

# A revisit to the [Num-Cl-Modifier-*de*-N]/[Modifier-*de*-Num-Cl-N] variation in Mandarin Chinese

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This paper investigates the licensing condition of the [Num(eral)-Cl(assifier)-Mod(ifier)-*de*-N(oun)] / [Mod-*de*-Num-Cl-N] variation in Mandarin Chinese. It is observed that this variation represents a complex interface phenomenon in the nominal domain, which is subject to the semantic condition concerning the i(ndividual)-level/s(tage)-level nature of the modifier contained on the one hand, and the discourse-related condition concerning CONTRASTIVE TOPIC (CT) on the other. Based on this, at the syntax-semantics interface level, this paper proposes a division of the syntactic domain of adnominal modification to account for the discrepancy between i-level and s-level modifiers in terms of their capability in forming [Mod-*de*-Num-Cl-N] in the neutral context. In the meanwhile, at the syntax-discourse interface level, in light of the interface-induced analysis pursued by Neeleman & Van de Koot (2008) and Horvath (2010), it is claimed that the word order of [Mod-*de*-Num-Cl-N] could be adopted as a linguistic device to encode CT within the nominal domain in Mandarin Chinese, in which case the ordering of [Mod-*de*-Num-Cl-N] is licensed for the purpose of establishing a transparent mapping between syntactic configuration and information structure.

**Keywords:** word order, modifier, syntax-semantics interface, syntax-discourse interface, nominal phrase

## 1. Introduction

It is a well-known fact that the *de*-marked modifier in Mandarin Chinese can occur in a variety of sites within the nominal phrase, such as pre-N, pre-Num, and pre-Dem positions, as illustrated below.

- (1) a. *liang ge [chuan xizhuang de] nansheng* (Pre-N)  
two CL wear suit DE boy  
'two boys who wear suits'
- b. *[chuan xizhuang de] liang ge nansheng* (Pre-Num)  
wear suit DE two CL boy  
'two boys who wear suits'
- c. *[chuan xizhuang de] na liang ge nansheng* (Pre-Dem)  
wear suit DE that two CL boy  
'those two boys who wear suits'

Regarding the position of Chinese *de*-marked modifiers, the topic which has received much scholarly attention in the literature is the relative word order of the *de*-marked modifier with respect to the demonstrative in numeral classifier constructions (Chao 1968; Huang 1982; Del Gobbo 2005; Hsieh 2005, 2008; Lin 2008, among many others),<sup>1</sup> as shown below:

- (2) a. *na liang ge [chuan xizhuang de] nansheng*  
that two CL wear suit DE boy  
'those two boys who wear suits'
- b. *[chuan xizhuang de] na liang ge nansheng* (= (1c))  
wear suit DE that two CL boy  
'those two boys who wear suits'

However, the ordering of the *de*-marked modifier with respect to the [Num-Cl] sequence, as shown in (1a) and (1b), is still a somewhat less explored area, with the existing analyses in the literature not fully adequate to capture the rules regulating the [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N] alternation. In an effort to advance current discussion on this issue, this paper will revisit the licensing conditions on the [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N] variation in Mandarin Chinese. The paper is organized as follows. §2 presents a review of previous approaches to the [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N] alternation. §3

1. In general, there are two lines of analysis proposed in previous studies to account for the distinction between [Dem-Num-Cl-Mod-*de*-N] and [Mod-*de*-Dem-Num-Cl-N]. Along one line, it is explained in terms of the restrictive vs. non-restrictive/descriptive nature of the modifier, with the core claim being that the modifier in between the Cl and the N is restrictive whereas that preceding the Dem is non-restrictive/descriptive (e.g. Chao 1968; Huang 1982, among many others). Along the other line, the distinction is explained from the perspective of the i(ndividual)-level vs. s(tage)-level property of the modifier in the sense of Larson & Takahashi (2007), with the basic stance being that it is the s-level modifier, rather than the i-level modifier, that can precede the demonstrative (e.g. Del Gobbo 2005; Hsieh 2005, 2008; but see Lin (2008) for criticisms of their analyses). See §4 below for discussion on the syntactic domains occupied by different types of adnominal *de*-marked modifiers.

conducts a scrutiny on relevant linguistic facts, where new observations are made with respect to the (non-)licensing of [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N] under different contexts. Based on this, §4 develops a novel, dichotomous analysis for the [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N] variation, followed by discussion on the consequences of this analysis in §5. §6 concludes this paper with final remarks.

## 2. Previous approaches

With respect to the [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N] alternation in Mandarin Chinese, the existing accounts in the literature can be generally categorized into two main camps, i.e. the semantics-oriented approach and the discourse-pragmatic approach. Below, I shall give a review of the two approaches, respectively.

As regards the semantics-oriented approach, the representative analyses include Lu's (1998) definiteness account and Zhang's (2006) and Tang's (2007) specificity account. To be concrete, under Lu's definiteness analysis, [Mod-*de*-Num-Cl-N] is treated as derived from [Num-Cl-Mod-*de*-N] via fronting the *de*-marked modifier from the pre-N position to the pre-Num position for the purpose of marking the definite status of the head noun.<sup>2</sup> Consider the English translations Lu assigns to [Num-Cl-Mod-*de*-N] and the [Mod-*de*-Num-Cl-N] counterpart, as given below:

- (3) a. *san ben hong de shu*  
           three CL red DE book  
           'three red books'  
       b. *hong de san ben shu*  
           red DE three CL book  
           'the three red books'

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2. In his 1998 dissertation, Lu follows Comrie (1978) and Hawkins (1978) to define "definiteness" in a strict sense, namely, "a noun phrase is definite if and only if it presupposes that the hearer of the sentence containing it is able uniquely to identify the object or set of objects to which that noun phrase refers" (Lu 1998:74). The present paper also adopts this definition when dealing with definiteness, that is, to treat the referent(s) of the definite nominal expression as uniquely identifiable to both the speaker and the hearer. More precisely, this paper defines definiteness as a semantic/pragmatic notion rather than a grammatical one, not assuming definiteness as necessarily associated with overt, grammaticalized definiteness marking (contra Lyons 1999).

The definiteness analysis has been criticized by Zhang (2006) and Tang (2007). At the factual level, Zhang adopts the equational sentence, a construction equating one definite nominal with another definite one, to testify the unavailability of a definite interpretation of [Mod-*de*-Num-Cl-N]. She shows that while a true definite phrase, such as one containing a demonstrative, can be used as the predicate of an equational sentence, [Mod-*de*-Num-Cl-N] cannot be used this way. This is illustrated in (4) below: the definite phrase *na san ge tebie congming de haizi* and *tebie congming de na san ge haizi* (both meaning ‘those three very smart children’) can well act as the predicate of the definite subject *Lanlan, Taotao, he Jiajia*, as in (4a) and (4b); whereas ungrammaticality arises when the predicate is replaced by the [Mod-*de*-Num-Cl-N] expression *tebie congming de san ge haizi*, as in (4c).

- (4) a. *Lanlan, Taotao, he Jiajia jiu shi na san ge tebie congming de haizi.*  
 Lanlan Taotao and Jiajia exactly be that three CL very smart DE child  
 ‘Lanlan, Taotao, and Jiajia are those three very smart children.’  
 b. *Lanlan, Taotao, he Jiajia jiu shi tebie congming de na san ge haizi.*  
 Lanlan Taotao and Jiajia exactly be very smart DE that three CL child  
 ‘Lanlan, Taotao, and Jiajia are those three very smart children.’  
 c. \**Lanlan, Taotao, he Jiajia jiu shi tebie congming de san ge haizi.*  
 Lanlan Taotao and Jiajia exactly be very smart DE three CL child  
 Intended: ‘Lanlan, Taotao, and Jiajia are the three very smart children.’  
 (Zhang 2006: Example (5))

Departing from Lu (1998), Zhang (2006) and Tang (2007) instead approach the distinction between [Num-Cl-Mod-*de*-N] and [Mod-*de*-Num-Cl-N] in terms of the (non-)obligatoriness of a specific interpretation. They claim that while [Num-Cl-Mod-*de*-N] may convey either a specific or a non-specific indefinite reading, [Mod-*de*-Num-Cl-N] exclusively accommodates a specific indefinite usage, namely, necessarily being “presupposed indefinites”.<sup>3</sup> Below are some of the arguments they present to support this claim.

First, it is indicated that only [Num-Cl-Mod-*de*-N], but not [Mod-*de*-Num-Cl-N], can be used in the existential construction which exclusively accommodates non-specific indefinites, as shown in (5):

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3. While Zhang (2006) and Tang (2007) do not explicitly define specificity in their papers, the criterion they adopt for defining specific vs. non-specific indefinites concerns whether the associated referents are contextually presupposed or not, that is, while the referents of specific indefinites are presupposed by the speaker but not by the hearer, the referents of non-specific indefinites are presupposed neither by the speaker nor by the hearer. The present paper also adopts this criterion when defining (non-)specificity.

- (5) a. *lai le [san ge dai yanjing de xuesheng].*  
 come PRF three CL wear glasses DE student  
 ‘Three students who wear glasses have come.’  
 b. \**lai le [dai yanjing de san ge xuesheng].*  
 come PRF wear glasses DE three CL student  
 Intended: ‘Three students who wear glasses have come.’  
 (Zhang 2006: Example (12))

Second, it is observed that only [Num-Cl-Mod-*de*-N] but not [Mod-*de*-Num-Cl-N] can occur as the object of creation verbs, as illustrated in (6). Given that the indefinites object of the verb of this type necessarily obtains a non-specific reading (Diesing 1992), the exclusion of [Mod-*de*-Num-Cl-N] in this environment is an indication that this sequence cannot be intended as a non-specific indefinite.

- (6) a. *Daiyu jingchang zai xingqitian lao [liang zhang xiangpenpen de laobing].*  
 Daiyu often at Sunday bake two CL savory DE pancake  
 ‘Daiyu often bakes two savory pancakes on Sundays.’  
 b. \**Daiyu jingchang zai xingqitian lao [xiangpenpen de liang zhang laobing].*  
 Daiyu often at Sunday bake savory DE two CL pancake  
 Intended: ‘Daiyu often bakes two savory pancakes on Sundays.’  
 (Zhang 2006: Example (17))

Third, [Mod-*de*-Num-Cl-N], unlike [Num-Cl-Mod-*de*-N], does not permit any element within to be extracted. In accordance with the constraint stated in Enç (1991) and Diesing (1992) that elements cannot be extracted from specific indefinites but can be extracted from non-specific indefinites, the contrast as shown below is taken as another piece of evidence that [Mod-*de*-Num-Cl-N] cannot be used as a non-specific indefinite expression:

- (7) a. *lishi-shu<sub>i</sub> Akiu du guo le [liang ben guanyu Xizang de t<sub>i</sub>].*  
 history-book Akiu read EXP PRF two CL about Tibet DE  
 ‘For history books, Akiu has read two on Tibet.’  
 b. \**lishi-shu<sub>i</sub> Akiu du guo le [guanyu Xizang de liang ben t<sub>i</sub>].*  
 history-book Akiu read EXP PRF about Tibet DE two CL  
 Intended: ‘For history books, Akiu has read two on Tibet.’  
 (adapted from Zhang 2006: Examples (22c), (24c))

Fourth, [Mod-*de*-Num-Cl-N] is unable to be intended as a purely quantity-denoting expression (in the sense of Li (1998)), in which respect [Mod-*de*-Num-Cl-N] behaves differently from [Num-Cl-Mod-*de*-N], as illustrated below:

- (8) a. *[san ge xue tiyu de xuesheng] jiu neng bandong zhe jia*  
three CL learn physical-training DE student then can move this CL  
*gangqin.*  
piano  
‘(In general,) three students who study physical training can move this piano.’  
(Zhang 2006: Example (39))
- b. *\*[xue tiyu de san ge xuesheng] jiu neng bandong zhe jia*  
learn physical-training DE three CL student then can move this CL  
*gangqin.*  
piano  
Intended: ‘(In general,) three students who study physical training can move this piano.’

