✗	✓	✓	✓
DEF	DEF	N/A	DEF	N/A	N/A	DEF/INDEF	?DEF/INDEF	DEF
Number	SG/PL	N/A	SG/PL	N/A	N/A	SG/PL	SG/PL	SG/PL

The above discussions can be further reduced to feature differences between [NP-*ɕiɛ*] and bare nouns, in particular, along the lines of number and definiteness. This is shown in Table 3.

Table 3. [NP-*ɕiɛ*] versus NP: Feature differences

	Number	Definiteness	Special usage
NP-*ɕiɛ*	PL	DEF	vocative
bare nouns	PL/SG	DEF/INDEF	generic kind-referring

To conclude this section, we present the semantic and syntactic features of *ɕiɛ* in Chengdu Chinese, as follows:

i.   The morpheme *ɕiɛ* can serve as a quantifier, which applies to both count and mass nouns. It is indeterminate with regard to its (in-)definiteness feature, the interpretation of which depends on the presence or absence of a demonstrative.

ii. The morpheme -*ɕiɛ* can function as a plural marker, which immediately follows a noun to form [NP-*ɕiɛ*], regardless of its conceptual countability. [NP-*ɕiɛ*] can be licensed in a syntactic context which requires its nominal phrase to be unambiguously definite.

In § 3 below, we shall conduct a syntactic analysis for these two types of *ɕiɛ* in Chengdu Chinese.

3.   Syntactic analysis of *ɕiɛ* in Chengdu Chinese

In this section, we shall analyze the two types of *ɕiɛ*, viz., the quantifier *ɕiɛ* and the plural marker -*ɕiɛ*, in Chengdu Chinese.

3.1   The quantifier *ɕiɛ* in Chengdu Chinese

The quantifier *ɕiɛ* in Chengdu Chinese is equivalent to *xie* 'some' in Mandarin Chinese. We analyze *ɕiɛ* of this usage as a numeral-like quantifier, in the sense that it occupies the syntactic position of [Spec, NumP], which usually accommodates numerals.

According to Iljic (1994; 2001), *xie* 'some' in Mandarin Chinese indicates a purely quantitative operation, i.e. extraction of a certain number of entities taken as a whole. Semantically, *xie* 'some' expresses a collective meaning. Vinet & Liu

(2008) take *xie* 'some' as a marker for indefinite quantity, which triggers plural interpretation. Syntactically, there are two competing analyses for *xie* 'some', one as a plural-encoding classifier and the other as a quantity word. In this regard, we concur with Iljic (1994) in that *xie* 'some' cannot be treated as a classifier. Our justifications are presented below:

First, the word *ɕiɛ* 'some' never co-occur with numerals other than *i* 'one'. In line of our analysis, *i* 'one' in *i-ɕiɛ* 'some' is not an authentic numeral but an indefinite marker.[1] This analysis is in congruence with Steindl (2010) and Zhang (2013). This being said, the complementary distribution between *ɕiɛ* 'some' and numerals is well-established. On the other hand, the word *ɕiɛ* 'some' can, at least in some Chinese dialects, such as in Shandong dialects, co-occur with a classifier, as exemplified by *yi-xie-ge-ren* 'one-some-CL-person; some people'. This contrast of collocation indicates that *ɕiɛ* 'some' behaves more like a numeral than a classifier, considering that two words of the same syntactic category compete for the same position and thus exhibit complementary distribution. Second, a classifier, be it of the individual type or of the kind type, may allow modification of size, such as *i-ta-ko-p'ingo* 'one-big-CL-apple; a big apple', *i-ɕiau-p'in-suei* 'one-small-bottle water; a small bottle of water' and *i-ta-nuei-sutɕi* 'one-big-kind book; a large kind of books' (Huang & Ahrens 2003; Her 2012a, 2012b; Zhang 2013). However, *ɕiɛ* 'some' does not allow any size-related modification, as evidenced by the unacceptability of **i-ta-ɕiɛ-su* 'one-big-some-book; a large number of books'. This syntactic behavior also helps to exclude *ɕiɛ* 'some' from the category of classifiers.

To sum up, the quantity word *ɕiɛ* syntactically patterns with numerals to occupy the [Spec, NumP] position. For the sake of analysis, we exemplify the nominal phrases containing the quantity word *ɕiɛ* in (26a–b) and present their syntactic structures in (27).

(26) a. *i*   *ɕiɛ*   *su*   [indefinite]
         INDEF some book
         'some books'

  b. *tse/nei* *(i)*   *ɕiɛ*   *su*   [definite]
         this/that INDEF some book
         'these/those books'

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(27)   The syntactic analysis of (26a–b):

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                              DP
                            /    \
                                   D’
                                 /    \
                              D⁰       QP
                                      /   \
                                           Q’
                                         /    \
                                       Q⁰      NumP
                                              /    \
                                        numeral     Num’
                                                   /    \
                                               Num⁰      CLP
                                                        /    \
                                                               CL’
                                                              /    \
                                                           CL⁰      NP
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(26a)		*i*	*çiɛ*		*su*
(26b)	*tse/nei*	(*i*)	*çiɛ*		*su*
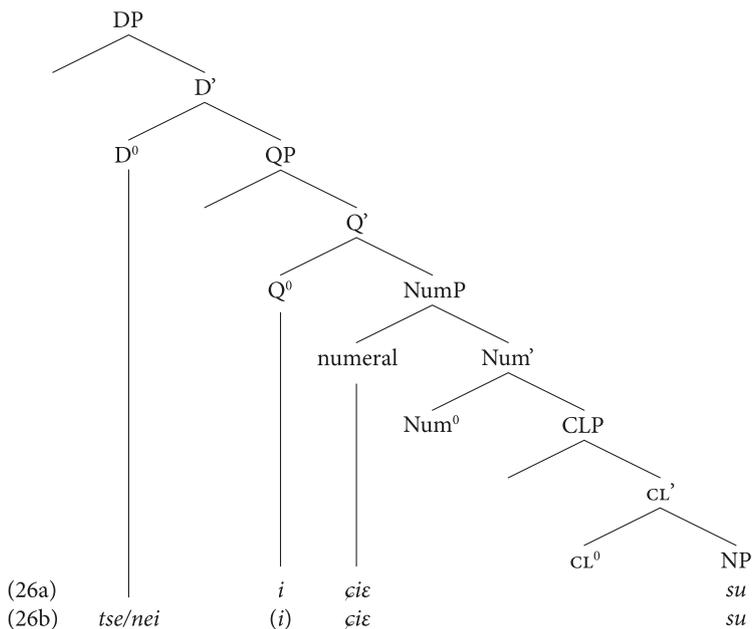
As illustrated in (27), both DP and QP are referential, the former of which is definite while the latter of which is indefinite. Even with the presence of an indefinite article *i*, its indefiniteness can be overwritten by the overt projection of a D element, e.g. a demonstrative. In this connection, two points need to be clarified, with regard to the indefinite article *i*.

