Adjectival Modification in Mandarin: Evidence for the Adjunction Analysis

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Abstract

This paper examines the interpretational properties and distributional patterns of adjectival modification with *de* in Mandarin, aiming to revive the adjunction approach to adjectival modification, against the alternative approach which takes adjectives as uniformly occupying the Specifier positions of different functional projections. Specifically, unlike previous studies which primarily focus on the distributional patterns of a single [Adj+*de*] sequence within a nominal expression, this paper mainly investigates collocated [Adj+*de*] sequences, and reveals that they not only show the same distributional patterns as a single [Adj+*de*] sequence, but may also give rise to two different interpretations, an observation which has gone unnoticed in the literature. Based on these observations, it is proposed that collocated [Adj+*de*] sequences are best analyzed on a par with a single [Adj+*de*] sequence as AP adjuncts, which can target three different positions, including a Determiner Phrase (DP), a Numeral Phrase (NumP) and a Noun Phrase (NP). As for the two readings available to collocated [Adj+*de*] sequences, they are proposed to be derived from different structures.

Keywords

adjectival modification, adjunct, specifier, collocated [Adj+*de*] sequences, Mandarin

1. Introduction

This paper investigates adjectival modification with *de* in Mandarin. A well-known characteristic property of this type of adjectival modification is that it allows free ordering of multiple prenominal adjectives with *de* (see, in particular, Sproat and Shih 1988, 1991), as demonstrated in (1a-b) and (2a-b). [1, 2, 3]

(1) a. yi-jian pianyi de shishang   de waitao
        one-Cl cheap   DE fashionable DE coat
        i. 'a cheap fashionable coat'
        ii. 'a cheap and fashionable coat'
     b. yi-jian shishang   de pianyi de waitao
        one-Cl fashionable DE cheap   DE coat
        i. 'a fashionable cheap coat'
        ii. 'a fashionable and cheap coat'
(2) a. yi-ge   zhuyao de gongtong de mubiao
        one-Cl main   DE common DE goal
        i. 'a main common goal'
        ii. 'a main and common goal'
     b. yi-ge   gongtong de zhuyao de mubiao
        one-Cl common DE main   DE goal
        i. 'a common main goal'
        ii. 'a common and main goal'

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[1] The abbreviations used in this paper are as follows: Adj: adjective; Asp: aspectual marker; Cl: classifier; CP: Complementizer Phrase, Dem: demonstrative; DP: Determiner Phrase, IP: Inflection Phrase, NP: noun phrase; NumP: Numeral Phrase; VP: verb phrase.

[2] Data on adjectival modification with *de* in Sproat and Shih (1988, 1991) mainly involve monosyllabic adjectives. However, we observe that monosyllabic adjectives tend to appear in adjectival modification without *de*, which has been noted by Zhu (1956). Therefore, we choose to use disyllabic adjectives in the discussion of adjectival modification with *de* in this paper.

[3] In addition to adjectival modification with *de*, Mandarin has *de*-less adjectival modification, as shown in the following examples:

(i) Adj_{size} > Adj_{color}
    a. yi-ge   da   hong qiu
       one-Cl big red   ball
       'a big red ball'
    b. *yi-ge hong da   qiu
        one-Cl red big ball
(ii) Adj_{size} > Adj_{shape}
    a. yi-zhang xiao yuan zhuo
       one-Cl   small round table
       'a small round table'
    b. *yi-zhang yuan xiao zhuo
        one-Cl   round small table

A well-known property of this type of adjectival modification is that adjectives preceding the noun exhibit a relatively fixed ordering, as evidenced by the stark contrast between (ia, iia) and (ib, iib) (see Sproat and Shih 1988, 1991, Feng 2001a, b, Paul 2005, among others).

(1a-b) contain predicative adjectives whereas (2a-b) contain non-predicative adjectives. Both (1a-b) and (2a-b) show that the two [Adj+*de*] sequences can be freely re-ordered. What has gone unnoticed in previous studies is the fact that examples like (1a-b) and (2a-b) are ambiguous. For instance, consider (1a-b). On one reading, the re-ordering of the adjectives yields different interpretations, which conform to the surface order of the adjectives. Under this reading, the preceding adjective always takes scope over the following one, giving rise to the interpretations 'a cheap fashionable coat' in (1a-i) and 'a fashionable cheap coat' in (1b-i). On the other reading, there is no scope relation between the two adjectives with *de*. Rather, they seem to be conjoined by a covert connective, thereby yielding the same interpretation in (1a-ii) and (1b-ii). For convenience, the former reading will be referred to as "a hierarchical reading" and the latter "a conjoined reading".

Another characteristic property of this type of adjectival modification is that [Adj+*de*] sequences can freely appear in three different positions as reported by Aoun and Li (2003): (i) before a demonstrative, (ii) between a demonstrative and a numeral, and (iii) between a classifier and a noun, as schematized in (3) (see also Tang 1990a).

(3)   Demonstrative + Numeral + Classifier + Noun
  (i)   (ii)   (iii)

The corresponding examples are given in (4)-(6), where the examples in (a) contain a predicative adjective and those in (b) contain a non-predicative adjective. The examples in (7) further illustrate that both types of adjectives with *de* are barred from appearing between a numeral and a classifier.[4]

(4)   An [Adj+*de*] sequence appearing in position (i)
    a. piaoliang de   na san-ge   nühai
       pretty   DE   that three-Cl girl
       'those three pretty girls'
    b. zhuyao de na san-ge   renwu
       main   DE that three-Cl task
       'those three main tasks'
(5)   An [Adj+*de*] sequence appearing in position (ii)
    a. na   piaoliang de   san-ge   nühai
       that   pretty   DE three-Cl girl
       'those three pretty girls'

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[4] A reviewer points out that non-predicative adjectives are different from predicative ones in terms of distribution. While it is well-known that non-predicative adjectives cannot serve as predicates (see, for instance, Lü 1984), Lü (1984: 353) notes that most of the non-predicative adjectives can be followed by *de* and serve as modifiers of an NP on a par with predicative ones in Mandarin. Close examination of their distributional patterns further shows that non-predicative adjectives behave like predicative ones in that they can appear in three different positions (see (4b, 5b and 6b)) on a par with predicative ones (see (4a, 5a and 6a)).

