

Two types of modification in Mandarin Chinese NPs

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Introduction: In Mandarin Chinese (MC), prenominal modification can be realised with two different structures: (i) the modifier (e.g. an adjective) precedes the marker *DE* which allows the combination of modifier and noun (ADEN structures: (2) & (4)), or (ii) the modifier precedes the noun directly (AN structures: (1), but not (3)).¹ We focus on prenominal adjectival modification and address the following research question: Are AN and ADEN structures ((1) & (2)) licensed by syntactic constraints,² as proposed in the literature (cf. Paul 2005, 2010)? A further issue we address concerns morphological processes (e.g. reduplication) which can increase the complexity of MC adjectives. This raises the question of how to account for the ungrammaticality of (3) given (1). That is, why do some adjectives need the marker *DE* to modify a noun (3), while others don't (1)? We propose an HPSG account that accounts for the distribution and interpretation of both AN and ADEN structures in MC.

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|--|--|
| (1) <i>hei xiangjiao</i>
black banana
'black banana' | (2) <i>hei de xiangjiao</i>
black DE banana
'black banana' |
| (3) * <i>hei-hei xiangjiao</i>
black-black banana
'black banana' | (4) <i>hei-hei de xiangjiao</i>
black-black DE banana
'black banana' |

Description: First, w.r.t. ADEN structures, prenominal modification with the marker *DE* is used with a range of syntactic categories as modifiers, e.g. nouns, pronouns, relative clauses, PPs (cf. Cheng & Sybesma 2009). Furthermore, modifiers combined with *DE* exhibit considerable distributional flexibility – they may occur immediately preceding the noun (2) or before a demonstrative and classifier preceding the noun (5).³ It can also be observed that adjective and *DE* form a syntactic constituent, as shown by the coordination structures in (7) and (8). We therefore assume – following Paul 2010, Cheng & Sybesma 2009, Si 2004, Huang 2006, a.o. – that the combination of *ADJ* with *N* is licensed through a phrasal constraint.

Concerning AN structures, two main positions have been proposed. On the one hand, building on data from reduced coordination (9a), it has been argued (cf. Paul 2005, 2010, Cinque 2010) that AN structures are also derived from syntactic constraints. The argument is as follows: since the second noun in the coordination of AN and ADEN can be elided (9a), it has been assumed that the AN structure must be syntactically available for syntactic processes – therefore (presumably) providing evidence for a phrasal structure. Assuming that *huang meigui* is a compound, the ellipsis in (9a) would violate the Lexical Integrity Principle (LIP; Bresnan & Mchombo 1995) – according to Paul (2005, 2010). In contrast, items such as *chahua* 'camelia' are argued to have word status (due to their idiosyncratic meaning) and therefore do not allow ellipsis (9b).

- | | |
|---|---|
| (5) [<i>hei de</i>] na ge xiangjiao
black DE DEM CLF banana
'that black banana' | (6) * <i>hei na ge xiangjiao</i>
black DEM CLF banana
'that black banana' |
| (7) [<i>hei de</i>] he [<i>lü de</i>] xiangjiao
black DE and green DE banana
'black and green banana' | (8) * <i>hei [de xiangjiao] he [de pingguo]</i>
black DE banana and DE apple
'black banana and apple' |
| (9) a. A mei bu xihuan [<i>huang meigui</i>], [<i>hong de</i>] hai keyi.
A mei NEG like yellow rose red DE still acceptable
'A mei doesn't like yellow roses, red ones are still ok.' | |

(Paul 2005: 763)

¹The former is often referred to as indirect modification, and the latter as direct modification (cf. Cinque 2010, Sproat & Shih 1987, 1991).

²As is well known, MC lacks inflectional morphology and its orthographic conventions do not mark word boundaries.

³The adjective with *DE* may also follow a demonstrative and classifier preceding the noun or can be between demonstrative and classifier. See Deng et al. (2025) for a detailed analysis of different constituent orders within MC NPs.

- b. * Amei bu xihuan [*cha-hua*]⁴, [*hong de* $\emptyset$] hai keyi.
 Amei NEG like tea-flower=*camelia* red DE still ok
 ‘Amei doesn’t like camelias, red flowers are still ok.’

(Paul 2005: 764)

- (10) Ich liebe *Groß*-städte, in *kleinen* $\emptyset$ gehe ich ein.
 I love big-towns.ACC, in small.DAT go I in
 ‘I love big cities, I wither away in small towns.’