First, the indefinite article *i* may or may not be present in indefinite nominal phrases. This is indeed not an isolated linguistic phenomenon in Chinese. As Lyons (1999) presents, indefinite articles, unlike definite ones, are usually subject to semantic constraints. For example, *a/an* in English and *un/une* in French are limited to singular cases. In the case of Chengdu Chinese, the indefinite marker *i* seems to be confined to nominal phrases containing approximate quantifiers, but excluded from nominal phrases containing [Numeral + Classifier]. This condition for the occurrence of an indefinite article can be further confirmed with another approximate quantifier *tian* 'a small number', which denotes a diminutive quantification. As shown in (28a–b), *tian* 'a small number' neatly patterns with *çiɛ* 'some', on the grounds that (i) it does not depend on individualization induced by classifiers or container words; (ii) it can give rise to both count and mass interpretations.

(28) a. *i   tian su*
          INDEF bit   book
          'a small number of books'   [count]
          'a small part of book'   [mass]

      b. *tse/nei (i)   tian su*
          this/that INDEF bit   book
          'these/those small number of books'   [count]
          'this/that small part of the book'   [mass]

Furthermore, the correlation between the occurrence of the indefinite article *i* and non-individualized plurality can be explained. In the plural-marking languages, such as in English and French, the contrast between singularity and plurality is of grammatical significance. As a consequence, singularity, as an important grammatical feature, can thus serve as a semantic condition to license the occurrence of an indefinite article. By contrast, in the classifier languages, such as in Chengdu Chinese, individualization of nouns is grammatically important, as evidenced by the presence of classifiers or measure words. Likewise, individualization, as a prominent feature, can serve as a semantic condition to affect the distribution of an indefinite article. Specifically, non-individualized plurality, or collective plurality (Iljic 1994), can license an indefinite article in Chinese.

Second, we need to further address the co-occurrence between an indefinite article and a demonstrative, as illustrated in (26b) and (28b). As said earlier, the indefinite meaning enforced by an indefinite article can be overwritten by the presence of a demonstrative. Thus, no semantic clash would arise. In fact, this phenomenon is attested in some other languages, such as in Sinhala, which is one of the official languages spoken in Sri Lanka. As exemplified in (29a–b), with the presence of the demonstrative *mee*, the indefinite marker *-ak* can optionally occur. Crucially, the overall meanings of both (19a) and (19b) are definite, even though our informants report some subtle differences between them. If three different books are mentioned, (29a) is preferred; if three copies of one particular book are referred to, (29b) is more apt.

(29) Sinhala:[2]
      a. *mee poth   thuna*
          DEM book:PL three
          'these three books'

      b. *mee poth   thunak*
          DEM book:PL three-INDEF
          'these three books'

To summarize, the indefinite article *i* in Chengdu Chinese can apply, when a nominal phrase expresses non-individualized plurality, which is usually enforced by the presence of a numeral-like approximate quantifier, such as *ɕiɛ* 'some' and *tian* 'a little/few'. Therefore, there are a few indefinite set-collocations, such as *i-ɕiɛ* 'some' and *i-tian* 'a small number', which are semantically in contrast with their definite counterparts *tse/na-ɕiɛ* 'these/those' and *tse/na-tian* 'these/those'. Regardless of the (in-)definiteness, the quantifier *ɕiɛ* occupies the [Spec, NumP] position. This renders *ɕiɛ* syntactically parallel to numerals.

Having provided the syntactic analysis of the approximate quantifier *ɕiɛ*, we proceed to the study of the plural marker *-ɕiɛ* in Chengdu Chinese.

3.2 The plural marker *-ɕiɛ* in Chengdu Chinese

Rijkhoff (1999: 240; 2002: 153) reports that, in some classifier languages, plural markers are usually members of a closed class of quantifiers. Based on our analysis of *ɕiɛ* in Chengdu Chinese, we partially agree with this observation. We concur with Rijkhoff (1999; 2002) in that the quantifier and the plural marker apparently converge on *ɕiɛ* in Chengdu Chinese; however, we differ from Rijkhoff, as we take the quantifier *ɕiɛ* and the plural marker *-ɕiɛ* as two separate morphemes. This view can be supported by the co-occurrence of the two *ɕiɛ*s, as exemplified in (30).

(30) *tse/nei ɕiɛ ɕosən-ɕiɛ*
      this/that some student-PL
      'these/those students'

The example in (30) is of great importance, as it embodies the DOUBLE DEFINITE-NESS EFFECT (Julien 2005; Roehrs 2009, among others), in the sense that two definite-encoding elements, viz., the demonstrative *tse/nei* 'this/that' and the plural marker *-ɕiɛ*, co-occur in one and the same nominal phrase in Chengdu Chinese.

It should also be noted that the quantifier *ɕiɛ* and the plural marker *-ɕiɛ* cannot always co-occur in the same nominal phrase. For example, with the presence of an indefinite article *i* and with the absence of a demonstrative, the co-occurrence of the two *ɕiɛ*s would lead to ungrammaticality, as shown in (31).

