On the Four Types of Null Complements of Xiang : 'Think/Want/Hope' in Mandarin Chinese

On the Four Types of Null Complements of *Xiang* 'Think/Want/Hope' in Mandarin Chinese

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Abstract

This paper aims to illustrate four types of null complements of *xiang* 'think/want/hope' in Mandarin Chinese and to examine their properties by several testing methods including the sloppy reading test, the adjunct-inclusion reading test and extraction. According to the results, I argue that the null nominal complements and the null clausal complements of *xiang* 'think' along with the null VP complement of *xiang* 'want' contain unpronounced internal syntactic representations, which can be captured by the phonological deletion analysis. In contrast, *xiang* 'hope' can take a kind of null complement without any syntactic representation and I propose that it is deep anaphora. Following the selection theory, I provide two possible analyses for it and both of them suggest that s-selection is necessary for its interpretation.

[Key words: null complement, Mandarin Chinese, deep anaphora, syntactic representation]

1．Introduction

In syntactic studies, a complement refers to a constitute taken by a head. For example, if a transitive verb *miss* functions as a head, the object *his family* is its complement as shown in (1a)[1]. A modal auxiliary can also be a head, and thus the subsequent verb phrase (VP) is its complement as show in (1b).

(1) a. Lisi [HEAD misses　　[COMP his family]].

　 b. Lisi [HEAD will　　　[COMP go to Tokyo]].

The complements can be omitted as illustrated in (2a), where the VP complement (VPC) is elided (shown as *e*VP). Note that it still can be interpretated just like the sentence in (2b). The case in (3) is an example of null nominal complement (NC) in Mandarin Chinese. The empty NC refers to *Lisi* in the antecedent.

(2) a. John will [VP　go to Tokyo], and Mary will *e*VP , too.

　 b. John will [VP　go to Tokyo], and Mary will [VP go to Tokyo], too.

(3) Zhangsan xihuan　　　Lisi$_i$,　　danshi Mali　bu　　xihuan　e_i .

　　 Zhangsan like　　　　Lisi　　but　　Mary　not　　like

　　 Lit. 'Zhangsan likes Lisi$_i$, but Mary does not like e_i.'　　(Cheng 2011)

In addition, a notable example of null clausal complement (CC) is shown in Japanese in (4).

(4) Taroo-wa [$_{CP}$　　zibun-ga　　　tensai　da　　to]　　omotteiru　　ga,

　　 Taroo-TOP　　　　self-NOM　　　genius　be　　that　　think　　　　while

　　 Ken-wa　　eCP　　omotteinai.

　　 Ken-TOP　　　　think.NEG

　　 Lit. 'While Taroo thinks that he is a genius, Ken does not think e.'

　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　(Takahashi 2014)

　One of the key issues of null complements is whether they contain internal syntactic representations. This paper aims to show different types of null complement of *xiang* 'think/ want/hope' in Mandarin Chinese and to examine their properties. In addition to null nominal complements (NC), null VP complements (VPC) and null clausal complements (CC), I point out that *xiang* 'hope' can take a special type of null complement as shown in (5).

(5) Nainai　　<u>xiwang</u> [$_{CP}$　Lisi　　hui　　　　　laojia　　　gongzuo].　Yeye

　　 Grandma　hope　　　　Lisi　　come.back　　hometown　work　　　Grandpa

　　 que　　　bu　　　<u>xiang</u>　***e***.

　　 POL　　　NEG　　　hope

　　 Lit. 'Grandma hopes that Lisi could come back to the hometown to work. But grandpa does not hope *e*.'

The null complement taken by *xiang* 'hope' can be interpreted as a proposition "that Lisi could come back to the hometown to work". Unlike other types of null CC, the null complement in (5) is hard to be reconstructed with a pronounced structure. I will show details in section 2 and 3.

　By employing tests, I attempt to illuminate the properties of these null complements. I show that unlike the null complements taken by *xiang* 'think' and *xiang* 'want', the null complement taken by *xiang* 'hope' in (5) does not allow extraction and cannot allow a pronominal phrase to refer to the elements in it. I propose that it is a kind of deep anaphora with no internal syntactic structure.