Based on the observations like the above, Zhang (2006) and Tang (2007) advocate that the licensing of [Mod-*de*-Num-Cl-N] is subject to the condition that it must be used to convey specific semantics.<sup>4</sup>

Different from the definiteness and specificity analyses outlined above, Ming and Chen (2010) pursue a discourse-pragmatic approach to investigate the use of [Num-Cl-Mod-*de*-N] and [Mod-*de*-Num-Cl-N] based on the Lancaster Corpus of Mandarin Chinese, a balanced corpus of written Mandarin Chinese (McEnery et al. 2003). Ming and Chen’s research scope is somewhat narrower than the above mentioned definiteness and specificity analyses in that they only consider cases where the modifier contained is a RELATIVE CLAUSE (RC) and where the numeral contained is *yi* ‘one’. The following main generalizations are proposed by

4. In addition to the above given arguments, there is another test adopted in both Zhang (2006) and Tang (2007) for distinguishing [Mod-*de*-Num-Cl-N] from [Num-Mod-*de*-Cl-N], which is concerned with the secondary predicate. To be concrete, they take the impossibility of [Mod-*de*-Num-Cl-N] to serve as the subject of the secondary predicate as a piece of evidence to argue for its specific interpretation. However, note that there is a problem underlying this argument. As pointed out by Huang (1987) and Tsai (1994), the subject of the secondary predicate must be a specific indefinite expression. Accordingly, it is not proper to take the exclusion of [Mod-*de*-Num-Cl-N] from the subject position of the secondary predicate as an argument for the specific reading of this construction. For now, it is still unclear to me (and also has passed unnoticed in Zhang (2006) and Tang (2007)) as to why [Mod-*de*-Num-Cl-N], as a specific expression, cannot serve as the subject of the secondary predicate. I think this suggests a necessity to scrutinize more closely the construction involving a secondary predicate, concerning which prior studies in general merely point out the specificity requirement on the subject of the secondary predicate without further investigation. A promising direction of inquiry could be that, presumably, being specific is a necessary yet not a sufficient condition on the licensing of the subject of the secondary predicate. Given that secondary predication does not concern the present study much, I do not delve into this issue here but leave it to further study in the future.

them. On the one hand, it is claimed that the [Num-Cl-Mod-*de*-N] sequence is primarily used in the situation where (i) the head noun involved denotes a concrete entity (either humans or objects/substance) with high discourse salience, and (ii) the RC contained serves to provide a characterizing assertion for the head noun. On the other, it is advocated that the [Mod-*de*-Num-Cl-N] sequence is adopted mainly under the case where (i) the head noun involved denotes an abstract concept with low discourse salience, and (ii) the RC contained serves to help identify the discourse referent of the head noun. Further, under the theory of Relevance (Sperber & Wilson 1995), Ming and Chen claim that the placement of [Num-Cl] before RC will give the hearer the expectation that the function of the following RC is to characterize the head noun, whereas the placement of RC before [Num-Cl] yields a different expectation that the RC in question needs to be interpreted as identifying the discourse referent associated with the head noun. Along this line of consideration, Ming and Chen treat the [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N] variation as a phenomenon fundamentally regulated by communicative demands.

While the variety of analyses attempted in previous studies have each contributed to the understanding of the [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N] alternation from a particular perspective, a closer examination reveals that none of them is fully adequate to tell the whole story concerning this word order phenomenon. To be concrete, for the definiteness account pursued by Lu (1998), in addition to the problem that has been demonstrated by Zhang (2006) (via the test of equational sentences), note that this analysis is further challenged by the fact that even though the definiteness condition has been fulfilled, the adoption of [Mod-*de*-Num-Cl-N] might still yield inappropriateness. Consider the following example:

- (9) *wo mai le san ben shu, fengmian shi hongse de;*  
 I buy PRF three CL book cover be red DE  
 a. [*san ben hongse de shu*] *dou hen gui.*  
     three CL red DE book all very expensive  
 b. #[*hongse de san ben shu*] *dou hen gui.*  
     red DE three CL book all very expensive  
 Intended: 'I bought three books, and their covers are red; the three red books are all very expensive.'

Example (9) has identified three particular red books in the given context. Given this, if the definiteness approach is correct, it would be expected that the [Mod-*de*-Num-Cl-N] expression *hongse de san ben shu* can be appropriately uttered in the continuation as a definite phrase which anaphorically refers to the previously mentioned three books. Contrary to expectation, the adoption of

[Mod-*de*-Num-Cl-N] yields unacceptability, as shown in (b), in contrast with the well permitted [Num-Cl-Mod-*de*-N] in (a).

On the other hand, the specificity account is not problem-free, either. Importantly, it is observed that the satisfaction of the specificity condition alone cannot always guarantee the licensing of [Mod-*de*-Num-Cl-N]. Consider the following conversation:

- (10) A: *ni dengyixia yao qu zuo shenme?*  
           you then       will go do what  
           ‘What will you do next?’
- B: a. *wo yao qu zhao [san ge gaogezi de xuesheng] lai ban xiangzi,*  
       I will go find three CL tall DE student come move box  
       *tamen shi John, Tom he Mark.*  
       they be John Tom and Mark
- b. *#wo yao qu zhao [gaogezi de san ge xuesheng] lai ban xiangzi,*  
       I will go find tall DE three CL student come move box  
       *tamen shi John, Tom he Mark.*  
       they be John Tom and Mark  
       Intended: ‘I shall go find three tall students to help move the boxes;  
       they are John, Tom, and Mark.’

Note that for both the replies (a) and (b), the continuation “...they are John, Tom, and Mark” explicitly indicates that the preceding bracketed numeral classifier phrase should be interpreted as a specific indefinite expression. However, the reply (b), which adopts [Mod-*de*-Num-Cl-N], cannot be properly permitted, in contrast with reply (a), which uses [Num-Cl-Mod-*de*-N].

Lastly, consider the discourse-pragmatic approach pursued by Ming & Chen (2010). Admittedly, this line sheds new light on the understanding of [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N]. Heed, however, a caveat that the conclusions of their study are essentially drawn based on frequency counts of the two expressions taken from a particular corpus. A potential inadequacy of this approach is that “while the relative frequency of different orders may be well-defined for a given corpus of texts, it is less clear what it means as a feature of the language itself” (Dryer 1995: 119). Specifically, when Ming and Chen tend to use [Num-Cl-Mod-*de*-N] or [Mod-*de*-Num-Cl-N] in the context “where alternating forms may be used” (Ming & Chen 2010: 188), their analysis would encounter difficulties in providing an effective explanation for why in some cases only [Num-Cl-Mod-*de*-N], but not [Mod-*de*-Num-Cl-N], can be licitly ruled in, as has been noticed by Zhang (2006) and Tang (2007) and to be further demonstrated in § 3 below.



In view of the above unsolved problems, in the following section, I shall revisit the licensing of [Num-Cl-Mod-*de*-N] and [Mod-*de*-Num-Cl-N] in different contexts.

### 3. Facts revisited

#### 3.1 Preliminary: Individual-level vs. stage-level modifiers

In approaching the [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N] alternation, a basic stance to be taken in this paper is that this phenomenon needs to be subcategorized into two cases based on the i(ndividual)-level vs. s tage)-level status of the modifier contained. Before proceeding, a brief introduction to the i-level vs. s-level distinction is warranted.

In accordance with a widely accepted definition of i-level and s-level modifiers, the i-level modifier is a modifier denoting permanent, non-episodic properties of the modifiee, while the s-level modifier expresses temporally anchored, episodic properties of the modifiee (e.g. Larson 2000; Larson & Takahashi 2007). At the grammatical level, a word order restriction is cross-linguistically attested regarding i-level and s-level modifiers, that is, the i-level modifier has to appear closer to the head noun than the s-level modifier does. To formally capture this regulation, it is commonly held that the i-level vs. s-level distinction has a syntactic correlate in the underlying structure, with a consensus being reached that i-level modifiers are base-generated in a lower site whereas s-level modifiers are originated in a higher position within the nominal domain (Larson 2000; Hsieh 2005, 2008; Larson & Takahashi 2007; Lin 2008; Cinque 2010; Kim 2014a, 2014b).<sup>5</sup>

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5. To briefly address some of the proposals attempted in previous studies, Larson (2000) and Larson & Takahashi (2007), for instance, assume that i-level modifiers attach to NP and are bound by a generic operator ranging over eventualities in the sense of Chierchia (1995), while s-level modifiers attach to DP, which fall outside the scope of the NP-internal generic quantifier. Hsieh (2005; 2008) draws on Chinese facts to argue that i-level modifiers are NP/N' modifiers whereas s-level modifiers are DP/D' modifiers (but see Lin (2008) for a critical review on Hsieh's analysis). Cinque (2010) hypothesizes a highly articulated structure for adnominal adjective modifiers along the cartographic approach, treating i-level modifiers as correlating with functional projections immediately above NP while s-level modifiers as located much higher in DP. A recent attempt made in Kim (2014a; 2014b) divides adnominal modification into three domains, depending on the specific nature of the modification expressed by the modifier. The present paper will follow Kim's line to account for the syntax of i-level and s-level modifiers. This issue will be returned to in §4 below.

Hsieh (2005) proposes a test, which involves the non-interrogative *wh*-word *shenme* ‘some, any’, to syntactically distinguish i-level modifiers from s-level ones in Mandarin Chinese. Upon the claim that the indefinite, non-interrogative *shenme* is a determiner base-generated under D and that the nominal phrase containing the indefinite determiner *shenme* underlyingly correlates with DP,<sup>6</sup> the rationale behind Hsieh’s *shenme* test is that a modifier that is allowed to modify a *shenme* indefinite can only be an s-level one but not an i-level one, for only the former, which is syntactically higher, could be accommodated by the DP layer. This is demonstrated in (11) below. The i-level modifier *haochi de* ‘delicious’, which expresses a stable, inherent property of the food, cannot precede and modify the indefinite *shenme dongxi* ‘something’, while the s-level modifier *ta zuotian mai de* ‘...(that) he bought yesterday’, a temporary property of the food involved in a particular shopping event, can appropriately accommodate the *shenme* indefinite:

- (11) a. \**ta mai le [haochi de]<sub>i-level</sub> shenme dongxi ma?*  
he buy PRF delicious DE what thing Q  
Intended: ‘Did he buy any delicious thing?’ (Hsieh 2005: Example (10b))  
b. *ni kanjian [ta zuotian mai de]<sub>s-level</sub> shenme dongxi ma?*  
you see he yesterday buy DE what thing Q  
‘Did you see anything he bought yesterday?’ (Hsieh 2005: Example (9a))

With the i-level vs. s-level modifier distinction at hand, the following subsection will look into the correlation between the semantics of the modifier and the (non-)licensing of the [Num-CI-Mod-*de*-N]/[Mod-*de*-Num-CI-N] variation.

