Mandarin associative plural *-men* and NPs with *-men*[*]

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This paper discusses the syntax and semantics of *-men* and four types of phrases containing *-men* in Mandarin. I defend the view that *-men* should be analyzed as a plural morpheme as first argued in Li (1999) but argue against the analysis of positing *-men* in the D position or treating it as a definite determiner. It will be shown that definiteness is not inherent to *-men* and that *-men* is compatible with numerals and classifiers and should be in a position local to nouns. I propose an analysis of *-men* as an associative plural and explain the properties of the four types of expressions containing *-men* within a Neocarlsonian account of bare nominals. The formal account of the syntax and semantics of phrases containing *-men* advanced in this paper shows that it is not necessary to assume a functional category D that is always invisible in the grammar of Mandarin in order to account for the behaviors of its nominal arguments and argues for the lack of DP projections in Mandarin.

Keywords: Mandarin, *-men*, plurality, numerals, classifiers, DP, associative plurals, (in)definite

1 Introduction

Mandarin does not mark the singular-plural distinction on nouns but does have an expression that conveys reference to pluralities: *-men*. This expression has received a lot of discussion, and some well-known generalizations about it include: nouns with *-men* are always definite, *-men* cannot co-occur with numeral-classifier quantity expression in post-classifier position, and *-men* differs from plural markers like -s/-*es* in English in that it has a peculiar behavior of attaching to proper names, expressing an associative reading of ‘a group of people containing the person denoted by the proper name and other people related to him/her’. This paper investigates *-men* and examines the syntactic and semantic properties of four types of phrases containing *-men*. I will show that definiteness is not inherent to *-men* and that *-men* can appear in the post-classifier position in two types of phrases less discussed in the literature. It will also be shown that the property of *-men* being used with proper names is not unique to Mandarin and is attested in other languages as well, such as Japanese, Bangla, Hungarian and Afrikaans. I propose an analysis of *-men* of associative plurals and provide a formal account of the syntax and semantics of the four types of phrases containing *-men* within a Neocarlsonian account of bare nominals and argue for a D-*less* analysis of nominal arguments in Mandarin.

This paper is organized as follows. Section 2 reviews three main views of *-men* that have been proposed in the literature. This paper supports the view that *-men* should be treated as a plural marker as first argued in Li (1999); however empirical evidence will be provided to argue against the analysis of positing *-men* in the D position or treating it as a definite determiner. It will be shown that definiteness is not inherent to *-men* and that *-men* should be located local to nouns and lower than numerals and classifiers. In the end of this section, two less commonly

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addressed properties of phrases containing *-men* will be discussed. Section 3 proposes an analysis of *-men* as an associative plural marker and explains the properties of phrases containing *-men* within a Neocarlsonian account of bare nominals. As we shall see, the proposed formal account of the syntax and semantics of phrases containing *-men* argues for a D-*less* analysis of nominal arguments in Mandarin. Section 4 discusses native speakers' acceptability judgment of two structures containing *-men* examined in Section 2 and variation among speakers. Section 5 concludes the paper.

2 Previous analyses, challenges and additional properties of *-men*

2.1 Previous analyses of *-men*

Mandarin has a plural-like morpheme *-men* which is used with pronouns or human nouns to express plurality (Lü, 1947, 1999; Chao, 1968; Norman, 1988; Iljic, 1994; Li, 1999, a.o.) (1). Inanimate nouns cannot take the morpheme *-men*, unless they are humanized (Lü 1947, 1999: 385) (2).

(1)	a. *ni*	a'. *ni-men*
	2-sg	2sg-MEN
	'you (sg)'	'you (pl)'
	b. *xuesheng*	b'. *xuesheng-men*
	student	student-MEN
	'the student(s)/students'	'the students'
(2)	a. *xiao-niao*	a'. *xiao-niao-men*
	little-bird	little-bird-MEN
	'a/the/some bird/birds'	'the birds'
	b. *pingguo*	b'.**pinguo-men*
	apple	apple-men
	'the apple(s)/apples'	

Three types of views of *-men* have been proposed in the literature. The first one regards *-men* as both a plural morpheme and a collective marker (Chao, 1968; Norman, 1988; Cheung, 2003; Hsieh, 2008). According to this view, whether *-men* is a plural morpheme or a collective marker depends on whether *-men* is attached to common nouns or pronouns/proper names.[1]

The second view treats *-men* as a collective marker (Iljic, 1994). Iljic (1994) considers three reasons to favor the analysis of *-men* as a collective marker and to argue against the plural analysis. One, *-men* marked nouns are always definite (Rygaloff, 1973; Yorifuji, 1976, see Iljic, 1994: 94). As illustrated in (3), the existential sentence allows bare nouns but not N-*men*.

[1] According to Chao (1968) and Norman (1988), *-men* is a plural morpheme when it is attached to pronouns but a collective marker when it is attached to common nouns. Cheung (2003) and Hsieh (2008), on other hand, hold the view that *-men* is a collective marker when using with pronouns and proper names but a plural marker when using with common nouns.

(3) a.*you ren-men
have person-MEN

b. you ren
have person
'there is/are some person(s)' (Iljic, 1994)

Two, -*men* can appear with proper names (PNs), denoting the group consisting of the person expressed by the proper name. (Lü, 1999, see Iljic, 1994: 95) (4). Three, -*men* cannot co-occur with numeral-classifier quantity expressions (Lü, 1947; Chao, 1968; Norman, 1988) (5).

(4) Zhangsan-men zai nali?
Zhangsan-MEN at where
'Where is Zhangsan and the others?'

(5) *san-ge xuesheng-men
three-Cl student-MEN
'three student+*men*' (Iljic, 1994)

Based on the above data, Iljic (1994: 91) argues that -*men* is not a plural morpheme but a collective marker which 'constructs a group from several already posited elements' and 'pertains to the grammatical category of person'.

Contrary to the second view, the third view of -*men* treats it as a plural morpheme, as first argued by Li (1999) and further defended by others (e.g., Kurafuji, 2004; H. Yang, 2005; Huang et al, 2009; Bošković & Hsieh, 2013; Jiang, 2012; Y. Li, 2015). Below I will focus on reviewing arguments from two representative analyses, Li (1999) and Kurafuji (2004).

Li (1999) provides four pieces of evidence to argue for the 'plural morpheme' analysis of -*men*. One, when occurring with pronouns, -*men* behaves like a plural morpheme (1b).

Two, the -*men* suffixed proper name, in addition to receiving a 'group' interpretation (6i), can also refer to a plural individual with the same characteristics or the same name of the person expressed by the proper name (6ii).

(6) XiaoQiang-men
XiaoQiang-MEN
i. 'XiaoQiang and the others'
ii. 'People with the characteristics or the same name of *XiaoQiang*.'

According to Li, this additional interpretation in (6ii) makes -*men* a true plural marker since -*men* allows a proper name to behave like a common noun via pluralization.

Three, -*men* marked nouns can co-occur with *dou*, which has been claimed to be a distributive marker in some literature. According to Li, this compatibility of -*men* and *dou*, as shown in (7), raises questions for the 'collective' status of -*men* as argued in Iljic (1994).

(7) xuesheng-men dou li-kai le.
student-MEN DOU leave ASP
'Each of the students has left.' (Li, 1999)

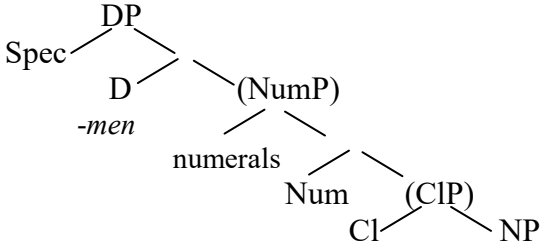
Four, -*men* is not completely incompatible with numeral-classifiers. Although it is true that -*men* marked nominal expressions cannot appear in the position following numeral-classifier (5), they

can appear in the position preceding numeral-classifiers(-noun) when the nominal expression is a pronoun or a proper name (8a, b). Common nouns and *-men*, on the other hand, are still incompatible with numeral-classifiers (8c). Li further notices that the sentence in (8b) can only receive an associative reading of 'a group of people containing the person denoted by the proper name and other people related to him/her', but not the pure plural reading (8bii).

(8) a. *wo qing ta-men san-ge (haizi) chifan.*
I invite them three-Cl (child) eat
'I invited them three-Cl (children) for a meal'
b. *wo qing XiaoQiang-men /xiaozhang-men san-ge (ren) chifan.*
I invite XiaoQiang-MEN/ Principal-MEN three-Cl person eat
i. 'I invited XiaoQiang/Principal and two others (in the group) for a meal.'
ii. *'I invited 3 principals/3 people all named/all with the characteristics of XiaoQiang.'
c.**wo qing pengyou-men sange (ren) chifan.*
I invite friend-MEN three-Cl person eat
'I invited three friends for a meal.' (Li, 1999)

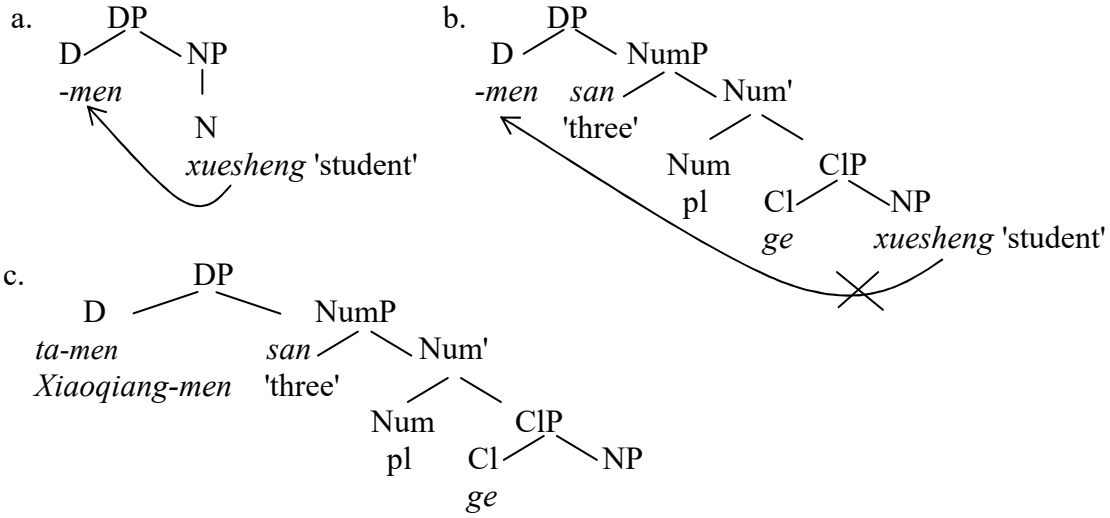
Based on the facts in (5) - (8), Li (1999) proposes a DP analysis for Mandarin definite nominal expressions, including phrases containing *-men* and definite bare nouns. Li assumes two (optional) projections, a Numeral Phrase (NumP) and a Classifier Phrase (ClP), within the DP projection and proposes that *-men* is a plural morpheme, similar to the plural morphology *-s/-es* in English (Li, 1999: 91). Structurally, *-men* is generated in the head position of NumP but is realized on an element in head position of DP (10).

(9) Definite expressions: DP



In Li (1999), definiteness is assumed to be obtained when the D head position is filled with an overt element, along the same lines as Longobardi (1994). Li assumes that common nouns are base-generated in the head of NP and that proper names are generated in the head of DP in Mandarin. When classifiers and numerals are absent, common nouns can move to the D position to pick up the plural morpheme *-men*, accounting for (1b'), as illustrated in (10a).

(10) Li's (1999) analysis of definite DP



In (10b), when numerals and classifiers are present, common nouns are blocked by the Cl head *ge* from moving to the D position to realize the plural morpheme *-men*. This structure explains why [common noun + *-men*] cannot co-occur with numeral-classifiers in (5) and (8c). On the contrary, in (10c) pronouns and proper names are base-generated in the D position, so *-men* can be realized directly on them, and numeral-classifiers can also appear in a position lower than D. This structure explains (8a, b).

Li's analysis which ties *-men* to the D position higher than numerals and classifiers not only provides a uniform structural account for phrases containing *-men* but also provides empirical evidence for the existence of DP projections in Mandarin.

Kurafuji (2004) adopts Li's (1999) analysis and treats *-men* as a plural morpheme, appearing in the D position. Regarding the semantics, Kurafuji proposes that *-men* also functions as a definite marker. The phrase *xuesheng-men* 'the students' in (10a) has the semantics below.

(11) a. $[[\text{xuesheng}]] = \text{STUDENT}$ <e>
b. $[[\text{xuesheng}]] = {}^{\cup}\text{STUDENT}$ <e, t>
c. $[[\text{men}]] = \lambda P_i[\sigma x[PL(P_i)(x)]]$ <<e, t>, e>>
d. $[[\text{xuesheng-men}]] = \sigma x[PL({}^{\cup}\text{STUDENT})(x)$ <e> (Kurafuji, 2004)

Following Chierchia (1998), Kurafuji assumes that bare nouns in classifier languages are kind-referring, type <e> (11a) and that the up-operator '$^{\cup}$' can shift kinds to properties (11b). In (11c), *-men* functions as plural marker as well as a definite determiner (11d). Specifically, PL is the pluralization function as in Chierchia (1998), 'P_i' is the Cooperian property variable which denotes the most salient property in the context, and 'σ' is an operator that contributes to the definiteness of the plural morpheme (Kurafuji, 2004: 226). In (11d), *-men* turns the property-denoting noun *xuesheng* 'student' into a plural individual with a definite interpretation.

Differing from Li (1999), Kurafuji provides a semantic type-theoretic explanation for the ungrammaticality of the phrase in (5) **san ge xuesheng-men* 'three Cl student-men'. Kurafuji assumes that classifiers are property-seeking functions; however the *xuesheng-men* 'the students' is entity-denoting and cannot combine with property-seeking functions (Kurafuji, 2004: 231).

Noted that, Kurafuji only discusses common nouns in Mandarin and assumes the use of *-men* with proper names (6) has a different semantics from the proposed one in (11).

This paper defends the third view that *-men* is a plural morpheme as first argued by Li (1999); however, I do not agree with an analysis of positing *men* in the D position or treating *-men* as a definite determiner. In the next sub-section, I discuss empirical evidence that challenge such a DP analysis of *-men*.

2.2 Challenges for the DP analysis of *-men*

This subsection discusses facts about *-men* that challenge the DP analysis of *-men*. The main goal is to show that *-men* should be in a position local to nouns and that facts about *-men* are independent of whether there is a D or not in the grammar of Mandarin.

2.2.1 Group classifiers and *-men*

The first challenge for the DP analysis of *-men* comes from the observation that *-men* is compatible with group classifiers such as *qun* 'group', *zu* 'team' and *dui* 'pile, crowd' (e.g., Hsieh, 2008; Jiang, 2012; Y. Li, 2015). It is true that classifiers like *ge* do not allow *-men* to appear in the numeral-classifier-noun phrase as shown in (5), but the classifiers examined in previous work are all individual classifiers (these are "individual measures" in Chao, 1968: 585, "count classifiers" in Cheng & Sybesma 1999 and "sortal classifiers" in Aikhenvald, 2000: 115). [2] If we replace individual classifiers with group classifiers, *-men* is allowed to appear in the [Numeral-Classifier-Noun] phrase, as illustrated below.

(12) a. *Ta zai gen yi qun haizi-men wan.*
he in with one Cl child-MEN play
'He is playing with a group of children.' (Hsieh, 2008)

b. *zhe (yi) qun haizi-men qu na-er le?*[3]
this one $Cl_{crowd/group}$ kid-MEN go where Asp
'Where did this crowd of kids go?'

c. *ni-men xuexiao de zhe dui haizi-men tai neng naoteng le.*
2pl school De Dem $Cl_{crowd,pile}$ kid-MEN too can disturb Asp
'This crowd of kids in your school are so naughty and disturbing.'

d. *wo juede zhe liang zu xuesheng-men de biao-xian dou bu cuo.*
I think this two $Cl_{team/group}$ student-MEN De behave all not bad
'I think the performances of these two teams of students are both very good.'

e. *zhe si zu xuanshou-men kan-qilai dou xinxin man-man de.*
this four $Cl_{team/group}$ contestant-MEN look all confidence full-full De
'These four groups contestants all look very confident.' (Jiang, 2012)

[2] In Chao (1968: 584-620), measures in Mandarin are divided into nine kinds; five out of the nine kinds are measures for counting nouns, and four out of the nine kinds are not . The five kinds of measures for counting nouns are: (i) individual measures (e.g., *yi ge ren* 'one person'); (ii) container measures (e.g., *yi wan yingtao* 'one bowl of cherry'); (iii) standard measures (e.g., *yi gongjin yingtao* 'one kilo of cherries'); (iv) group measures (e.g., *yi qun haizi* 'a group of children'); (v) partitive measures (e.g., *yi ceng dangao* 'one layer of cakes').

[3] The numeral 'one' *yi* is optional in this sentence. The optional numeral 'one' *yi* has been argued to be a case of omission (from [one Cl-N]) (see Lü, 1944; Chao, 1968; Li, 1997; Jiang, 2012, 2015; Li & Feng, 2015; Huang, 2014).