(31) **i ɕiɛ ɕosən-ɕiɛ*
      INDEF some student-PL
      Intended: 'some students'

The unacceptability of (31) could be explained by semantic clash, as the indefinite article *i* is incompatible with the definite [NP-*ɕiɛ*]. Furthermore, definiteness is only a necessary but not a sufficient condition to license the occurrence of [NP-*ɕiɛ*], as evidenced by the ungrammaticality of (32a–b), which are definite due to the pres-

ence of demonstratives. The ungrammaticality is ascribed to the mutual exclusiveness between the plural marker *-ɕiɛ* and classifiers or container words.

(32)   a.   **tse   san   ko ɕosən-ɕiɛ*
             this three CL student-PL
             Intended: 'these three students'
       b.   **nei   niaŋ p'in   suei-ɕiɛ*
             that two bottle water-PL
   Intended: 'those two bottles of water'

Based on the above discussions, we summarize the semantic and syntactic features of [NP-*ɕiɛ*] in (33).

(33)   The grammatical features of [NP-*ɕiɛ*]:
       i.   [NP-*ɕiɛ*] is plural;
       ii.   [NP-*ɕiɛ*] is definite;
       iii. [NP-*ɕiɛ*] can co-occur with demonstratives.   (DOUBLE DEFINITENESS)

We propose that *-ɕiɛ*, as a plural marker, occupies the Num^0 position. Apart from conveying the plural meaning, it also carries the [+DEF] feature. In order to check the [+DEF] feature, *-ɕiɛ* undergoes Num^0-to-D^0 head movement. This head movement induces another A-bar movement, i.e. NP moves upward to land in the [Spec, DP] position, leading to the linear order of [NP-*ɕiɛ*]. The example and its syntactic structure are shown in (34a–b), respectively.

(34)   a.   *ɕosən-ɕiɛ*
             student-PL
             'the students'

b.   The syntactic structure of [NP-$\varepsilon i\varepsilon$]:
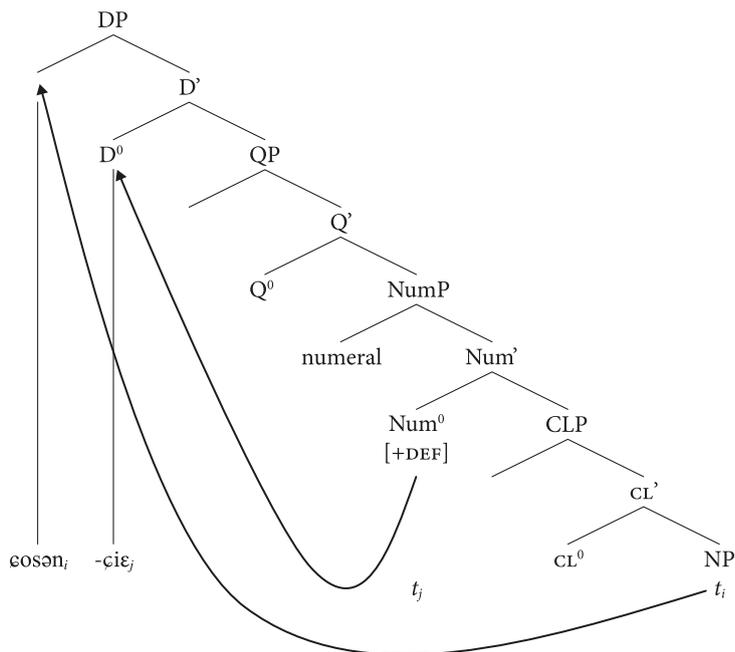
Our analysis is congruent with Li's (1999) analysis of the plural marker *-men* in Mandarin Chinese. However, *-$\varepsilon i\varepsilon$* in Chengdu Chinese differs from *-men* in Mandarin Chinese in that the former is applicable to all the nouns whereas the latter is restricted to nouns with the [+human] feature.

Having established the syntactic structure of [NP-$\varepsilon i\varepsilon$], we proceed to the phenomenon of DOUBLE DEFINITENESS, viz. the co-occurrence of a demonstrative (*tse* 'this' or *nei* 'that') and a plural marker $\varepsilon i\varepsilon$. Since a demonstrative occupies the D^0 position, its presence would prevent the plural marker *-$\varepsilon i\varepsilon$* from undergoing Num^0-to-D^0 head movement to realize the [+DEF] feature. In this case, the [+DEF] feature of *-$\varepsilon i\varepsilon$* needs to be checked through agreement. Specifically, due to the occupation of the D^0 position by a demonstrative, the definite meaning of a nominal phrase is established. Thus, the [+DEF] feature of the plural marker *-$\varepsilon i\varepsilon$* is successfully checked through its agreement with the [+DEF] feature at D^0. This is shown in (35a–b).

(35)   a.   *tse/nei $\varepsilon i\varepsilon$ $\varepsilon o s \ni n$-$\varepsilon i\varepsilon$*   (reproduction of 30)
             this/that some student-PL
             'these/those students'