### 3.2 Comparison: Cases with i-level modifiers vs. cases with s-level modifiers

With respect to the alternation between [Num-CI-Mod-*de*-N] and [Mod-*de*-Num-CI-N], an important fact which has gone unnoticed in previous studies is that the cases containing i-level modifiers behave quite differently from those containing s-level modifiers. For illustrative purposes, let us first identify some i-level and s-level modifiers (which will be used in the discussion below) with the aid of Hsieh’s (2005) *shenme* test. Compare (a)- and (b)-examples below:

- (12) a. \**ni renshi [gaogezi de] shenme yanyuan ma?*  
you know tall DE what actor/actress Q  
Intended: ‘Do you know any tall actors/actresses?’

6. See Hsieh (2005) for detailed arguments for analyzing the indefinite *shenme* as a D element.

- b. *ni renshi [zuotian lai canjia yanhui de] shenme yanyuan ma?*  
 you know yesterday come attend banquet DE what actor/actress Q  
 ‘Do you know any actors/actresses who came to attend the banquet yesterday?’

- (13) a. *\*ni xiwang wo fenxiang [langman de] shenme gushi ma?*  
 you wish I share romantic DE what story Q?  
 Intended: ‘Do you wish me to share any romantic stories?’  
 b. *ni xiwang wo fenxiang [wo rensheng zhong de] shenme gushi ma?*  
 you wish I share I life in DE what story Q?  
 ‘Do you wish me to share any stories in my life?’

As shown above, *gaogezi de* ‘tall’ and *langman de* ‘romantic’ in (a)-examples, which express stable, non-episodic characteristics of *yanyuan* ‘actor/actress’ and *gushi* ‘story’, respectively, cannot be used to modify the *shenme* indefinites. By contrast, *zuotian lai canjia yanhui de* ‘... (who) came to attend the banquet yesterday’ and *wo rensheng zhong de* ‘in my life’ in (b)-examples, which describe situation-dependent properties not intrinsically associated with ‘actor/actress’ and ‘story’, are allowed to precede the *shenme* indefinites. In accordance with Hsieh’s analysis, this indicates that the modifiers in (a)-examples should be i-level ones and those in (b)-examples belong to the s-level type.

Now consider how the semantics of modifiers may bear on the (non-)licensing of the [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N] variation. The first important observation to be made here is that, whereas it is true that a [Num-Cl-[Mod-*de*]<sub>s-level</sub>-N] construction could appropriately have a [[Mod-*de*]<sub>s-level</sub>-Num-Cl-N] alternate upon the satisfaction of the specificity condition as advocated by Zhang (2006) and Tang (2007), as shown in the reply (a) below, this is not the case for [Num-Cl-[Mod-*de*]<sub>i-level</sub>-N], as exemplified in the reply (b):

- (14) A: *ni dengyixia yao zuo shenme?*  
 you then will do what  
 ‘What will you do next?’  
 B: a. *wo yao zhao [san ge [zuotian lai canjia yanhui de]<sub>s-level</sub> nansheng]/[zuotian lai canjia yanhui de]<sub>s-level</sub> san ge boy*  
 I will find three CL yesterday come attend banquet DE boy  
*yesterday come attend banquet DE three CL nansheng] lai ban xiangzi, tamen shi John, Tom he Mark.*  
 boy come move box they be John Tom and Mark  
 ‘I shall find three (specific) boys who attended the banquet yesterday to help move the boxes; they are John, Tom, and Mark.’

- b. *wo yao zhao [san ge [gaogezi de]<sub>i-level</sub> nansheng]/\*[[ gaogezi*  
 I will find three CL tall DE boy tall  
*de]<sub>i-level</sub>san ge nansheng] lai ban xiangzi, tamen shi John, Tom*  
 DE three CL boy come move box they be John Tom  
*he Mark.*  
 and Mark  
 Intended: 'I shall find three (specific) tall boys to help move the  
 boxes; they are John, Tom, and Mark.'

Second, it is detected that while both [Num-Cl-[Mod-*de*]<sub>s-level</sub>-N] and [[Mod-*de*]<sub>s-level</sub>-Num-Cl-N] can be uttered out of the blue to introduce new referents into the current conversation, as shown in (15a), in the same context, only [Num-Cl-[Mod-*de*]<sub>i-level</sub>-N] but not [[Mod-*de*]<sub>i-level</sub>-Num-Cl-N] can be allowed, as given in (15b):

- (15) *Context: The speaker is making introductory remarks to the audience.*
- a. *jintian wo xiang gen dajia fenxiang [ji ge [wo rensheng zhong*  
 today I want with everyone share several CL my life in  
*de]<sub>s-level</sub>xiaogushi] /[[wo rensheng zhong de]<sub>s-level</sub>ji ge xiaogushi].*  
 DE little.story I life in DE several CL little.story  
 'Today I would like to share with everyone several little stories in my life.'
- b. *jintian wo xiang gen dajia fenxiang [ji ge [langman de]<sub>i-level</sub>*  
 today I want with everyone share several CL romantic DE  
*xiaogushi]/\*[[ langman de]<sub>i-level</sub>ji ge xiaogushi].*  
 little.story romantic DE several CL little.story  
 Intended: 'Today I would like to share with everyone several romantic stories.'

Third, it is noted that under the cases where the numeral involved is *yi* 'one', only [Num-Cl-[Mod-*de*]<sub>i-level</sub>-N] but not [[Mod-*de*]<sub>i-level</sub>-Num-Cl-N] can be ruled in, as illustrated in (a)-examples below. By contrast, both [*yi*-Cl-[Mod-*de*]<sub>s-level</sub>-N] and [[Mod-*de*]<sub>s-level</sub>-*yi*-Cl-N] can be grammatically formed, as given in (b)-examples.

- (16) a. *yi ge [gaogezi de]<sub>i-level</sub>nansheng/\*[gaogezi de]<sub>i-level</sub>yi ge nansheng*  
 one CL tall DE boy tall DE one CL boy  
 Intended: 'a tall boy'
- b. *yi ge [zuotian lai canjia yanhui de]<sub>s-level</sub>nansheng/[zuotian*  
 one CL yesterday come attend banquet DE boy yesterday  
*lai canjia yanhui de]<sub>s-level</sub>yi ge nansheng*  
 come attend banquet DE one CL boy  
 'a boy who came to attend the banquet yesterday'

- (17) a. *yi ge [langman de]<sub>i-level</sub> gushi* / \**[langman de]<sub>i-level</sub> yi ge gushi*  
 one CL romantic DE story romantic DE one CL story  
 Intended: ‘a romantic story’
- b. *yi ge [wo rensheng zhong de]<sub>s-level</sub> gushi* / *[wo rensheng zhong de]<sub>s-level</sub> yi ge gushi*  
 one CL I life in DE story I life in DE one  
 CL story  
 ‘a story in my life’

All this taken together, this paper claims that to deal with the (non-)licensing of the [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N] alternation, there is a need to distinguish the case of [Num-Cl-[Mod-*de*]<sub>s-level</sub>-N]/[[Mod-*de*]<sub>s-level</sub>-Num-Cl-N] from the case of [Num-Cl-[Mod-*de*]<sub>i-level</sub>-N]/[[Mod-*de*]<sub>i-level</sub>-Num-Cl-N]. In the following two subsections, a close scrutiny will be conducted on the two cases respectively.

### 3.3 Examination on the case with an s-level modifier

With respect to the [Num-Cl-[Mod-*de*]<sub>s-level</sub>-N]/[[Mod-*de*]<sub>s-level</sub>-Num-Cl-N] alternation, ample empirical evidence can be found showing that albeit the two are both grammatical orders in Mandarin Chinese, they are not semantically equivalent.

To illustrate, first, while [Num-Cl-[Mod-*de*]<sub>s-level</sub>-N] can be used as a non-specific indefinite expression, [[Mod-*de*]<sub>s-level</sub>-Num-Cl-N] can only convey a specific meaning, as manifested by the contrasts in (18)–(20) between the two in terms of occurring in the linguistic environments that exclusively accommodate non-specific indefinites (cf. see Zhang (2006); Tang (2007), and also §2).

#### (18) *As object of existential construction*

- a. *ban-shang you [san ge kaoshi bu jige de xuesheng]*.  
 class-on have three CL exam not pass DE student  
 b. \**ban-shang you [kaoshi bu jige de san ge xuesheng]*.  
 class-on have exam not pass DE three CL student  
 Intended: ‘There are three students in the class who did not pass the exam.’

#### (19) *As object of creation verb*

- a. *Lisi dasuan kao [liang ge ta zui nashou de mianbao]*.  
 Lisi intend bake two CL he most good.at DE bread  
 b. \**Lisi dasuan kao [ta zui nashou de liang ge mianbao]*.  
 Lisi intend bake he most good.at DE two CL bread  
 Intended: ‘Lisi intends to bake two loaves of bread that he is most good at.’

(20) *As expression undergoing extraction*

- a. *xuesheng<sub>i</sub> gongsi jin-nian zhao le [liang ge gang biye de t<sub>i</sub>].*  
 student company this-year employ PRF two CL just graduate DE  
 b. *\*xuesheng<sub>i</sub> gongsi jin-nian zhao le [gang biye de liang ge t<sub>i</sub>].*  
 student company this-year employ PRF just graduate DE two CL  
 Intended: 'For students, this year the company employed two who just graduated.'

The above picture shows that albeit the specificity condition proposed by Zhang (2006) and Tang (2007) may not be able to satisfyingly capture the rule regulating the [Num-Cl-[Mod-*de*]<sub>i-level</sub>-N]/[[Mod-*de*]<sub>i-level</sub>-Num-Cl-N] alternation (as illustrated in §3.2), this condition is well respected by the [Num-Cl-[Mod-*de*]<sub>s-level</sub>-N]/[[Mod-*de*]<sub>s-level</sub>-Num-Cl-N] alternation.

Second, [[Mod-*de*]<sub>s-level</sub>-Num-Cl-N] necessarily serves as a referring expression, while [Num-Cl-[Mod-*de*]<sub>s-level</sub>-N] can be used as a non-referential, quantity-denoting expression, as shown below:

- (21) a. *zhe ge xiangzi tai zhong le, [liang ge gang shangxue de haizi]*  
 this CL box too heavy SFP two CL just start.school DE child  
*yiban tai bu dong.*  
 generally lift not move  
 b. *zhe ge xiangzi tai zhong le, \*[gang shangxue de liang ge haizi]*  
 this CL box too heavy SFP just start.school DE two CL child  
*yiban tai bu dong.*  
 generally lift not move  
 Intended: 'This box is too heavy; generally two children who just started school would not be able to lift it up.'

Third, given a [Num-Cl-[Mod-*de*]<sub>s-level</sub>-N] construction and its [[Mod-*de*]<sub>s-level</sub>-Num-Cl-N] counterpart, while the former can be intended as referring to a subset of discourse referents that satisfy the descriptive content of [Mod-*de*]<sub>s-level</sub>, note that generally the latter needs to be associated with the totality of discourse referents that meet the description of [Mod-*de*]<sub>s-level</sub>. Consider (22):

- (22) a. *wo gangcai jian le [liang ge xin lai de xuesheng], dan hai you*  
 I just meet PRF two CL newly come DE student but still have  
*lingwai san ge xin lai de meiyou jiandao.*  
 another three CL newly come DE not.have see  
 'I just met two students who newly came, but there are still another three (students) who newly came that I have not seen.'

- b. *wo gangcai jian le [xin lai de liang ge xuesheng], #dan hai you*  
 I just meet PRF newly come DE two CL student but still have  
*lingwai san ge xin lai de meiyou jiandao.*  
 another three CL newly come DE not.have see  
 Intended: 'I just met two students who newly came, but there are still  
 another three (students) who newly came that I have not seen.'