(Schäfer 2009: 286)

- (11) * *huang* $\emptyset$ he *hong* meigui
 yellow and red rose

(Schäfer 2009: 283)

On the other hand, adjectives without DE do not show the same syntactic flexibility as ADE structures, as they cannot precede the demonstrative and classifier before the noun ((1) vs. (6)) (cf. Duanmu 1998). If AN structures are analysed as the result of morphological compounding, while ADEN structures arise from phrasal combination, this contrast follows naturally from LIP. Furthermore, the ellipsis-under-coordination test in (9) is not entirely conclusive. Evidence from other languages that distinguish between morphological and phrasal modification, such as German, shows that in certain contexts⁵ the deletion of the noun in a syntactic phrase is possible when it is coordinated with a compound (10).⁶ Further evidence against a syntactic analysis of AN structures comes from the coordination of compounds, which in MC do not allow ellipsis (11) – in contrast to coordination of phrases (7). If AN structures are assumed to have phrasal status – based on data such as (9a) – it would be expectable for (11) to be grammatical (cf. Schäfer 2009: 283).

From a semantic perspective, Bücking (2009) argues for a fundamental distinction between phrasal and lexical modification (based on evidence from German that can be extended cross-linguistically). His central claim is that phrasal modification operates extensionally via standard predicate modification, whereas lexical modification involves an underspecified relation (PART-OF), that is resolved through conceptual knowledge and contextual information, yielding – in many cases – a new concept (cf. Levin et al. 2019). Accordingly, the combination of lexical and phrasal modification of *Tee* ‘tea’ in (12) is well formed. The adjectival stem *blau* is interpreted as applying to a specific part of ‘tea’ (e.g. the leaves or packaging), thereby giving rise to a new *concept* that can be named *Blautee* ($\lambda x[\text{tea}(x) \wedge \text{PART-OF}(x, y) \wedge \text{blue}(y)]$). The adjective *roter*, in turn, modifies the extension of this derived concept ($\lambda x[\text{tea}(x) \wedge \text{PART-OF}(x, y) \wedge \text{blue}(y) \wedge \text{red}(x)]$) – i.e. the set of entities that fall under ‘blue tea’. By contrast, the double phrasal modification in (13) results in a contradictory interpretation, whereby the same entity is required to be both blue and red simultaneously ($\lambda x[\text{tea}(x) \wedge \text{blue}(x) \wedge \text{red}(x)]$).⁷

This contrast parallels the semantic difference between AN and ADEN structures in MC. As shown in (14), (14a) is well formed – although *hei xiangjiao* ‘black banana’ is negated while the property of being black is asserted. In contrast, in (14b), the negation of the property of being ‘black’ and its assertion yields a contradiction, requiring the referent to be both black and not black at the same time. This contrast provides further support for analysing the ADEN structure as phrasal and the AN structures as lexical.

- | | |
|--|--|
| <p>(12) roter Blau-tee
 red blue-tea
 ‘red blue-tea’</p> | <p>(13) # roter blauer Tee
 red blue tea
 ‘red blue tea’</p> |
|--|--|
- (14) a. zhege xiangjiao bu shi *hei xiangjiao*, suiran ta shi *hei de*.
 this banana not COP black banana, although it COP black DE
 ‘This banana is not a ‘black-banana’, although it is black.’

⁴The examples in (9) were taken from Paul (2005) to exemplify her analysis. However, *cha-hua* ‘tea-flower(lit.), camelia’ in (9b) is a NN compound. Nevertheless, there exist several lexicalised AN compounds also not allowing ellipsis, e.g. *huang-gua* ‘yellow-melon(lit.), cucumber’ and *hong-hua* ‘red-flower(lit.), safflower’.

⁵Booij (1985) argues that the ellipsis-under-coordination follows from prosodic phonology and does not violate LIP.

⁶It should also be mentioned that AN constructions are less productive than ADEN structures (cf. Zhu 1999) – a fact generally expected for compounds due to its semantics.

⁷See also the minimal pair *black bird* and *blackbird* in English. The former refers to any bird with black plumage, whereas the latter denotes a particular species (a concept): *Turdus merula*. Notably, only the adult males of this species are glossy black; females and juveniles are dark brown rather than black.

- b. # zhege xiangjiao bu shi *hei de xiangjiao*, suiran ta shi *hei de*.
 this banana not COP black DE banana, although it COP black DE
 ‘This banana is no a black banana, although it is black.’