b.   The syntactic realization of DOUBLE DEFINITENESS:

```
                    DP
                   /  \
                       D'
                      /  \
                   D⁰     QP
                         /  \
                             Q'
                            /  \
                          Q⁰    NumP
                               /   \
                          numeral   Num'
                                   /   \
                               Num⁰     CLP
                               [+DEF]   /  \
                                            CL'
                                           /  \
                                        CL⁰    NP

  tse/nei        (i)    ɕiɛ    tᵢ          ɕosən-ɕiɛᵢ
```
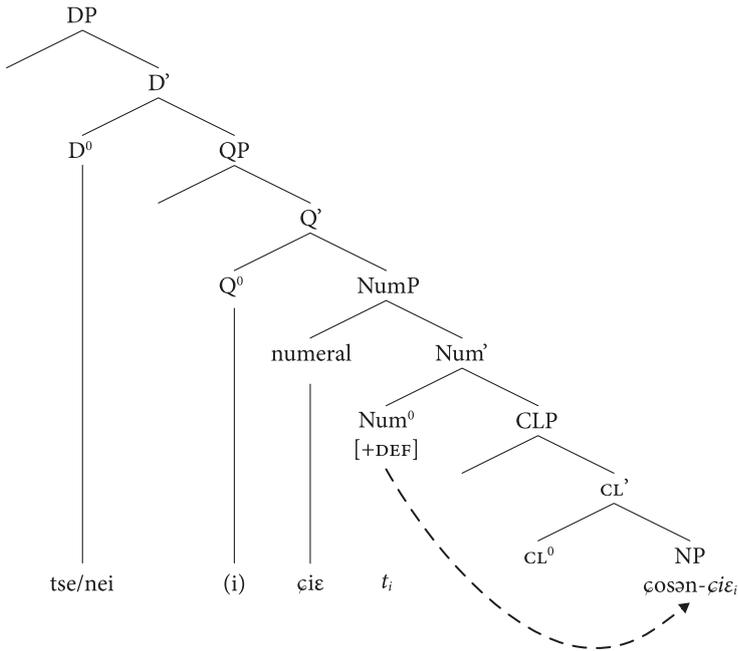
Due to the suffixal nature of *-ɕiɛ* in Chengdu Chinese, it cannot stand alone as a dangling morpheme. Thus, it undergoes a Merging process to be realized on the noun, as shown by the dotted line in (35b). This phenomenon in Chengdu Chinese bears similarities with DOUBLE DEFINITENESS phenomenon in Scandinavian languages, such as in Swedish and Norwegian. For the sake of illustration, we present Roehrs' (2009: 74) example and syntactic analysis of DOUBLE DEFINITENESS in Swedish in (36a–b).

(36)   DOUBLE DEFINITENESS in Swedish:
   a.   *den gamle mannen*
        the old   man-the
        'the old man'
   b. $[_{DP}$ den$_i$+D $[_{AgrP}$ gamle $[_{ArtP}$ t$_i$+en$_k$ $[_{NP}$ mann+en$_k$]]]]   (Roehrs 2009: 75)

(35b) and (36b) are similar in that suffixal definite elements, i.e. *-ɕiɛ* in Chengdu Chinese and *-en* in Swedish, undergo Merging processes to be realized on their respective head nouns. The difference between them lies in the way how D is spelled out. In the case of Chengdu Chinese, a demonstrative is base-generated in D^0, whereas in Swedish, the free-standing determiner *den* is analyzed to undergo Art^0-to-D^0 head movement to encode definiteness. Crucially, in both cases, the definite-encoding suffixal elements cannot be realized on the nouns unless D^0 is

overtly spelled out. If D^0 is vacant, the suffixal elements must move upward, in one way or another, to check the [+DEF] feature under D^0 or [Spec, DP]. As for Chengdu Chinese, as analyzed in (35b), the suffixal -*ɕiɛ* undergoes Num^0-to-D^0 head movement, which further triggers NP-to-[Spec, DP] movement to give rise to [NP-*ɕiɛ*]. With regard to Scandinavian languages, according to Roehrs (2009), the suffixal -*en* and the head noun, as a single syntactic unit, undergoes ArtP-to-[Spec, DP] movement to check the [+DEF] feature. This is shown in (37a–b).

(37)   Single definiteness in Norwegian:
    a.   *mannen*
        man-the
        'the man'
    b.   [$_{DP}$ [$_{ArtP}$ -en$_i$ [$_{NP}$ mann+en$_i$]]$_j$ D…t$_j$]   (Roehrs 2009: 75)

Crucially, the above data point to a fact: a non-D element that carries the [+DEF] feature can successfully check its [+DEF] feature in two ways, viz. it may move upward either to D or to [Spec, DP] to check the [+DEF] feature; alternatively, it may check its [+DEF] feature by means of agreeing with a spelled-out DP. These two mechanisms are associated with single definiteness and DOUBLE DEFINITENESS, respectively. If neither of these two conditions is met, this kind of non-D element with a [+DEF] feature cannot be grammatically realized, as in the case of (38). To facilitate the presentation, we reproduce (31) in (38a) and provide its syntactic analysis in (38b).

(38)   a.   *i $ɕiɛ$ $ɕosən$-$ɕiɛ$
        INDEF some student-PL
        Intended: 'some students'

b. The syntactic analysis of (38a):
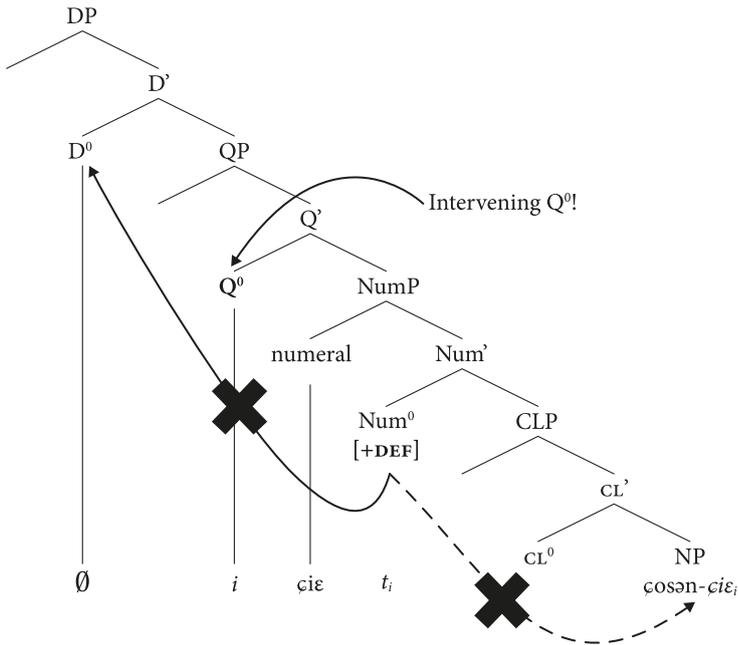
As shown in (38b), when Q^0 is spelled out by the indefinite article i and D^0 remains vacant, the plural marker -$\varepsilon i \varepsilon$ fails to be merged to the noun, because its [+DEF] feature cannot be properly checked. On the one hand, the Num^0-to-D^0 movement is blocked by the intervening Q^0; on the other hand, since D is not spelled out, -$\varepsilon i \varepsilon$ cannot check its [+DEF] feature by agreement. So the co-occurrence of two $\varepsilon i \varepsilon$s in (38a) results in ungrammaticality.