    b. na   zhuyao de san-ge   renwu
       that main   DE three-Cl   task
       'those three main tasks'

(6)   An [Adj+*de*] sequence appearing in position (iii)
    a. na   san-ge   piaoliang de   nühai
       that three-Cl pretty   DE   girl
       'those three pretty girls'
    b. na   san-ge   zhuyao de   renwu
       that three-Cl main   DE   task
       'those three main tasks'

(7)   An [Adj+*de*] sequence appearing between a numeral and a classifier
    a. *na   san   piaoliang de ge   nühai
        that three pretty   DE Cl   girl
    b. *na   san zhuyao de ge renwu
        that three main   DE Cl task

    The goal of this paper is to offer a syntactic analysis of adjectival modifications with *de* in Mandarin with special focus on those which show collocation of two [Adj+*de*] sequences. By taking into consideration the relatively free distribution of adjectival modification with *de*, I propose that [Adj+*de*] sequences are essentially AP adjuncts, which can target three different positions, including Determiner Phrase (DP), Numeral Phrase (NumP) and Noun Phrase (NP). I further show that an adjectival modification containing two collocated [Adj+*de*] sequences can give rise to two readings, namely, the hierarchical reading and the conjoined reading. The former is argued to be derived by the c-command relation between the two APs, whereas the latter is attributed to the presence of a conjunction phrase whose head is occupied by a covert counterpart of *erqie* 'and'.

    This paper is organized as follows. Section 2 illustrates the interpretational and distributional properties of adjectival modification with *de*, focusing on those which show collocation of two [Adj+*de*] sequences. In section 3, I propose that [Adj+*de*] sequences are essentially AP adjuncts, which can adjoin to three different positions, namely, DP, NumP and NP. I further propose that the two readings available to adjectival modification involving collocation of two [Adj+*de*] sequences are derived from different structures. Section 4 concludes this paper.

2. Interpretational and distributional properties of adjectival modification with *de*

2.1. Hierarchical versus conjoined readings

I mentioned earlier that the collocation of two adjectives with *de* can give rise to both hierarchical and conjoined readings. To verify that these two readings indeed exist when two [Adj+*de*] sequences are collocated, consider the following examples, which involve non-predicative adjectives:

(8) a. Tamen weiyi de gongtong de xingqu shi da lanqiu.
        they   sole   DE common DE hobby is play basketball
        i. 'Their sole common hobby is to play basketball.'
            (hierarchical reading)
        ii. 'Their sole and common hobby is to play basketball.'
            (conjoined reading)
     b. Tamen gongtong de weiyi de xingqu shi da lanqiu.
        they   common DE sole DE hobby is play basketball
        i. 'Their common sole hobby is to play basketball.'
            (hierarchical reading)
        ii. 'Their common and sole hobby is to play basketball.'
            (conjoined reading)

Suppose the people referred to as *tamen* 'they' in (8a-b) are John and Peter. Further suppose that John and Peter both have hobbies other than playing basketball, and those hobbies are not commonly shared by the two individuals. For instance, in addition to playing basketball, John likes playing volleyball and tennis, whereas Peter likes hiking and fishing. Under this scenario, (8a) would be judged true under the hierarchical reading given in (8ai). In contrast, under the conjoined reading in (8aii), (8a) would be judged false in the same scenario, since both John and Peter are required to have only one hobby, which is also commonly shared by the two individuals. However, since (8a) can be uttered truthfully under the two different scenarios (i.e. the one where John and Peter have hobbies other than playing basketball that are not commonly shared among them, and the other where John and Peter have only one hobby, which is commonly shared among them), it is clear that the collocation of two adjectives with *de* in Mandarin allows both hierarchical and conjoined readings. To further support the existence of hierarchical and conjoined readings, let's consider (8b), where the order of the two [Adj+*de*] sequences is reversed. Note that unlike (8ai) where John and Peter could have hobbies other than the one commonly shared by the two individuals under the hierarchical reading, (8b) is judged true only if John and Peter have only one hobby, which is commonly shared by the two individuals under the hierarchical reading in (8bi). As for the conjoined reading in (8bii), (8b) is judged true under the same scenario where (8aii) is judged true, i.e. if John and Peter have only one hobby, which is commonly shared by the two individuals. Comparing (8a) with (8b) reveals that the hierarchical readings are determined by the relative order of the two [Adj+*de*] sequences, as evidenced by the fact that (8ai) and (8bi) have different truth conditions. In contrast, the conjoined readings in (8aii) and (8bii) have the same truth condition, regardless of the order of the two [Adj+*de*] sequences. These facts lend crucial support to the distinction between hierarchical readings and conjoined readings.

Additional evidence in support of the availability of hierarchical and conjoined readings comes from the following examples, which involve predicative adjectives:

(9)   a. Wo mai-le   pianyi de shishang   de waitao.
          I   buy-Asp cheap DE fashionable DE coat
          i. 'I bought cheap fashionable coats.'   (hierarchical reading)
          ii. 'I bought cheap and fashionable coats.'   (conjoined reading)
      b. Wo mai-le   shishang   de pianyi de waitao.
          I   buy-Asp fashionable DE cheap DE   coat
          i. 'I bought fashionable cheap coats.'   (hierarchical reading)
          ii. 'I bought cheap and fashionable coats.'   (conjoined reading)

Suppose there are nine coats labeled "a", "b", "c", "d", "e", "f", "g", "h", and "i". Further suppose that the nine coats are associated with different prices and different degrees of fashionableness, with d1 meaning the least fashionable and d9 meaning the most fashionable, as shown below:

(10) a=d9=HK\$550,   b=d8=HK\$500,   c=d7=HK\$450,   d=d6=HK\$400,
      e=d5=HK\$350,   f=d4=HK\$300,   g=d3=HK\$250,   h=d2=HK\$100,
      i=d1=HK\$50