Further evidence for distinguishing both types of modification in MC comes from the behaviour of different classes of adjectives. In MC, adjectives can be simple (SA) or complex (CA). CA forms are derived from SA via morphological processes such as reduplication (cf. Zhu 1999, Huang 2006, Paul 2010, Cheng & Sybesma 2009).⁸ Reduplicated forms (15) and their corresponding simple bases are assumed to be truth-conditionally equivalent, differing w.r.t. their expressive interpretation.⁹ Crucially, there is an asymmetry regarding the distribution of SAs and CAs in AN and ADEN structures: while SAs may combine directly with a noun (1) or first merge with DE to modify the noun (2), CAs can only modify the noun after combining with the marker DE (cf. (3) vs. (4)).

(15) *chang* ‘long’ → *changchang* ‘long’

Analysis: To account for the data discussed in the previous section, we assume that AN structures are the derived by a lexical rule (LR) yielding a compound (19), while ADEN structures result from phrasal modification.

Our analysis adopts the *boolean*-valued feature *LEX* (following Pollard & Sag 1987). In general, rules of morphological concatenation assign the value + to their output, while syntactic constraints assign the value – to the mother node. In this sense, and in line with Pollard & Sag (1987), we assume that the distinction between *LEX*– and *LEX*– roughly corresponds to the contrast between lexical and phrasal domains. Nevertheless, we allow that the output of certain morphological processes may be specified as *LEX*–.¹⁰ This applies, for instance, to reduplication and other morphological operations yielding CAs, whereas SAs are categorised as *LEX*–.

(16) Constraint on *word*

$$\text{word} \Rightarrow \left[\begin{array}{l} \text{word} \\ \text{SYNSEM|LOC|CAT|LEX} \quad \text{bool} \end{array} \right]$$

(17) Constraint on *cn-sa*

$$\text{cn-sa} \Rightarrow \left[\begin{array}{l} \text{word} \\ \text{SYNSEM|LOC|CAT|LEX} \quad + \end{array} \right]$$

Based on the distinct distribution of SAs and CAs in MC, we assume the *pos* inheritance hierarchy for nouns and adjectives (*n-a*) shown in Fig. 1. Further, we assume a supertype for common nouns and simple adjectives *cn-sa*, objects of type *cn-sa* are specified as being *LEX*–, cf. (16) vs. (17) (cf. footnote 10). Proper nouns and complex adjectives do not belong to that class since they have to be specified as *LEX*–.

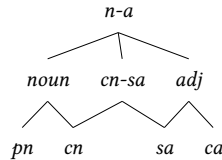


Fig. 1: Hierarchy of *n-a*

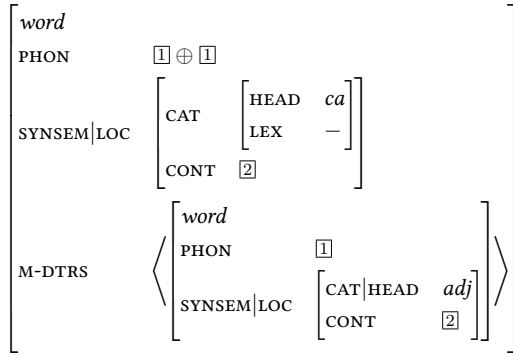
In order to license reduplicated forms, we postulate the LR in (18) which takes an adjective (SA or CA; e.g. *xue-bai* ‘extremely white’ → *xue-bai xue-bai*), reduplicates its *PHON* value without changing its truth-conditional meaning, but specifying the output as *LEX*–.

⁸Further exponents of CAs in MC considered in the literature are: adjectives with expressive suffixes (e.g. *hong-tongtong* ‘bright red’), adjectives with intensifying prefix-like elements (e.g. *xue-bai* ‘extremely white’), adjectives built with degree adverb or coordinated (e.g. *hen-da* ‘very big’).

⁹According to Zhu (1999: 32–33), the reduplicated form of an adjective shares the same lexical meaning as its non-reduplicated form. However, while the non-reduplicated form merely expresses a quality or property, the reduplicated form additionally conveys the speaker’s subjective assessment of that quality.