To sum up, $\varepsilon i \varepsilon$ in Chengdu Chinese instantiates two separate morphemes, an approximate quantifier and a plural marker. This phenomenon is not unique to Chengdu Chinese. In § 4, we shall show that *di* 'some; PL' in Cantonese is parallel to $\varepsilon i \varepsilon$ 'some; PL' in Chengdu Chinese, with regard to the dual functions as well as their syntactic realizations.

4. More on plurality: Syntactic analysis of *di* in Cantonese

It will be shown that *di* in Cantonese patterns with $\varepsilon i \varepsilon$ in Chengdu Chinese in that they can serve as both an approximate quantifier and a plural marker.

4.1   Data presentation of *di*

The quantifier usage of *di* can be exemplified in (39a–c), regardless of whether the noun is conceptually countable or not. Moreover, *di* is attested as a plural marker in the form of [*di*-NP], as illustrated in (40a–c).[3]

(39)   a.   *jat   di   hoksaang*
            INDEF some student
            'some students'

       b.   *jat   di   syu*
            INDEF some book
            'some books'

       c.   *jat   di   seoi*
            INDEF some water
            'some water'

(40)   a.   *di   hoksaang*
            some/PL student
            'some students; the students'

       b.   *di   syu*
            some/PL book
            'some books; the books'

       c.   *di   seoi*
            some/PL water
            'some water; the water'

The plural marker *di-* in Cantonese and the plural marker *-ɕiɛ* in Chengdu Chinese differ in that *di-* is a prefix whereas *-ɕiɛ* is a suffix. Following Matthews & Yip (2011: 43), prefixes and suffixes are thus called mainly because they cannot occur independently but have to attach to another morpheme. On a par with the pronom-

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3.   One reviewer suggested that post-adjectival *di*, as exemplified in (i), could be relevant.

   (i)   *Siu-Yin jigaa hangfuk di.*
         Siu-Yin now blissful a_bit
         'Siu-Yin is more blissful now.'   (Matthews & Yip 2011: 189)

The reviewer suggested that there is semantic parallelism between the post-adjectival *di* and the pre-nominal *di*, arguing that they increase the scalar meaning of the modified adjectives and nouns, respectively. Though we do not disagree with the observed similarity, it is not clear if it is strong enough motivation to treat them as one and the same morpheme. It is important to note that both plurality and definiteness are attested in nominal phrases with plural markers in these two varieties of Chinese. Hence, applying Occam's razor, we choose to focus on how nominal plurality is expressed and further associated with definiteness.

inal suffix -*deih* 'plural' as in *ngoh-deih* 'I-plural; we/us' and *keuih-deih* 's/he-plural; they/them', *di*- attaches to nouns in a pre-nominal position and should be termed as a nominal prefix for plurality. By contrast, -*ɕiɛ* occurs in a post-nominal position and is thus labelled as a suffix in Chengdu Chinese. This morphological contrast is not trivial, as it engenders more differences with regard to these two plural markers. First, since both the plural marker *di*- and the quantifier *di* are pre-nominal, the quantificational expression and the plural expression end up having the same linear order, as evidenced by the fact that [*di*-NP] gives rise to both definite and indefinite readings, as shown in (40). In fact, the indeterminacy with regard to (in-)definiteness has been observed by Matthews & Yip (2011: 115), as they employ both "the" and "some" to translate those non-contextualized *di*-nominal phrases. By contrast, the plural expression [NP-*ɕiɛ*] is unambiguously definite, as exemplified in (34a). Second, unlike the co-occurrence of two *ɕiɛ*s in one and the same nominal phrase in Chengdu Chinese, with one being pre-nominal and the other post-nominal (c.f. the example of 30), no co-occurrence of two *di*s is attested in Cantonese. The double occurrence of two *ɕiɛ*s is a case of DOUBLE DEFINITE-NESS, which features the presence of two [+DEF] elements, i.e. a demonstrative and a plural marker. In Cantonese, a demonstrative collocates with one single *di*, as shown in (41a–c). This phenomenon, we argue, is due to the pre-nominal feature of the plural marker *di*-. Since both the quantificational *di* and the plural marker *di*- are pre-nominal, their co-occurrence will lead to their immediate adjacency, which is simply out. Therefore, the absence of DOUBLE DEFINITENESS in Cantonese can be explained in two possible ways: first, the quantifier *di* and the plural marker *di*- merge into one single occurrence of *di*; second, the quantifier *di* is selected to encode plurality in order to avoid awkwardness caused by the immediate adjacency of two *di*s.[4]

(41) a. *ne/gwo di   hoksaang*
          this/that some student
          'these/those students'
     b. *ne/gwo di   syu*
          this/that some book
          'these/those books'

---

4. In the case of (41a–c), if one *di* is selected out of the two *di*s, the selected item should be the quantificational *di*, as opposed to the plural marker *di*-. First, a demonstrative in Cantonese generally requires the presence of a classifier or a quantifier to modify a noun, given that [DEM + N] is not grammatical; second, plural markers in Sinitic languages (e.g. -*men* in Mandarin and -*ɕiɛ* in Chengdu Chinese) are optional in the sense that bare nouns can also be plural. Therefore, if there is no merge between two *di*s, we treat *di* in (41a–c) as a quantifier.

    c.   *ne/gwo di   seoi*
        this/that some water
        'this/that water; these/those bottles of water'

The above data of Cantonese *di* will be analyzed in § 4.2 below.