In addition to the above examples observed in Hsieh (2008) and Jiang (2012), examples of this sort can be widely seen in newspaper and literary work. Below, I provide some of the examples found in Beijing Language and Culture University DCC Corpus (BLCU Corpus in short, see Gou et al, 2016) and Peking University CCL Corpus (PKU Corpus in short):

(13) a. *meidang xiawu xuexiao fangxue le……tamen jiu hui zhunshi laidao*
when afternoon school dismiss Asp they then will on-time come
Anhuili zhongxin xiaoxue, shou-ba-shou de fudao yi qun haizi-men
Anhuili central primary-school hand-hold-hand De tutor one Cl_{group} child-MEN
xue minyue.
study folk-music (PKU Corpus, from China Daily)
'When class ends in the afternoon, they will come to Anhuili Central Primary School on time to teach a group of children folk music step by step.'

b. *Huang yisheng shuo, dangshi kan-zhe zhe qun xuexheng-men zai malushan*
Huang doctor say back-then see-Prog this Cl_{group} student-MEN on street
junxun, jingchang you chezi he luren jingguo,
military-training constantly exist car and people pass-by.
shizai shi weixian.
really is dangerous (BLCU Corpus, from Xiamen Business News)
'Doctor Huang said, "at that time, I saw this group of students doing military training on the street, and cars and people were passing by constantly; it was really dangerous".'

c. *zhe qun guniang-men weile zhe ci bisai fuchu le duoshao,*
this Cl_{group} girl-MEN for this Cl competition invest Asp how-many
ta-men xin-li zui qingchu.
3sg-Men heart-inside most clear (BLCU Corpus, from China Daily)
'They know the best how much (hard work and effort) this group of girls have devoted to this competition.'

d. *shao da yixie de shihou, wo bian he yi qun huoban-men qu lincun*
a-little old a-bit De time I then with one Cl_{group} partner-Men go neighbor-village
gan xi le.
hurry-on opera Asp (PKU Corpus, from China Daily)
'When I was a little older, I started to go to the nearby villages one after another with a group of partners to perform operas.'

e. *chongman huanxiang de xia ye, zong you yi qun haizi-men*
fully-filled imagination De summer evening always exist one Cl_{group} child-Men
nian-zhe ta, li san quan wai san quan de juji zai wutong shu
stick-Prog 3sg inside three circle outside three circle De gather at Paulownia tree
xia ting Xiao Mingxu na yongyuan ye jiang-bu wan de gushi.
under listen Xiao Mingxu that forever ever tell-not-finish De story
(CCL Corpus, from Xiamen Daily)
'In the summer evenings that were filled fully with imaginations, there was always a group of children surrounding Xiao Mingxu, listening to his endless stories. '

f. *qiao! zher you yi qun xingfu de laoren-men he youeryuan de haizi-men*
Look! there exist one Cl_{group} happy De old-man-Men with kindergarten De kid-Men

yiqi guoqi-le jie.
together celebrate-Asp festival **(**PKU Corpus, from Xiamen Evening News**)**
'Look! There is a group of happy old men celebrating the festival with the kindergarten kids.'

As we saw in Section 2.1, the ungrammaticality of the phrase **san ge xuesheng-men* 'three Cl student-men' in (5), according to Li's (1999) DP analysis, is due to the occurrence of the classifier *ge* which blocks common nouns from moving to the D position to realize *-men* (10b). Then one may wonder why the occurrence of the classifiers in (12) and (13) does not prevent the common nouns from moving to the D position to combine with *-men*. Kurafuji (2004), on the other hand, attributes the ungrammaticality in (5) to the semantic type of the *-men* phrase (as type <e>) which is not the correct semantic type that classifiers are looking for. Similarly, one may also wonder why the *-men* phrases in (12) and (13) allow the classifiers to combine with them.

If we examine closer, we can notice that the examples in (12) and (13) show some important differences between N-*men* in Mandarin and the definite plural *the Ns* in English. One, N-*men* can be used with group classifiers but definite plurals in English cannot:

(14) a. *one group of the kids b. *a crowd of the kids c. *two teams of the students

Two, we can posit the existence of phrases containing N-*men*, as we saw in (13e) and (13f), but cannot do so with definite plurals in English:

(15) a. *There was always a group of the children surrounding Xiao Mingxu.
b. *Look! There is a group of the happy old men celebrating the festival with the kindergarten kids.

Further examples to illustrate this contrast are given below:

(16) *qiao, you you yi qun haizi-men lai yao tang le.*
Look, again exist one Cl_{group} child-MEN come ask-for candy Asp
'Look, there is a crowd of kids coming to ask for candies again.'

(17) Look, *there is a crowd of the kids coming to ask for candies again.'

Note that one reviewer and some of his/her informants do not accept the example in (16). To better understand native speakers' judgment of examples that contain group classifiers and N-*men*, I conducted a judgment test which will be presented in Section 4.1.

This subsection showed that *-men* is compatible with numeral-classifier quantity expressions when the classifier is a group classifier. The examples observed by previous researchers (12) and the examples easily found in corpora (13) showed that N-*men* in Mandarin is not the equivalence of definite plural *the Ns* in English and that *-men* should be in a position lower than the numeral-classifier and local to the nouns. Next, I will move on to the second challenge for the DP analysis of *-men*.

2.2.2 Individual classifiers and *-men*

The second challenge for the DP analysis of *-men* comes from the fact that *-men* is not completely banned in the position following individual classifiers. It is true that *-men* is banned in the post-classifier position in examples like (5)/(10b) (as repeated in (18a)); however, as noted in Hsieh (2008) and Y. Li (2015), in some examples, *-men* is allowed in the post-classifier position (18b). In addition to their examples, I provide further examples found in the BLCU Corpus in (19).

(18) a. **san-ge xuesheng-men*
three-Cl student-MEN
'three student+*men*'
b. ...*sanbai duo wei laoshi ji juanshu-men posuoqiwu...*
three:hundred more Cl teacher and family:dependant-MEN beautifully:dance
'…more than three hundred teachers and their family dependants danced beautifully…' (Academia Sinica Corpus, Hsieh, 2008)

(19) a. *zai shi ji ge tongxue-men de qianhuhouyong xia,*
at ten a-few/how many Cl classmate-MEN De have-a-retinue-before-and-behind
Yan Yuhong zou le chuqu.
Yan Yuhong walk Asp out (BLCU Corpus, from West China Metropolis Daily)
'With ten-odd classmates crowding around, Yan Yuhong walked out.'
b. *jijian-jiaolian Liu Yuling zhengzai zhidao*
fencing-instructor Liu Yuling Prog guide
qishi duo ge xuesheng-men lianxi.
seventy many/which Cl student-MEN practice
'The fencing instructor Liu Yuling is giving seventy-some students directions to practice fencing' (BLCU Corpus, from Guangzhou Daily)
c. *ruguo keyi gei wo xuan, wo hai shi xiang hui dao guoqu,*
if can give 1sg choose 1sg still be want return arrive past
ji bai ge tongshi-men yiqi zuo-hua,
a-few/how-many hundred Cl colleagues-MEN together make-painting
te you ganjue.
very have feeling
'If I could choose, I still would like to go back to the past, painting with several-hundred colleagues; that really feels good.'
(BLCU Corpus, from Yangcheng Evening News)

The above examples further illustrate that the presence of the individual classifier *ge* is not a factor that prevents the common nouns from combining with *-men* as suggested in (10b). As one examines closer, it can be observed that the numerals in the above examples differ from bare numerals like *shi* 'ten' or *qishi* 'seventy' in that they are modified by a morpheme *ji* 'how many/(number)/a few' or *duo* 'how/many'. *Shi-ji* 'ten-ji' in (19a) ranges from 11 to 19; *qishi-duo* 'seventy-duo' in (19b) ranges from 71 to 79; *ji-bai* 'ji-hundred' in (19c) ranges from 100 to 900. Morphemes like *ji* 'how many/(number)/a few' and *duo* 'how/many' are referred to as "quantitative determinatives"; they do not give exact numbers but express relative quantities by providing a range of numbers (Chao, 1968: 578-582; Lü, 1999: 184-187, 290). When using *ji* or

duo with numerals, the context is quantification of approximation and conveys the speakers' uncertainty about the precise number. I refer to phrases that contain numerals and quantitative determinatives like *ji* and *duo* as Numerical Approximation Phrases.[4]

Note that the numeral approximation phrase containing N-*men* in (19) exhibits differences from the phrase without *-men*. First, existential sentences allow the latter not the former:

(20) a. *zhe ge ban you qishi-duo ge xuesheng.*
this Cl class have seventy-many Cl student
'This class has seventy-some students.'
b. * *zhe ge ban you qishi-duo ge xuesheng-men.*
this Cl class have seventy-many Cl student-MEN

Second, the [Num-Approximation Cl N] phrase implies existence of other individuals denoted by the noun, whereas the [Num-Approximation Cl N-*men*] phrase does not have such an implication. Consider the following two sentences:

(21) a. *wo kanjian shi-ji ge xuesheng zhengzai lianxi jijian.*
1sg see ten-a few Cl student Prog practice fencing
'I saw 10 plus x students practicing fencing.'
b. *wo kanjian shi-ji ge xuesheng-men zhengzai lianxi jijian.*
1sg see ten-a few Cl student-MEN Prog practice fencing
'I saw the 10 plus x students practicing fencing.'

The sentence in (21a) implies existence of other students besides those who were practicing fencing. Instead, (22b) implies that all students in the context were included and that they were practicing fencing.

In the rest of this subsection, I will provide a description the syntactic and semantic properties of numeral approximation using *ji*/*duo*, which will help us understand the structure and semantics of the [Num-Approximation Cl N-men] phrase later in Section 3.5.

Numeral approximation construction containing *ji*/duo has two syntactic properties. One, the particular quantitative determinative may appear in different position. *Ji* 'a few/how many' can either follow or precede the numeral, as in (22a) and (22b), whereas *duo* 'many/how' cannot precede the numeral (22a') but only follow it (22b').

(22) a. *ji bai*
a few hundred
'a few hundreds'
a'. **duo bai*
many hundred
b. *ershi ji*
twenty a few
'twenty-some'
b'. *ershi duo*
twenty many
twenty-some

[4] I name this construction after Anderson (2015) who refers to English phrases like *seventy-some*, *twenty-some* as 'Numerical Approximation using *some*'.

Two, the particular numeral being modified determines whether *ji*/*duo* is allowed. Specifically, ten and multiples of ten (e.g., 20, 30, 100, 160, 1000) allows the occurrence of *duo*; as for *ji*, round numbers lower than one hundred (i.e., ten to ninety) allow *ji* to appear in the post-numeral position, and ten and powers of ten (e.g., 100, 1000, 1000) allow it to appear in the pre-numeral position.

(23)	a. **wu duo* five many	b. *shi duo* ten many 'ten plus x'	c. *yi-bai duo* one-hundred many 'one hundred-some'	d. *yiqian duo* one-thousand many 'one thousand-some'
(24)	a. **wu ji* five a few	b. *shi ji* ten a few 'ten plus x'	c. **yi-bai ji* one-hundred a few	d.* *yi-qian-ji* one-thousand-many
	a'. **ji wu* a few five	b'. *ji shi* a few ten 'x multiple 10'	c'. *ji bai* a few hundred 'a few hundred'	d'. *ji qian* a few thousand 'a few thousand'

Numeral approximation using *ji*/*duo* has three semantic properties. First, the position of *ji*/*duo* corresponds to the meaning. Specifically, the post-numeral position corresponds to the additive environment (see Chao, 1968: 581), and the pre-numeral position corresponds to the multiplicative environment. For instance, *ji* 'a few' can be used additively (19a)/(22b) and multiplicatively (19c)/(22a); *duo* 'many/how' can only be used additively, as in (19b)/(22a', b').

Second, this phrase denotes a range of numbers (Chao, 1968; Lü, 1999); in other words, this phrase has its lower and upper bounds (i.e., it has the 'at least' and 'at most' readings). I illustrate it by creating situations where the truth or falsity of a statement is judged along the lines proposed by Anderson (2015) for English numeral approximation using *some* (e.g., *twenty-some*). For instance, if a speaker had uttered a sentence in (25a), but in fact *Linguistics 101* this course has 19 students; in this case, (25a) is naturally thought of as being false; similarly, if *Linguistics 101* in fact has 33 students, (25a) is also thought of as being false. However, if in a situation, *Linguistics* has 23 students, (25a) would be judged true.[5]

(25) a. *yuyanxue 101 you ershi-ji/duo ge xuesheng.*
linguistics 101 have twenty-a few/many Cl student
'Linguistics 101 has twenty-some students.'
b. if *Linguistics 101* has 19 students, (25a) is judged to have been false.
c. if *Linguistics 101* has 33 students, (25a) is judged to have been false.
d. if *Linguistics 101* has 23 students, (25a) is judged to have been true.

The above property differentiates numeral approximation using *ji*/*duo* from the phrases below which merely gives approximate numbers without giving lower or upper bounds:

[5] Note that *ji* differs from *duo* slightly in terms of the range of numbers; for example *shi-ji* 'ten-a few' ranges from 11 to 19, and *shi-duo* 'ten-many' has the same range but is more like to be under than over 15 (see Chao, 1968: 581). Since this semantic difference between *ji* and *duo* does not matter much for the purpose of discussion in this paper, I will set aside this difference and assume that *ji* and *duo* are the same in the semantics for now.

(26) a. *yuyanxue 101 you ershi ge xuesheng zuo-you.*
linguistics 101 have twenty Cl student left-right
'Linguistics 101 has around twenty students.'
b. *yuyanxue 101 you (da)yue ershi ge xuesheng.*
linguistics 101 have about twenty Cl student
'Linguistics 101 has about twenty students.'

This subsection showed that *-men* is compatible with numeral-classifier expressions even when the classifier is a individual classifier (19); however the numeral needs to express approximation with a lower and upper bound. This fact further showed that the presence of the individual classifier *ge* is not a factor that prevents common nouns from combining with *-men* as suggested in (10b). I also illustrated that the [Num-Approximation Cl N-*men*] phrase differs from the phrase without *-men* (21) and examined the syntactic and semantic properties of numeral approximation using *ji*/*duo*. In the next subsection, I will present the third challenge for the DP analysis of *-men*.

2.2.3 *-men* marked common nouns in the pre-classifier position

The third piece of evidence that challenges the DP analysis of *-men* comes from the observation that common nouns are not completely banned in the position preceding the numeral-classifier. Recall the example that we saw in (8c) in which common nouns are disallowed to combine with *-men* to appear in the position preceding numeral-classifiers (as repeated in (27)). However, we do observe some examples in which [common noun + *men*] can appear before the numeral-classifier, especially when a context is provided, as illustrated in (28).

(27) **wo qing pengyou-men san-ge (ren) chifan.*
I invite friend-MEN three-Cl person eat
'I invited three friends for a meal.'

(28) a. Context: in a family in which there are three kids; the mother said to the father:
ba hai-zi men san ge (ren) jiao xia lai chi wan-fan.
BA child-MEN three Cl person ask down come eat late-meal
'Go to get the kids, three of them, to come downstairs to have dinner.'
b. Context: the speaker is running for President for the student council and knows that the hearer's three sister haven't voted yet, so the speaker said to the hearer:
jiao (ni) jiejie- men san ge (ren) dou lai tou-piao ba.
ask you sister-MEN three Cl person all come vote SFP
'Tell your sisters, them three, to come to vote.'
c. Context: the hearer is leaving for school abroad; the speaker handed a farewell gift to the hearer and said:
zhe shi xiongdi-men ji ge (ren) de xinyi, xiwang ni yiqie shunli
this is brother-MEN several Cl person De regard hope you all smooth
'This is the regard from the brothers, them several; hope all things go well with you.'

The above examples in (28) suggest that the presence of the individual classifier *ge* is not a factor that prevents the common nouns from appearing in the pre-classifier position.[6] But more importantly, I would like to address the general syntactic and semantic properties of this [N-*men* Num Cl] phrase which differs greatly from the numeral-classifier noun phrase [Num Cl N]; I discuss these properties in Section 2.3.1.

2.3 Two less addressed properties of phrases containing *-men*

The purpose of this subsection is to illustrate the properties of two types of phrases containing *-men*, [N-*men* Num Cl] and N-*men*, which are less addressed in the literature. I will start with the [N-*men* Num Cl] phrase and its syntactic and semantic properties.

2.3.1 [N-men Num Cl]: its appositive nature

Iljic (1994: 93-94) and Li (1999: 95, ft.13) both noted that in the [N-men Num Cl] phrase, the numeral-classifier is a *non-restrictive* (i.e., appositive) modifier to N-*men*. This is to say, instead of restricting the definite N-*men* phrase, the numeral-classifier provides additional descriptive information to it (i.e., the numeral information about the members in the group). Compared with the restrictive structure [Num Cl N] which has been widely discussed and examined in the literature (Tang, 1990; Li, 1998, Cheng & Sybesma, 1999; Chierchia, 1998; Yang, 2001, X. Li, 2011, 2013; Jiang, 2012; Zhang, 2013, a.o.), the non-restrictive structure [N-men Num Cl] has received much less attention. Below I examine the properties of the [N-men Num Cl] phrase.