Suppose that what we consider as absolutely cheap are those coats whose price is lower than HK\$350, and that those which are considered as absolutely fashionable should have a degree no smaller than d5. Further assume that the relatively cheap coats among the fashionable coats should be no smaller than d5 and no more than HK\$450. Under the hierarchical reading in (9ai), the coats which can fulfill these conditions, i.e. they are relatively cheap coats among fashionable coats, should be c, d and e. Before turning to conjoined reading in (9aii) and (9bii), let's compare the hierarchical reading in (9bi) with (9ai). Unlike (9ai), (9bi) requires the coats to be relatively fashionable coats among those which are cheap. Thus, the price of these coats should cost no more than HK\$350 and the degree of fashionableness should be no smaller than d3. As we can see from (10), there are only three coats which can fulfill these conditions, i.e. e, f, and g. Comparing the coats that can make (9ai) true with those that can make (9bi) true reveals that the two sets of coats are not identical: the former is true if I bought c, d and e, whereas the latter is true if I bought e, f and g. This suggests that the two hierarchical readings are different in terms of truth conditions. As for the conjoined reading in (9aii) and (9bii), the coats should be both absolutely cheap and fashionable, i.e. they should not cost more than HK\$350 and the degree of fashionableness should be no smaller than d5. The only coat which can fulfill these conditions is e. It follows that (9aii) and (9bii) would be true if I bought e only.

In sum, I have shown that the collocation of two [Adj+*de*] sequences can give rise to both hierarchical and conjoined readings. In the next section, I shall turn to the distributional patterns of adjectival modification with *de*.

2.2. Distributional patterns of adjectival modification with *de*

It is well-known that nominal expressions in Mandarin exhibit a rigid order, i.e. [Demonstrative + Numeral + Classifier + Noun] (see, for instance, Tang 1990a,

b, Li 1998, 1999b, inter alia). Adjectival modification with *de*, however, exhibits a relatively free distribution within a nominal expression. As mentioned in section 1, adjectives with *de* can occur in three positions: (i) before a demonstrative, (ii) between a demonstrative and a numeral, and (iii) between a classifier and a noun, as shown in (3) (repeated below as (11)).

(11)   Demonstrative + Numeral + Classifier + Noun
　　(i)　　　　　　(ii)　　　　　　　　(iii)

　　While we have seen that a single [Adj+*de*] sequence can appear in positions (i), (ii) and (iii) (see (4)-(6) above), the collocation of two [Adj+*de*] sequences can also appear in those three positions, regardless of whether the adjectives are predicative (see (a-b) in (12)-(14)) or non-predicative (see (c-d) in (12-14)).

(12)   Two [Adj+*de*] sequences appearing in position (i)
　　a. pianyi de   shishang   de na san-jian   waitao
　　　cheap   DE fashionable DE that three-Cl   coat
　　　i. 'those three cheap fashionable coats'   (hierarchical reading)
　　　ii. 'those three cheap and fashionable coats'   (conjoined reading)
　　b. shishang   de   pianyi de na san-jian   waitao
　　　fashionable DE   cheap   DE that three-Cl   coat
　　　i. 'those three fashionable cheap coats'   (hierarchical reading)
　　　ii. 'those three fashionable and cheap coats'   (conjoined reading)
　　c. zhuyao de   gongtong de na san-ge   mubiao
　　　main   DE common DE that three-Cl goal
　　　i. 'those three main common goals'   (hierarchical reading)
　　　ii. 'those three main and common goals'   (conjoined reading)
　　d. gongtong de zhuyao de na san-ge   mubiao
　　　common DE main   DE that three-Cl goal
　　　i. 'those three common main goals'   (hierarchical reading)
　　　ii. 'those three common and main goals'   (conjoined reading)
(13)   Two [Adj+*de*] sequences appearing in position (ii)
　　a. na   pianyi de   shishang   de   san-jian   waitao
　　　that cheap   DE fashionable DE   three-Cl   coat
　　　i. 'those three cheap fashionable coats'   (hierarchical reading)
　　　ii. 'those three cheap and fashionable coats'   (conjoined reading)
　　b. na   shishang   de   pianyi de san-jian   waitao
　　　that fashionable DE   cheap   DE three-Cl   coat
　　　i. 'those three fashionable cheap coats'   (hierarchical reading)
　　　ii. 'those three fashionable and cheap coats'   (conjoined reading)
　　c. na   zhuyao de   gongtong de san-ge   mubiao
　　　that main   DE common DE three-Cl goal
　　　i. 'those three main common goals'   (hierarchical reading)
　　　ii. 'those three main and common goals'   (conjoined reading)

     d. na gongtong de zhuyao de san-ge mubiao
        that common DE main   DE three-Cl goal
        i. 'those three common main goals'   (hierarchical reading)
        ii. 'those three common and main goals' (conjoined reading)

(14) Two [Adj+*de*] sequences appearing in position (iii)
     a. na san-jian   pianyi de shishang   de   waitao
        that three-Cl cheap DE fashionable DE coat
        i. 'those three cheap fashionable coats' (hierarchical reading)
        ii. 'those three cheap and fashionable coats' (conjoined reading)
     b. na san-jian   shishang   de   pianyi de   waitao
        that three-Cl fashionable DE   cheap   DE   coat
        i. 'those three fashionable cheap coats' (hierarchical reading)
        ii. 'those three fashionable and cheap coats' (conjoined reading)
     c. na san-ge   zhuyao de gongtong de mubiao
        that three-Cl main   DE common DE goal
        i. 'those three main common goals'   (hierarchical reading)
        ii. 'those three main and common goals' (conjoined reading)
     d. na san-ge   gongtong de zhuyao de mubiao
        that three-Cl common DE main   DE goal
        i. 'those three common main goals'   (hierarchical reading)
        ii. 'those three common and main goals' (conjoined reading)

The above examples further show that adjectival modification containing two collocated [Adj+*de*] sequences can yield both hierarchical and conjoined readings, regardless of whether the adjectives are predicative (see (a-b) in (12)-(14)) or non-predicative (see (c-d) in (12)-(14)).

To briefly summarize, the distribution of [Adj+*de*] sequences is relatively free. Similar to a single [Adj+*de*] sequence, the collocation of two [Adj+*de*] sequences can occur in three different positions: before a demonstrative, between a demonstrative and a numeral, and between a classifier and a noun. Furthermore, we have seen that the collocation of two [Adj+*de*] sequences can yield both hierarchical and conjoined readings in any of the three positions.