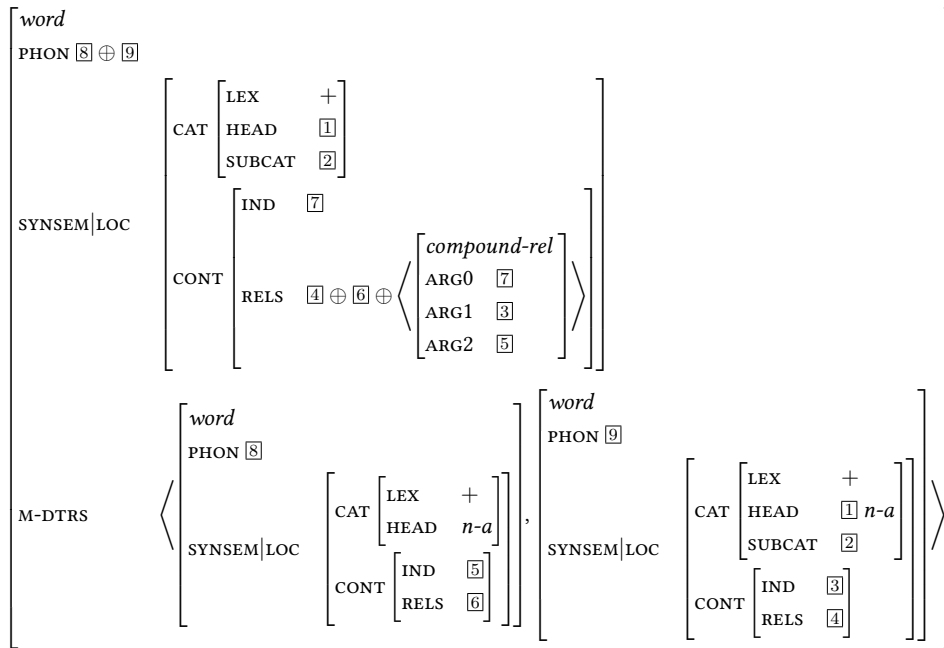
¹⁰Machicao y Priemer et al. (2026) suggest, for instance, that proper nouns (such as *Tim* in *die Untersuchung von Tim* ‘the examination of Tim’) represent syntactically simple elements bearing a *LEX*– specification. A fact that can be observed in MC as well, since proper nouns in MC cannot participate in word-formation process and must be combined with DE to modify another noun.

(18) LR for reduplication



To derive AN structures, we posit the compounding LR (19).¹¹ This rule combines two daughters with the HEAD value *n-a* (e.g. simple adjective and common noun). Both daughters are required to bear a LEX+ value, and the resulting structure carries a LEX+ value as well. The right-hand constituent of the compound (cf. PHON [9] in (19)) functions as the head and projects its HEAD and SUBCAT values to the mother node. Semantically, the output is formed by concatenating the RELS values of the daughters and a *compound-relation* specifying that the left constituent (cf. IND [5]) modifies a “part of” the head (cf. IND [3]) and that the denotation of the output of the LR is a subset of the denotation of the head. The *compound-relation* can also be analysed as a supertype that – depending on the specification of the daughters – may be further refined to denote more specific relations. For instance, Levin et al. (2019) propose that nouns denoting natural kinds typically combine with adjectives that modify internal properties of the referent (similar to Bücking’s PART-OF relation), whereas nouns denoting artefacts tend to combine with adjectives that modify properties of the event the artefact is related to. This rule correctly allows the combination of SAs with nouns, while excluding CAs, given their LEX– specification.

(19) LR for (AN) compounds



Regarding ADEN structures, we assume that DE combines with a modifier (e.g. AP, PP, relative clause) to form a nominal-modifier phrase, DEP (cf. Deng et al. 2025). The marker selects the modifier as a complement via the *head-argument-phrase*, thereby allowing different types of phrases to modify nouns – via its SELECT feature. The combination DEP with the noun is licensed by the *head-functor-phrase* (cf. Van Eynde 2006, Van Eynde & Kim

¹¹We assume that the constituents of compounds in MC are words. MC lacks inflection, and each character in a polysyllabic word typically corresponds to a minimal morpheme that can occur as an independent word in other contexts.

2022; and for an implementation in MC: Deng et al. 2025).¹² Since syntactic processes do not impose constraints on the LEX value of their daughters, but assign a LEX— value the mother node (cf. Pollard & Sag 1987: 73), both SAs (LEX+) and CAs (LEX—) are permitted in the phrasal modification of nouns. We illustrate this combination using the reduplicated adjective *heihei* ‘black’ in Fig. 2.¹³