Structurally, the [N-men Num Cl] structure has three properties. First, a noun denoting 'person' is allowed after the numeral-classifier (Li, 1999). This applies to pronouns, proper names and common nouns, as illustrated below.

(29) a. *wo qing ta-men san-ge (haizi) chifan.*
I invite them three-Cl (child) eat
'I invited them three-Cl (children) for a meal'

b. *wo qing xiaozhang-men san-ge (ren) chifan.*
I invite Principal-MEN three-Cl person eat
'I invited Principal and two others (in the group) for a meal.' (Li, 1999: 80)

c. *qu jiao haizi-men san ge (ren) xia lai chi wan-fan*
go ask child-MEN three Cl person down come eat late-meal
'Go to get the kids, three of them, to come downstairs to have dinner.'

One crucial point that the examples above illustrate is that the nouns should not be treated as being moved from the post-classifier position since that position is a filled position (by a noun denoting 'person').

The second syntactic property of the [N-men Num Cl] phrase is that the occurrence of *-men* is *obligatory*: [7]

[6] One reviewer who does not accept the example in (16) also rejects the examples in (28). An acceptability judgment study and discussions will be presented in Section 4 to understand native speakers' acceptability of these two structures.

[7] One exception to this generalization is the case in which the numeral is *one* and the classifier is an individual classifier:

(i) *Zhangsan(*-men) yi ge ren juran chi-le liu wan fan.*

(30) a. *wo qing ta*(-men) san-ge (haizi) chifan.*
I invite them three-Cl (child) eat
'I invited them three (children) for a meal'

b. *wo qing xiaozhang*(-men) san-ge (ren) chifan.*
I invite Principal-MEN three-Cl person eat
'I invited Principal and two others (in the group) for a meal.' (Li, 1999: 80)

c. *qu jiao haizi*(- men) san ge (ren) xia lai chi wan-fan*
go ask child-MEN three Cl person down come eat late-meal
'Go to get the kids, three of them, to come downstairs to have dinner.'

In contrast, *-men* in the pre-nominal numeral-classifier phrase [Num Cl N] is either optional or banned, as we saw in Section 2. Three examples are repeated below.

(31) a. *qu jiao san ge hai-zi (*men) xia lou lai chi wan-fan*
go ask three Cl child-MEN down stair come eat late-meal
'Go to get three kids to come downstairs to have dinner.'

b. *zhe yi qun haizi(-men) qu na-er le?*
this one Cl_{group} kid-MEN go where Asp
'Where did this group of kids go?'

c. *Liu Yuling zhengzai zhidao qishi duo ge xuesheng(-men) lianxi.*
Liu Yuling Prog guide seventy more Cl student-MEN practice
'Liu Yuling is providing practice guidance to seventy-some students.'

Third, N-*men* and the numeral-classifier can undergo movement to the topic position or the post-*ba* position (a case position argued for in Huang et al, 2009). Examples are given below.

(32) a. *ta-men san ge a, wo hui qing lai chi wanfan.*
3sg-Men three Cl Top I will invite come eat dinner
'They, three, I will invite to come for dinner.'

b. *ba Xiaozhang-men san ge jiao xia lai chi wan-fan.*
Ba Xiaozhang-MEN three Cl ask down come eat late-meal
'Go to ask Xiaozhang and two others (in the group) to come downstairs to have dinner.'

c. *ba hai-zi men san ge jiao xia lai chi wan-fan.*
BA child-MEN three Cl ask down come eat late-meal
'Go to ask the kids, three of them, to come downstairs to have dinner.'

Semantically, the [N-*men* Num Cl] phrase receives a definite interpretation. Let us compare the examples in (33) and (34); we can posit the existence of the [Num Cl N] phrases (33) but cannot do so with the [N-*men* Num Cl] phrases (34).

Zhangsan MEN one Cl person unexpectedly eat-Perf six bowl rice
'Zhangsan, one person, unexpectedly ate six bowls of rice.'

In the above example, the numeral *yi* 'one' indicates singular which cannot satisfy the number requirement by *-men*.

(33) *you san ge haizi zai wu-li zuo zuoye*
exist three Cl kid at room-inside do homework
'There are three kids doing homework in the room.'

(34) a.(**you) ta-men san ge zai wu-li zuo zuoye.*
exist 3sg-MEN three Cl at room-inside do homework
'They, three, are doing homework in the room.'
b.(**you) Xiaozhang-men san ge zai wu-li zuo zuoye.*
exist Xiaozhang-MEN three Cl at room-inside do homework
'Xiaozhang and two other (in the group) are doing homework in the room.'
c.(**you) haizi-men san ge zai wu-li zuo zuoye.*
exist kid-men three Cl at room-inside do homework
'The kids, three of them, are doing homework in the room.'

In (33), the [Num Cl N] phrase refers to some individuals mentioned for the first time in the discourse. In contrast, the [N-*men* Num Cl] phrases in (34) refer to some salient individuals familiar to the hearer.

Another semantic property of the [N-*men* Num Cl] phrase is that the numeral serves to provide additional descriptive information to N-*men*, and the numeral information provided by the numeral should be the total/maximal number of the group. For instance, in a scenario where there are five others in the group associated with *Xiaozhang,* to use *Xiaozhang-men san ge* as in (34) to refer to Xiaozhang and two others out of the five in this group would be problematic. Similarly, in a scenario where there are five kids in a family, to use *haizi-men san ge* in (34c) to refer to three out of the five kids would be problematic. To further illustrate this point, let us consider a contrast in the following examples.

(35) a. *wo kanjian san ge haizi toutou-di zou chuqu le.*
1sg see three Cl kid secretly walk out Asp
'I saw three kids walking outside secretly.'
b. *wo kanjian haizi-men san ge toutou-di zou chuqu le.*
1sg see kid-MEN three Cl secretly walk out Asp
'I saw three kids walking outside secretly.'

In (35a), the numeral *san* 'three' is a restrictive modifier, when uttering this sentence, the [Num Cl N] phrase can imply the existence of other kids besides those who walked out secretly. On the contrary, the numeral *san* 'three' in (35b) is a non-restrictive modifier and denotes the total/maximal number of kids in the scenario, and the [N-*men* Num Cl] phrase does not have an implication of other kids in the context. That is to say, if there are more than three kids in the contexts, it is felicitous to utter the sentence in (35a) but infelicitous to utter the one in (35b).[8]

Next, let us move on to the N-*men* phrase and its additional property.

[8] The two underlined phrases in (35) are not minimal pair; as mentioned before, *san ge haizi-men* 'three kid-men' is not a grammatical phrase (5), and *haizi san ge* 'kid three Cl' is not a grammatical phrase either (30). Consequently, the phrases in (35) are the only two grammatical ones that can be used for comparison.

2.3.2 N-*men*: its generic reading

This subsection discusses an additional property of the [Common Noun + *men*] phrase, namely that it can receive a generic reading.

It has been claimed in the literature that *-men* marked common nouns can never receive a generic reading (Rygaloff, 1973; Yorifuji, 1976, see Iljic, 1994: 94); the following two examples have been used to illustrate this point:

(36) a. *Tamen shi laoshi(*-men)*
they be teacher-MEN
'They are teachers.'

b. *ren-men*
person-MEN
'(given) individuals'
NOT: 'the mankind, people (in general)'
(Iljic, 1994)

The above two examples cannot illustrate the point that the [Common Noun + *men*] phrase can never receive a generic interpretation. First, the example in (36a) only shows that the [Common Noun + *men*] phrase cannot be used as a predicate. Second, the example in (36b) at most shows that the [Common Noun + *men*] phrase cannot refer to kinds; this can be further supported by the examples below in which kind-level predicates disallow an argument containing *-men*:

(37) a. *baiwanfuweng(-*men) yijing hen pubian le.*
millionaire-MEN already very common Asp
'Millionaires are very common now.'
b. *hao nanren(*/??-men) yijing kuai juezhong le.*
good man-MEN already soon extinct Asp
'Good men are becoming extinct very soon.'

Although the [Common Noun + *men*] phrase cannot receive a kind interpretation, it can appear in generic sentences, receiving a generic interpretation (Jiang, 2012), as exemplified below.

(38) a. *haizi-men shi zuguo de weilai.*
child-MEN is nation De future
i. [generic]: 'Children (in general) are the future of our nation.'
ii. [definite]: 'The children are the future of our nation.'
b. *fumu zhijian de zhengchao hen rongyi gei haizi-men dai-lai shanghai.*
parents between De fight very easy give kid-MEN bring-come harm
i. [generic]: 'Fights between parents can easily bring harms to kids (in general).'
ii. [definite]: 'Fights between parents can very easily bring harms to the kids.'
c. *zhongguo de fumu-men hen xihuan ganyu haizi-men de shenghuo*
China De parent-MEN very like intervene kid-MEN De life
i. [generic]: 'Chinese parents (in general) like intervening in the lives of their children.'
ii. [definite]: 'The Chinese parents like intervening in the lives of their children.'
d. *xiaofangyuan-men hen yong-gan.*
fireman-MEN very brave
i. [generic]: 'Firemen (in general) are very brave.'
ii. [definite]: 'The firemen are very brave.' (Jiang, 2012)

The sentences in (38) are generic sentences which report a kind of general property (see Krifka et al., 1995: 2). The *-men* suffixed common nouns in these sentences receive a generic interpretation in addition to a definite interpretation which refers to a plural individual previously introduced in the context. Note that *-men* is optional in all cases; although N-*men* in the above sentences can receive a generic interpretation, bare nouns without *-men* are preferred for the generic use.

2.4 Section Summary

To summarize Section 2, I reviewed three views of *-men* that have been proposed in the literature and support the view that *-men* is a plural marker as first argued in Li (1999); however I do not agree with the analysis of placing *-men* in the D position or treating it as a definite determiner. I showed three challenges for the DP analysis of *-men*; I also examined the properties of two types of phrases containing *-men*, which are less commonly addressed in the literature.

Although I argued against the DP analysis of *-men* in Li (1999) and Kurafuji (2004), I will, in the next section, defend their view that *-men* is a plural morpheme and propose that *-men* is an associative plural. It will be shown that the proposed analysis of *-men* together with well established principles of meanings can explain in a principled manner the syntactic and semantic properties of the four types of phrases containing *-men* discussed in this section: (i) N-*men*, (ii) [Num Cl_{group} N-*men*], (iii) [Num-Approximation Cl N-*men*] and (iv) [N-*men* Num Cl (person)].

3 *-Men* as an associative plural marker

In this section, I propose an alternative analysis of *-men* and explain the properties of phrases containing *-men* within a Neocarlsonian account of bare nominals. The system that I adopt includes a set of ranked type-shifting operations, which will be introduced first in Section 3.1. The goal here is to derive the structural and semantic properties of phrases containing *-men* in a coherently principled manner.

3.1 Theoretical background: the Neocarlsonian account of bare nominals

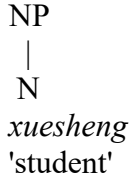
I adopt the view that all bare nominals denote kinds and that their object level meanings are derived from their basic kind level meaning (Carlson, 1977, 1989; Chierchia, 1998; Dayal, 2004, 2011, 2012). This is consistent with the view, going back to Krifka (1995) that bare nominals in classifier languages denote kinds, and that classifiers serve to shift the denotation from kinds to objects/sets and to relate kinds to numerals. When numerals, which are property-seeking, combine with kind-referring nouns, a type-mismatch arises, preventing numerals from combining directly with nouns. The Neocarlsonian approach to bare nominals in classifier languages provides a natural account for the obligatory existence of classifiers, i.e., classifiers turn kind-referring nouns into properties so that the type-mismatch can be resolved (Chierchia, 1998, 2010).[9]

[9] One reviewer points out the conclusion that nouns in Mandarin do make a mass-count distinction in the lexicon (e.g., Cheng & Sybesma, 1999; Cheng, Doetjes & Sybesma, 2008) can also help us understand and explain many other facts in Mandarin. For instance, it can help understand why Mandarin offers very little possibility for applying Universal Grinder (as in Pelletier, 1975) to its nouns: only in contexts where we have a strong world knowledge cue

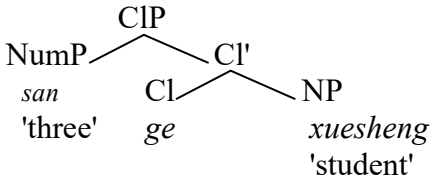
Very crucially, to treat nouns in classifier languages as kind-referring does *not* mean that nouns in these languages are all mass or that their nouns do not make a distinction between mass and count. Instead, there can be *count kinds* (e.g., apple-kind) and *mass kinds* (e.g., water-kind) just like there can be count properties and mass properties; whether it is a count kind or a mass kind depends on whether the instances of the kind are atomic/whole objects or not (see Chierchia, 2010: 131, see also Lima, 2014). In other words, nouns in Mandarin as well as those in other classifier languages do make a lexical distinction between mass and count. Such a conclusion has been argued for by both theoretical work and experimental work (e.g., Imai & Gentner, 1997; Cheng & Sybesma, 1999; Cheng, Doetjes & Sybesma, 2008, P. Li et al., 2009; Doetjes, 2012). In particular, Cheng & Sybesma (1999) have argued that the mass-count distinction manifests itself through the classifier system: one class of classifiers, i.e., 'individual classifiers', or 'count-classifiers' in Cheng & Sybesma (1999), must combine with nouns that are conceptually-count. In contrast, other classes of classifiers, such as 'measure classifiers' and 'container classifiers', do not have such a restriction, i.e., they can combine with either conceptually count or conceptually mass nouns. The behavior of individual classifiers presupposes that nouns in classifier languages are lexically divided into count and mass, e.g., it is the lexical property of 'water' and 'flour' that prevents them from combining with individual classifiers.

Based on the above view of bare nouns, Mandarin bare nouns and numeral classifier phrases are analyzed as follows. Syntactically, bare nouns in Mandarin project an NP instead of a DP (39a) since bare nouns are argumental (i.e., kind-referring); this renders a D head unnecessary (see Yang, 2001; X. Li, 2011, 2013; Jiang, 2012).[10] The structure of numeral classifier phrases in (39b) is based on the analysis proposed in Li (1997, 1999) and Cheng & Sybesma (1999), in which the numeral is phrasal appearing in the specifier position, and the classifier is the head taking an NP as its complement.

(39) a.



b.



The semantics of the bare noun and the numeral classifier phrase in (39), based on Krifka (1995), Chierchia (1998, 2010), Dayal (2012) is given below:

(40) a. [[xuesheng]] = $^{\cap}$students — $<e^k>$[11]
b. [[ge]] = λk λx[AT($^{\cup}$k)(x)] — $<e^k, <e, t>>$
c. [[ge xuesheng]] = λx[AT($^{\cup\cap}$students)(x)] — <e, t>
d. [[san]] = λP λx [P(x) ∧ $\underline{3}$(x)] — <<e, t>, <e,t>>
e. [[san ge xuesheng]] = λx [AT($^{\cup\cap}$students)(x) ∧ $\underline{3}$(x)] — <e, t>

(e.g., the salad context: *There is apple in the salad.*) do we find it, and then only if it is not blocked by the availability of another lexical item with the intended meaning (see Cheng, Doetjes & Sybesma, 2008: 60).

[10] Note that an NP analysis of bare nouns in Mandarin has been proposed in Li (1999); in her work, indefinite bare nouns in Mandarin are treated as NPs, and definite bare nouns are treated as DPs.

[11] I superscript e^k to indicate that reference is to kind level individuals and use *e* for reference to object level individuals.

In (40a), the bare noun *xuesheng* 'student' denotes kind, type <e^k> (Krifka, 1995; Chierchia, 1998).[12] The individual classifier *ge* in (40b) is an atomizing function shifting a count kind to a set of atomic instantiations of the kind, providing the correct semantics for the numeral *san* 'three' to combine with (e.g., Chierchia, 2008, 2010; Dayal, 2012). *AT*, in the semantics of the classifier in (40b), takes a property and returns the set of atoms in the extension of such property. As for numerals, I adopt the view that they are predicate modifiers as in Ionin & Matushansky (2006).[13] Under this view, numerals always combine with atomic predicates; such a view fits nicely with the analysis of individual classifiers as atomizing functions from count kinds to sets of atomic entities adopted in this paper.