3. An adjunction analysis of adjectival modification with *de*

3.1. Deriving the hierarchical and conjoined readings

Before I proceed to account for the two readings available to adjectival modification involving collocation of two [Adj+*de*] sequences, let us recapitulate their characteristic properties, which are summarized below:

(15) Properties of adjectival modification with two collocated [Adj+*de*] sequences:
     a. Ordering: two collocated [Adj+*de*] sequences exhibit free ordering
     b. Distribution: two collocated [Adj+*de*] sequences can appear in three different positions, i.e. they can immediately precede a noun, a demonstrative or occur between a demonstrative and a numeral.

c. Interpretation: the collocation of two [Adj+*de*] sequences can yield two different readings, namely, a hierarchical reading and a conjoined reading.

These three crucial properties of adjectival modification involving two collocated [Adj+*de*] sequences are illustrated by (16)-(18) below, where (a-b) contain predicative adjectives and (c-d) contain non-predicative ones.

(16) [Adj+*de*] sequences preceding a demonstrative
    a. pianyi de   shishang   de na san-jian   waitao
       cheap DE fashionable DE that three-Cl   coat
       i. 'those three cheap fashionable coats'   (hierarchical reading)
       ii. 'those three cheap and fashionable coats'   (conjoined reading)
    b. shishang   de pianyi de na san-jian   waitao
       fashionable DE cheap DE that three-Cl   coat
       i. 'those three fashionable cheap coats'   (hierarchical reading)
       ii. 'those three fashionable and cheap coats'   (conjoined reading)
    c. zhuyao de   gongtong de na   san-ge   mubiao
       main   DE common DE that three-Cl goal
       i. 'those three main common goals'   (hierarchical reading)
       ii. 'those three main and common goals'   (conjoined reading)
    d. gongtong de   zhuyao de na san-ge   mubiao
       common DE main   DE that three-Cl goal
       i. 'those three common main goals'   (hierarchical reading)
       ii. 'those three common and main goals'   (conjoined reading)

(17) [Adj+*de*] sequences appearing between a demonstrative and a numeral
    a. na   pianyi de   shishang   de san-jian   waitao
       that cheap DE fashionable DE three-Cl   coat
       i. 'those three cheap fashionable coats'   (hierarchical reading)
       ii. 'those three cheap and fashionable coats'   (conjoined reading)
    b. na   shishang   de   pianyi de san-jian   waitao
       that fashionable DE   cheap DE three-Cl   coat
       i. 'those three fashionable cheap coats'   (hierarchical reading)
       ii. 'those three fashionable and cheap coats'   (conjoined reading)
    c. na   zhuyao de   gongtong de san-ge   mubiao
       that main   DE common DE three-Cl goal
       i. 'those three main common goals'   (hierarchical reading)
       ii. 'those three main and common goals'   (conjoined reading)
    d. na   gongtong de   zhuyao de san-ge   mubiao
       that common DE main   DE three-Cl goal
       i. 'those three common main goals'   (hierarchical reading)
       ii. 'those three common and main goals'   (conjoined reading)

(18) [Adj+*de*] sequences preceding a head noun
    a. na   san-jian pianyi de shishang   de   waitao
       that three-Cl cheap DE fashionable DE   coat
       i. 'those three cheap fashionable coats'   (hierarchical reading)
       ii. 'those three cheap and fashionable coats'   (conjoined reading)

b. na   san-jian shishang   de   pianyi de   waitao
  that three-Cl fashionable DE   cheap DE   coat
  i. 'those three fashionable cheap coats'   (hierarchical reading)
  ii. 'those three fashionable and cheap coats'   (conjoined reading)
c. na   san-ge   zhuyao de gongtong de mubiao
  that three-Cl main   DE common DE goal
  i. 'those three main common goals'   (hierarchical reading)
  ii. 'those three main and common goals'   (conjoined reading)
d. na   san-ge   gongtong de zhuyao de   mubiao
  that three-Cl common DE main   DE goal
  i. 'those three common main goals'   (hierarchical reading)
  ii. 'those three common and main goals'   (conjoined reading)

Let us first consider how the hierarchical reading can be derived. The fact that the two collocated [Adj+*de*] sequences show free ordering provides important support for the adjunction analysis, which assumes that adjectives are modifiers which are adjoined to the modified elements (see, for instance, Jackendoff 1977, Valois 1991, Bernstein 1993, among others). This approach is in sharp contrast with the so-called "functional projection analysis", which posits that every adjective occupies the Specifier position of different functional projections, and the hierarchical organization of the functional projections follows from the universal adjective ordering restriction (henceforth, AOR) (see, for instance, Cinque 1994, 1996, 1999, Chao et al. 2001, Scott 1998, 2002a, b, inter alia). A simplified version of AOR is given in (19), and the illustrative example is given in (20a). The examples in (20b-i) show that reordering of the adjectives results in ungrammaticality due to the violation of AOR.[5]

(19) Universal adjective ordering restriction (AOR):[6]
  $\text{Adj}_{quality} > \text{Adj}_{size} > \text{Adj}_{shape/color} > \text{Adj}_{provenance}$
(20) a. the beautiful big green Chinese vase
  b. *the beautiful Chinese big green vase
  c. *the beautiful big Chinese green vase
  d. *the big beautiful green Chinese vase
  e. *the big beautiful Chinese green vase
  f. *the green beautiful big Chinese vase
  g. *the green beautiful Chinese big vase
  h. *the Chinese beautiful big green vase
  i. *the Chinese big green beautiful vase

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[5] The proposal that there is a universal adjective ordering restriction (AOR) is discussed in Sproat and Shih (1988, 1991), whose idea is inspired by Bloomfield (1933), Whorf (1945), Quirk et al. (1972), among other references cited therein.

[6] The notation ">" means "X precedes Y". More precisely, according to Sproat and Shih (1988, 1991), ">" is taken to mean "X is further from the head noun than Y".