　The organization of this paper is as follows: in section 2, I will illustrate the types of null complements that *xiang* takes when it has different meanings. Then I will give a brief review on properties of null complements and introduce several methods used to test whether they contain internal syntactic representations. The tests will be applied to the null complements of *xiang* 'think/want/hope' in section 3. Then, in section 4, I will discuss the results and provide

analyses for the null complements. The last section is the conclusion.

２．Null complements of *xiang* 'think/want/hope' and diagnostic tests

In this section, different types of null complements of *xiang* 'think/want/hope' will be presented first and then several testing methods will be introduced.

2.1 Null complements of *xiang* 'think/want/hope'

The fundamental meaning of *xiang* is "think" or "think of." The complement of *xiang* 'think' can be a nominal object like *wenti* 'problem', or an embedded question.

I. *Xiang* 'think'

Xiang 'think' can be accompanied with the temporal adverb *zai* 'now' and it takes the negative marker *meiyou* rather than bu as shown in (6). *Meiyou* is usually used in perfective clauses indicating the incomplete status of an act expressed by the verb.

(6) a.　Ta　　　zai　　xiang　｜wenti/　　　　zenme　jiejue　wenti｝.

　　　　3.SG　　now　　think　　problem　　　how　　solve　　problem

　　　　'He is thinking of a problem.'

　　　　'He is wondering how to solve the problem.'

　　b.　Ta　　　｛mei(you)/*bu｝　(zai)　　xiang　｜wenti/　zenme　jiejue　wenti｝.

　　　　3.SG　　NEG　　　　　　　now　　think　　problem　how　　solve　　problem

　　　　'He is not thinking of a problem.'

　　　　'He is not wondering how to solve the problem.'

These properties suggest that *xiang* 'think' is a verb with internal processes. The null complements following *xiang* 'think' can be a NC or a CC as shown in (7-8).

(7) a.　Lisi　　zai　　xiang　[NP　　shuxue ti].

　　　　Lisi　　now　　think　　　　math　problem

　　　　'Lisi is thinking of math problem.'

　　b.　Xiaowang　　que　　mei　　zai　　xiang　*e*NC .

　　　　Xiaowang　　POL　　NEG　　now　　think

　　　　Lit. 'Xiaowang is not thinking of *e*.'

(8) a.　Lisi　　zai　　xiang [CP　weishenme　Lin　　zongshi　shengqi].

　　　　Lisi　　now　　think　　why　　　　　Lin　　always　　angry

　　　　'Zhangsan is wondering why Lin is always angry.'

　　b.　Xiaowu　　ye　　zai　　xiang　　*e*CC .

　　　　Xiaowu　　also　　now　　think

Lit. 'Xiaowu is also wondering *e*.'

The interpretation of the null NC in (7b) could be "a math problem" and the null CC in (8b) can be interpreted as "why Lin is always angry."

II. *Xiang* 'want'

In addition, *xiang* has an optative usage expressing a will to do something, namely *xiang* 'want'. It takes a verbal phrase as its complement as illustrated in (9).

(9) a.   Ta   ye   (*zai)   xiang   [VP   hui   guo].

       3.SG   also   now   want   go.back   country

       'He also wants/hopes to go back to his country.'

     b.   Ta   {*mei(you)/ bu}   xiang   [VP   hui   guo].

          3.SG   NEG   want   go.back   country

          'He does not want/hope to go back to his country.'

In contrast to *xiang* 'think', *xiang* 'want' cannot be accompanied by adverb *zai* 'now' or the negative marker *meiyou*. In the literature, *xiang* 'want' is analyzed as a modal auxiliary just like *hui* 'will' and *neng* 'can' (Chao 1968). According to Soh (2007), the modal auxiliaries in Mandarin Chinese are posited in the head of ModP as illustrated in (10a), and the null complement of them is no smaller than a VP as shown in (10b) (Xu 2003, Li 2005, Soh 2007).

(10) a.   Zhangsan   [ModP   xiang   [VP   ganjin   xie-wan   zuoye   ]].

        Zhangsan   want   quickly   write-finished   homework

        'Zhangsan wants to finish the homework quickly.'

    b.   Lisi   ye   xiang   *e*VP.