Next, I give the specific version of the Neocarlsonian approach adopted in this paper, due to Chierchia (1998), with the specific modification of *Rank of Meaning* from Dayal (2004).[14]

(41) Chierchia's (1998) type-shifting operations:

a. Predicativize: $^{\cup}k = \lambda x\,[x \leq k_s]$, if k_s is defined, else undefined. <s,e>→<e,t>

b. Nominalize: $^{\cap}P = \lambda s\,\iota\,P_s$, if $\lambda s\,\iota\,P_s$ is in K, else undefined. <s, <e,t>>→<s,e>>

c. Iota: ιX = the largest member of X if there is one, else, undefined. <e, t>→<e>

d. Existential closure: $\exists X = \lambda P \exists y[X(y) \wedge P(y)]$ <e, t> → <<e,t>, <<e,t>,t>>)

(42) a. *Ranking of Meaning*:
(i) $^{\cap}$ > {ι, ∃}; (ii) {$^{\cap}$, ι} > ∃ (revised by Dayal (2004))
b. *Blocking Principle* ('Type Shifting as Last Resort')
For any type shifting operation τ and any X: *τ(X), if there is a determiner D such that for any set X in its domain, D(X) = τ(X)

In (41a), the 'up'-operator $^{\cup}$ predicativizes kinds and maps kinds to properties; the 'down'-operator $^{\cap}$ in (41b) nominalizes, mapping those properties that correspond to kinds to their kind individuals (Chierchia, 1984; Partee, 1986). These two type-shifting operations serve as universal mechanisms to get from one to the other. Importantly, plural properties can be turned to kinds, but singular ones cannot. This is so because the semantics of singularity clashes with the conceptual notion of a kind which corresponds to the plurality of all instances of the property (Dayal, 1992; Chierchia, 1998). In (41c), the iota operator 'ι' shifts properties to arguments with a definite interpretation and is used to interpret the definite article 'the' in English (e.g., Sharvy, 1980); in (41d), the existential operator '∃' shifts properties into existential generalized

[12] Other interpretations of bare nouns in Mandarin (i.e., definite, non-specific indefinite, generic) can be derived from the kind term in a principled manner; I refer the readers to Chierchia (1998), Dayal (2004, 2012) and Jiang (2012) for details.

[13] According to Ionin & Matushansky (2006), the numeral 'three' in (40) has the following lexical entry:
(i) $[\![\text{three}]\!] = \lambda P \in D_{<e,t>} . \lambda x \in D_{<e>} . \exists S \in D_{<e,t>}$ [,t> the $\wedge$ |S| = 3 $\wedge$ ∀s ∈ S $\wedge$ ∀s ∈ S P(s)]
For simplicity, I represent numerals directly as $\underline{n}$ (e.g. $\underline{2}$, $\underline{3}$), underlined to gesture towards its formal meaning, following the practice in Dayal (2014).

[14] For simplicity, I avoid reference to the world argument. For instance, I treat $^{\cap}$, ι and ∃ as functions of type <<e,t>, e/<<e,t>,t>> rather than <<s, <e,t>>, e/<<e,t>, t>>.

quantifiers and is traditionally taken to be the meaning of the indefinite article 'a' in English (e.g., Montague, 1974: 216).

Next, I will briefly discuss the reason for the ranking in (42a). In Chierchia (1998), '$\cap$' ranks over 'ι' and '∃' (42ai); this ranking is motivated by the fact that (English) plurals generally favor the kind interpretation over the indefinite one (43a). Chierchia claims that '∃' comes into the picture when '$\cap$' is undefined (43b, c).

(43) a. Machines are widespread.
b. ?? Parts of that machine are widespread.
c. ?? Boys sitting here are rare. (Chierchia, 1998)

A further explanation is that '$\cap$' only changes the type of its arguments without changing the information associated with it, but '∃' introduces quantificational force in addition to changing the type of its arguments. Kind formation '$\cap$', therefore, is more meaning preserving than '∃' and should get picked whenever possible. Dayal (2004), however, notes that Chierchia's ranking in (42ai) would block bare nominals in determiner-less languages from having any object level meaning, definite or indefinite. She also notes that the same reasoning that favors '$\cap$' over '∃' should apply to 'ι' as it also merely changes the type of its arguments without adding quantificational force and should also rank over '∃'. The revised ranking (42aii) is required to explain the fact that bare nominals can denote kinds as well as being contextually salient entities in languages without definite determiners. That is, definite readings are never blocked by kind formation in languages without definite determiners. Ranking '∃' below 'ι' is based on her claim that bare nouns in such languages are not bona fide indefinites:

(44) a. *mujhi lagtaa hai ki kamre meN cuuha ghuum rahaa hai.* (Hindi)
to-me seems that room in mouse moving around is
'It seems to me that a mouse is moving around in the room.' *seem* > ∃/*∃ > *seem*
b. *Wo xiang waimian gou keneng zai-jiao.* (Mandarin)
I think outside dog probably be-barking
'I think dogs are probably barking outside.' *think* > ∃/*∃ > *think* (Dayal, 2004)

The last piece of the theory that will be relevant to us is the Blocking Principle (42b) that favors *overt* type-shifting operations over the corresponding *covert* ones. The Blocking Principle is what explains the difference between the anaphoric potential of bare nominals in languages like English as opposed to languages like Hindi or Mandarin, for example:

(45) a. Some children came in. *(The) children were happy. (English)
b. *kuch baccei aaye. baccei bahut khush lage.* (Hindi)
some children came children very happy seemed
'Some children came. The children seemed very happy.' (Dayal, 2004)

With the above background in place, I now move on to the alternative analysis of *-men* to be proposed in Section 3.2.

3.2 Mandarin *-men* as an associative plural

Among the properties of *-men*, as we saw in Section 2, one that distinguishes *-men* from the canonical additive plural markers like English *-s*/*-es* is its grouping effect with singular reference. For instance, in English *Johns* only refers to 'people all named John' and cannot refer to 'a salient group which is represented by *John* and contains people associated with him'; whereas *XiaoQiang-men* in Mandarin has both the additive plural and the associative plural interpretations as we saw in (6). It is crucial to point out that, this "grouping"/"associative" property of *-men* is not unique to Mandarin; other languages also have similar morphemes that show such an associative grouping effect with singular reference, such as *-tati* (or *-tachi*) in Japanese (Moravcsik, 2003; Nakanishi & Tomioka, 2004), *-ra* in Bangala (Dayal, 2012, 2014; Biswas, 2014), *-ék* in Hungarian (Moravcsik, 1994, 2003; Corbett, 2000; Dékány, 2011) and *-hulle* in Afrikaans (den Besten, 1996), as illustrated below:

(46) a. *Taro-tati* (Japanese)
Taro-TATI
'the group of people represented by Taro' (Nakanishi & Tomioka, 2004)
b. *Ghosh-ra* (Bangla)
Ghosh-RA
'a set of individuals that includes Ghosh' (Dayal, 2014)
c. *Jan-hulle* (Afrikaans)
John-HULLE
lit: 'John and his folks'
'the group surrounding and include John' (den Besten, 1996)
d. *Péter-ék* (Hungarian)
Peter-EK
'Peter and his family or friends or associates' (Moravcsik, 2003)

All examples in (46) consist of a proper name and a morpheme and denote a set comprised of the referent of the proper name and one or more associated individuals. These morphemes that appear with proper names in (46) have been referred to as 'associative plurals' (or 'grouping plurals') (Moravcsik, 1994, 2003; den Besten, 1996; Corbett, 2000; Nakanishi & Tomioka, 2004; Vassilieva, 2005; Dékány, 2011; Dayal, 2012; Biswas, 2014, a.o.). Cross-linguistically, associative plurals are found to be restricted to pronouns, proper names and human nouns, with the focal referent interpreted as definite (Vassilieva, 2005, see Biswas, 2014).

Based on the properties of *-men* shown in Section 2 and the similarities between *-men* and the above morphemes in (46), I analyze *-men* in Mandarin as an associative plural as well. Building on the analysis of the associative plural proposed in Nakanishi & Tomioka (2004), I propose that *-men* maps a kind to a salient group, type $\langle e^k, \langle e,t\rangle\rangle$; the semantics of *-men* is proposed to be the one in (47).

(47) $\textit{-men}_{\langle e^k, \langle e, t\rangle\rangle} = \lambda k \lambda Y\, [{}^{\cup}k_{human} \wedge |Y| \geq 2 \wedge G(k) = Y]$

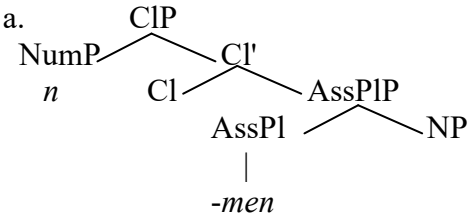
In (47), *k* is a kind and k_{human} is a human kind, Y is a set of plural individuals, type <e, t>, and G is a group function mapping a kind to a salient group. Differing from Nakanishi & Tomioka (2004) who propose two semantic types for the associative plural *-tati* in Japanese depending whether the plural is combined with proper names or common nouns, I propose that the

semantics of *-men* remains the same regardless of what types of nominals it combine with.[15]

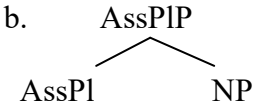
Specifically, if *k* is a regular kind, like 'kids', G picks out an instance of that kind to represent the group, if *k* is an individual kind (e.g., singular individuals/proper names), such as *Zhangsan* or President, G picks out that individual who is saliently associated with a group to represent the group, that is, Y can be viewed as a representative group associated with k. In other words, all nominals in Mandarin, including common nouns and proper names, are kinds; the difference between them is that the former are natural, regular kinds, but the latter are individual kinds. From now on, I will use the term 'noun' to refer common nouns, pronouns and proper names throughout the paper (see Bošković & Hsieh, 2013 for a similar treatment).[16] After *-men* combines with a noun, the N-*men* is predicative, type <e, t>.

Turning to the syntax of *-men*, I propose an associative plural projection closer to the noun and lower than the classifier phrase, building on the split analysis of plurality (e.g., Wiltschko, 2008; Kramer, 2009, 2012, 2016; Dékány, 2011; Butler, 2012; Mathieu, 2012, 2013, 2014; Mathieu & Zareikar, 2015):

(48) a.



b.



The head of the associative plural phrase (AssPlP in short) in (48) indicates plurality, group and human; the plural feature [+pl], the group feature [group] and the human feature [human] surface as a suffix *-men* (see Dékány, 2011 for a similar analysis of Hungarian associative plural *-ek*).[17] The suffix *-men* needs to be realized on nouns, and this can be done by assuming that nouns move up to the head of AssPlP to realize the plural feature (see e.g., Li, 1999; Bošković & Hsieh, 2013; Mathieu & Zareikar, 2015) or that the noun undergoes NP movement to the specifier position of the AssPlP (see e.g., Bošković & Hsieh, 2013, fn 20).[18] When numerals and classifiers are absent, N-*men* has a simpler structure as the one in (48b).

---

[15] Nakanishi and Tomioka (2004) treat common nouns in Japanese as properties, type <e, t> and proper names as entities of type <e> and propose the following two semantics types for the associative plural *-tati* in Japanese:
(i) a. $[[tati]] \in D_{<<e,t>,<e,t>>} = \lambda P_{<<e,t>,<e,t>>} = \lambda P_{<e,t>} \lambda Y_e$. $|Y| \geq 2$ & P represents Y
b. $[[tati]] \in D_{<e,<e,t>>} = \lambda x_e . \lambda Y_e$. $x \leq_i Y$ & $|Y| \geq 2$ & x represents Y

[16] One reviewer points out that pronouns are commonly assumed to be in the D position (or a position higher than the numeral head). It is important to acknowledge this common assumption about pronouns. At the same time we should also acknowledge that the morphology-syntax-semantics of pronouns is still a debated issue (see e.g., Corbette, 2000; Elbourne, 2001, 2002, 2005; Kratzer, 2009; see Boškvoić & Hsieh, 2013: 197). Syntactically, a number of arguments have been provided to argue that even pronouns can be NPs rather than DPs in languages without overt determiners (see, e.g., Fukui, 1988; Noguchi, 1997; Neeleman & SzendrőI, 2007; Bošković, 2008, Despić, 2011; Runić, 2014a, b; Melchin, 2015). Semantically, it has been argued that pronouns can be regarded as the result of deleted NPs (see e.g., Heim & Kratzer, 1998, Elbourne, 2001, 2002, 2005).

[17] The term "associative plural phrase" AssPlP was first named by Dékány (2011) for Hungarian associative plural *-ek* (see (46d)). In Dékány (2011: 259-260), AssPlP in Hungarian is proposed to be in a position higher than DP and demonstratives: AssPl > D > Dem > Num > Cl > n.

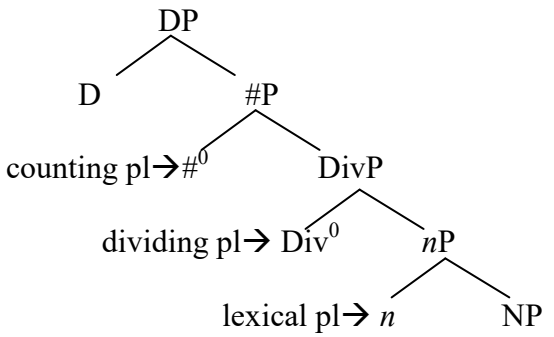
[18] Alternatively, we can assume that *-men* undergoes suffix hopping/lowering in PF to the noun (see e.g., Boškvoić & Hsieh, 2013, fn 20; Kramer, 2009, 2010; 2016).

In the structure in (48a), I still would like to retain the connection between the classifier and the canonical number morphology such as *-s/-es* in English and to assume that they are in complementary distribution, as argued for by a number of authors (see e.g., T'sou, 1976; Doetjes, 1997; Borer, 2005).[19] However, it is important to acknowledge that such complementary distribution is not perfect. Counterexamples in which classifiers and number morphology co-occur have been observed in various languages such as Armenian (Gebhardt, 2009: 258); Arabic (Borer & Ouwayda, 2010); Ejagham (Aikhenvald, 2000), Halkomelem (Wiltschko, 2008); Mayan (Allan, 1977; Zaavala, 2000), Ojibwe (Allan, 1977; Mathieu & Zareikar, 2015), Tlingit (Aikhenvald, 2000), Vietnamese (Goral, 1979), Dutch and German (De Belder, 2008, 2011; Ott, 2011) (see Dékány, 2011: 234 for a comprehensive list of languages that allow the co-occurrence).[20] The fact that the plural element *-men* can co-occur with group classifiers (12) and (13) (see Section 2.2.1) adds Mandarin to the list of languages above.

A number of approaches can account for the cases of co-occurrence of classifiers and number morphology. One can pursue a split analysis of plurality and propose a special plural (e.g., Wiltschko, 2008; Dékány, 2011; Butler, 2012; Mathieu, 2012, 2013, 2014; Mathieu & Zareikar, 2015; Kramer, 2009, 2010, 2016). Or one can pursue a split analysis of classifiers and propose a special classifier (e.g., Svenonius, 2008; Ott, 2008). Or one can suggest that some of the counter-examples have been misanalyzed (e.g., Borer & Ouwayda, 2010) (see Dékány, 2011: 232-235 for a review of different approaches).[21]

The proposed analysis of *-men* in (48) adopts the split analysis of plurality and draws specifically on the plural typology in Mathieu (2012, 2014), Mathieu & Zareikar (2015) and Kramer (2016):

(49)



#0: - plural of singulative
- plural of plural
- measure words in English-type

Div0: - broken plural
- sound plural
- singulative
- measure words

n: - idiosyncratic plurals
- plural of collectives

(Mathieu & Zareikar, 2015)

The plural typology in (49) demonstrates where the different plurals available in the world's languages surface. The highest plural is the counting plural (Mathieu, 2012, 2014; Mathieu &

[19] These authors either observe that the use of number morphology and that of classifiers are in complementary distribution (T'sou, 1976; see Borer, 2005: 93) or argue that their roles are parallel—for example, classifiers and the number morphology both signal the presence of minimal parts (e.g., atoms/groups) (Doetjes, 1997: 35). Based on either their complementary distribution or their parallel roles, those authors identify classifiers with the number morphology and propose that they appear in the same position in the structure.

[20] In addition to the co-occurrence of classifiers and number morphology, some languages have one more type of plurals in addition to the regular plural morphology and allow the occurrence of double plurals, such as Breton (Acquaviva, 2008: 260) and Amharic (Kramer, 2009, 2010, 2016).

[21] Alternatively, some authors do not assume a connection between classifiers and number morphology and assume one projection dedicated to the number morphology and one dedicated to classifiers (e.g., Zhang, 2013; Gebhardt, 2009; see Dékány, 2011: 235).

Zareikar, 2015) which hosts plural of singulatives, plurals of plurals and plurals of measure word in English-type languages. The intermediate plural in (49) is the familiar dividing plural from Borer (2005), the head of which (Div^0) can also host the Chinese-type classifiers or sound plurals in Arabic; it has been argued that this head can also accommodate singulative markers and broken plurals (Mathieu, 2012). The lowest plural (closer-to-root plural) in (49) is the lexical plural (Lecarme, 2002; Acquavia, 2008; Wiltschko, 2008; Kramer, 2009, 2010, 2016; Alexiadou, 2011; Harbour, 2011); its head *n* can host idiosyncratic plurals in Somali, Halkomelem and Salish (Wiltschko, 2008) and Korean (Kwon & Zribi-Hertz, 2004), plurals of collectives in Arabic; in addition, it has been argued that the lexical plural *n* can accommodate groups plurals in Amharic (Kramer, 2016). Typologically, languages can have multiple types of plurals or just one type of plurals (see Kramer, 2016: 555).