As illustrated above, in the case where ['two'-Cl-'newly came'-*de*-'student'] is used, the continuation which implies that there are more than two students who newly came could be appropriately permitted, as in (22a). By contrast, when what is adopted is the order ['newly came'-*de*-'two'-Cl-'student'], such a continuation would lead to inappropriateness, as in (22b). This shows that while the [Mod-*de*]<sub>s-level</sub> in [Num-Cl-[Mod-*de*]<sub>s-level</sub>-N] serves to restrictively modify the denotation of N, the [Mod-*de*]<sub>s-level</sub> in [[Mod-*de*]<sub>s-level</sub>-Num-Cl-N] acts to non-restrictively modify the referents of [Num-Cl-N].<sup>7</sup>

To summarize, it was illustrated that [[Mod-*de*]<sub>s-level</sub>-Num-Cl-N] is obligatorily a specific indefinite expression and that the [Mod-*de*]<sub>s-level</sub> contained normally functions to modify the discourse referent(s) associated with [Num-Cl-N] in a non-restrictive fashion. Differently, [Num-Cl-[Mod-*de*]<sub>s-level</sub>-N] is allowed to be used as a non-specific indefinite expression, and the [Mod-*de*]<sub>s-level</sub> contained acts to restrict the denotation of the head noun.<sup>8</sup> Next, further examination will be conducted on the [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N] variation involving an i-level modifier.

### 3.4 Examination on the case with an i-level modifier

Recall from §3.2 that while in many contexts it is possible for [Num-Cl-[Mod-*de*]<sub>s-level</sub>-N] to have a [[Mod-*de*]<sub>s-level</sub>-Num-Cl-N] alternate, in exactly the same contexts, intriguingly, the [Num-Cl-[Mod-*de*]<sub>i-level</sub>-N] construction cannot grammatically have a [[Mod-*de*]<sub>i-level</sub>-Num-Cl-N] counterpart (see

7. It will be shown in §4.2 that there also exist cases in which a restrictive s-level [Mod-*de*], which is originally base-generated in between [Num-Cl] and N, could be fronted in a position preceding [Num-Cl-N] in the context involving CONTRASTIVE TOPIC, an operation applied at the syntax-discourse interface. Please see §4.2 below for details.

8. An indefinite [Num-Cl-Mod-*de*-N] construction may also obtain a specific interpretation (cf. Zhang 2006; Tang 2007), which is reminiscent of a cross-linguistically attested fact that numeral indefinites may obtain either specific or non-specific readings depending on the contexts (e.g. Barwise & Cooper 1981; Enç 1991; Diesing 1992; Reinhart 1997; Cheng & Sybesma 1999; Matthewson 1999; Chierchia 2001, among many others). As a formal account of the mechanism governing the (non-)specificity of indefinites is beyond the scope of the present study, this paper does not approach the issue here.

(14)–(17)). This leads to a crucial question as to whether there are any chances at all for the  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  sequence to be appropriately licensed in Mandarin Chinese.

A scrutiny on relevant data reveals that the answer is a positive one. To begin with, it is observed that either  $[\text{Num-Cl-}[\text{Mod-de}]_{i\text{-level}}\text{-N}]$  or  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  could be acceptable when the nominal phrase is intended to refer to a subset of a contextually pre-established set. To understand this, see the contrast between the following two scenarios in licensing  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$ :

(23) *Context: A and B just passed by three long-haired girls.*

A: *ni juede zhe san ge nüsheng piaoliang ma?*

you think this three CL girl pretty Q

‘Do you think these three girls are pretty?’

B: a. *piaoliang, [san ge changtoufa de nüsheng] dou hen piaoliang.*  
pretty three CL long-hair DE girl all very pretty

b. *piaoliang, \*[changtoufa de san ge nüsheng] dou hen piaoliang.*  
pretty long-hair DE three CL girl all very pretty

Intended: ‘Pretty; the three long-haired girls are all very pretty.’

(24) *Context: A and B just passed by five girls, three with long hairs and two with short hairs.*

A: *ni juede zhe wu ge nüsheng piaoliang ma?*

you think this five CL girl pretty Q

‘Do you think these five girls are pretty?’

B: a. *[san ge changtoufa de nüsheng] ting piaoliang.*  
three CL long-hair DE girl very pretty

b. *[changtoufa de san ge nüsheng] ting piaoliang.*  
long-hair DE three CL girl very pretty

‘Three long-haired girls are very pretty.’

Here (23) and (24) are different in that for (23),  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  is used to refer to the whole set (i.e. a total of three girls); whereas for (24),  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  is associated with a subset (i.e. three long-haired girls out of a total of five girls). As shown above, the adoption of  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  yields inappropriateness in (23) yet causes no problems in (24).<sup>9</sup>

9. A reviewer points out that for examples like (23), it is against native speakers’ intuition to add new information when someone answers a yes-no question; therefore, neither (23a) nor (23b) is appropriate for they are ‘drawing a snake with legs’. I agree with the reviewer that in the daily conversation, given a question as shown (23), it may not be quite natural for one to add further information when he/she has already answered *piaoliang*. In response to the reviewer’s



A further noteworthy fact is that for a  $[[\text{Mod-}de]_{i\text{-level}}\text{-Num-Cl-N}]$  expression to be licensed, this expression is necessarily used to exhaustively include all the referents in the current context that satisfy the descriptive content denoted by  $[\text{Mod-}de]_{i\text{-level}}$ . Such an interpretive requirement is, nevertheless, absent in the case of  $[\text{Num-Cl-}[\text{Mod-}de]_{i\text{-level}}\text{-N}]$ . Consider (25):

(25) *Context: A and B just passed by five girls, three with long hair and two with short hair.*

A: *ni renshi zhe wu ge nüsheng ma?*

you know this five CL girl Q

‘Do you know these five girls?’

B: a. *wo renshi tamen dangzhong liang/san ge changtoufa de nüsheng.*

I know they among two three CL long-hair DE girl

‘I know two/three long-haired girls among them.’

b. *wo renshi tamen dangzhong changtoufa de \*liang/<sup>OK</sup>san ge nüsheng.*

I know they among long-hair DE two three CL girl

‘I know \*two/<sup>OK</sup>three long-haired girls among them.’

As shown above, in the context where there are three long-haired girls contained in a set of five girls, while  $[\text{Num-Cl-}[\text{Mod-}de]_{i\text{-level}}\text{-N}]$  can be used to refer to either all of or part of the three long-haired girls, as in the reply (a), the  $[[\text{Mod-}de]_{i\text{-level}}\text{-Num-Cl-N}]$  order can only be used to refer to all of the three long-haired girls, as demonstrated in the reply (b).

Furthermore, note that in the context where a  $[[\text{Mod-}de]_{i\text{-level}}\text{-Num-Cl-N}]$  sequence can be appropriately licensed, an opposite proposition would be presupposed concerning alternative members who lack the property denoted by  $[\text{Mod-}de]_{i\text{-level}}$ . Consider (26):

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comment, a specification worth making here is that what the comparison between (23a) and (23b) is intended to reflect is a semantic distinction – rather than a pragmatic one – held between the two orders in terms of referential properties; that is,  $[[\text{Mod-}de]_{i\text{-level}}\text{-Num-Cl-N}]$  is used to refer to a subset of a contextually pre-established set, while  $[\text{Num-Cl-}[\text{Mod-}de]_{i\text{-level}}\text{-N}]$  is not subject to this condition (as further evidenced by the sharp contrast between (23) and (24)). This is supported by the fact that, in accordance with many native speakers I have consulted, while they judge (23b) as totally awkward and unacceptable, they do accept (23a) as an eligible reply (although not fully natural). Given that what is of relevance to the present discussion is the semantic (referential) properties of the two orders, that the continuations in (23a) and (23b) may bring about some degrees of pragmatic inappropriateness does not constitute a problem to the main argument proposed here.

(26) *Context: A and B just passed by five girls, three with long hair and two with short hair.*

A: *ni renshi zhe wu ge nüsheng ma?*

you know this five CL girl Q

‘Do you know these five girls?’

B: *wo renshi changtoufa de san ge nüsheng, #/?? ye renshi na ji ge duantoufa de.*

I know long-hair DE three CL girl

also know that several CL

short-hair DE

short-hair DE

Intended: ‘I know three long-haired girls, and also know those short-haired ones.’

As manifested above, in the context where the [‘long-haired’-Num-Cl-N] can be licensed, the continuation which means that speaker B knows both long-haired and short-haired girls would be inappropriate, or at least remarkably awkward. To improve (26), one may replace the continuation by an expression conveying a proposition that is semantically opposite to the proposition about the long-haired girls, such as “...but I do not know those short-haired ones”, as shown in (27) below.

(27) *Uttered in the same context as that of (26):*

... *wo renshi changtoufa de san ge nüsheng, dan bu renshi na ji ge*

I know long-hair DE three CL girl but not know that several CL

*duantoufa de.*

short-hair DE

‘I know three long-haired girls, but do not know those short-haired ones.’

To wrap up, the key observations made so far concerning the use of  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$ : (i)  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  can be licensed in the situation where it is intended to pick a subset out of a context-given referent set; (ii)  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  is used to exhaustively refer to the discourse referents which meet the description expressed by  $[\text{Mod-de}]_{i\text{-level}}$ ; and (iii) the adoption of  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  presupposes an opposite proposition concerning alternative members that do not have the property denoted by  $[\text{Mod-de}]_{i\text{-level}}$ .

#### 4. Towards a solution

Grounded in the above observations, in what follows, a dichotomous analysis will be proposed for the  $[\text{Num-Cl-Mod-de-N}]/[\text{Mod-de-Num-Cl-N}]$  alternation.

#### 4.1 Analysis of [Num-Cl-[Mod-*de*]<sub>s-level</sub>-N]/[[Mod-*de*]<sub>s-level</sub>-Num-Cl-N]

With respect to the [Num-Cl-[Mod-*de*]<sub>s-level</sub>-N]/[[Mod-*de*]<sub>s-level</sub>-Num-Cl-N] alternation, recall that the [Mod-*de*]<sub>s-level</sub> in [Num-Cl-[Mod-*de*]<sub>s-level</sub>-N] serves to restrict the denotation of the head noun whereas the [Mod-*de*]<sub>s-level</sub> in [[Mod-*de*]<sub>s-level</sub>-Num-Cl-N] is used to describe the total set of referents expressed by [Num-Cl-N] (see (22)). To formally capture such an interpretive distinction, this paper intends to follow Kim's (2014a; 2014b) analysis of adnominal modifiers to account for the syntax of [Num-Cl-[Mod-*de*]<sub>s-level</sub>-N]/[[Mod-*de*]<sub>s-level</sub>-Num-Cl-N].

Kim divides adnominal modification into three types, which are hypothesized as occurring in different syntactic domains and correlating with three different functional projections inside DP, called XP, YP, and ZP, respectively. To be specific, the lowest domain exclusively accommodates N-dependent, i-level modifiers, which Kim calls “non-D(iscourse)-linked modifiers”. Following Chierchia (1995), Kim assumes that i-level modifiers are all bound by the generic operator  $\Gamma$  over eventualities, which is the source of non-episodic, situation-independent semantics. Syntactically, non-D-linked modifiers / i-level modifiers are assumed to be introduced by the functional projection XP, with XP hosting the generic operator  $\Gamma$ . Among the three functional layers of adnominal modification, XP is the one closest to NP.<sup>10</sup> By contrast, s-level modifiers are originated above XP and fall outside the scope of the generic operator  $\Gamma$ , hence an episodic, temporally-anchored semantic nature. Kim further splits s-level modifiers into two classes in accordance with their interpretations and the syntactic hierarchies they occur. It is proposed that restrictive s-level modifiers, i.e. the ‘D-linked modifiers’ in Kim’s terminology, are associated with the functional projection YP, which is located above XP but below ClP; while non-restrictive s-level modifiers, labeled “supplementary modifiers” by Kim, are introduced by the functional projection ZP, with ZP occurring as high as above DP. The modification hierarchy is visualized below:

- (28) [<sub>ZP</sub> **Supplementary Mod** [<sub>DP</sub>...[<sub>NumP</sub> Num [<sub>ClP</sub> Cl [<sub>YP</sub> **D-linked Mod**  
[<sub>XP</sub> ( $\Gamma$ ) **Non-D-linked Mod** [<sub>NP</sub> N]]]]]]]]]<sup>11</sup>  
(in accordance with Kim (2014a; 2014b))

10. Under Kim's (2014b) analysis, XP is considered similar to Zamparelli's (2000) Kind Phrase (KIP).

11. In Kim's (2014b) terminology, the functional layers headed by Num and Cl are labeled UnitP and PluralP, respectively, which are in turn borrowed from Svenonius (2008). The present paper adopts the more commonly used NumP and ClP for ease of understanding.