4.2   Data analysis of *di*

As analyzed in § 4.2, *di* in Cantonese can serve as an approximate quantifier as well as a plural marker. The quantifier *di* is exemplified in (39a–c), in which *jat* and *di* are an indefinite article (in Q^0) and an approximate quantifier (in [Spec, NumP]), respectively. In this regard, they pattern neatly with *i* and *ɕiɛ* in Chengdu Chinese. Moreover, the plural marker *di-* in Cantonese syntactically pattern with the plural marker *-ɕiɛ* in Chengdu Chinese, in the sense that these two plural markers occupy the Num^0 position, even though they stand in contrast between a prefix and a suffix in Cantonese and Chengdu Chinese, respectively. This morphological difference, however gives rise to a few semantic contrasts between these two plural markers. Specifically, [*di*-NP] allows both definite and indefinite readings whereas [NP-*ɕiɛ*] is unambiguously definite. We argue that this is just a difference in disguise, as a definite [*di*-NP] and an indefinite [*di*-NP] are associated with two distinct syntactic structures. In particular, a definite [*di*-NP] features a plural marker *di-* while an indefinite one contains a quantifier *di*. Put differently, *di-,* by virtue of serving as a plural marker, is compulsorily definite, exactly as *-men* in Mandarin and *-ɕiɛ* in Chengdu Chinese behave in this regard. This analysis is summarized in (42).

(42)   Bipartite analysis of *di* in Cantonese:
     i.   [*di*-NP] ([+DEF]): *di* is a plural marker
     ii. [*di* NP] ([−DEF]): *di* is a quantifier

To sum up, Cantonese *di* in [*di* NP] is subject to two competing analyses, i.e. a quantifier analysis versus a plural marker analysis, largely depending on its (in-)definiteness. In particular, a definite [*di*-NP] features a plural marker *di-*. This said, we can unify the plural markers in Cantonese, Chengdu Chinese and Mandarin in that all the attested plural markers carry the [+DEF] feature.

    Now we turn to the syntactic analysis of the plural marker *di-* in Cantonese. Given its prefix nature, the syntactic realization is different from that of *-ɕiɛ* in Chengdu Chinese. There are two possible ways to realize *di-*: on a par with *-ɕiɛ* in Chengdu Chinese, *di-* undergoes Num^0-to-D^0 head movement without an accompanying NP movement, due to the fact that *di-* is a prefix. This is shown in (43a).

Alternatively, *di-* is merged on the noun and the whole chunk of [*di*-NP] moves up to [Spec, DP] to check its [+DEF] feature, as illustrated in (43b).

(43) a. $[_{DP}$ D^0-*di-$_i$* $[_{QP}$ Q^0 $[_{NumP}$ Num^0-*di-$_i$* $[_{NP}$ *syu*]]]]
     b. $[_{DP}$ $[_{QP}$ Q^0 $[_{NumP}$ Num^0-*di-* $[_{NP}$ *syu*]]]$_i$ D^0...t$_i$]

To conclude this section, we summarize the syntactic and semantic features of *di* in Cantonese, as follows:

(44) The grammatical features of *di* in Cantonese:
    i. Cantonese *di* can serve as an approximate quantifier as well as a plural marker. The quantifier is a free morpheme and the plural marker takes the form of a prefix.
    ii. [*di* + NP] in Cantonese allow both definite and indefinite readings. The definite reading comes from the plural marker *di-*, which carries the [+DEF] feature, whereas the indefinite reading may be due to the deletion of the indefinite article *jat* from [*jat di* NP].
    iii. Cantonese does not exhibit DOUBLE DEFINITENESS EFFECT, as the co-occurrence of two *di*s in one and the same nominal phrase is unacceptable.

4.3 A comparison between *di* and *ɕiɛ*

There are similarities between *di* in Cantonese and *ɕiɛ* in Chengdu Chinese. First, both of them can serve as approximate quantifiers in the pre-nominal position. As quantifiers, both *di* and *ɕiɛ* are indeterminate in their (in-)definiteness, the interpretation of which depends on whether a demonstrative is present or not. Second, both *di* and *ɕiɛ* can serve as plural markers, which are necessarily definite in meaning.

The differences between *di* an *ɕiɛ* are also evident. First, [*di*-NP] in Cantonese cannot fulfil the vocative function, whereas [NP-*ɕiɛ*] in Chengdu Chinese can. Second, due to the prefix-versus-suffix contrast between *di-* and *-ɕiɛ* as plural markers, their syntactic realizations may be different: *di-* may undergo a Num^0-to-D^0 head movement with NP remaining in-situ; alternatively, [*di*-NP] moves upward to the [Spec, DP] position. By contrast, when *-ɕiɛ* undergoes Num^0-to-D^0 head movement, it necessarily triggers NP movement to reach the [Spec, DP] position.

Having examined both *ɕiɛ* in Chengdu Chinese and *di* in Cantonese, we move on to the discussion of their theoretical impacts in § 5.

5.   Theoretical impacts

This study has a bearing on both plurality and definiteness in nominal phrase structures, in terms of syntax as well as semantics. In this section, our discussion will revolve around the two nominal features, i.e. plurality and definiteness, and reveal how this study of -ɕiɛ in Chengdu Chinese, coupled with the study of its counterpart *di-* in Cantonese, has repercussions on these two features.

5.1   On plurality

Both -ɕiɛ in Chengdu Chinese and *di-* in Cantonese express plurality, regardless of the mass-count status of nouns. Plurality is usually linked to count-mass distinction and is considered as an operation applicable to count nouns but not to mass nouns (notably in Chierchia 1998). Given this, there is a demand to justify plurality of mass nouns. Rothstein (2017: 85) claims that mass nouns do pluralize. In the literature, plurality of mass nouns has also been attested and reported in both number languages and classifier languages. For example, Heycock & Zamparelli (2005) and Acquaviva (2008) identify a group of necessarily plural mass nouns in English, such as "brains" and "funds", which take plural markers but defy numerical modifications. Watanabe (2017) convincingly proves the existence of plural mass nouns in Japanese, which bear no plural markers but can be syntactically diagnosed by its (non-)occurrence in the reverse partitive construction. More similar cases have also been reported in Persian (Ghomeshi 2003; Ghaniabadi 2012) and Greek (Tsoulas 2006, 2009; Athanasiadou & Athanasopoulos 2017). The data presented in this study lend clear credence to mass plurality in classifier languages, as plurality of mass nouns in Chengdu Chinese and Cantonese, unlike that in Japanese, can take plural markers. Furthermore, the presence of a plural marker in Chengdu Chinese and Cantonese excludes numerical modification, regardless of nominal types. In this regard, ɕiɛ- and *di-*induced plurality in Chengdu Chinese and Cantonese pattern neatly with *funds*-type plurality in English (see Heycock & Zamparelli 2005; Acquaviva 2008; Watanabe 2017).