Regarding Mandarin, the Div^0 head in (49), which can host classifiers (Borer, 2005; Mathieu, 2014; Mathieu & Zareikar, 2015), corresponds to the classifier head Cl in (48); the closer-to-root plural *n*, which can host group plurals with a [+pl] and [group] feature (Kramer, 2009, 2016), corresponds to the associative plural head AssPl in (48). In other words, Mandarin, under the proposed analysis, is a language that have both Div^0 and *n* within the nominal domain.

In the following subsections, I will illustrate how the proposed semantics and syntax of *-men* in (47) and (48) together with the Neocarlsonian approach introduced in Section 3.1 help us derive in a coherently principled manner the properties of the four types of phrases containing *-men* examined in Section 2: (i) N-*men*, (ii) [Num Cl N-men], (iii) [Num-Approximation Cl N-*men*], and (iv) [N-*men* Num Cl (person)]. These four types of phrases will be analyzed in turn.

3.3 N-*men*

The goal of this subsection is to show that the proposed analysis of *-men* together with the Neocarlsonian approach to bare nominals can derive the properties of N-*men* shown in Section 2 in a principled manner. The properties of N-*men* are repeated below:

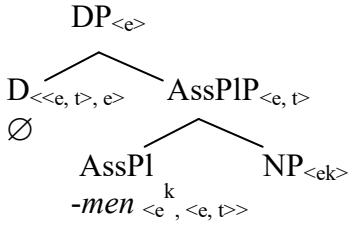
(50) i. [Common Noun *-men*] can receive a definite or a generic interpretation but not a kind nor an indefinite interpretation (3), (27), (28).
ii. [Proper Name *-men*] receives an associative or an additive plural reading (6).
iii. [Pronoun *-men*] receives an additive plural reading (1a, a').

In all examples that we saw, N-*men* is argumental, but the outcome of the N-*men*, according to the proposed semantics of *-men* in (47), is predicative, type <e, t>. Generally, predicative nominals can be turned into arguments by whatever device available in the language, either overt ones (e.g., article determiners *a*/*the* in English) or covert ones (e.g., a null D or a semantic type-shifter). In the specific case of Mandarin, it lacks overt determiners of the category D like *the/a* in English which turn N-*men* into arguments; however, N-*men* can be turned into an argument via the corresponding covert operations.[22]

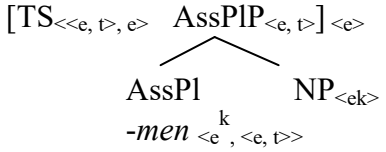
[22] As pointed out by one reviewer, Mandarin has demonstratives which are generally taken as overt devices to shift properties to entities of type <<e,t>, e>. This paper adopts this view of demonstratives as well and assumes that demonstratives are property seeking functions with indexically individuated situations, along the lines in Kaplan (1989), Wolter (2006) and Dayal (2012). As N-*men* is property-denoting, we should expect that demonstratives can combine with it, turning it into an argument. This prediction is indeed borne out:
(i) *laoshi dui <u>zhexie/naxie xuesheng-men</u> tebie hao*.

Regarding covert operations that turn properties into arguments, there are two available: a null D in the syntax (e.g., Longobardi, 1994; Borer, 2005) or a type-shifting operation in the semantics (TS in short) (e.g., Partee, 1986; Chierchia, 1984, 1998; Dayal, 2004):

(51) a. covert operation in syntax



b. covert operation in semantics



Concerning whether we should choose the covert operation in the syntax (51a) or the covert operation in the semantic (51b) to argumentize N-*men,* it is crucial to acknowledge that there is no empirical evidence to support one over the other. It is also impossible to prove either of them to be wrong since both operations are invisible. In this paper, I choose the semantic operation in (51b). The goal is to show that it is not necessary to stipulate a functional category D that is always invisible in Mandarin in order to account for the behaviors of its nominal arguments.

After choosing a type-shifting operation for argumentizing N-*men* (51b), we need to decide which specific type-shifting operation will fulfill this job. Three type-shifting operations are available, namely the iota operator 'ι', the existential closure operator '∃', and the down-operator '∩' (41b, c, d) (see Section 3.1). Theoretically, we should expect that N-*men* can be turned into an argument with not only a definite interpretation, but also an indefinite interpretation as well as a kind interpretation. Nevertheless, as introduced in Section 3.1, it is not the case that these three type-shifting operations apply to predicative nominals in a random fashion. Instead, they apply to predicative nominals and derive their interpretations in a principled manner, following a general principle *Ranking of Meaning* {∩, ι} > ∃ (42aii). Such a ranking is motivated by cross-linguistic data as well as theoretical considerations (see Section 3.1)

Below, I am going to show how the interpretation of N-*men* is derived in a coherently principled manner via *Ranking of Meaning* (42aii) and the proposed semantics of *-men* in (47).

According to *Ranking of Meaning*, the iota operator 'ι' and the down-operator '∩' rank over the existential closure operator '∃', so we expect that the iota operator 'ι' and the down-operator '∩' will be chosen first to turn N-*men* into an argument. If these two operators cannot

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teacher to these/those student-MEN especially good
'The teacher is especially nice to these/those students.' (Li, 1999: 88, (17a))

As suggested in Li (1999: 96, fn 24, 25), *zhe* 'this' and *na* 'that' are the singular form of demonstratives, *zhexie* 'these' and *naxie* 'those' express plurality; *xie* in *zhexie/naxie* can be treated as part of demonstratives. If we adopt Li's analysis, we would expect that *zhe* 'this' and *na* 'that' cannot combine with N-*men*. This prediction is borne out:

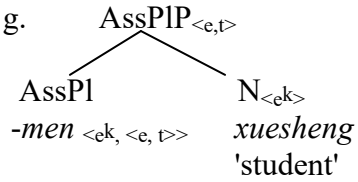
(ii) **zhe/na xuesheng-men*
this/that student-ren
Intended: 'these/those students'

In this paper, I am not concerned about demonstratives which exist both in Mandarin and English as well as in other languages; instead, I am only conerned about article determiners of the category D which vary from language to language and the ongoing debate regarding whether the DP projection is universal (e.g., Longobardi, 1994; Borer, 2005) or is subject to parameterization (e.g., Chierchia, 1998; Dayal, 2004; Bošković, 2005 et seq.).

come to play, i.e., when they are blocked by overt article determiners (see *Blocking Principle* (42b)), the existential operator '∃' will be selected, as a second choice.

Let us start with the iota operator "ι". It can turn N-*men* into an argument with a *definite* interpretation. This correctly captures the fact that N-*men* receives a definite reading:

(52) a. *xuesheng-men li-kai le.* [definite]
student-MEN leave ASP
'The students has left.'
b. [[xuesheng]] = $^{\cap}$students <e^k>
c. [[men]] $_{<e, <e, t>>}$ = λkλY [$^{\cup}k_{human} \wedge |Y| \geq 2 \wedge G(k) = Y$] <$e^k$, <e,t>>
d. [[xuesheng-men]] = λY [$^{\cup\cap}$students $\wedge |Y| \geq 2 \wedge G(^{\cap}$students$) = Y$] <e, t>
e. ι [xuesheng-men] = ιY [$^{\cup\cap}$students $\wedge |Y| \geq 2 \wedge G(^{\cap}$students$) = Y$] <e> (via iota)
f. [[xuesheng-men li kai le]] = ∃e ιx [student-men (x) ∧ leave$_w$ (e, x)]
g.



In (52b), the bare noun *xuesheng* 'student' is kind-referring; when *-men* in (52c) combines with *xuesheng* 'student', the grouping function in the semantics of *-men* G picks out an instance of the student-kind to represent a salient group whose cardinality is more than one. Hence, '*xuesheng-men*' in (52d) denotes a property of a salient group represented by one instance of the 'student-kind', type <e, t>.[23] Next, iota "ι" in (52e) turns the property-denoting *xuesheng-men* into an argument with a definite interpretation, that is, 'the unique salient group whose cardinality is more than one and which is represented by one instance of the 'student-kind'. Syntactically, *xuesheng-men* is an AssPlP (52g) and remains an AssPlP after iota "ι" turns it into an argument.

Now let us consider the other type-shifting operator that shares the same ranking as the iota operator, i.e., the down-operator "$^{\cap}$" (see *Rank of Meaning*). The down-operator can turn N-*men* into an argument with a kind interpretation. However, turning N-*men* to kinds is undefined because the semantics of N-*men*, i.e., a property of a salient group represented by one instance of the kind, does not satisfy the conceptual notion of a kind which corresponds to the plurality of *all* instances of the property (see Carlson, 1977 for the detailed discussion of kinds). This correctly captures the fact that N-*men* is not compatible with a kind level predicate and cannot receive a kind reading (as seen in (37a) and repeated in (53a).

(53) a. **baiwanfuweng-men xianzai yijing hen pubian le.* [*kind]
millionaire-MEN now already very common Asp
Intended: 'Millionaires are very common now.'
b. [[baiwanfuwen-men]] = λY [$^{\cup\cap}$millionaires $\wedge |Y| \geq 2 \wedge G(^{\cap}$millionaires$) = Y$] <e, t>

[23] This analysis of N-*men* as property-denoting would predict that N-*men* can appear in predicate positions; however, this prediction is not borne out as we saw in (36a). This puzzle would exit if one chooses a null DP analysis of N-*men* since one may as well wonder why the N-*men* that a null D combines with cannot occur in predicate positions. I leave this puzzle why N-*men* cannot serve as predicates for another occasion.

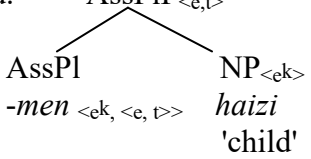
c. $^{\cap}$ [baiwanfuweng-men]
= $^{\cap}$Y [$^{\cup\cap}$millionaires $\wedge$ |Y| $\geq$ 2 $\wedge$ G($^{\cap}$millionaires) =Y], via '$^{\cap}$', undefined

Given that the iota operator "ι" has come to play, turning N-*men* into an argument with a definite interpretation (52), the lower ranked existential operator "∃" is no longer an option for argumentizing N-*men*. *Rank of Meaning* (42aii), thus, correctly predicts that N-*men* cannot receive an *indefinite* reading, capturing the fact in Mandarin (3a), as repeated in (54a).

(54) a.*_you ren-men_ [*indefinite]
have person-MEN
b. [[ren-men]] = λY [$^{\cup\cap}$persons $\wedge$ |Y| $\geq$ 2 $\wedge$ G($^{\cap}$persons) =Y] <e, t>
c. ∃ [ren-men]
=∃Y [$^{\cup\cap}$persons $\wedge$ |Y| $\geq$ 2 $\wedge$ G($^{\cap}$persons) =Y], via '∃', ruled out by *Ranking of Meaning*

In addition to a definite interpretation, N-*men* can also receive a generic interpretation (38) (one example is repeated in (55a)). As is well studied, the generic interpretation of a nominal is contributed by the *Gen* operator which quantifies over the whole generic sentence (see Krifka et al 1995 for discussion on *Gen* and genericity). In the generic sentence containing N-*men* (55a), the N-*men* phrase can remain as predicative of type <e, t> (55b), with the *Gen* operator binding it (55c). In (55c), 'ACC' is the accessibility relation: ACC (s_0, s) iff s is accessible from s_0 (e.g., see Krifka, et al. 1995).[24] Structurally, *haizi-men* is still an AssPlP (55d).

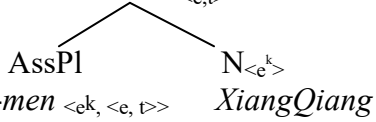
(55) a. _haizi-men_ *shi zuguo de weilai.*
child-MEN is nation De future
i. 'Children (in general) are the future of our nation.' [generic]
ii. 'The children are the future of our nation.'
b. [[haizi-men]] = λY [$^{\cup\cap}$children $\wedge$ |Y| $\geq$ 2 $\wedge$ G($^{\cap}$children) =Y] <e, t>
c. [[haizi-men shi zuguo de weilai]]
= ∀x, s [ACC(s_0, s) $\wedge$ haizi-men$_s$(x)] [be the future of our nation$_s$(x)]
d.



The examples analyzed above only concern common nouns; next, let us turn to the cases in which Ns are proper names (6) and pronouns (1a'). The derivation of [Proper Name-*men*] is essentially the same as that of [Common Noun-*men*]. I repeat an example in (56a).

[24] One reviewer points out that the reading that we get from (55c) seems to be 'Groups of children are the future of the country', which does not reflect the generic reading of this sentence (55ai). In order to derive the pseudo-partitive reading suggested by the reviewer, a measure function μ (e.g., to measure children in groups) should be present in the semantics. The semantics in (55c) lacks a measure function and is unlikely to derive such a pseudo-partitive reading. Under the proposed analysis of *-men* in (47), *-men* is a function from a kind to a salient group; after the generic operator applies to N-*men*(55c), a generic reading is derived, namely that 'Children (this salient group) are the future of the country'.

(56) a. *XiaoQiang-men*
XiaoQiang-MEN
i. 'XiaoQiang and the others'
ii. 'People with the characteristics or the same name of *Xiaoqiang*.'
b. [[XiaoQiang]] = $^{\cap}$Xiaoqiang $<e^k>$
c. [[men]] $_{<e, <e, t>>}$ = $\lambda k \lambda Y[^{\cup}k_{human} \wedge |Y| \geq 2 \wedge G(k)=Y]$ $<e^k, <e,t>>$
d. [[XiaoQiang-men]] = $\lambda Y[^{\cup\cap}$Xiaoqiang $\wedge |Y| \geq 2 \wedge G(^{\cap}$Xiaoqiang$)=Y]$ $<e, t>$
e. ι [XiaoQiang-men] = $\iota\lambda Y[^{\cup\cap}$Xiaoqiang $\wedge |Y| \geq 2 \wedge G(^{\cap}$Xiaoqiang$)=Y]$ $<e>$ (via ι)
f.



In (56b), the proper name *XiaoQiang* is an individual kind, type $<e^k>$; it combines with *-men* in (56c). G picks out *XiaoQiang* who is saliently associated with a group whose cardinality is more than one to represent that group (56d). Last, iota ι turns the property-denoting '*XiaoQiang*-men' into an argument with a definite interpretation (56e), that is, 'the unique salient group whose cardinality is more than one and which is represented by *XiaoQiang* and contains the others associated with him,' deriving the associative plural interpretation in (56ai).

Crucially, if *XiaoQiang* is not treated as an individual kind but a regular kind—people who are named *XiaoQiang* or people who have the same characteristics as *XiaoQiang*, G will pick out an instance of that kind to represent a salient group whose cardinality is more than *one*. After the iota operator applies, 'XiaoQiang-*men*' refers to the unique salient group whose cardinality is more than one and which is represented by one instance of the 'XiaoQiang-kind', resulting in the additive plural interpretation in (56aii). Syntactically, 'XiaoQiang-*men*' still remains as an AssPlP, same as the ones in (52g) and (55d).

Regarding pronoun-*men* (1a'), its derivation is virtually the same as that of proper name-*men*. Specifically, if pronouns are regarded as the result of deleted NPs (e.g., see Heim & Kratzer, 1998, Elbourne, 2001, 2005), they could be seen as individual kinds like proper names. Hence, the derivation of pronoun-*men* resembles that of proper name-*men* in (56).[25]

This section showed that the proposed analysis of *-men* in Section 3.2, together with the Neocarlsonian approach of Chierchia (1998) and Dayal (2004), correctly predicted the definite and generic interpretations of N-*men* and ruled out its indefinite and kind interpretations. We also saw that the derivation of proper name-*men* and pronoun-*men* is essentially the same as that of common noun-*men*. The proposed analysis of *-men* not only explained the additive plural interpretation but also the associative plural interpretation. Structurally, N-*men* is an AssPlP and remains as an AssPlP regardless of whether N is a common noun, proper name or pronoun. Next, let us turn to the [Num Cl N-*men*] phrase and its properties.

[25] As observed by one reviewer, when using *ta-men* '3sg-men' in Mandarin, the speaker does not need to have a specific referent for *ta* 'he/she' in mind. In means that *ta* 'he/she' can refer to any individual that is neither the speaker nor the addresses. I agree with this observation and suggest that this intuition can be captured via the semantics of *ta* 'he/she' proposed in Bošković & Hsieh (2013: 198):
(i) [[ta]] $^{g, c}$ = a unique individual in c that is neither the speaker nor the addressee (Bošković & Hsieh, 2013)

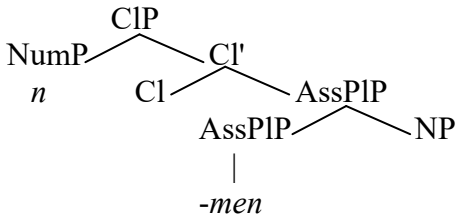
3.4 The [Num Cl N-*men*] phrase

In Section 2.2.2, we saw that N-*men* can combine with group classifiers, appearing in the post-classifier position (12)/(13); such a phrase can combine with a demonstrative (12b, 13b, c) or appear in existential sentences (13e, f). Two examples are repeated below:

(57) a. *zhe (yi) qun haizi-men qu na-er le?*
this one $Cl_{crowd/group}$ child-MEN go where Asp
'Where did this crowd of children go?'
b. *zong you yi qun haizi-men nian-zhe ta.*
always exist one $Cl_{crowd/group}$ child-MEN stick-Prog 3sg
'There is always a group of children surrounding him.'