Based on this view, examples like (20a) above would have the simplified representation given in (21):

(21)
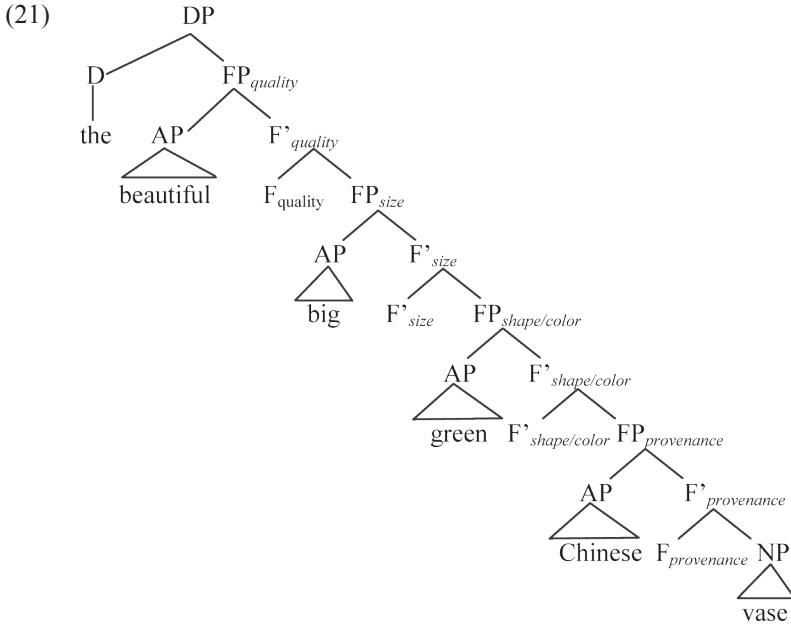
A crucial prediction of the functional projection analysis is that the ordering of adjectives must be fixed, i.e., their distribution must be in accordance with the AOR shown in (20). However, as shown in the following examples, adjectives with *de* describing quality, size and color can be freely re-ordered in Mandarin:

(22) a. $Adj_{quality} > Adj_{size} > Adj_{color}$
  piaoliang de juda de bilü de shitou
  pretty DE huge DE verdure DE stone
  i. 'pretty huge verdurous stone' (hierarchical reading)
  ii. 'pretty, huge and verdurous stone' (conjoined reading)

 b. $Adj_{quality} > Adj_{color} > Adj_{size}$
  piaoliang de bilü de juda de shitou
  pretty DE verdurous DE huge DE stone
  i. 'pretty verdurous huge stone' (hierarchical reading)
  ii. 'pretty, verdurous and huge stone' (conjoined reading)

 c. $Adj_{color} > Adj_{quality} > Adj_{size}$
  bilü de piaoliang de juda de shitou
  verdurous DE pretty DE huge DE stone
  i. 'verdurous pretty huge stone' (hierarchical reading)
 ii. 'verdurous, pretty and huge stone' (conjoined reading)

   d. $\text{Adj}_{size} > \text{Adj}_{quality} > \text{Adj}_{color}$
     juda   de piaoliang de bilü   de   shitou
     huge DE pretty   DE verdurous DE   stone
     i. 'huge pretty verdurous stone'   (hierarchical reading)
     ii. 'huge, pretty and verdurous stone'   (conjoined reading)
   e. $\text{Adj}_{size} > \text{Adj}_{color} > \text{Adj}_{quality}$
     juda   de bilü   de piaoliang de   shitou
     huge   DE verdurous DE pretty   DE   stone
     i. 'huge verdurous pretty stone'   (hierarchical reading)
     ii. 'huge, verdurous and pretty stone'   (conjoined reading)
   f. $\text{Adj}_{color} > \text{Adj}_{size} > \text{Adj}_{quality}$
     bilü   de juda   de piaoliang de   shitou
     verdurous DE huge   DE pretty   DE   stone
     i. 'verdurous huge pretty stone'   (hierarchical reading)
     ii. 'verdurous, huge and pretty stone'   (conjoined reading)

Since one of the characteristic properties of adjectival modification with *de* in Mandarin is that it allows free permutation of [Adj+*de*] sequences, as evidenced by the well-formedness of the above examples (see also Sproat and Shi 1988, 1991), I conclude that the functional projection analysis is not applicable to Mandarin.[7]

Assuming the adjunction analysis is a more adequate account for the free ordering of adjectives with *de*, let us consider how the hierarchical reading can be derived. Recall that I have shown that [Adj+*de*] sequences can appear before a demonstrative, a noun or occur between a demonstrative and a numeral (see (11)). I propose that [Adj+*de*] sequences immediately preceding a demonstrative are DP modifiers, and they are adjoined to a DP whose head hosts a demonstrative. Based on this view, examples like (16ai) and (16bi) would be visualized as (23).[8]

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[7] As pointed out by Sze-Wing Tang (personal communication), the difference between English and Mandarin attributive adjectives in terms of the availability of relatively free ordering is reminiscent of Duffield's (1999) proposal concerning the parameterization of natural languages. Specifically, Duffield claims that languages can be roughly divided into two types: Specifier- and adjunct-type languages, where the former exhibit relatively rigid ordering and the latter relatively free ordering. Adopting Duffield's view, Tang (2006) claims that Mandarin is an adjunct-type language, based on his observation that attributive adjectives with *de* show relatively free ordering and distributional patterns.

[8] In this paper, I shall abstract away from the syntactic status of *de* in adjectival modification. Specifically, I assume that it does not head its own projection in adjectival modification with *de*, and it syntactically forms a constituent with the preceding adjective (Huang 1982, Tang 1990a, inter alia). A reviewer questions whether other types of modifying phrases with *de* (e.g. *Meiguo de xuesheng* 'American student', *zai Beijing de ren* 'the people in Beijing', among others) are analyzed in the same way. Since this paper only focuses on adjectival modification with *de*, I shall leave the syntactic status(es) of *de* in other types of modifying phrases open to future studies.