        Lisi   also   want

        'Lisi also wants to *e*.'

III. *Xiang* 'hope'

   The third meaning of *xiang* is "hope." It is clear that *xiang* 'want' and *xiang* 'hope' share similar properties in combination with adverbs and negation as shown in (11a-b).

(11) a.   Ta   ye   (*zai)   xiang   [vP   rang [CP   erzi   qu   Shanghai]].

       3.SG   also   now   hope   let   son   go   Shanghai

       'He also hope that his son goes to Shanghai.'

     b.   Ta   {*mei(you)/ bu}   xiang   [vP   rang   [CP   erzi   qu   Shanghai]].

          3.SG   NEG   hope   let   son   go   Shanghai

          'He does not hope that his son goes to Shanghai.'

(12)   Laoli   xiwang   [CP   haizi   qu   Shanghai].

	Laoli	hope		child	go	Shanghai

'Laoli hopes that his child goes to Shanghai.'

a. *Lisi   ye   xiang [CP   haizi   qu   Shanghai].

Lisi   also   hope   child   go   Shanghai

Lit. 'Lisi hopes that his child goes to Shanghai, too.'

b. Lisi   ye   xiang   *e*.

Lisi   also   hope

Lit. 'Lisi hopes (that his child goes to Shanghai), too.'

In Mandarin Chinese, the causative light verb such as *rang* 'let' or *yao* 'want' is posited in the head of *v*P. The light verb takes a clause to form a *v*P (Weng 2007). As demonstrated in (11a-b), *xiang* 'hope' takes a *v*P as its complement. However, in (12a), without the support of a light verb, a bare clausal phrase fails to be the complement of *xiang* 'hope'. On the other hand, in (12b), following the same antecedent, *xiang* 'hope' can take a null complement and the sentence successfully get interpretations.

The properties of these null complement will be tested in section 3 and I will discuss the nature of them, especially the null complement of *xiang* 'hope' in section 4. In the next subsection, I will briefly introduce several testing methods in previous studies.

2.2 Testing methods in the literature

Huang (1988, 1991) mentions that sloppy reading is allowed in the null NC in Mandarin Chinese as shown in (13a).

(13) a. Zhangsan   kanjian-le ziji-de mama.   Lisi   ye   kanjian-le   *e*DP.

Zhangsan   see-ASP   self-GEN mother   Lisi   also   see-ASP

Lit. 'Zhangsan saw self's mother. Lisi also see *e*.'

b. Zhangsan   kanjian-le ziji-de mama.   Lisi   ye   kanjian-le ta.

Zhangsan   see-ASP   self-GEN mother   Lisi   also   see-ASP   her

'Zhangsan saw his mother. Lisi also saw her.' ([OK]strict, [X]sloppy)

(Huang 1991)

The meaning of the null NC can be "Zhangsan's mother" (strict reading) or "Lisi's mother" (sloppy reading). When the null NC is replaced by an overt pronominal object, the sloppy reading is excluded as shown in (13b), which indicates that the null NC cannot be a pronominal.

Besides, the adjunct-inclusion reading can be employed to distinguish a null NC and a null VPC (Xu 2003, Cheng 2011, Landau 2020). The interpretation of (14b) is "Lisi also finished the rice." The meaning of "quickly" is excluded.

(14) a. Zhangsan   [VP henkuai-de [VP   chi-wan-le   [NP   fan]]].

Zhangsan　　　quickly　　　　　　eat-finish-ASP　　　　　rice

'Zhangsan finished the rice quickly.'

b.　Lisi　　ye　　　chi-wan-le　　　　　　e_{NC}.

　　Lisi　　also　　eat-finish-ASP

　　Lit. 'Lisi also finished e.'　　e = rice　　　　　　　　　　　　(Cheng 2011)

A null NC of a verb cannot contain the reading of an adjunct since the adjunct is adjoined to VP. Nevertheless, adjunct-including reading is possible for null VPC as shown in (15).

(15)　　John　[ModP hui [VP　zixide　[VP　shua　ya]]],　Peter　ye　　hui　　e_{VP}.