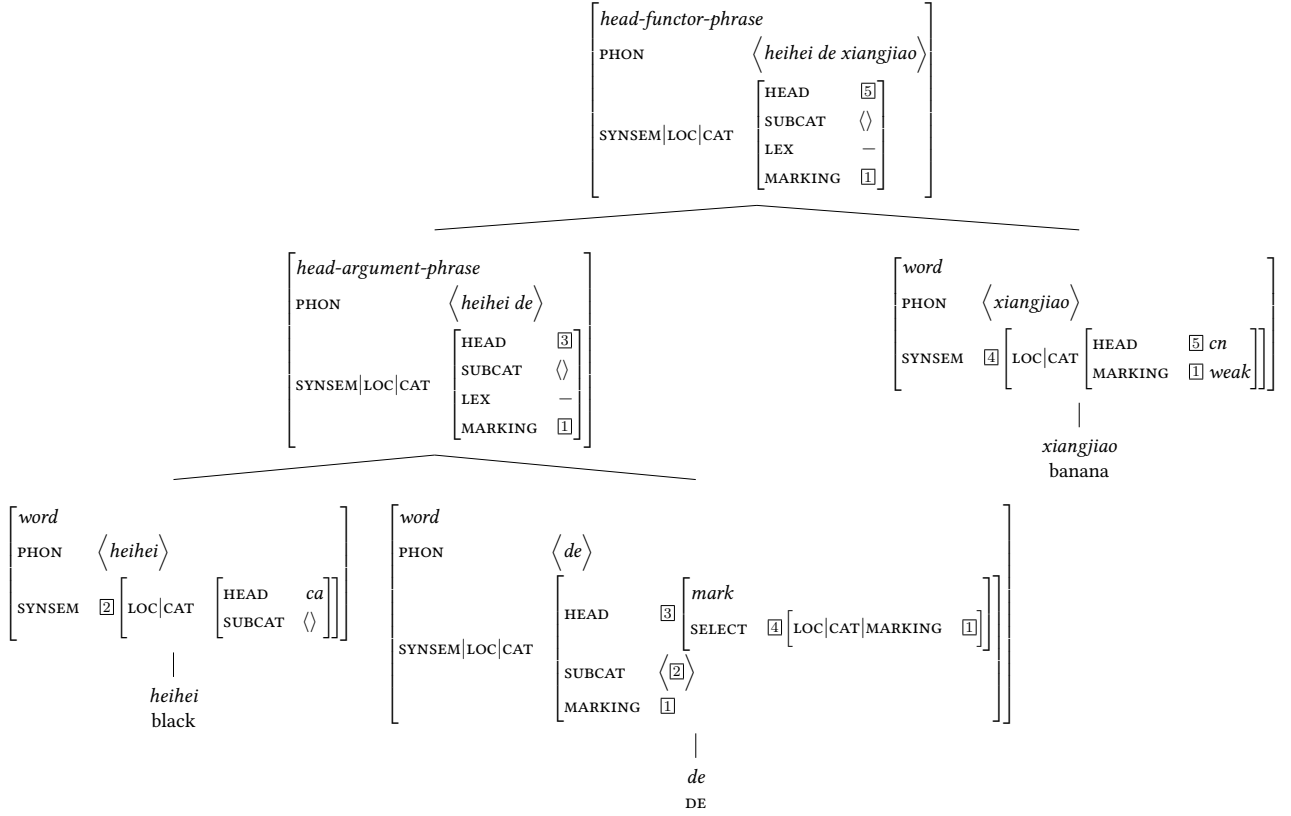


Fig. 2: *heihei de xiangjiao* ‘black banana’

Conclusion: We have shown how two types of NP modification in MC can be analysed. On the one hand, AN structures can be accounted for through lexical means (compounding). This treatment reflects both their distributional (e.g. less syntactic flexibility) and their semantic behaviour (e.g. formation of new concepts). On the other hand, ADEN structures are licensed by phrasal constraints, accordingly, modifiers with DE exhibit more syntactic flexibility. The interpretation of these structures differs from the semantic output of morphological compounding in being captured by standard predicate modification. Our analysis correctly predicts the distribution of NP modifiers within MC NPs without requiring additional phrasal constraints or feature–value pairs beyond those already proposed in the literature for MC.

¹²It may also be possible to analyse DE as a parasitic head (cf. Levine 2010, Machicao y Priemer et al. 2026) projecting the HEAD value of its complement phrase, while independently contributing a MOD value that licenses nominal modification.

¹³Due to space limitations, we do not provide a full semantic composition of the construction. We assume that DE denotes a relation between two sets and yields their intersection, i.e. analogously to predicate modification in Heim & Kratzer (1998) ($\lambda P \lambda Q \lambda x [P(x) \wedge Q(x)]$).

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