   To sum up, plurality in Chengdu Chinese and Cantonese does not hinge upon the count-mass distinction, on the grounds that (i) ɕiɛ and *di* can apply to all kinds of nouns, be they count or mass nouns; (ii) ɕiɛ- and *di-*induced plurality can give rise to both count and mass readings, regardless of whether the head noun is countable or not. Specifically, when a noun is conceptually countable, [NP-ɕiɛ] and [*di*-NP] can refer to both multiplicity of items as well as abundance of mass amount, instantiating the functions of counting and measuring (Rothstein 2017). Likewise, when a noun is conceptually uncountable, [NP-ɕiɛ] and [*di*-NP] can mean both abundance of mass amount and multiplicity of units. In consideration

of these, plurality in this study is not confined to count cases. In particular, following Corbett (2000), Ojeda (2005), Tsoulas (2006), Acquaviva (2008), Alexiadou (2011) and Doron & Müller (2013), to list a few, we take mass plurality into consideration and classify plurality into two main types, as shown in (45).

(45)   Two types of plurality:
    a.   unit-based plurality
    b.   amount-based plurality

Unit-based plurality, as the name suggests, depends on division of nouns into units. This division can be inherent, as in the case of so-called count nouns; alternatively, division can be grammatically realized by means of applying classifiers or container words to nouns. Semantically, unit-based plurality refers to multiplicity of units, no matter whether the units are built-in or grammatically-imposed. Moreover, multiplicity is amenable to numeral quantification. Take English as an example: unit-based plurality can be shown by *two books* (multiplicity of built-in units) or *two bottles of water* (multiplicity of container-induced units). By contrast, amount-based plurality emphasizes a substantive amount, which is not based on singularity. We argue that *ɕiɛ-* and *di-*induced plurality is of this type, given that they defy numerical modification, no matter whether the head noun is countable or not. Plurality of this kind has been attested in Persian (Ghomeshi 2003; Ghaniabadi 2012) and in Greek (Tsoulas 2006, 2009; Athanasiadou & Athanasopoulos 2017) as well.

The distinction between unit-based and amount-based plurality is significant, as the two types of plurality do not rely on a count-mass distinction but can be teased apart by their (in-)compatibility with numerical modification. On the one hand, unit-based plurality can apply to mass nouns, with the assistance of a measure word. On the other hand, amount-based plurality can be imposed on conceptually count nouns, as in the case of *ɕiɛ-* and *di-*induced plurality in Chengdu Chinese and Cantonese. In order to show the similarities as well as differences between unit-based plurality and amount-based plurality, we present their encoding mechanisms in Table 4, with English, French, Chengdu Chinese (CC), and Cantonese as representative languages.

As shown in Table 4, the two types of plurality are allowed in both number languages (English and French) and classifier languages (Chengdu Chinese and Cantonese), with different encoding mechanisms. Moreover, it is clear that *-ɕiɛ* and *di-* are amount-based plural markers, but not unit-based plural markers. This stands in contrast to unit-based plural markers as in English and French. This may be associated with the typological differences between classifier languages and number languages.

Furthermore, we have shown that plural markers in Chengdu Chinese and Cantonese necessarily carry the [+DEF] feature. According to our analysis, these

Table 4. Two types of plurality and their encoding mechanisms [*]

Plurality	Language	Count	Mass
unit plurality	English	[Num + NP$_{PL}$]	[Num + M/C + NP]
	French	[Num + NP$_{PL}$]	[Num + M/C + NP]
	CC	[Num + M/C$_{PL}$ + NP]	[Num + M/C + NP]
	Cantonese	[Num + M/C$_{PL}$ + NP]	[Num + M/C + NP]
amount plurality	English	[*some* + NP$_{PL}$]	[*some* + NP]
	French	[*quelques* + NP$_{PL}$]	[*quelque* + NP][**]
	CC	[*i* + *ɕiɛ* + NP]	[*i* + *ɕiɛ* + NP]
		[NP-*ɕiɛ*]	[NP-*ɕiɛ*]
	Cantonese	[*jat* + *di* + NP]	[*jat* + *di* + NP]
		[***di***-NP]	[***di***-NP]

* Num, CL, M and C in the table represent numeral, classifier, measure words and container words, in that order.

** As pointed out by one of the reviewers, *quelque* 'some' in French can modify singular count nouns, to indicate a certain (person or thing). This same holds true for *some* in English, as in *someone*. However, in this table, we just focus on the cases when *quelque* in French and *some* in English modify mass nouns, but not singular count nouns, as only the former case is quantity-related.

plural markers undergo upward movement to reach the positions of D⁰ or [Spec, DP]. This raising analysis is reminiscent of the classifier-raising for definiteness in Cantonese (see Au Yeung 2005), though classifier-raising is not attested in Chengdu Chinese.

In § 5.2 below, we shall examine how our data contribute to the DP nominal structure, with special regard to two aspects: (i) what are the possible occupants of D in Chengdu Chinese; (ii) whether NP-DP distinction is real in Chengdu Chinese.

5.2 On definiteness

Our study of -*ɕiɛ* in Chengdu Chinese, together with that of *di*- in Cantonese, can shed light on the encoding mechanisms of definiteness, or more generally, on the DP theory (Longobardi 1994; Giusti 1995, 1997, 2015; Chierchia 1998; Bošković 2005, 2008). Longobardi (1994) proposes that all the nominal expressions contain both NP and DP, regardless of its definiteness feature. The definite meaning is enforced by an iota ɩ-operator in the D position, which can be realized by a determiner (e.g. *the* in *the book*). Without the presence of a determiner, N-to-D movement can also give rise to a definite reading, as in the case of proper nouns (e.g.