(23)
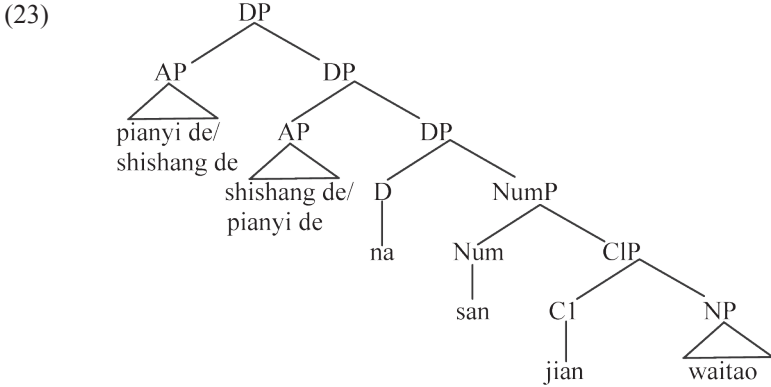
The structure in (23) shows that the two collocated [Adj+*de*] sequences can be freely re-ordered. This follows from the fact that either [Adj+*de*] sequence can be adjoined to the DP first.

In order to accommodate the hierarchical interpretation, i.e., the reading where the preceding AP always has scope over the following one, I propose that the scope relation between the two APs is determined by the definition of c-command formulated by Reinhart (1983: 23), as given in (24).

(24) Node A c-commands node B iff the branching node α_1 most immediately dominating A either dominates B or is immediately dominated by a node α_2 that dominates B, and α_2 is of the same category type as α_1.

Crucially, the above definition does not make any distinction between categories and segments in the sense of May (1985) and Chomsky (1986, 1995), hence allowing us to capture the scope relation between APs in adjunction structures. In particular, assuming that an AP has scope over another AP if and only if the former c-commands the latter, in the configuration shown in (23), it is expected that the higher AP always has scope over the lower AP, given that the former c-commands the latter following (24).[9]

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[9] Note that the hierarchical reading can also be observed in adverbial modification in Mandarin. As discussed in Aoun and Li (1993: Ch. 6), the adverbials in Mandarin show relatively free ordering, and they also exhibit a hierarchical reading, as illustrated in the following examples (drawn from Aoun and Li 1993: 183):

(i) a. Ta changchang zai xuexiao kan   shu.
    he often   at school   read book
    'He often reads at school.'
  b. Ta zai xuexiao changchang kan   shu.
   he at school   often   read book
    'At school, he often reads.'

Following Aoun and Li (1993), I assume that adverbials are adjuncts to VPs in Mandarin. The examples in (ia) and (ib) would then have the configurations schematized in (iia) and (iib), respectively (with irrelevant details omitted).

Turning to examples involving collocation of two [Adj+*de*] sequences between a demonstrative and a numeral (see (17) above), I propose that the two [Adj+*de*] sequences are NumP modifiers, which are adjoined to NumP. Based on this view, examples like (17ai) and (17bi) would be represented as (25).

(25)
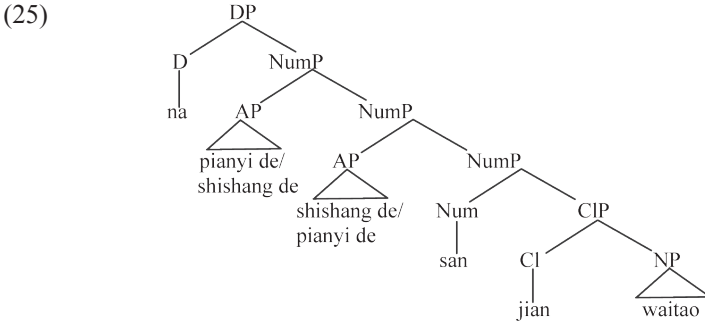
Again, we expect that the two [Adj+*de*] sequences can be freely re-ordered, which follows from our analysis of [Adj+*de*] sequences as adjuncts. The hierarchical reading is derived by the c-command relation between the two APs with the higher AP taking scope over the lower one.

As for examples involving collocation of two [Adj+*de*] sequences (see (18) above), I propose that they are NP modifiers, which are adjoined to NP. Based on this view, examples like (18ai) and (18bi) would be visualized as (26).

(26)
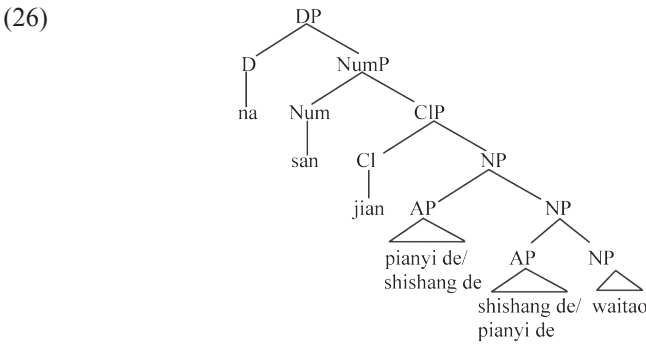
(ii) a. [$_{IP}$ ta [$_{VP}$ changchang [$_{VP}$ zai xuexiao [$_{VP}$ kan shu]]]]
   b. [$_{IP}$ ta [$_{VP}$ zai xuexiao [$_{VP}$ changchang [$_{VP}$ kan shu]]]]

Note that the hierarchical reading can be correctly captured under (24) by assuming that the scope relation between adverbials is also determined by their c-command relation. In the configurations given above, it is expected that *changchang* 'often' has scope over *zai xuexiao* 'at school' in (iia), given that the former c-commands the latter. In contrast, the opposite scope is expected in (iib), since *zai xuexiao* 'at school' now c-commands *changchang* 'often'. Given the fact that adverbials and adjectives share many common properties in Mandarin, i.e., the free ordering, the hierarchical reading, etc., an additional advantage of the proposed adjunction analysis is that it allows adverbials and adjectives to receive a uniform analysis.

Similar to other examples involving collocation of two [Adj+*de*] sequences, the two [Adj+*de*] sequences adjoined to NP can be freely re-ordered in (26). The hierarchical reading is derived by the c-command relation between the two APs: the higher AP always takes scope over the lower one following the definition of c-command given in (24).

In sum, I have shown that the adjunction analysis can nicely accommodate the free ordering of collocated [Adj+*de*] sequences with the hierarchical reading derived from the c-command relation between the two APs.