As proposed in (48) (as repeated in (58)), the [Num Cl_{group} N-*men*] phrase has an associative plural projection between the classifier and the noun:

(58)



Regarding the semantics of the [Num Cl_{group} N-*men*] phrase, I adopt the analysis that classifiers serve to shift the denotation from kinds to sets (40) (see Section 3.1). The analysis in (40) can be extended to other types of classifiers as well. Below I illustrate with a group classifier *zu* 'team/section'.

(59) a. *liang zu xuesheng*
two $Cl_{team/section}$ student
'two teams/sections of students'
b. $[[zu]] = \lambda k \lambda x \exists n\, [^{\cup}k(x) \wedge \mu_{team/section}(x) = \underline{n}]$ $<e^k, <e, t>>$
c. $[[liang]] = \lambda P\, \lambda x\, [P(x) \wedge \underline{2}(x)]$ $<<e, t>, <e, t>>$
d. $[[liang\ zu\ xuesheng]] = \lambda x\, [^{\cup\cap}students\ (x) \wedge \mu_{team/section}(x) = \underline{2}]$ $<e, t>$

In (59b), *zu* 'team, section' serves to turn the kind-referring noun *xuesheng* 'student' to a set measured in teams/sections; '$\mu_{team/section}(x)$' means that x is measured/formed in teams/sections. So *liang zu xuesheng* in (58d) denotes two teams/sections of students.

When *-men* combine with bare nouns, I propose that group classifiers have a derived use, i.e., they can turn salient sets to sets that contain specific information as to how the sets are formed/measured, e.g., by groups, by sections or by teams (60).

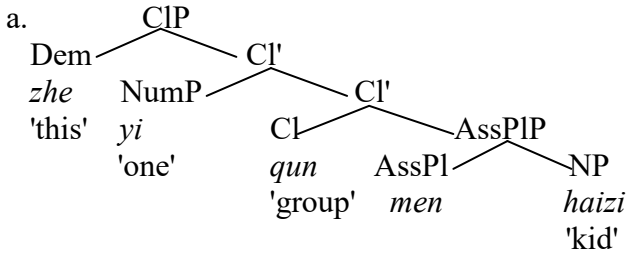
(60) Derived use of group classifiers:
$Cl_{group/team/section/pile} = \lambda G \lambda n\, \lambda x\, [G(x) \wedge \mu_{group/team/section/pile}(x) = \underline{n}]$

In the case of the phrase in (57), the semantics of *yi qun haizi-men* 'a crowd of children' is given below:

(61) a. $[[\text{haizi-men}]] = \lambda Y\, [^{\cup\cap}\text{children} \wedge |Y| \geq 2 \wedge G(^{\cap}\text{children}) = Y]$ <e, t>
b. $[[\text{qun}]] = \lambda G \lambda x \exists n\, [G(x) \wedge \mu_{group/crowd}(x) = \underline{n}]$ <<e, t>, <e,t>>
c. $[[\text{qun haizi-men}]] = \lambda x \exists n\, [\text{haizi-men}(x) \wedge \mu_{group/crowd}(x) = \underline{n}]$ <e, t>
d. $[[\text{yi}]] = \lambda P\, \lambda x\, [P(x) \wedge \underline{1}(x)]$ <<e, t>, <e, t>>
e. $[[\text{yi qun haizi-men}]] = \lambda x\, [\text{haizi-men}(x) \wedge \mu_{group/crowd}(x) = \underline{1}]$ <e, t>

In (61d), the numeral is treated as a predicate modifier (Ionin & Matushansky, 2006, see Section 3.1), and the numeral classifier phrase containing *-men yi qun haizi-men* in (61e) is predicative, type <e, t>. Note that this analysis immediately accounts for the fact that the [Num Cl_{group} N-*men*] phrase can be used as restrictors of demonstratives, as in (57a). I give below a derivation to show this.

(62) = (57a)
a.



b. $[[\text{yi qun haizi-men}]] = \lambda x\, [\text{haizi-men}(x) \wedge \mu_{group/crowd}(x) = \underline{1}]$ <e, t>
c. $[[\text{zhe yi qun haizi-men}]] = \iota x [\text{haizi-men}(x) \wedge \mu_{group/crowd}(x) = \underline{1} \wedge x \text{ is in this}_n]$ <e>

Regarding demonstratives, I adopt the view that they occur in the specifier position rather than the head position (Giusti, 1997, 2002; Brugè, 2000, 2002; Alexiadou et al., 2007, a.o.)[26]. As for their semantics, I follow Kaplan (1989), Wolter (2006) and Dayal (2012) and assume that demonstratives are property seeking functions with indexically individuated situations. So the phrase *zhe yi qun haizi-men* 'this group of kids' has the semantics in (62d) in which 'this$_n$' denotes a non-distal situation that the speaker is pointing at.

Note that the [Num Cl_{group} N-*men*] phrase is predicative rather than argumental in (60), we might well ask, then, how it becomes an argument with an indefinite interpretation, as in (56b). Here I take the position that numerals have a predictable lexical variant in which they are indefinite determiners derived via a choice function in the lexical entry of numerals (Jiang, 2012, see Dayal (2012) for a similar view). The resulting numeral classifier phrase, under this analysis of numerals, is argumental. I give below a derivation to show this:

[26] One of the arguments for distinguishing demonstratives from determiners is that in many languages, such as Romanian, Hungarian, Spanish, Greek, the two elements can co-occur. These authors further argue that demonstratives are very low specifiers and can undergo movement to higher specifier positions (e.g., Giusti, 2002: 71-72; Alexiadou et al., 2007: 109).

(63) = (57b)

a. [[yi]] = λP [$f_{\exists}$ (λx [P(x) ∧ 1(x)]) <<e, t>, e>

b. [[yi qun haizi-men]] = $f_{\exists}$ (λx [haizi-men(x) ∧ μ_{group} (x) = $\underline{1}$]) <e>

Crucially, under the above analysis, the predicative and the argumental [Num Cl_{group} N-*men*] phrases have the same structure, which is the one in (58). Such a structure does not require us to assume a functional category D that is invisible in the grammar of Mandarin to account for the behaviors of the numeral classifier phrases containing *-men*.

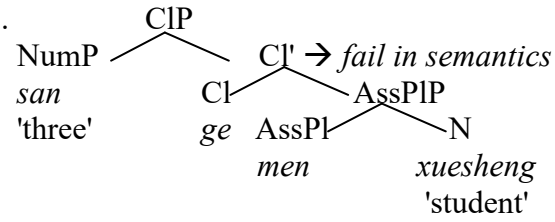
One last but very important fact to explain in this sub-section is why *-men* is not allowed in the numeral-classifier-noun structure when the classifiers are individual classifiers, as seen in (5) and repeated in (64a). I propose that the structure of (64a) is the same as the one in (58) and that the unacceptability of (64a) is the result of the semantics of individual classifiers clashing with the denotation of N-*men* , as demonstrated below:

(64) a. **san-ge xuesheng-men*

three-Cl student-MEN

Intended: 'three students'

b.



c. [[ge]] = λk λx [AT($^{\cup}$k)(x)] <e^k, <e, t>>

d. [[xuesheng-men]] = λY [$^{\cup}$STUDENT ∧ |Y| ≥ 2 ∧ G(STUDENT)=Y] <e, t>

e. [[ge xuesheng-men]] = ?? uninterpretable

As we saw in Section 3.1, individual classifiers like *ge* turn kinds to a set of atomic instantiations of the kind (40b)/(64c); however, N-*men* denotes a salient group of plural individuals (64d), which cannot provide the correct semantics that individual classifiers look for. Consequently, *ge xuesheng-men* is not interpretable in the semantics (64e), causing the computation to fail to proceed. In other words, the syntax allows an individual classifier to merge with N-*men*, but the combination of the two fails in the semantics, resulting in the unacceptability of (64a).

Having seen how the structure and semantics of [Num Cl N-men] phrase are analyzed, I now analyze the third type of phrases containing *-men*, the [Num-Approximation ge N-*men*] phrase, and its properties.

3.5 The Numerical Approximation Construction [Num-Approximation Cl N-*men*]

In Section 2.2.2, we concluded that *-men* is allowed to appear in the position following individual classifiers in the numerical approximation construction using *ji* and *duo* (19). The syntactic and semantic properties of the [Num-Approximation Cl N-*men*] phrase are repeated below:

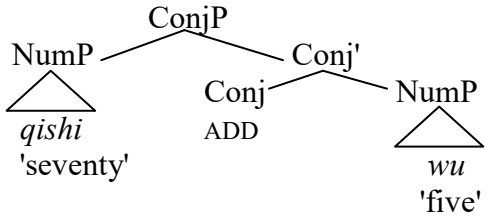
(65) Properties of [Num-Approximation Cl N-*men*]
i. definite interpretation (20)
ii. *ji*/*duo* can appear in pre-numeral and/or post-numeral position (23)/(24)
iii. the position of *ji*/*duo* determines whether the phrase involves addition or multiplication. (19)/(22)

In order to analyze the structure and the semantics of the [Num-Approximation Cl N-*men*] phrase, let us first understand the structure and semantics of numeral approximation containing *ji*/*duo*.

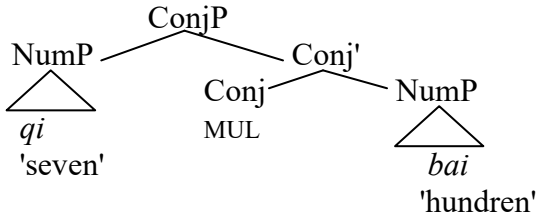
3.5.1 Structure and semantics of numerical approximation using *ji/duo*

Numerals that involve multiplication (such as *qi-bai* 'seven hundred' which is formed by the multiplication of 7 and 100) and/or addition (such as *qishi-wu* 'seventy-five' which is formed by the addition of 70 and 5) are usually referred to as complex numbers (see Ionin & Matushansky 2006). Following Ionin & Matushansky (2006), I assume that additive numerals as well as multiplicative numerals are built up syntactically by coordinating smaller numerals.

(66) a. Structure of an additive numerical (*qishi-wu* 'seventy five')



b. Structure of a multiplicative numeral (*qi-bai* 'seven hundred')



The above structures of complex numbers also integrate the assumption that the head of the conjunctive phrase is a silent morpheme ADD (Anderson, 2015) or a silent morpheme MUL (Mendia, 2016). Regarding numerals, I assume that they can serve as predicates in addition to serving as adjectival modifiers and indefinite determiners. When numerals are properties, I follow Solt (2015) and Anderson (2015) and assume that they can denote properties of degrees, type <d, t>, similar to quantity words *many* and *a few*. The semantics of the simple numeral like *qi* 'seven' and that of ADD and MUL are given below.

(67) a. [[n]] = λd[d = n] <d, t> (Solt, 2015; Anderson, 2015)
b. [[ADD]] = λ*D*λ*D′*λ*d*∃*d′*, *d″* [*d* = *d′* + *d″* ∧ *D*(d') ∧ *D′*(*d″*)] (Anderson, 2015)
c. [[MUL]] = λ*D*λ*D′*λ*d*∃*d′*, *d″* [*d* = *d′* × *d″* ∧ *D*(d') ∧ *D′*(*d″*)] (Mendia, 2016)

Based on (67), the complex numerals *qishi-wu* 'seventy five' and *qi-bai* 'seven hundred' in (66) have the following derivation:

(68) a. [[qishi]] = λd[d = seventy]]
b. [[wu]] = λd[d = five]]
c. [[qishi ADD wu]] = λ*d*∃*d′*, *d″* [*d* = *d′* + *d″* ∧ [[seventy]] (d') ∧ [[five]] (*d″*)]
d. [[qi]] = λd[d = seventy]]
e. [[bai]] = λd[d = hundred]]
f. [[qi MUL bai]] = λ*d*∃*d′*, *d″* [*d* = *d′* × *d″* ∧ [[seven]] (d') ∧ [[hundred]] (*d″*)]

In (68c), *qishi-wu* 'seventy five' is split into its component parts, a degree equal to *5* (68b) and a degree equal to *70* (68a); by adding 5 and 70, we obtain a newly formed property of degree *75*. Similarly, *qi-bai* 'seven hundred' (68f) is split into a degree equal to 100 (68e) and a degree equal to 7 (68d), and multiplication of 7 and 100 results in a newly formed property of degree 700.

Turning to numeric approximation using *ji 'a few/how many' or duo 'many/how'*, in Section 2.2.2, I presented a description of their syntactic and semantic properties (22) - (25). The similarities and differences between *duo* and *ji* in numerical approximation are summarized below:

(69) Numerical Approximation using *duo* and *ji*

	Position	Restrictions on Numeral	Relation to Numeral	Example
duo 'many/how': to denote a range of numbers from 1-9	post-numeral	ten and multiples of ten (e.g., 10, 20, 30, 100, 160, 1000)	additive	(23)
	*pre-numeral	N/A	N/A	(22a')
ji 'a few, how many': to denote a range of numbers from 1-9	post-numeral	round numbers lower than one hundred (i.e., 10 to 90)	additive	(24a-d)
	pre-numeral	ten and powers of ten (e.g., 10, 100, 1000, 10000)	multiplicative	(24a'-d')

Crucially, these properties of numeral approximation using *ji/duo* are not unique to Mandarin; they are also attested in English numerical approximation using *some* as well as in Japanese numeral approximation using *nam* 'what' (see Anderson, 2015; Mendia, 2016). Relevant examples from English and Japanese are provided below:

(70) a. twenty-some students (English)
b. *Juu-nan-nin-ka-ga kita*. (Japanese)
ten-what-$Cl_{(people)}$-ka-NOM came
'10 plus x people came.'
c. *Nan-juu-nin -ka-ga kita*.
what-ten-$Cl_{(people)}$-ka- NOM came
'x multiple 10 people came.' (Anderson, 2015)

Based on the properties of numeral approximation using *ji*/*duo* (69) and the similarities among Mandarin, English and Japanese regarding their numerical approximation constructions (70), I propose that *ji*/*duo* can be analyzed in a similar way as *some* and *nun* in Anderson (2015) and Mendia (2016).

Syntactically, I analyze *ji* and *duo* as a quantifier head (Q). I consider two reasons for such an analysis. First, *duo* 'many' and *ji* 'a few' can also combine with a classifier-noun phrase without a numeral:

(71) a. *duo ge zhanghu* b. *duo wei zhuanjia* c. *duo ming xuezhe* d. *duo ge xiangmu*
many Cl account many Cl expert many Cl scholar many Cl program
'multiple accounts' 'multiple experts' 'multiple scholars' 'multiple programs'

(72) a. *ji ge zhanghu* b. *ji wei zhuanjia* c. *ji ming xuezhe* d. *ji ge xiangmu*
a-few Cl account a-few Cl expert a-few Cl scholar a-few Cl program
'a few accounts' 'a few experts' 'a few scholars' 'a few programs'

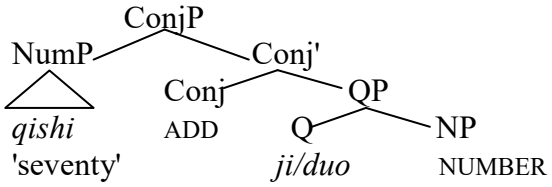
Second, similar to numerals, *duo* 'many' and *ji* 'a few' do not combine with a noun directly, except in a handful of cases (see e.g., Chao, 1968: 581-582): [27]

(73) a. **duo zhanghu* b. **duo zhuanjia* c. *duo nian* d. *duo ri*
many account many expert many year many day
'many years' 'many days'

(74) a. **ji zhanghu* b. **ji zhuanjia* c. *ji nian* d. *ji ri*
a-few account a-few expert a-few year a-few day
'a few years' 'a few days'

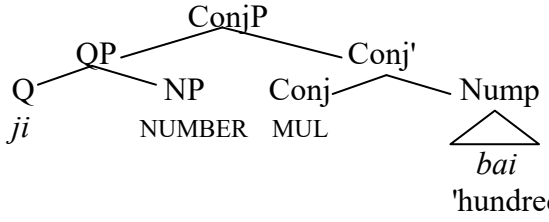
Following Anderson (2015), I assume a silent noun NUMBER as the complement to Q, along the lines proposed by Kayne (2005) and Zwig (2005). The structure of numerical approximation using *ji* and *duo* are given below.

(75) a. *qishi ji/duo*
seventy a few/many
'seventy-some'
b. Structure of an additive numerical approximation phrase



[27] As pointed out by one reviewer, *duo* and *ji* differ in many contexts as well. For example, they differ in their ability to combine with certain classifiers and nouns:
(i) a. *ji ge xuesheng* b. * *duo ge xuesheng*
a-few Cl student many Cl student
'several students' Intended: 'multiple students'
In addition to the above examples pointed by this reviewer, *ji* and *duo* also differ in their ability to combine with certain nouns directly (Chao, 1968: 584):
(ii) a. *ji fenzhong* b. * *duo fenzhong*
a-few minute many minutes
'a few minutes' Intended: 'many minutes'
I do not have an explanation to the two differences above, and I leave it to future research to provide a resolution.