John). Moreover, indefiniteness is considered to reside in the D position as well. Specifically, the existential ∃-operator in the D position, which is usually realized by zero determiners, is taken to be the source for indefinite meanings. In the case of kind-referring expressions, D is also projected, even though the locus of kind-referring reading is N. According to Longobardi (1994), as long as N-to-D movement is properly prevented, kind-referring interpretation can be obtained. In this connection, language can be divided into two categories, depending on the level at which N-to-D movement is carried out. As for the languages in which N-to-D movement is allowed at the syntactic level, in order for a noun to remain in the N position to obtain its kind-referring reading, an expletive article is required to occupy the D position, as exemplified by the obligatory presence of expletive determiners in Italian and French. By contrast, in the languages in which N-to-D movement takes place at the LF level, as in English, an expletive determiner may or may not be present, as evidenced by the fact that both *the dog* and *dogs* in English can give rise to kind-referring readings. To sum up, according to Longobardi (1994), D position is versatile and it can accommodate the following elements:

(46)   The possible D occupants:
    a.   definite articles   (the iota ɩ-operator)
    b.   indefinite or null articles   (the existential ∃-operator)
    c.   expletive articles   (place holder; no substantive meaning)

Crucially, D is considered able to accommodate both definiteness and indefiniteness. In this regard, our data in Chengdu Chinese, as well as the data in Sinhala, pose challenges to this view, because both definite and indefinite markers can co-occur in one and the same nominal phrase, as exemplified in (26b), (28b) and (29b). If both definite and indefinite articles are realized in D, there would arise a clash of semantic features, i.e. a conflict between [+DEF] and [−DEF]. In consideration of this, we propose a nominal phrase structure by positing a DP-QP distinction, with DP taking care of the definite feature while QP the indefinite feature. Both DP and QP are referential, as opposed to NP, which is predicative.

    Next, we shall show that the DP-NP distinction is real in Chengdu Chinese. Chierchia (1998) divides languages into NP-type languages, DP-type languages and a mixed type, by resorting to the two features [±pred] and [±arg]. This is called NOMINAL MAPPING PARAMETER.

(47)   NOMINAL MAPPING PARAMETER:
    a.   [−pred, +arg] type: NP
    b.   [+pred, +arg] type: NP and DP
    c.   [+pred, −arg] type: DP

Chierchia (1998) takes Chinese as an NP-type language. However, our study shows that both DP and NP are separately represented in Chengdu Chinese, which can be exemplified by [NP-*ɕiɛ*] and bare NPs, respectively.

First, as presented in § 2.2 (c.f. Table 1), [NP-*ɕiɛ*] defies kind-referring or generic meanings, whereas bare NPs can express both kind-referring and generic meanings. This contrast, coupled with Longobardi's (1994) view that a kind-referring reading is located in N instead of D, [NP-*ɕiɛ*] and bare NPs are analyzed to project DP and NP, respectively. This further corroborates our syntactic analysis of [NP-*ɕiɛ*] in § 2.2.

Second, it is bare NPs, but not [NP-*ɕiɛ*], that can serve as nominal predicates, as exemplified in (25) in § 2.2. It confirms that bare NPs in Chengdu Chinese can be used for, though not limited to, predicative use. This is characteristic of NP.

The above two points indicate that DP-NP distinction is real in Chengdu Chinese. Therefore, the data in Chengdu Chinese has a theoretical bearing on nominal phrase structures: (i) definiteness and indefiniteness should be encoded at two distinct syntactic layers, as DP and QP; (ii) both DP and NP are projected in (Chengdu) Chinese. In particular, the presence of a plural marker necessarily gives rise to the projection of DP.

6.   Concluding remarks

This study examines *ɕiɛ* in Chengdu Chinese, which is found to represent two distinct morphemes, viz. a free morpheme *ɕiɛ* and a suffix -*ɕiɛ*. The first one is a collective plural quantifier, which can collocate with either a demonstrative or an indefinite marker. The second one is a plural marker, which encodes both plurality and definiteness. The dual features of [+PL] and [+DEF] are realized by Num^0-to-D^0 movement. Alternatively, the presence of a demonstrative can successfully check the [+DEF] feature of the plural marker -*ɕiɛ*, and this phenomenon is dubbed as DOUBLE DEFINITENESS EFFECT in the sense that two definiteness-encoding elements occur in one and the same nominal phrase.

Similarly, *di* in Cantonese shows its dual functions, as a quantifier *di* and as a plural marker *di*-. In addition to the similarities, *ɕiɛ* in Chengdu Chinese and *di* in Cantonese exhibit remarkable differences, especially when it comes to their functions as plural markers. First, -*ɕiɛ* is a post-nominal whereas *di*- is a pre-nominal. Second, -*ɕiɛ* allows DOUBLE DEFINITENESS EFFECT, whereas *di*- does not.

This study has theoretical impacts on both "plurality" and "definiteness". First, Chinese, as a typical classifier language, is found to be able to have a plural marker, which does not hinge upon a count-mass distinction. Moreover, two types of plu-

rality, viz. the unit-based plurality and the amount-based plurality, have been identified and distinguished. Second, the plural markers in Chengdu Chinese and Cantonese carry both plural and definite meanings, indicating that the plural markers should be realized in D (D^0 or [Spec, DP]). Thus, DP is proven to be real in Chengdu Chinese and Cantonese.

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Abbreviations

AgrP	Agreement Phrase	INDEF	indefinite marker
Arg	Agumental or non-argumental	M	Measure word
ArtP	Article Phrase	NP	Noun Phrase
ASP	aspectual marker	Num_0/Num	Number (head)
CL	classifier	NumP	Number Phrase
D^0/D	Definiteness (head)	PL	plural
DEF	definite marker	PRED	predicative or non-predicative
DEM	demonstrative	SPEC	specifier (position)
DP	Definiteness Phrase	SFP	sentence final particle

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