Before turning to the conjoined reading, it is important to point out that Mandarin, unlike English, possesses (at least) three different types of connectives that can be paraphrased as 'and', including *jian*, *he/gen*, and *erqie* (see Aoun and Li 2003: 143 for detailed discussion of the functions of these connectives). Relevant to our current discussion is the use of the connective *erqie*, since it is the only connective that functions to conjoin APs that can give rise to a conjoined reading. This can be illustrated by the following examples:[10]

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[10] He and Jiang (2011) note that when *erqie* serves to conjoin two [Adj+*de*] sequences, the sentence is slightly degraded, as shown in (ia). In contrast, if *de* in the first conjunct is deleted, the sentence becomes fully acceptable, as in (ib).

(i) a. ?Zhe shi yi-ge   hen piaoliang de erqie hen angui   de jiezhi.
     this be one-Cl very pretty   DE and   very expensive DE ring
     'This is a very pretty and very expensive ring.'
   b. Zhe shi yi-ge   hen piaoliang erqie hen angui   de jiezhi.
     this be one-Cl very pretty   and   very expensive DE ring
     'This is a very pretty and very expensive ring.' (He and Jiang 2011: (31a-b))

I agree with He and Jiang's judgment of the above sentences but since the contrast between (ia) and (ib) is very subtle, and there are cases where the appearance of *de* before the adjective is mandatory when *erqie* serves to conjoin two unlike phrases, such as an AP and a CP, as shown in (iia-b) (see Progovac (2003) for evidence that conjunction does not necessarily apply to syntactically like categories, contra Chomsky's (1957) "Coordination of Likes Constraint" (CLC) or Williams' (1978) "Law of Coordination of Likes"), I assume that the preference to delete *de* in (ia) is not a constraint imposed by *erqie*.

(ii) a. [$_{AP}$ zhuyao *(de)] erqie [$_{CP}$ women yijing   taolun-guo   de] shiqing
         main   DE   and   we   already discuss-Asp DE matter
     'the main matters that we have discussed'
   b. [$_{AP}$ zhongyao *(de)] erqie [$_{CP}$ women feichang guanzhu   de] wenti
         important   DE   and   we   very   concerned DE problem
     'the important problem that we concern very much'

Tang (2011: 110) notes that the fact that *erqie* in (iia-b) cannot be replaced by *he* or *gen*, connectives functioning to conjoin two individual-denoting expressions such as DPs (e.g. *Zhangsan he/gen Lisi* 'Zhangsan and Lisi'), can be used as evidence against the analysis of modifier phrases with *de* as DPs (see, for instance, Simpson 2001). Also, it could be taken as indirect evidence in favor of our analysis of adjectival modification with *de* as APs, given that *erqie* can serve to conjoin two APs with or without *de*, as shown in (1b). As for the question regarding how the subtle contrast between (1a) and (1b) can be captured, I leave this open to future studies.

(27)   Conjoined [Adj+*de*] sequences preceding a demonstrative
    a. pianyi de erqie shishang   de   na   san-jian   waitao
      cheap DE and   fashionable DE that three-Cl   coat
      (Lit.) 'cheap and fashionable those three coats'
    b. shishang   de erqie pianyi de na san-jian   waitao
      fashionable DE and cheap   DE that three-Cl   coat
      (Lit.) 'fashionable and cheap those three coats'
(28)   Conjoined [Adj+*de*] sequences appearing between a demonstrative and a numeral
    a. na pianyi de erqie shishang   de   san-jian   waitao
      that cheap DE and   fashionable DE   three-Cl   coat
      (Lit.) 'those cheap and fashionable three coats'
    b. na shishang   de erqie pianyi de   san-jian   waitao
      that fashionable DE and cheap   DE   three-Cl   coat
      (Lit.) 'those fashionable and cheap three coats'
(29)   Conjoined [Adj+*de*] sequences preceding a head noun
    a. na san-jian pianyi de erqie shishang   de   waitao
      that three-Cl cheap DE and   fashionable DE   coat
      (Lit.) 'those three cheap and fashionable coats'
    b. na san-jian shishang   de erqie pianyi de   waitao
      that three-Cl fashionable DE and cheap   DE   coat
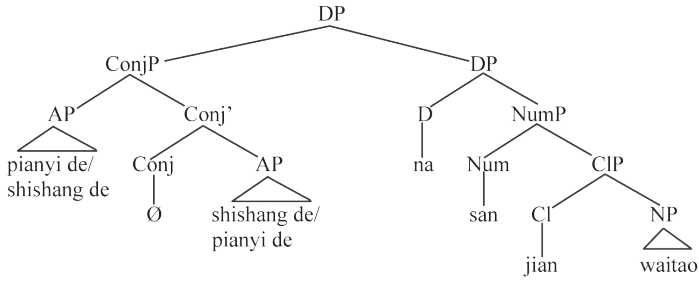   (Lit.) 'those three fashionable and cheap coats'

Crucially, apart from the fact that [Adj+*de*] sequences conjoined by *erqie* have the same conjoined reading as those involving collocation of two [Adj+*de*] sequences, the distribution of [Adj+*de*] sequences conjoined by *erqie* is identical to those involving collocation of two [Adj+*de*] sequences, i.e., both can appear before a demonstrative (see (28)), a noun (see (30)), or between a demonstrative and a numeral (see (29)).

Given the striking resemblance between [Adj+*de*] sequences conjoined with *erqie* and collocated [Adj+*de*] sequences in terms of interpretational properties and distributional patterns, I propose that they have essentially the same structure. More specifically, I propose that the conjoined reading is derived by the presence of a Conjunction Phrase (ConjP) whose head is occupied by a covert counterpart of *erqie*, which serves to conjoin two APs. Following our proposal that [Adj+*de*] sequences can be adjoined to three adjunction sites, including a DP, a NumP and an NP, examples involving collocated [Adj+*de*] sequences preceding a demonstrative, such as (16aii) and (16bii), would serve as a DP modifier with the two [Adj+*de*] sequences conjoined by the covert counterpart of *erqie* (indicated by 'Ø' below), as shown in the following configuration:[11, 12]

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[11] An alternative would be to assume that *erqie* is selected in the numeration, which is later deleted at PF.