(76) a. *ji* *bai*
a-few hundred
'a few hundred'
b. Structure of a multiplicative numerical approximation phrase



Regard the semantics of *ji*/*duo*, it can be analyzed in a similar way as *some* in numeral approximation phrase proposed in Anderson (2015) (77a).[28] As for the semantics of the silent noun NUMBER, I adopt the analysis in Mendia (2016) which treats its denotation as the set of 'basic' numbers (77b).

(77) a. [[ji/duo]] = $\lambda f(dt,dt)\lambda D\lambda d$: anti-singleton($f$)[$f(D)(d)$]
b. [[NUMBER]] = {1, 2, 3, 4, 5, 6, 7, 8, 9}

The logic forms of the two phrases in (75a) and (76a), after some reduction, would look as the ones below:

(78) a. [[qishi-ji]] = [[qishi ADD ji NUMBER]]
$= \lambda d \exists d', d''[\text{d} = d' + d'' \wedge [[\text{seventy}]](d') \wedge [[\text{ji NUMBER}]](d'')]$
$= \lambda d \exists d', d''[\text{d} = d' + d'' \wedge [[\text{seventy}]](d') \wedge \text{f}(0 < d'' < 10)]$
$= \lambda d\, [f\,(70 < d < 80)]$
b. [[ji-bai]] = [[ji NUMBER MUL bai]]
$= \lambda d \exists d', d''[\text{d} = d' \times d'' \wedge [[\text{ji NUMBER}]](d') \wedge [[\text{hundred}]](d'')]$
$= \lambda d \exists d', d''[\text{d} = d' \times d'' \wedge \text{f}(0 < d' < 10) \wedge [[\text{hundred}]](d'')]$
$= \lambda d\, [f\,(100 < d < 1000)]$

With the analysis of numeral approximation using *ji/duo* in place, we now can proceed to analyze the [Num-Approximation Cl N-*men*] phrase.

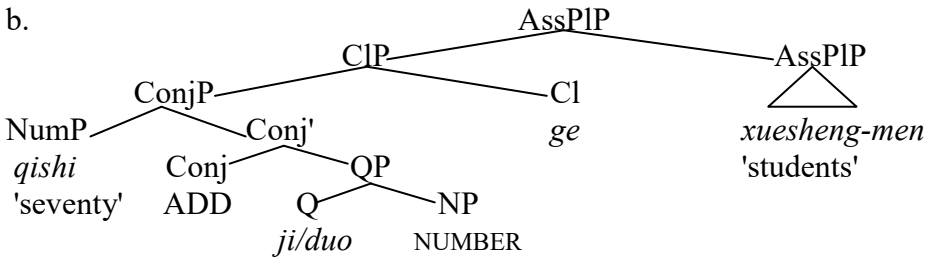
3.5.2 Structure and semantics of [Num-Approximation Cl N-men]

I propose a right-adjunction structure for [Num-Approximation Cl N-men] (79b), with one example repeated in (79a).

(79) a. *qishi* *duo/ji* *ge* *xuesheng-men*
seventy many, how/a few, how many Cl student-MEN
'seventy-some students'

[28] Anderson's (2015) analysis of English *some* in numeral approximation structures is based on the analysis of Spanish *-algún*, which expresses ignorance with respect to number, in Alonso-Ovalle & Menéndez-Benito (2010).

b.



In (79b), the classifier and the complex numeral form a constituent, serving as a modifier to N-*men*. I consider two main reasons to support the above right-adjunction analysis. First, numerals and the classifiers can be used independently either as a predicate or an argument (Jiang, 2009; X. Li, 2011, 2013), as illustrated in (80) and (81).

(80) a. *ta zhong le wubai ke de shu*.
he plant Perf 500 Cl De tree
'He planted five hundred trees.'
b. *ta zhong de shu you wubai ke*.
he plant De tree have 500 Cl
'The trees he planted reached 500.' (X. Li, 2011)

(81) a. *Liu laoshi zhengzai zhidao qishi duo ge xuesheng-men lianxi.*
Liu teacher Prog guide seventy more Cl student-MEN practice
'Teacher Liu is providing practice guidance to more than seventy students.'
b. *Liu laoshi zhengzai zhidao xuesheng-men lianxi, dagai you qishi duo ge.*
Liu teacher Prog guide student-MEN practice about have seventy more Cl
'Teacher Liu is providing practice guidance to the students,
(the number of which is) probably seventy-some .'

Second, when numerals and classifiers form a constituent, the [Num Cl] unit has been argued to have a measuring interpretation in contrast with the [Num [Cl N]] unit in which the classifier and the noun form a constituent (Jiang, 2009; X. Li, 2011, 2013).

When numerals combine with individual classifiers as a constituent, I adopt the analysis in X. Li (2011) that the [Num-$Cl_{individual}$] unit serves the function of estimation and that the estimation interpretation is brought about by the individual classifier. The derivation for the underlined phrase in (79a) is given below.

(82) a. $[[ge]] = \lambda n \lambda x\ [EST(x) = <n, U_{atom}>]$ <d, <e, t>>
b. $[[qishi\text{-}ji]] = \lambda d\ [f(70 < d < 80)] = (78)$ <d, t>
c. $[[qishi\text{-}ji]] = \iota d\ [f(70 < d < 80)]$ <d> (via iota)
d. $[[qishi\text{-}ji\ Cl_{ind}]] = \lambda x\ [EST(x) = <\iota d\ [f(70 < d < 80)], U_{atom}>$ <e, t>
e. $[[xuesheng\text{-}men]] = \lambda Y\ [^{\cup}\text{STUDENT} \wedge |Y| \geq 2 \wedge G(\text{STUDENT})=Y]$ <e, t>
f. [[qishi-ji ge xuesheng-men]] (via Predicate Modification)
$= \lambda x\ [EST(x) = <\iota d\ [f(70 < d < 80)], U_{atom}> \wedge$ xuesheng-men $(x)]$ <e, t>

g. [[qishi-ji ge xuesheng-men]] (via iota)
= ιx [EST (x) = <ι*d* [*f* (70 < *d* < 80)], U_{atom}> ∧ xuesheng-men (x)] <e>

In (82a), EST is an estimation function, which estimates the number of atomic entities (see X. Li, 2011). The classifier *ge* takes a numeral *n* and returns a set of atomic entities whose estimated value is *n*. In (82b), the denotation of *qishi-ji* 'seventy-some' is a property of degree, type <d, t> (see Section 3.5.1). At this point, the denotations of *ge* and *qishi-ji* are not compatible since *ge* needs a specific degree, not a property of degrees. This can be fixed by applying Partee's (1986) iota type-shifting operation to the property of degrees (82c) (see also Anderson, 2015 for numerical approximation using *some*). So the modifier *qishi-ji ge* 'seventy-some Cl_{ind}' in (82d) denotes a set of atomic entities whose estimated value is seventy-some (70 < n < 80), type <e, t>. The modified head AssPlP *xuesheng-men* denotes a salient group of students, also type <e, t> (see Section 3.3). By applying Heim & Kratzer's (1998) Predicate Modification to these two property-denoting phrases, the phrase '*qishi-ji ge xuesheng-men*' in (81a) then denotes a salient group of students whose estimated value is seventy-some (i.e more than 70 but less than 80) (82f).

Note that the modified phrase in (77f) denotes a property of type <e, t>. According to *Rank of Meaning* in (42aii), the iota operator can turn it into an argument with a definite interpretation, i.e., the group of students whose estimated value is seventy-some. The availability of the iota type-shifting excludes the possibility of turning the modified AssPlP into an argument with an indefinite interpretation via the ∃ operator (due to *Rank of Meaning*, (42aii)). Of course, another possibility is to argumentize the property-denoting AssPlP in (76f) via the down-operator ∩, but this possibility is ruled out since the denotation of kinds requires all individuals not just a salient group of individuals.

The proposed semantics in (82) naturally explains why the existential sentence does not allow the [Num-Approximation Cl N-men] phrase (as seen in (20b)), i.e., this phrase is a definite expression (82g) which does not satisfy the indefinite requirement of the existential sentence.

One may wonder why the phrase in (5) **san ge xuesheng-men*, which received an analysis in (64), cannot be analyzed like the one in (79b) and (82). The reason is not hard to justify. When one provides an estimated numerical value, it presupposes that one is uncertain about or not aware of what the specific numerical value is; when a speaker utters a specific small number like *san* 'three', it conveys the information that the speaker is aware of the specific numerical value; this renders a context of vague estimation unnecessary.

Now let us analyze the structure and semantics of the last type of phrases containing *-men*, [N-*men* Num Cl (person)].

3.6 The appositive phrase containing *-men* [N-men Num Cl (person)]

As discussed in Section 2.3.1, [N-*men* Num Cl (person)] is an appositive nominal phrase in which the numeral-classifier serves as a non-restrictive modifier to N-*men*. I repeated the properties of this phrase in (83), with three examples repeated in (84).

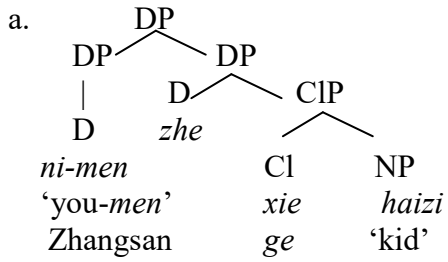
(83) i. a noun denoting 'person' can optionally appear after the classifier
ii. *-men* is obligatory
iii. [N-*men* Num Cl] is interpreted as definites

iv. the numeral provides additional descriptive information to N-*men*; the numeral information provided by the numeral should be the total/maximal number of the group

(84) a. *wo qing XiaoQiang*(-men) san ge (ren) chifan.*
I invite XiaoQiang-MEN three Cl person eat
'I invited XiaoQiang and two others (in the group) for a meal.'
b. *wo qing ta*(-men) san ge (haizi) chifan.*
I invite he-MEN three Cl (child) eat
'I invited them three-Cl (children) for a meal'
c. *ba hai-zi men san ge (ren) jiao xia lai chi wan-fan.*
BA child-MEN three Cl person ask down come eat late-meal
'Go to ask the kids, three of them, to come downstairs to have dinner.'

Concerning the structure of [N-*men* Num Cl (person)], I propose a left-adjunction analysis based on the analysis of nominal appositives in del Gobbo (1999). In del Gobbo (1999), she proposes the adjunction structure in (85a) for nominal appositives in Mandarin like the ones in (85b, c).

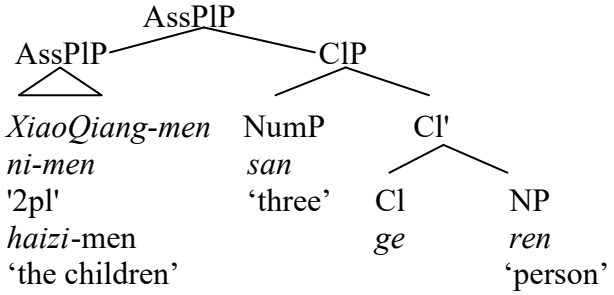
(85) a.



b. *nimen zhe xie haizi*
you-MEN this xie children
'those of you who are children'
c. *Zhangsan zhe ge haizi*
Zhangsan this Cl children
'Zhangsan, this kid' (del Gobbo, 1999)

The examples in (85b, c) are very much like the ones in (84). Based on the left-adjunction structure in (85a), I propose that the structure of appositive nominals [N-*men* Num Cl (person)] in (84) is the one below:

(86)



Note that the merge between the AssPlP and the ClP should be formed via external merge rather than internal merge given that a noun denoting 'person' can appear in the position following the

classifier (i.e., N-*men* is unlikely to undergone movement from within the [Num CL (person)] phrase). When the noun *ren* 'person' is absent, I assume that it is a phonetically null form which still presents in the syntax.

With regard to the semantics of the nominal appositive [N-*men* Num Cl (person)], I now can only provide a very rough analysis of it. I propose that the nominal appositive can be treated as an appositive function which apposes a property expressed by the numeral-classifier to a plural individual denoted by N-*men*; it takes an entity and returns an entity, as illustrated in (87).

(87) APP(P)(x)= x if P(x), else undefined

The proposed analysis of the appositive [N-*men* Num Cl (person)] phrase allows us to understand why -*men* is obligatory in this phrase. When the numeral is larger than 'one', the numeral construction requires a plural individual. When -*men* is present, N-*men* denotes a unique plural individual, but when -*men* is absent, bare pronouns (e.g., *ni* '2sg') and bare proper names (e.g., *XiaoQiang)* are singular, and bare nouns are number-neutral, all of which cannot satisfy the plural requirement imposed by the numeral.

Last, let us return to the unacceptable sentence in (8c) (as repeated in (88)).

(88) ?/**wo qing pengyou-men sange (ren) chifan.*
I invite friend-MEN three-Cl person eat
'I invited three friends for a meal.'

Normally, the total/maximal number of members in the group of one's friends is very unlike to be just 'three' especially when no context is provided. A conjecture about the reason why (88) is unacceptable is that the semantic requirement of this construction is not met. That is to say, if we restrict the domain of the -*men* marked group in (88) to the extent that we can provide a plausible number to describe the total/maximal number of its members, this sentence should become acceptable. This prediction is borne out:

(89) *wo qing [zu li de pengyou-men] shi-ge (ren) chifan.*
I invite team in De friend-MEN ten-Cl person eat
'I invited the friends in the team, ten of them, for a meal.'

3.7 Section Summary

In this section, I analyzed -*men* as an associative plural whose function is to map a human kind to a salient group, type $\langle e^k, \langle e,t\rangle\rangle$ and proposed an associative plural projection closer to the noun and below the classifier phrase. We saw that the properties of the four types of phrases containing -*men* noted in Section 2, i.e., (i) N-*men*, (ii) [Num Cl_{group} N-*men*], (iii) [Num-Approximation Cl N-*men*] and (iv) [N-*men* Num Cl (person)], are amenable to the proposed analysis of -*men* within within the Neocarlsonian approach, using well-established principles of interpretation. The proposed analysis of -*men* showed that it is not necessary to assume a functional category D that is always invisible in the grammar of Mandarin in order to account for the properties of nominals containing -*men*. In the next section, I will discuss the issue on variation among native Mandarin speakers regarding their acceptability judgment of two

structures [Num Cl_{group} N-men] and [N-men Num C] and two issues about N-*men* that remain in need of future exploration.

4 Variation among speakers and remaining issues

I showed in Section 2.2 that *-men* is compatible with numeral-classifier expressions when the classifier is a group classifier, as observed by previous researchers (12) and seen in corpora (13). I also acknowledged that some speakers seem to reject sentences containing such a pattern. For instance, one reviewer does not accept the example in (16) (as repeated in (90a)) and points out that the native speakers that he/she consulted with also seemed to reject nearly all such examples, with only some of them marginally showing acceptance. When the common noun (CN in short) in (90a) is replaced by a proper name (PN in short), the resulting pattern, namely [Num Cl_{group} PN-*men*] (90b), also seems to be unacceptable to this reviewer. In addition, this reviewer and his/her informants also reject the use of common noun and *-men* in the pre-numeral position, i.e., the [CN-*men* Num Cl] pattern, as we saw in (28) (one example is repeated in (90c)).

(90) a. [Num Cl_{group} Common Noun-men]
qiao, you you yi qun haizi-men lai yao tang le.
Look, again exist one Cl_{group} child-MEN come ask-for candy Asp
'Look, there is a crowd of kids coming to ask for candies again.'

b. [Num Cl_{group} Proper Name-men]
zhe liang zu xiaozhang-men de biao-xian dou bu cuo
this two Cl_{team} Principal-MEN De behave all not bad
'The performances of these two teams of principals are all very good.'

c. [Common Noun-men Num Cl]
Context: the hearer is leaving for school abroad; the speaker handed a farewell gift to the hearer and said:
zhe shi xiongdi-men ji ge (ren) de xinyi, xiwang ni yiqie shunli
this is brother-MEN several Cl person De regard hope you all smooth
'This is the regard from the brothers, them several; hope all things go well with you.'

In order to investigate native Mandarin speakers' acceptability judgment of the three patterns in (90), I conducted a 7-point Likert scale acceptability judgment study, to be presented below.

4.1 Method

In this Likert scale acceptability judgment study, each sentence is presented with a series of seven rating options, as follows. 7 = fully acceptable, 6 = acceptable, 5= acceptable but a little bit unnatural, 4 = I don't know, 3 = very hard to accept, 2 = unacceptable, 1 = completely unacceptable. Participants were asked to use these options to indicate their acceptability judgments.

The Likert scale task is a staple of both experimental psychology and the social sciences, as it is very intuitive for most participants, and odd numbered scales allow participants to easily define the most acceptable rating, the least acceptable rating, and a rating that is exactly in the middle (see Sprouse et al., 2013: 225).