Essentially following Kim's spirit, to present a formal account for the aforementioned observations concerning the  $[\text{Num-Cl-}[\text{Mod-de}]_{s\text{-level}}\text{-N}]/[[\text{Mod-de}]_{s\text{-level}}\text{-Num-Cl-N}]$  alternation, this paper assumes that the  $[\text{Mod-de}]_{s\text{-level}}$  in  $[\text{Num-Cl-}[\text{Mod-de}]_{s\text{-level}}\text{-N}]$ , a restrictive modifier of the noun denotation, is originated above XP (the functional projection introducing the i-level modifier) but below ClP; while the  $[\text{Mod-de}]_{s\text{-level}}$  in  $[[\text{Mod-de}]_{s\text{-level}}\text{-Num-Cl-N}]$ , which provides non-restrictive/supplementary modification for the discourse referents expressed by  $[\text{Num-Cl-N}]$ , is syntactically located above DP, as schematized below.<sup>12</sup>

- (29)  $[_{ZP} [\text{Mod-de}]_{s\text{-level}} (\text{non-restrictive}) [_{DP} \dots [_{\text{NumP}} \text{Num} [_{\text{ClP}} \text{Cl}]]]]$   
 $[_{YP} [\text{Mod-de}]_{s\text{-level}} (\text{restrictive}) [_{XP} (\text{r}) \dots [_{\text{NP}} \text{N}]]]]]$

Along this line, this paper explains the syntactic freedom enjoyed by  $[\text{Mod-de}]_{s\text{-level}}$  in linear order with respect to  $[\text{Num-Cl}]$  in that  $[\text{Mod-de}]_{s\text{-level}}$  is underlyingly compatible with either the highest domain or the intermediate domain of adnominal modification. Concretely,  $[\text{Mod-de}]_{s\text{-level}}$  is applicable to the syntactic layers either as high as above DP, where it is construed as a non-restrictive modifier, or in between ClP and NP, where it is used for restrictive modification. According to this, given that the  $[\text{Num-Cl-N}]$  sequence modified by a non-restrictive  $[\text{Mod-de}]_{s\text{-level}}$  is a D-linked, referring expression (i.e. syntactically correlating with DP, as illustrated in (29)), it follows that at the semantic level, the  $[[\text{Mod-de}]_{s\text{-level}}\text{-Num-Cl-N}]$  construction is always specific (cf. Zhang 2006; Tang 2007).<sup>13</sup>

12. To clearly differentiate the hierarchy of modification, this paper follows Kim (2014a; 2014b) in labeling the projections associated with the three types of adnominal modification as XP, YP, and ZP. As regards the internal syntax of *de*-marked modifiers in Mandarin Chinese, while various analyses have been attempted in previous studies, little consensus has been reached so far with respect to the exact syntactic status of *de*. To address some, for example, *de* has been analyzed as a non-root complementizer (Paul 2007; 2010), a clitic-like determiner (Simpson 2002), or a functional category which heads its own maximal projection (e.g. Si 2004; Sio 2006; Shi 2008). Given that the syntax of *de* does not concern the present research much, I shall leave it for a separate study. In this paper, I take *de* as a modification marker without further discussion on the internal structure of *de*-marked modification constructions.

13. As pointed out by Pesetsky (1987), Enç (1991), and many others, a key criterion for distinguishing specific indefinites from non-specific ones is that the former are D-linked whereas the latter are not.

## 4.2 Analysis of [Num-Cl-[Mod-*de*]<sub>i-level</sub>-N]/[[Mod-*de*]<sub>i-level</sub>-Num-Cl-N]

With respect to the case involving an i-level modifier, it has been illustrated in §3.2 that normally only [Num-Cl-[Mod-*de*]<sub>i-level</sub>-N], but not [[Mod-*de*]<sub>i-level</sub>-Num-Cl-N], can be ruled in. To account for this, the present study follows Kim (2014a; 2014b) in assuming that [Mod-*de*]<sub>i-level</sub> is confined to the lowest syntactic domain of modification, i.e. correlating with XP right above NP, where it is scoped over by the generative operative  $\Gamma$ , as demonstrated in (30) below. Accordingly, given that the pre-Num position falls outside the scope of  $\Gamma$  and does not qualify as an eligible merge site for [Mod-*de*]<sub>i-level</sub>, the above mentioned fact that normally the [[Mod-*de*]<sub>i-level</sub>-Num-Cl-N] sequence is illicit in Mandarin Chinese is within expectation.

$$(30) \quad [{}_{\text{DP}} \dots [{}_{\text{NumP}} \text{Num} [{}_{\text{CIP}} \text{Cl} \dots [{}_{\text{XP}(\Gamma)} [\text{Mod-}de]_{i\text{-level}} [{}_{\text{NP}} \text{N}]]]]]$$

On the other hand, recall an intriguing fact that in some special contexts the [[Mod-*de*]<sub>i-level</sub>-Num-Cl-N] expression may also be acceptable. Some key observations concerning the licensing of [[Mod-*de*]<sub>i-level</sub>-Num-Cl-N] (cf. §3.4) are worth restating here. First, [[Mod-*de*]<sub>i-level</sub>-Num-Cl-N] can only be ruled in when intended to pick out a subset from a pre-established referent set. Second, [[Mod-*de*]<sub>i-level</sub>-Num-Cl-N] is used to exhaustively refer to the members who satisfy the descriptive content of [Mod-*de*]<sub>i-level</sub>. Third, the adoption of [[Mod-*de*]<sub>i-level</sub>-Num-Cl-N] always presupposes an opposite proposition regarding contrasted alternatives which lack the property denoted by [Mod-*de*]<sub>i-level</sub>. To capture these characteristics, this paper proposes considering the licensing of [[Mod-*de*]<sub>i-level</sub>-Num-Cl-N] in terms of the notion of CONTRASTIVE TOPIC.

In the existing literature, CONTRASTIVE TOPIC (CT henceforth) is commonly defined as a discourse property which represents an intersection between Topic and Focus. To be concrete, CT is topical in that denotationally it is used to refer to constituent members of a context-given set which serves as the Topic of the current conversation.<sup>14</sup> In the meanwhile, CT is focal in that it interpretively triggers a set of alternative members, and the utterance of a CT-related proposition would induce an opposite proposition concerning alternatives, hence a CONTRASTIVE FOCUS interpretation (e.g. Molnár 1998; Lee 1999, 2003, 2006; Büring 2003; Tomioka 2010).<sup>15</sup> It has been reported in many studies that different languages

14. Here “Topic” is understood as given, shared knowledge that receives the main attention of interlocutors in the current conversation (e.g. Portner & Yabushita 2001; Gundel & Fretheim 2004).

15. A distinction is explicitly made between CT and CONTRASTIVE FOCUS (CF) in Lee (2003; 2006). Put briefly, Lee argues that CT is induced by a conjunctive question whereas CF comes from an alternative disjunctive question. Taking (31) for instance, here the CT context is con-

may use different linguistic devices to explicitly encode CT, including morphological markers, syntactic movement, prosodic features, and/or combination thereof (e.g. Lee 1999, 2003, 2006; Tomioka 2010). For instance, in English and German, CT is marked by the prosodic cue of a fall-rise contour (Jackendoff 1972; Krifka 1998; Büring 2003); in Japanese and Korean, CT is morphologically signaled by the suffixes *-wa* and *-un*, respectively (Lee 1999, 2003, 2006; Tomioka 2010). Consider the example below for illustration of CT in Korean, which is marked by the suffix *-un* (and accompanied by a high tone; cf. Lee 1999, 2003, 2006):

- (31) A: *ne ton iss ni?*  
           you money have Q  
           ‘Do you have money?’  
       B: a. *tonceon-un iss-e* (, *haciman cicen-un eps-e*).  
           I coins-CT have-DEC but bill-CT not-have  
           ‘I have coins (, but I don’t have bills).’

sidered as implying a conjunctive question like “Do you have coins and do you have bills?” Differently, if the addresser’s concern is understood as an alternative disjunctive question, the addressee’s reply would be characterized by CF rather than CT. This is illustrated in (i) below: when speaker A raises an alternative disjunctive question concerning the choice between *ton* ‘money’ and *phen* ‘pen’, *ton* in speaker B’s reply can only be intended as CF but not as CT, as evidenced by its incompatibility with the CT marker *-un*.

- (i) A: *aki-ka ton-ul mence cip-ess-ni (ttonun/animyen) phen-ul mence*  
       baby-NOM money-ACC first pick-PAST-Q (or/if.not) pen-ACC first  
       *cip-ess-ni?*  
       pick-PAST-Q  
       ‘Did the baby pick the money first, or did she pick the pen first?’  
       B: (*aki-ka ton<sub>F</sub>-ul/\*ton-un mence cip-ess-e*.  
       baby-NOM money-ACC /money-CT first pick-PAST-DEC  
       ‘The baby picked the money first/\*money<sub>CT</sub> first.’ (Lee 2003: Example (21))

A further interpretive distinction between CT and CF lies in that, albeit both have to do with contrastiveness, CT exhibits concessive contrast whereas CF is associated with juxtaposing contrast (Lee 2006). Specifically, a CT-contained proposition expresses a concessive admission/compliance, whereby the proposition concerning CT referents can always be connected with an opposite proposition concerning the alternative referents via a concessive connective, such as “but” in (31). By contrast, CF does not have such characteristics. A CF-related proposition (e.g. “The baby picked the money first” in (i)) is an exhaustive answer to the alternative disjunctive question, where no concessive meaning is presupposed. As such, the proposition concerning CF referents cannot be properly connected by a concessive connective with the proposition concerning the contrasted alternatives. Taking (i), the answer provided by speaker B cannot be one meaning “The baby picked the money first *but* she does not pick the pen first”. For detailed arguments and empirical evidence for the distinction between CT and CF, interested readers are referred to Lee (2003; 2006).

- b. *na tonceon-un iss-e* (, #*kuriko cicen-un /-to iss-e*).

I coins-CT have-DEC and bill-CT /-also have-DEC

'I have coins(, #and I have bills/also have bills).'

(adapted from Lee 2003: Examples (3), (9), and (10))

For (31), *ton* 'money' functions as the Topic of speaker A and speaker B's current conversation, which is understood as composed by coins and bills in the context. Speaker B responds to speaker A's question about money in terms of coins, with *tonceon* 'coins' being intended as CT and marked by the suffix *-un*. Here the affirmative proposition concerning the CT element "coins" (i.e. "I have coins") presupposes an uncancellable, opposite proposition concerning the alternatives, i.e. bills. This is demonstrated by the contrast between (a) and (b) in accommodating different continuations: while a semantically reversed continuation "...but I don't have bills" is perfectly allowed, as in the reply (a), an affirmative continuation "...and I have bills/also have bills" yields infelicity, as in the reply (b).