[12] For ease of exposition, I have assumed that ConjP shows binary branching in (30) along the lines of Kayne (1994), Johannessen (1998) and Zoerner (1999). Note that a tertiary branching analysis of ConjP is equally plausible and I shall not decide between these two analyses.
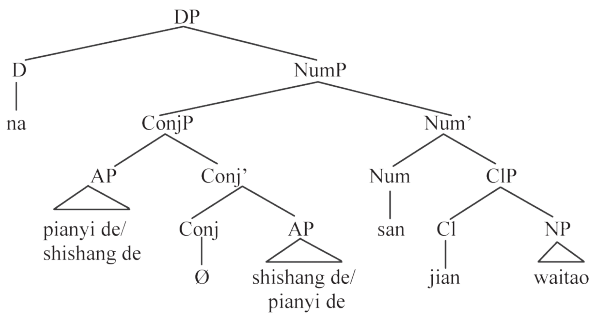
(30)

```
                              DP
              _____/_____
           ConjP                               DP
       ____/_____                      _____/_____
     AP        Conj'                    D            NumP
     /\      __/\___                    na         __/\____
  pianyi de/ Conj    AP                          Num       ClP
  shishang de  |     /\                          san     __/\__
             Ø   shishang de/                          Cl      NP
                 pianyi de                             |       /\
                                                      jian   waitao
```
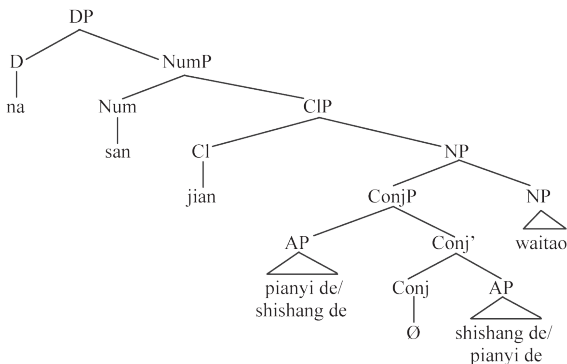
On this view, [Adj+*de*] sequences conjoined by *erqie* and those involving collocated [Adj+*de*] sequences can be captured under a uniform analysis. The fact that [Adj+*de*] sequences can be freely re-ordered with no effect on the conjoined reading can naturally follow from the relatively free ordering of [Adj+*de*] sequences in conjunction structures involving *erqie* (see (27a-b) above).

The same analysis can be extended to examples involving collocated [Adj+*de*] sequences appearing between a demonstrative and a numeral (see (17) above), and those preceding a noun (see (18) above). More precisely, the former involves adjunction of the conjoined APs to NumP, and the latter involves adjunction of the conjoined APs to NP. Based on this view, examples like (17aii) and (17bii) would be schematized as (31), and those like (18aii) and (18bii) would be schematized as (32).

(31)

```
                          DP
               _____/_____
             D                         NumP
             |              _____/_____
             na          ConjP                    Num'
                   _____/_____           _____/\____
                 AP           Conj'          Num        ClP
                 /\         __/\___           san      __/\__
             pianyi de/    Conj    AP                 Cl      NP
             shishang de    |      /\                 |       /\
                          Ø   shishang de/           jian   waitao
                              pianyi de
```

(32)

```
               DP
          ____/\____
        D          NumP
        |        ___/\____
        na     Num        ClP
               |        ___/\_____
              san      Cl          NP
               |      jian       __/\___
                             ConjP       NP
                       _____/_____  waitao
                     AP           Conj'
                     /\         __/\___
                 pianyi de/    Conj    AP
                 shishang de    |      /\
                             Ø   shishang de/
                                 pianyi de
```

In brief, I have proposed that the relatively free ordering of adjectives with *de* arises precisely because of their syntactic status as adjuncts, which can be adjoined to three different positions, including a DP, a NumP and an NP. In addition, I have shown that the two readings available to the collocation of two adjectives with *de* are derived from different structures: for the hierarchical reading, the two APs containing adjectives with *de* are adjoined to the target adjunction site (a DP, a NumP or an NP), and the hierarchical reading is derived from the c-command relation between the two APs. As for the conjoined reading, I have proposed that it is derived by the presence of a ConjP whose head is occupied by the covert counterpart of *erqie*, which serves to conjoin the two APs.

4. Conclusion

In this paper, I have argued that adjectival modification with *de* in Mandarin essentially involves AP adjunction. By taking into account the distributional patterns and interpretational properties of adjectives with *de*, I have proposed that the two different readings associated with the collocation of two adjectives with *de* are accommodated by different structures: the hierarchical reading is derived by the c-command relation between the two APs. In contrast, the conjoined reading is attributed to the presence of a conjunction phrase whose head is occupied by the covert counterpart of *erqie* 'and'. Crucially, the fact that adjectival modification with *de* always allows free permutation has been argued as substantial evidence in favor of the adjunction analysis rather than the functional projection analysis.

The analysis of adjectival modification with *de* as AP adjuncts has two implications. The theoretical implication is that AP adjunction should be taken as a legitimate strategy allowed by Universal Grammar to account for the different adjectival modification patterns across languages. The current study also provides additional support to Aoun and Li's (2003) proposal that Mandarin principally makes use of adjunction structures. If the proposed analysis is correct, it further suggests that adjunction structures not only apply to relative clauses (as argued by Aoun and Li) but also to adjectival modification with *de* in Mandarin.

Acknowledgments

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漢語的形容詞修飾結構──附接分析的例證

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提要

本文研究帶"的"字的形容詞修飾結構，描述其釋義和分佈，支持將這種修飾結構分析為附接語，並反對將形容詞短語一概分析為指示語的說法。具體來說，本文著重考察了"形容詞＋的"的並置結構，認為它不僅與單項"形容詞＋的"結構具有相同分佈，而且會引出一種之前並未注意的歧義解讀。由此，本文認為"形容詞＋的"的並置結構與單項"形容詞＋的"的修飾結構相同，應該分析為附接語，並可附接於限定詞短語、數詞短語和名詞短語。此外，歧義解讀應該是不同的句法結構所引出的一種結構歧義。

關鍵詞

形容詞修飾結構，附接語，指示語，"形容詞＋的"並置結構，漢語