This study consisted of thirty-two items. Fourteen of them are target items from the three patterns in (90); eighteen of them are filler items which consisted of nine grammatical structures like the ones in (91) and nine unacceptable structures like the ones in (92).

(91) a. *waimian you san ge haizi zai da lanqiu.* [Num $Cl_{individual}$ NP]
outside exist three Cl child Prog play basketball
'There are three kids playing basketball outside.'
b. *zhe qun haizi qu na-er le?* [Num Cl_{group} NP]
this Cl_{group} child go where Asp
'Where did this group of kids go?'
c. *XiaoZhang-men san ge zheng zai wu-li tan shi.* [PN-*men* Num Cl]
XiaoZhang-MEN three Cl Prog at room-inside talk things
'XiaoZhang and two others (in the group) are discussing things in the room.'

(92) a. **wo kandao liang ge haizi-men zai* *[Num $Cl_{individual}$ NP-*men*]
I see two Cl child-MEN at
louxia da lanqiu.
downstairs play basketball
b. **wo qing XiaoZhang san ge chi fan.* *[PN Num Cl]
I invite XiaoZhang three Cl have meal
c. **you LaoWang-men san ge zheng zai wu-li tan shi.* *[*you* PN-*men* Num Cl]
exist LaoWang-MEN three Cl Prog at room-inside talk things

These thirty-two items were created on Google Form. The survey that contain these thirty-two items was sent to participants via Google Form; each participant completed the survey on his/her own digital device and submitted the response electronically. In the survey, each participant saw the fourteen target items intermixed with the nineteen filler items in a pseudo-random order; after the judgment task, two questions were asked to gather the dialect background information of each participant.

A total of thirty-four participants who are native speakers of Mandarin were recruited for this study. Twenty of them only speak Mandarin; fourteen of them can speak another variety of Chinese besides Mandarin.[29] Specifically, six of them can speak Wu, one of them can speak Gan, two of them can speak Xiang, two of them can speak Min, one of them can speak Hakka, and two of them can speak Cantonese, as summarized below:

(93) Table 1: Number (N) of participants in each group

	Mandarin-only Speakers	Speakers of Mandarin and another variety of Chinese						Total
		Wu	Gan	Xiang	Min	Hakka	Cantonese	
N	20	6	1	2	2	1	2	34

4.1 Results

[29] This paper adopts Yuan's (1961) classification which classifies Chinese dialects into seven groups: Mandarin (Beifang hua), Wu, Xiang, Gan, Min, Hakka (Kejia) and Cantonese (Yue).

I will start with the results of the sentences containing grammatical structures (91) and those that contain ungrammatical structures (92), which will serve as a basis for us to understand the participants' responses to the three target structures in (90).

Table 2 summarizes the percentage and the number of participants in each group regarding their responses to sentences like those in (91).

(94) Table 2: Percentage (%) and number (N) of participants in each group

Grammatical Structures = (91)										
Groups	7 ≥ rating ≥ 6		6 > rating ≥ 5		5 > rating ≥ 4		4 > rating ≥ 3		3 > rating ≥ 1	
	%	N	%	N	%	N	%	N	%	N
Mandarin	70	14/20	30	6/20	—	—	—	—	—	—
Wu	66.6	4/6	13.7	2/6	—	—	—	—	—	—
Gan	100	1/1	—	—	—	—	—	—	—	—
Xiang	100	2/2	—	—	—	—	—	—	—	—
Min	100	2/2	—	—	—	—	—	—	—	—
Hakka	100	1/1	—	—	—	—	—	—	—	—
Cantonese	50	1/2	50	1/2	—	—	—	—	—	—
All	73.5	25/34	26.5	9/34	—	—	—	—	—	—

The descriptive results in Table 2 show that all participants, regardless of what their dialect background is, rated such sentences in (91) as 5 or above, which corresponds to 'acceptable' or 'completely acceptable'. Such results confirm the acceptability of these structures in (91). Table 3 below summarizes the percentage and the number of participants in each group regarding their responses to the sentences that contain ungrammatical structures like those in (92).

(95) Table 3: Percentage (%) and number (N) of participants in each group

Ungrammatical Structures = (92)										
Groups	7 ≥ rating ≥ 6		6 > rating ≥ 5		5 > rating ≥ 4		4 > rating ≥ 3		3 > rating ≥ 1	
	%	N	%	N	%	N	%	N	%	N
Mandarin	—	—	—	—	25	5/20	10	2/20	65	13/20
Wu	—	—	—	—	16.7	1/6	33.3	2/6	50	3/6
Gan	—	—	—	—	—	—	—	—	100	1/1
Xiang	—	—	—	—	—	—	50	1/2	50	1/2
Min	—	—	—	—	—	—	50	1/2	50	1/2
Hakka	—	—	—	—	—	—	—	—	100	1/1
Cantonese	—	—	—	—	—	—	50	1/2	50	1/2
All	—	—	—	—	17.6	6/34	20.6	7/34	61.8	21/34

The results in Table 3 show that more than eighty percent of the participants (twenty-eight out of thirty-four) provided ratings lower than 4 for such sentences in (92), which correspond to 'unacceptable' or 'completely unacceptable'. Among the rest of the participants, one in the Wu group and five in the Mandarin-only group provided mix ratings (i.e., between scale 5 and 4). Such results draw a sharp contrast with those in Table 2 and also confirm the unacceptability of the structures in (92).

With the above results in Table 2 and 3 as a basis, let us move on to the three target structures in (91). Table 4 presents the percentage and the number of participants in each group

regarding their responses to sentences containing the [Num Cl_{group} CN-men] pattern (e.g., (90a)/(12)).

(96) Table 4: Percentage (%) and number (N) of participants in each group

Num Cl_{group} Common Noun-men, e.g., (90a)/(12)										
Groups	7 ≥ rating ≥ 6		6 > rating ≥ 5		5 > rating ≥ 4		4 > rating ≥ 3		3 > rating ≥ 1	
	%	N	%	N	%	N	%	N	%	N
Mandarin	45	9/20	15	3/20	15	3/20	15	3/20	10	2/20
Wu	50	3/6	16.66	1/6	16.66	1/6	—	—	16.66	1/6
Gan	—	—	—	—	100	1/1	—	—	—	—
Xiang	50	1/2	—	—	50	1/2	—	—	—	—
Min	100	2/2	—	—	—	—	—	—	—	—
Hakka	100	1/1	—	—	—	—	—	—	—	—
Cantonese	—	—	50	1/2	50	1/2	—	—	—	—
All	47.1	16/34	14.7	5/34	20.6	7/34	8.8	3/34	8.8	3/34

Broadly speaking, over sixty percent of the participants (twenty-one out of thirty-four) rated sentences containing the pattern [Num Cl_{group} CN-men] as acceptable (i.e., scale 5 and above); seven participants provided mixed ratings (i.e., between scale 5 and 4); the rest six participants provided an average rating lower than scale 4, which, based on the results in Table 3, is regarded as unacceptable.

When the dialect background is taken into consideration, the fourteen participants who speak another variety of Chinese besides Mandarin perform more uniformly than the twenty participants who only speak Mandarin. The former generally provided higher ratings, with only one exception in the Wu group; especially the two participants who speak Min besides Mandarin systematically rated all sentences containing the [Num Cl_{group} CN-men] pattern as 7 (i.e., completely acceptable). In contrast, variation is observed in latter (i.e., the Mandarin-only group). Specifically, twelve out of the twenty participants rated sentences containing this pattern as acceptable (i.e., scale 5 and above). Three of them showed mixed ratings in the way that they accepted most of such sentences but rejected a couple of them (i.e., between scale 5 and 4). Three of them also showed mixed ratings in the way that they accepted half of such sentences but rejected half of them (i.e., between scale 4 and 3). Two of them rated almost all sentences containing this pattern as unacceptable (i.e., below scale 3) .

Similar results can be found in Table 5, which presents the percentage and the number of participants in each group regarding their responses to sentences that contain the [CN-men Num $Cl_{individual}$] pattern (e.g., (90b)/(28)).

(97) Table 5: Percentage (%) and number (N) of participants in each group

Common Noun-men Num $Cl_{individual}$, e.g., (90c)/(28)										
Groups	7 ≥ rating ≥ 6		6 > rating ≥ 5		5 > rating ≥ 4		4 > rating ≥ 3		3 > rating ≥ 1	
	%	N	%	N	%	N	%	N	%	N
Mandarin	45	9/20	20	3/20	20	5/20	—	—	15	3/20
Wu	50	3/6	50	3/6	—	—	—	—	—	—
Gan	—	—	—	—	—	—	100	1/1	—	—
Xiang	50	1/2	—	—	—	—	50	1/2	—	—
Min	50	1/2	50	1/2	—	—	—	—	—	—
Hakka	—	—	—	—	100	1/1	—	—	—	—
Cantonese	50	1/2	50	1/2	—	—	—	—	—	—
All	44.1	15/34	23.5	8/34	17.7	6/34	5.9	2/34	8.8	3/34

Near seventy percent of the participants (twenty-three out of thirty-four) rated sentences containing the pattern [CN-men Num $Cl_{individual}$] as acceptable (i.e., 5 and above); six participants provided mixed ratings (i.e., between 5 and 4); the remaining five participants provided an average rating lower than 4, which can be regarded as unacceptable (based on the results in Table 3).

Among the fourteen participants who speak another variety of Chinese besides Mandarin, those in the Wu, Min and Cantonese groups uniformly accepted sentences of this pattern with a rating 5 or above, while participants in the other three groups (Gan, Xiang, Hakka) show mixed responses and lower ratings. Among the twenty participants who only speak Mandarin, twelve of them rated such sentences as acceptable, five of them provided mixed responses, and three of them rated these sentences as unacceptable.

Turning now to the sentences that contain the pattern [CN-men Num $Cl_{individual}$] (e.g., (90b)). Table 6 presents the percentage and the number of participants in each group regarding their responses to these sentences.

(98) Table 6: Percentage (%) and number (N) of participants in each group

Num Cl_{group} Proper Name-men (90b)										
Groups	7 ≥ rating ≥ 6		6 > rating ≥ 5		5 > rating ≥ 4		4 > rating ≥ 3		3 > rating ≥ 1	
	%	N	%	N	%	N	%	N	%	N
Mandarin	25	5/20	35	7/20	15	3/20	5	1/20	20	4/20
Wu	66.6	4/6	16.7	1/6	—	—	—	—	16.7	1/6
Gan	—	—	—	—	—	—	—	—	100	1/1
Xiang	—	—	50	1/2	—	—	—	—	50	1/2
Min	50	1/2	—	—	50	1/2	—	—	—	—
Hakka	—	—	—	—	100	1/1	—	—	—	—
Cantonese	—	—	50	1/2	50	1/2	—	—	—	—
All	29.4	10/34	29.4	10/34	17.7	6/34	2.9	1/34	20.6	7/34

The results in Table 6 show that near sixty percent of the participants (twenty out of thirty-four) rated sentence of such a pattern as acceptable (i.e., scale 5 and above), six participants provided mixed ratings (i.e., between scale 5 and 4), and eight participants rated these sentences as unacceptable (i.e., below scale 4). Crucially, in Table 6 variation among speakers is observed in all groups that contain multiple participants (i.e., Mandarin, Wu, Xiang, Min and Cantonese); this contrasts with the results in Table 4 and 5.

4.3 General Discussion

In Section 2.2, I showed that *-men* is compatible with numeral-classifier phrases when the classifier is a group classifier, as observed by previous researchers (12) and seen in corpora (13) and that common nouns with *-men* are not completely banned in the position preceding the numeral-classifier (28). Based on such data, I concluded that the presence of a classifier is unlikely to be an intervener that prevents the common nouns from combining with *-men* and proposed an alternative analysis of the syntax and semantics of *-men* in Section 3.3 (see (47) and (48)). The Likert scale acceptability judgment study presented in this section shows that most participants accept both [Num Cl_{group} CN-men] and [CN-men Num Cl] patterns. It also shows that near sixty percent of the participants accept the use of group classifiers with proper name and *-men*. Such results suggest the proposed analysis of [Num Cl_{group} N-men] in Section 3.4 can be extended to proper names. Nevertheless, this acceptability judgment study also reveals something not explained by the proposed analysis of *-men*, namely that a handful of speakers (most of whom are in the Mandarin-only group) generally reject the use of group classifiers with N-*men* as well as the use of common nouns with *-men* in the pre-numeral position.[30]

In particular, six out of thirty-four participants generally reject sentences containing the [Num Cl_{group} CN-*men*] pattern. But the six participants' responses to one particular sentence are worth-noting:

(99) *Ta zai gen yi qun haizi-men wan.*
he in with one CL child-MEN play
'He is playing with a group of children.' (Hsieh, 2008)

Among these six participants, four of them accept the sentence in (99) with a rating 5 or 7, one participant's response is 4 (i.e., 'I don't know'), and the last one does not accept this sentence but accepts the sentence in (90a). The behaviors of these six participants seem to suggest that even among the most rigid participants, this structure [Num Cl_{group} CN-men] is not completely banned in their grammar.

When the common noun is replaced with a proper name, i.e., [Num Cl_{group} PN-*men*], these six participants and two other participants reject such examples with consistent low ratings.[31]

As for the [CN-men Num $Cl_{individual}$] pattern, five out of thirty-four participants reject it. But very crucially, all of them also reject the [PN-*men* Num Cl] pattern in (91c), as repeated below.

(100) *XiaoZhang-men san ge zheng zai wu-li tan shi.* [PN-*men* Num Cl]
XiaoZhang-MEN three Cl Prog at room-inside talk things
'XiaoZhang and two others (in the group) are discussing things in the room.'

[30] In addition to those who reject these two patterns, a significant number of speakers show mixed ratings, i.e., they accepted most of these sentences but reject a couple of them. Such mixed results will be set aside for future study.
[31] The low ratings for sentences that containing [Num Cl_{group} Proper Name-men] is probably related to some pragmatic reasons, e.g., it is not common to have a bunch of individuals with the same name and to group them: *yi qun XiaoZhang* 'one group of people whose name is XiaoZhang'.

In (100), the sentence contains a proper name and *-men* in the pre-numeral position; such a pattern was first noted in Li (1999) and has been discussed by other since then (e.g., Hsieh, 2008; Jiang, 2012; Bošković & Hsieh, 2013, see section 2.1). The behavior of these five speakers seems to suggest that this structure [N-*men* Num Cl], regardless of whether the noun is a common noun or a proper name, is disallowed completely in the grammar of these speakers.

In order to account for the above variation among speakers on the acceptability judgment of the [N-*men* Num Cl] structure and the [Num Cl_{group} N-men] structure, I would like to outline two approaches.

The first approach assumes that these two structures are available in the grammar of all native speakers of Mandarin. Such an approach foresees cases like (99) and those seen in corpora (13). However it leads to a puzzle as to why some speakers do not generally accept examples containing these two structures. One possible solution is to extend to these speakers a competition story that blocks the two structures. Note that these two structures [Num Cl_{group} N-men] and [N-*men* Num Cl] have their corresponding simpler structure, namely [Num Cl_{group} N] and [N-*men*] respectively. These two simpler structures are much more frequently used and convey a similar interpretation when compared to their counterparts:

(101) a. *yi qun haizi-men*
one Cl_{group} kid-MEN
'a group of kids'

b. *XiaoZhang-men san ge*
XiaoZhang-MEN three Cl
'XiaoZhang and two others'

a'. *yi qun haizi*
one Cl_{group} kid
'one group of kids'

b'. *XiaoZhang-men*
XiaoZhang-MEN
'XiaoZhang and the others'

Perhaps the simpler and very frequently used structure (101a', b') blocks the corresponding structure that is more complex (101a, b), causing some speakers to reject the complex structures. However, such a competition should not apply to the majority of speakers of Mandarin.

Alternatively, the second approach assumes that these two structures [Num Cl_{group} N-men] and [N-*men* Num Cl] are not uniformly available in the grammar of native speakers of Mandarin but are something that native speakers of Mandarin may or may not have (i.e., an independent parametric choice for native speakers of Mandarin). Such a parametric approach predicts that some speakers will ban these two structures, and this can explain why some speakers provided low ratings for such structures. However it still faces the problem of explaining cases like (99) which is acceptable to even the most rigid speakers. With regard to how I choose between these two approaches and how the details are worked out, I will leave them aside for future research.

5. Conclusion

In conclusion, I discussed the syntactic and semantic properties of four types of phrases containing *-men*, (i) N-*men*, (ii) [Num Cl_{group} N-*men*], (iii) [Num-Approximation Cl N-*men*] and (iv) [N-*men* Num Cl (person)], and defended the view that *-men* should be treated a plural marker first argued in Li (1999). However I argued against the analysis of positing *-men* in the D position or treating it as a definite determiner. I proposed an analysis of *-men* as associative plural and showed that the properties of the four types of phrases containing *-men* are amenable to well-established principles of meanings within the Neocarlsonian approach to bare nominals. The formal account for the syntax and semantics of phrases containing *-men* in this paper

showed that it is not necessary to assume a functional category D that is always invisible in the grammar of Mandarin in order to account for the behaviors of nominal arguments containing -*men*, providing evidence for the lack of DP in Mandarin.

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