With the characteristics of CT in mind, it is worth noticing that the above mentioned behaviors exhibited by  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  well meet the defining properties of CT. To illustrate, specifically, as for its topical nature, recall that  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  can only be appropriately licensed when it is used to pick out a subset from a pre-established referent set. Generally, such a referent set stands as the center of communicative attention around which the current conversation is initiated and developed, whereby it qualifies as the discourse Topic. Taking (32) below ((26) and (27) combined) for instance, here the locus of the interlocutors' communicative attention is a set of five girls, which constitutes the discourse Topic in the current conversation. Concomitantly, the  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  expression, which picks out a subset (i.e. the three long-haired ones) from the topical girl set, is possessed with a CT-type topical property. In the meanwhile, the utterance of  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  would presuppose an opposite proposition concerning the alternative members, as demonstrated by the contrast between the replies (a) and (b) below in accommodating different continuations. This is a typical CT-type focal meaning – one associated with induction of an opposite proposition concerning alternatives.

- (32) Context: A and B just passed by five girls, three with long hair and two with short hair.

A: *ni renshi zhe wu ge nüsheng ma?*

you know this five CL girl Q

'Do you know these five girls?'

- B: a. *wo renshi changtoufa de san ge nüsheng, #/?? ye renshi na ji*  
 I know long-hair DE three CL girl also know that several  
*ge duantoufa de.*  
 CL short-hair DE  
 Intended: 'I know three long-haired girls, and also know those short-haired ones'
- b. *wo renshi changtoufa de san ge nüsheng, dan bu renshi na ji*  
 I know long-hair DE three CL girl but not know that several  
*ge duantoufa de.*  
 CL short-hair DE  
 'I know three long-haired girls, but do not know those short-haired ones.'

In view of the CT-type topical and focal properties exhibited by  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$ , the present study considers that the linear order of  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  is licensed at the syntax-discourse interface as a linguistic means of encoding CT within the nominal domain.<sup>16</sup> Specifically, upon the assumption that *i*-level modifiers are base-generated at a quite low position within the nominal phrase, it is postulated that  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  is derived from  $[\text{Num-Cl}[\text{Mod-de}]_{i\text{-level}}\text{-N}]$  via fronting the  $[\text{Mod-de}]_{i\text{-level}}$  from the pre-N position, i.e. its base-generated site, to the pre-Num position. Further, following the spirit of Neeleman & Van de Koot (2008) and Horvath (2010), I consider such a CT-related movement as interface-induced and driven by the purpose of generating a transparent mapping of the syntactic representation onto the information structure.<sup>17</sup>

16. The present study leaves the issue for a separate study as to whether such a CT-related word order is accompanied by a particular prosodic feature.

17. Neeleman & Van de Koot (2008) and Horvath (2010) hypothesize that different mapping rules may apply *optionally* to associate different types of discourse properties with particular syntactic configurations. Their analysis is fundamentally different from the feature-driven analysis pursued along the Cartographic Approach (Rizzi 1997; Cinque 1999): while the latter assumes a strict one-to-one correspondence between a particular discourse property and a particular syntactic configuration, the former does not. Neeleman & Van de Koot and Horvath advocate an interface-induced rather than a formal feature-driven analysis for CT-related movement mainly due to the consideration that across languages, this type of movement, if applicable at all, is not an obligatory operation, nor is CT necessarily confined to a particular syntactic position, hence incompatible with the spirit of the feature-driven analysis. Interested readers are referred to their works for detailed cross-linguistic empirical evidence and theoretical arguments in favor of the interface-induced analysis for CT-related movement.

Given that it is entirely possible for the  $[\text{Num-Cl}[\text{Mod-de}]_{i\text{-level}}\text{-N}]$  sequence in Mandarin Chinese to be intended as a CT expression without having  $[\text{Mod-de}]$  overtly move across the



Before proceeding, it helps to briefly introduce Neeleman & Van de Koot's and Horvath's proposal first. They pursue an interface-induced analysis to account for the CT-related movement taking place in the clausal domain, a phenomenon detected in many languages. Consider the following example in English:

- (33) Do you know who John gave the book to?  
 a. I'm not sure, but he gave the record to Susan.  
 b. I'm not sure, but the record<sub>i</sub> he gave *t*<sub>i</sub> to Susan.  
 (Horvath 2010: Example (38))

Here the underlined phrase *the record* is intended as a CT expression. As shown above, it could either stay in situ, as in (33a), or undergo movement across the subject *he*, as in (33b). Albeit there is no difference between the two orders in terms of truth value, the application of movement as depicted in (33b) is considered to contribute an interface effect in that it yields a syntactic configuration which satisfies the structural input of a syntax-information structure mapping rule related to conveying CT. Such a syntactic configuration is called "discourse template" in Neeleman & Van de Koot's terminology. To be specific, Neeleman & Van de Koot account for the CT-related movement in terms of the Comment Mapping Rule and the Background Mapping Rule as stated below (adapted from Neeleman & Van de Koot 2008: Example (9)). They claim that the CT-related movement as depicted in (35) is triggered by the discourse demand of forming a syntactic configuration which can directly feed the Comment Mapping Rule and the Background Mapping Rule in (34).

- (34) a. *Comment Mapping Rule*  
 If XP in (35) is interpreted as topic, then interpret N2 as comment.<sup>18</sup>  
 b. *Background Mapping Rule*  
 If XP in (35) is interpreted as focus, then interpret N2 as background.

- (35) [<sub>N1</sub> XP<sub>i</sub> [<sub>N2</sub> ... *t*<sub>i</sub> ...]]<sup>19</sup>

Taking (33b) to spell Neeleman & Van de Koot's idea out, under their analysis, the fronting of *the record* creates a surface structural configuration as visualized in (36) below. As can be seen, upon application of the movement, the informational CT unit *the record*, a topical and focal element, and *he gave to Susan*, which

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Num, in the same spirit of Neeleman & Van de Koot and Horvath, the present paper adopts the interface-induced view to analyze the derivation of [[Mod-*de*]<sub>i-level</sub>-Num-Cl-N].

18. The term 'Topic' in Neeleman & Van de Koot's system subsumes both the (super-)Topic and CT (Neeleman & Van de Koot 2008: 272).

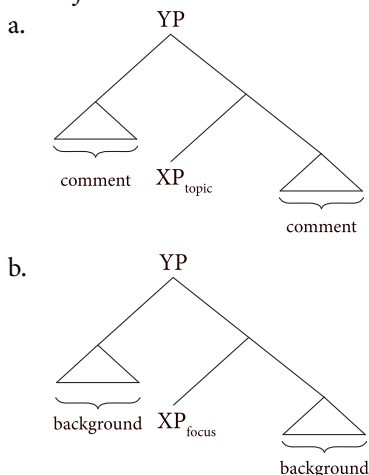
19. Under Neeleman & Van de Koot's analysis, Topic-related movements, including the CT-related cases, are essentially an adjunction operation.

provides comment and background information about *the record*,<sup>20</sup> are syntactically separated. As a result, a syntactic structure corresponding to (35), which matches the Comment Mapping Rule and the Background Mapping Rule in (34), is yielded. The resultant utterance is different from (33a) in that, in (33a), the CT unit *the record* is surrounded by the comment/background materials *he gave\_\_to Susan*, whereas in (33b)/(36), the CT unit and the comment/background materials appear as separated constituents.

(36) I'm not sure, but [<sub>N1</sub> the record]<sub>i</sub> [<sub>N2</sub> he gave t<sub>i</sub> to Susan]].

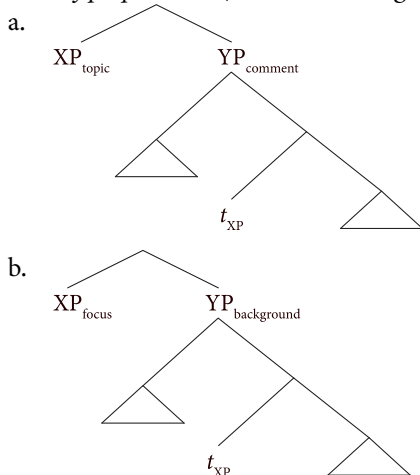
Abstracting away from concrete lexical content, Neeleman & Van de Koot demonstrate the syntax-information structure interface of (33a) and (33b) in the form of (37) and (38), respectively. As added by Horvath (2010), in accordance with Neeleman & Van de Koot's Comment/Background Mapping Rules, the movement as shown below "extracts the CONTRASTIVE TOPIC, and thus creates a constituent in the syntax that corresponds to the comment, and as a consequence, the structure is ready for interpretation in information structure via a direct, transparent mapping procedure" (Horvath 2010: 1364).

(37) Case of *in-situ* CT



(Neeleman & Van de Koot 2008: Example (7))

20. Along Neeleman & Van de Koot's line, *the record*, as a CT element, is contextually associated with the comment whose content is  $\lambda x$  (*he gave  $x$  to Susan*). In addition, *he gave  $x$  to Susan* provides background for the contrastively focused *the record* as it identifies a set of alternatives against which the focus is evaluated, that is, the speaker contrasts *the record* with other objects that are alternatives for the value of  $x$  in *he gave  $x$  to Susan*.

(38) *Case of preposed CT (Comment/Background Mapping Rules applied)*

(Neeleman &amp; Van de Koot 2008: Example (8))

Integrating the insight of the discourse-induced analysis for the clause-level CT-related movement, the present paper proposes that the CT-induced preposing of [Mod-*de*] across the numeral performs a function similar to that of the clause-level CT-related movement, which is “syntactically delineating the material based on which the set of alternatives is determined” (Horvath 2010: 1366). More in specific, the *de*-marked modifier qualifies as “the material based on which the set of alternatives is determined” in that it provides the key criterion for identifying CT referents in contrast with a set of alternatives – with the former having, whereas the latter lacking, the property denoted by the *de*-marked modifier. As such, extracting [Mod-*de*] from the embedded position of the numeral classifier construction (i.e. out of [Num-Cl-Mod-*de*-N]) has an effect of delineating [Mod-*de*], which pertains to the identification of CT referents, from [Num-Cl-N], which refers to members bearing the CT property, and thus makes them appear as two structurally separated constituents. Along this line of consideration, the present study proposes a nominal-level CONTRASTIVE TOPIC Mapping Rule as stated in (39) below. The movement of [Mod-*de*] out of the numeral classifier construction is treated as motivated by the purpose of yielding a discourse template ready for a transparent mapping between syntax and information structure.

(39) *Nominal-level CONTRASTIVE TOPIC Mapping Rule*

If XP in (40) is interpreted as a CONTRASTIVE TOPIC-related property, then interpret N2 as a set of members in contrast with a set of alternatives in the current discourse Topic, with N2 having whereas the alternatives lacking the property denoted by XP.

(40)  $[_{N1} XP_i [_{N2} \dots t_i \dots]]$

Before closing this section, as what have been discussed so far are examples containing i-level modifiers, now one may wonder whether it is possible for the order of  $[[Mod-de]_{s-level}-Num-Cl-N]$  to be used to denote CT referents. The answer is a definite yes. Taking (41) below, notice that here  $[[Mod-de]_{s-level}-Num-Cl-N]$  is used as an answer to a question which can be paraphrased as a conjunctive question in the sense of Lee (2003; 2006) (cf. Footnote 16 above), which indicates a CT status of the  $[[Mod-de]_{s-level}-Num-Cl-N]$  in question.

(41) *Context: A and B saw five girls in the classroom, three in the doorway and two in front of the blackboard.*

A: *ni renshi zhe wu ge nüsheng ma?*

you know this five CL girl Q

'Do you know these five girls?' (= 'Do you know the three girls in the doorway and do you know the two girls in front of the blackboard?')

B: *wo renshi menkou de san ge nüsheng.*

I know doorway DE three CL girl

'I know the three girls in the doorway (, but I do not know the two girls in front of the blackboard).'

Note that for languages such as Chinese, in which an element could obtain a CT interpretation in situ without any morphological markings (akin to the case in English as given in (33) above), given that an s-level modifier is inherently allowed to be originated either before [Num-Cl-N] or in between [Num-Cl] and N (cf. § 3.1 and § 4.1), the picture shown in (41) may raise a question as to how to determine whether an s-level modifier occurring in front of [Num-Cl-N] is base-generated there as a non-restrictive modifier of the referents expressed by [Num-Cl-N], or is originated in between ClP and NP as a restrictive modifier of the head noun denotation but raised across [Num-Cl] as an instance of CT-motivated movement (with the latter case being parallel to the derivation of  $[[Mod-de]_{i-level}-Num-Cl-N]$ ). The present study suggests that to answer this question, one should look into the actual semantic role the s-level modifier performs in the context. Concretely, if the s-level modifier is used to describe the properties of the whole referent set in a non-restrictive way, then in accordance with the above given analysis on the syntactic domains of s-level modifiers (see (29)), the s-level modifier should be one base-generated in front of [Num-Cl-N]. The example illustrating this scenario is provided in (42) below. Here the property denoted by the s-level modifier "... (who are) standing in front of the blackboard" is assigned to the whole set of girls; therefore, the s-level modifier should be non-restrictive and base-generated in front of [Num-C-N].

(42) Context: *There are five girls in the classroom, all standing in front of the blackboard.*

A: *ni renshi zhan zai heiban qian de wu ge nüsheng ma?*  
 you know stand at blackboard front DE five CL girl Q  
 'Do you know the five girls standing in front of the blackboard?'

B: *bu renshi.*  
 not know  
 'I don't know (them).'

By contrast, if the s-level modifier preceding [Num-Cl-N] provides restrictive modification for the head noun denotation, given that this type of s-level modifier should be underlyingly originated in between ClP and NP (cf. (29)), the surface linear order  $[[\text{Mod-de}]_{\text{s-level}}\text{-Num-Cl-N}]$  results from CT-related movement. This is the case exhibited in (41) above. In (41), the s-level modifier *menkou de* 'in the doorway' is used as a restrictive modifier to define a subset, i.e. a group of girls in the doorway, out of the whole girl set pre-established in the context. Given this, on the syntactic analysis presented in § 3.1, *menkou de* in (41) should be originated in between [Num-Cl] and N and undergoes CT-motivated movement to yield a structure meeting the Nominal-level CONTRASTIVE TOPIC Mapping Rule as given in (39).

To summarize, it was proposed in this section that the  $[[\text{Mod-de}]_{\text{i-level}}\text{-Num-Cl-N}]$  construction is formed via the CT-induced movement of  $[\text{Mod-de}]_{\text{i-level}}$  from the pre-N position to the pre-Num position. The purpose of this movement is to establish a transparent mapping between syntactic configuration and information structure by means of delineating  $[\text{Mod-de}]_{\text{i-level}}$ , which denotes the property for defining CT referents in contrast with a set of alternatives, from [Num-Cl-N], which refers to members bearing the CT-related property denoted by  $[\text{Mod-de}]_{\text{i-level}}$ . Such a CT-induced movement of  $[\text{Mod-de}]$  is also applicable to  $[\text{Num-Cl-}[\text{Mod-de}]_{\text{s-level}}\text{-N}]$ . Given a  $[[\text{Mod-de}]_{\text{s-level}}\text{-Num-Cl-N}]$  expression, the  $[\text{Mod-de}]_{\text{s-level}}$  sequence contained might be one originated at the pre-Num position, or be fronted across the numeral as an instance of CT-driven movement, depending on whether the  $[\text{Mod-de}]_{\text{s-level}}$  in question is associated with non-restrictive or restrictive modification.

## 5. Consequences

The account proposed in § 4 has several welcome consequences.

First of all, the dichotomous treatment of the [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N] alternation can provide an effective explanation for the

observation that when the modifier involved is of the i-level type and the context is irrelevant to the CT interpretation, the order of  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  would be ruled out, in contrast with the case involving an s-level modifier. To be concrete, this is because the merge site of the i-level modifier is inherently quite low in the underlying structure. As such, the ordering of an i-level modifier preceding  $[\text{Num-Cl-N}]$  would lead to a violation to the grammatical rule on the syntax of i-level modifiers, hence the exclusion of  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$ . By contrast, s-level modifiers syntactically enjoy a freedom to occur either above DP (associated with non-restrictive modification) or in between ClP and NP (associated with restrictive modification). Therefore, both  $[\text{Num-Cl-}[\text{Mod-de}]_{s\text{-level}}\text{-N}]$  and  $[[\text{Mod-de}]_{s\text{-level}}\text{-Num-Cl-N}]$  are grammatical sequences. On the other hand, the proposal that such a grammatical constraint on  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  could be overridden by the need of explicitly encoding CT at the syntax-discourse interface is reminiscent of a cross-linguistically attested fact that discourse-related properties may play a role in determining syntactic configurations; in this case, intra-linguistic restrictions on syntax could be exempted without yielding inappropriateness (e.g. Hertel 2003; Laenzlinger 2005; Lozano 2006; see also §6 below).

Second, the analysis pursued in this paper can help explain the fundamental reason behind the obligatory specific reading exhibited by  $[\text{Mod-de-Num-Cl-N}]$  (cf. Zhang 2006; Tang 2007). In accordance with the well-accepted definition of specificity proposed by Enç's (1991), the specific reading emerges when the intended referent is included in a contextually given or presupposed referent set (a "partitive" reading, in essence). With this in mind, as regards the specific semantics of the  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  expression, given that this word order is related to picking out a subset from a context-given topical set, it follows straightforwardly that  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  always fulfills the definition of specificity. Importantly, along this line, the observed specificity of  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  turns out as a by-product resulting from the CT nature of this construction rather than as a sufficient condition on the licensing of  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$ . Consequently, no predictions would be (wrongly) implied that specificity in itself can suffice to guarantee the appropriateness of  $[\text{Mod-de-Num-Cl-N}]$ , as has been demonstrated in §3.2. On the other hand, regarding the specific semantics of  $[[\text{Mod-de}]_{s\text{-level}}\text{-Num-Cl-N}]$ , recall that  $[\text{Mod-de}]_{s\text{-level}}$  under this case may be interpreted either as an extensional, non-restrictive modifier applied to the discourse referent(s) associated with the following  $[\text{Num-Cl-N}]$ , or as a restrictive modifier which has undergone CT-driven movement. For the former case, as previously mentioned in Footnote 14, given that the  $[\text{Num-Cl-N}]$  sequence modified by  $[\text{Mod-de}]_{s\text{-level}}$  here is a D-linked, referring expression and that the key property distinguishing specifics from non-specifics is that the former

are D-linked whereas the latter are not (e.g. Pesetsky 1987; Enç 1991), it turns out unsurprising that the  $[[\text{Mod-de}]_{s\text{-level}}\text{-Num-Cl-N}]$  construction of this type would be a specific expression.<sup>21</sup> For the latter case, namely when  $[\text{Mod-de}]_{s\text{-level}}$  is preposed in front of [Num-Cl-N] in the CT context, given that the resultant  $[[\text{Mod-de}]_{s\text{-level}}\text{-Num-Cl-N}]$  is associated with CT referents, its specific reading can be directly attributed to the fact that CT referents always satisfy the definition of specificity in the sense of Enç (1991).<sup>22</sup>

Third, the current analysis can not only effectively account for the conditions governing the [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N] alternation, but also fares well with other word order phenomena related to adnominal modifiers in Mandarin Chinese. To illustrate, for instance, it is a well-noted fact that there are restrictions on the relative word order between i-level and s-level *de*-marked modifiers in Chinese, with i-level ones normally required to occur closer to the head noun than s-level ones (e.g. Del Gobbo 2005; Hsieh 2005; Lin 2008), as exemplified in (43) below. This picture is not surprising: as has been indicated above, at the grammatical level, i-level modifiers are born originated at a position closer to the head noun than s-level modifiers, a fact that cross-linguistically holds (Larson 2000; Hsieh 2005, 2008; Larson & Takahashi 2007; Lin 2008; Cinque 2010; Kim 2014a, 2014b).

- (43) a. *san ge [wo zuotian kanjian de]<sub>s-level</sub> [xihuan qu yinyuehui de]<sub>i-level</sub>*  
 three CL I yesterday see DE like go concert DE  
*ren*  
 person  
 ‘three persons I met yesterday who like to go to concerts’  
 b. *\*san ge [xihuan qu yinyuehui de]<sub>i-level</sub> [wo zuotian kanjian de]<sub>s-level</sub>*  
 three CL like go concert DE I yesterday see DE  
*ren*  
 person  
 ‘three persons who like to go to concerts who I met yesterday’  
 (adapted from Lin 2008: Examples (10a), (10b))

21. An alternative line to think of the specific reading of  $[[\text{Mod-de}]_{s\text{-level}}\text{-Num-Cl-N}]$  can be found in Liao & Wang (2011). Concretely, upon the assumption that an s-level predicate contains an event argument linked to a specific time/location, they assume that when an s-level predicate is used to modify a DP, the s-level predicate can function as a generalized demonstrative. That is, when D is not otherwise specified, the s-level modifier would be able to mark the DP as specific. I thank one reviewer for introducing this reference to me.

22. I thank one reviewer for bringing to my attention the relation between Enç's (1991) definition of specificity and the interpretation of  $[[\text{Mod-de}]_{s\text{-level}}\text{-Num-Cl-N}]$ .

If the analysis developed in § 4.2 is correct, it would then be expected that in the context where an i-level modifier and an s-level modifier co-occur and where the property denoted by the i-level modifier is associated with identifying CT referents, the i-level modifier should be able to undergo CT-driven movement, as a result of which the i-level modifier could end up in the initial position of the nominal phrase and linearly precedes the s-level modifier. This expectation is fulfilled by the example given below:

(44) *Context: A and B are talking about the students B saw yesterday and the day before yesterday.*

A: *ni zuotian he qiantian fenbie jian le ji*  
 you yesterday and the.day.before.yesterday respectively see PRF how.many  
*ge xuesheng?*

CL student

‘How many students did you meet yesterday and the day before yesterday, respectively?’

B: *zuotian liu ge, qiantian wu ge.*

yesterday six CL the.day.before.yesterday five CL

‘(I met) six yesterday and five the day before yesterday.’

A: *tamen dou shi zhongwenxi xuesheng ma?*

they all be Chinese.department student Q

‘Are they all students from Department of Chinese?’

B: *san ge [wo zuotian jian de]<sub>s-level</sub> [xihuan qu yinyuehui de]<sub>i-level</sub>*

three CL I yesterday see DE like go concert DE

*xuesheng/ [xihuan qu yinyuehui de]<sub>i-level</sub> san ge [wo zuotian jian*

student like go concert DE three CL I yesterday see

*de]<sub>s-level</sub> xuesheng shi zhongwenxi de; lingwai ba ge xuesheng*

DE student be Chinese.department DE other eight CL student

*dou shi wulixi de, tamen dui yinyue mei xingqu.*

all be physics.department DE they to music not.have interest

‘Three students who like to go to concerts I met yesterday are from

Department of Chinese; the other eight students are all from Department of Physics, and they have no interest in music.’

As illustrated above, in this context the hobby of going to concerts is a key criterion for identifying a subset out of a total of eleven students speaker B saw in the past two days. Since the i-level modifier *xihuan qu yinyuehui de* ‘...(who) like(s) to go to concerts’ here denotes a CT-related property and the three students who like to go to concerts are CT referents, the i-level modifier is allowed to be fronted to give rise to a surface order like [[[Mod-*de*]<sub>i-level</sub>]<sub>i</sub>-Num-CL-[Mod-*de*]<sub>s-level</sub>-t<sub>i</sub>-N], as shown in speaker B’s reply above.



In the same vein, the fact that in Mandarin Chinese the i-level modifier could appear preceding the demonstrative can also receive an explanation under the present analysis. Consider the following examples from Lin (2008):

- (45) a. *na wei xihuan qu ting yinyuehui de yuyanxuejia*  
 that CL like go listen concert DE linguist  
 'the linguist that likes to go to concerts'
- b. *xihuan qu ting yinyuehui de na wei yuyanxuejia*  
 like go listen concert DE that CL linguist  
 'the linguist that likes to go to concerts' (Lin 2008: Example (14))

Lin points out that expressions such as (45b) may raise a dilemma for the syntax-semantics mapping of i-level modifiers: in (45b) the i-level modifier is semantically interpreted as a restrictive modifier of the head noun *yuyanxuejia* 'linguist' but is syntactically located outside DP. While Lin does not go into details on this issue, he insightfully suggests a possible solution to this problem, that is, the pre-Dem i-level RELATIVE CLAUSE may be derived via a raising movement from the pre-N position. Here I side with Lin in analyzing the i-level modifier that precedes the demonstrative as a result of movement. Specifically, due to the fact that the context in which (45b) could be appropriately uttered would normally be one where the discourse Topic is a set of linguists and where the speaker intends to pick out the one who likes to go to concerts in contrast with others who do not like to go to concerts, I consider the fronting of the i-level modifier '...(who) like(s) to go to concerts' here also as an instance of CT-induced movement, as a result of which a discourse template that conforms to the Nominal-level CONTRASTIVE TOPIC Mapping Rule can be yielded. Given this, the apparent syntax-semantics mismatch exhibited by i-level modifiers preceding demonstratives can be straightforwardly accounted for in terms of a general syntax-information structure mapping rule applying at the level of syntax-discourse interface.

Fourth, the present analysis inspires a way to explain the 'one'-avoidness effect observed about the use of  $[[\text{Mod-}de]_{i\text{-level}}\text{-Num-Cl-N}]$ , which has gone unnoticed in previous studies. Relevant examples are reproduced below ((16a) and (17a) repeated):

- (46) a. *yi ge gaogezi de nansheng/\*gaogezi de yi ge nansheng*  
 one CL tall DE boy tall DE one CL boy  
 'a tall boy'
- b. *yi ge langman de gushi/\*langman de yi ge gushi*  
 one CL romantic DE story romantic DE on CL story  
 'a romantic story'

Having indicated that the  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  construction is licensed by the discourse demand of encoding CT at the structural level, regarding the illicit  $[[\text{Mod-de}]_{i\text{-level}}\text{'one'-Cl-N}]$  as shown in (46), this paper suggests that this could be understood in terms of CT referent identification. It is commonly held that the core function of a CT-related proposition is to narrow down the current discourse Topic and to elicit an opposite proposition concerning a set of alternative members (cf. Molnár 1998; Lee 1999, 2003, 2006; Büring 2003; Tomioka 2010). With this in mind, notice that when there is only one member intended as a CT referent, the  $[\text{Mod-de-N}]$  expression alone would suffice to pick out the intended CT referent from the discourse Topic, which renders the use of  $[\text{'yi'-'one'-Cl}]$  redundant in CT identification. Consider (47) below for illustration. In the context involving only one long-haired girl, the numeral-classifier-less phrase *changtoufa de nüsheng* is able to unambiguously identify the only one long-haired girl to be the CT referent and induce an opposite preposition concerning the alternative girls (i.e. the short-haired ones), as shown below.

(47) Context: A and B just passed by five girls, one with long hairs and four with short hairs.

A: *ni renshi zhe wu ge nüsheng ma?*

you know this five CL girl Q

'Do you know these five girls?'

B: *changtoufa de nüsheng wo renshi, dan bu renshi duandoufa de / #ye*  
long-hair DE girl I know but not know short-hair DE also  
*renshi duantoufa de.*

know short-hair DE

'I know the long-haired girl, but do not know the short-haired ones / #and also know the short-haired ones.'

By contrast, if there are more than one referent satisfying the descriptive content of the CT-related modifier, given that Chinese bare nouns could obtain either singular or plural interpretations depending on the contexts (e.g. Cheng & Sybesma 1999), in this case, the use of  $[\text{Num-Cl}]$  turns out crucial for ensuring all members with the CT-related property to be included (recall from §3.4 the exhaustiveness condition on the referents denoted by CT nominals). Taking (48), in the scenario involving three long-haired girls, the use of the  $[\text{Mod-de-N}]$  expression *changtoufa de nüsheng* will leave the possibility open that the referents intended by  $[\text{Mod-de-N}]$  may or may not include all long-haired girls in the current context. This is why it is appropriate for speaker A to further raise a question to seek for clarification on the total number of girls expressed by *changtoufa de nüsheng*, as demonstrated below:

(48) Context: *A and B just passed by five girls, three with long hairs and two with short hairs.*

A: *ni renshi zhe wu ge nüsheng ma?*

you know this five CL girl Q

'Do you know these five girls?'

B: *changtoufa de nüsheng wo renshi.*

long-hair DE girl I know

'I know long-haired girls.'

A: *shi san ge dou renshi ma?*

be three CL all know Q

'(You mean you) know all of the three (long-haired girls)?'

The above picture leads the present paper to suggest that the encoding of CT via the configuration of [Mod-*de*-Num-Cl-N] in Mandarin Chinese be further subject to an economy principle that the use of [Num-Cl] would be avoided if [Num-Cl] is redundant in CT referent identification. Accordingly, the observed 'one'-avoidness effect can be accounted for in that under the case where the CT referent is a singleton, the CT referent could be determined solely based on the property specified by the modifier, whereby the use of ['one'-Cl] will be blocked by the economy principle.

## 6. Concluding remarks

This paper revisits the licensing of the [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N] variation in Mandarin Chinese. It has been shown that neither the semantics-oriented approach (e.g. Lu 1998; Zhang 2006; Tang 2007) nor the discourse-pragmatic approach (Ming & Cheng 2010) attempted in previous studies is fully adequate to tell the whole story concerning this word order phenomenon. Upon a closer reexamination, it is revealed that the [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N] alternation represents a complex interface phenomenon, whose licensing is subject to a semantic condition on the one hand and a discourse condition on the other.

To be specific, it is uncovered that in the neutral context (i.e. one without a CONTRASTIVE TOPIC interpretation), the i-level vs. s-level nature of the modifier has a direct bearing on the acceptability of the [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N] permutation. For concreteness, the s-level modifier enjoys a freedom to occur either (i) before [Num-Cl-N], where it is interpreted as a non-restrictive modifier concerning the referent(s) of [Num-Cl-N], or (ii) in between [Num-Cl] and N, where it provides restrictive modification for the head noun denotation. Differently, at the grammatical level, the i-level modifier can only

occur in between [Num-Cl] and N. To formally capture this fact, this paper follows Kim (2014a; 2014b) in hypothesizing that the i-level modifier is based-generated quite low in the nominal phrase (i.e. right above NP), where it is bound by a generic operator in the sense of Chierchia (1995); whereas the s-level modifier can be originated either in between ClP and NP (but higher than the merge site of the i-level modifier) or above DP, where it performs as a restrictive and a non-restrictive modifier, respectively.

On the other hand, it is revealed that such a syntax-semantics interface restriction on the [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N] variation could be overridden in the context involving CONTRASTIVE TOPIC (CT). Specifically, the  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  construction could be ruled in when  $[\text{Mod-de}]_{i\text{-level}}$  is intended to express a property for identifying CT referents in contrast with a set of alternatives. Based on this, this paper proposes that the word order of  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  is licensed at the syntax-discourse interface as a linguistic device to signal CT. In this case,  $[[\text{Mod-de}]_{i\text{-level}}\text{-Num-Cl-N}]$  is derived from  $[\text{Num-Cl}-[\text{Mod-de}]_{i\text{-level}}\text{-N}]$  via moving  $[\text{Mod-de}]_{i\text{-level}}$  from its base-generated, lower position to the higher, pre-Num position for the purpose of creating a transparent mapping between syntax and information structure (cf. Neeleman & Van de Koot 2008; Horvath 2010) via structurally delineating  $[\text{Mod-de}]$ , which provides a key criterion for identifying CT referents, from  $[\text{Num-Cl-N}]$ , which refers to a set of members bearing the CT-related property denoted by  $[\text{Mod-de}]$ . Such a mechanism could also be applied to  $[\text{Num-Cl}-[\text{Mod-de}]_{s\text{-level}}\text{-N}]$ . Given a  $[[\text{Mod-de}]_{s\text{-level}}\text{-Num-Cl-N}]$  construction, the  $[\text{Mod-de}]_{s\text{-level}}$  sequence contained might either be originated in front of  $[\text{Num-Cl-N}]$  (as a non-restrictive modifier underlyingly) or be an element fronted via the CT-induced movement (as a restrictive modifier underlyingly).

The discourse-licensed  $[\text{Num-Cl-Mod-de-N}]/[\text{Mod-de-Num-Cl-N}]$  alternation as shown in this paper presents an interesting instance of how rules applying at different levels of grammar may interact with each other in determining syntactic configurations. It has been cross-linguistically detected that discourse-related properties are capable to affect syntax, among which the discourse-licensed word order variation is one of the most typical syntax-discourse interface phenomena. For example, in Spanish, the unergative verb and its argument correlate with the SV surface word order in the neutral context (e.g. *una mujer gritó* ‘a woman shouted’), whereas a marked order of VS can be allowed in the context where the argument is intended as bearing a presentational focus (e.g. *gritó [una mujer]*<sub>Focus</sub> ‘shouted a woman’) (cf. Lozano 2006). In French, the attributive adjective normally appears at the postnominal position in the neutral situation (e.g. *une voiture superbe* ‘a car superb’), whereas a prenominal placement can be licensed by interface factors such as focus and subjectivity (e.g. *une superbe*<sub>Focus</sub> *voiture* ‘a

**superb** car') (cf. Laenzlinger 2005). Such phenomena coupled with the [Num-Cl-Mod-*de*-N]/[Mod-*de*-Num-Cl-N] variation in Mandarin Chinese examined in this paper point to an interesting direction of inquiry, i.e. the interaction of intra-linguistic components, such as syntax and semantics, with extra-linguistic factors, including various types of discourse properties, in determining syntactic configurations. Needless to say, for a deeper understanding in this area, more research would need to be done in the future.

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## Abbreviations

ACC	accusative case
Cl	classifier
CF	CONTRASTIVE FOCUS
CT	CONTRASTIVE TOPIC
DE	modifier marker <i>de</i>
DEC	declarative marker
DEM	demonstrative
EXP	experiential aspectual marker
Mod	modifier
N	noun
Nom	nominative case
Num	numeral
PRF	perfective aspectual marker
Q	question marker
RC	RELATIVE CLAUSE
SFP	sentence final particle

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