　　　　John　　　　will　　　carefully　　brush　teeth　Peter　also　will

　　　　'John will carefully brush teeth and Peter will e, too.'　　　(Xu 2003)

The interpretation of the second sentence in (15) is "Peter will carefully brush teeth, too." The adjunct *zixide* 'carefully' which is adjoined to VP in the antecedent is recovered in the following null VPC taken by the modal *hui* 'will'. There is a clear difference between the null NC and the null VPC.

Extraction provides an effective way to test whether a null complement has an internal syntactic representation or not. In English, the elided VP in (16) allows overt extraction, which indicates that a syntactic structure is fully constructed inside the elided part (Fiengo and May 1994).

(16) a. I know which book Max read and which book Oscar didn't e_{VP}.

　　b. I know which $book_i$ Max read t_i and which $book_j$ Oscar didn't [VP read t_j].

　　　　　　　　　　　　　　　　　　　　　　　　　　　　(Fiengo and May 1994)

The null VPC is also called VP ellipsis, which is derived through phonological deletion (indicated with grey shade) with a fully constructed internal structure as demonstrated in (16b). It is assumed that VP ellipsis is surface anaphora.

In contrast to surface anaphora such as VP ellipsis, Hankamer and Sag (1976) claim that there exists a kind of null complement called deep anaphora which can get interpretations through pragmatic controlled environments. As illustrated in (17), with the same context, VP ellipsis is not acceptable while the sentence with deep anaphora can be understood to be "it's not clear that you'll succeed in stuffing a 9-inch ball through a 6-inch hoop."

(17)　　Context: Hankamer attempts to stuff a 9-inch ball through a 6-inch hoop.

　　a. Sag: *It's not clear that you'll be able to e.　　(VP ellipsis)

　　b. Sag: It's not clear that you'll succeed e.　　(Deep anaphora)

　　　　　　　　　　　　　　　　　　　　　　　　(Hankamer and Sag 1976)

(18) *I know the blue papers Pete volunteered to sign and I think the green ones Jan refuses e.

　　　　　　　　　　　　　　　　　　　　　　　　　　(Depiante 2000)

Depiante (2000) further points out that extraction is not possible for deep anaphora as indicated in (18) because they do not have any internal syntactic structure.

As for Mandarin Chinese, pragmatic control is possible for null VPC taken by a modal as shown below in (19a).

(19) a. Context: You and friends are playing darts and another friend A happens to pass by and sees this situation.

    A: Wo   ye   hui eVP.

      I   also   can

      'I also can (play darts).'   (adapted from Li 2005)

   b. Zhe-zhong feibiao$_i$ wo   hui   wan t_i, na-zhong$_j$ wo   bu   hui eVP.

      this-CL   dart   1.SG   can   play   that-CL   1.SG   NEG   can

      'This kind of darts I can play, but that kind I cannot e.'

The modal *hui* 'can' allows extraction at the same time as shown in (19b). Whether a verb allows null complements through pragmatic context is determined by the lexical features of each single verb (Grimshaw 1979, Depiante 2000). Although pragmatic control helps to define a null complement in English or in southern Min (Lin 2022), it is not clear if it can be a testing rule for null elements in Mandarin Chinese.

In summary, the sloppy reading test, the adjunct-inclusion reading test and extraction will be used for testing the internal structure of the null complements of *xiang* 'think/want/hope'.

3．Tests for null complements of *xiang* 'think/want/hope'

I will show the data involving the sloppy reading test and the adjunct-inclusion reading test. In (20), the null NC can get the strict interpretation as "Lisi's problem" or the sloppy interpretation as "Xiaowang's problem."

(20) a.   Lisi   zai   renzhende   xiang [DP   ziji-de   wenti].

       Lisi   now   seriously   think   self-GEN   problem

       'Lisi is thinking of his own problem seriously.'

   b.   Xiaowang   ye   zai   xiang eNC.

       Xiaowang   also   now   think

       'Xiaowang is also thinking of e.'

       e = 'Lisi's problem'   (Strict reading)

       e = 'Xiaowang's problem'   (Sloppy reading)

Secondly, (20b) does not include the meaning of the adjunct *renzhende* 'seriously'. It only means that "Xiaowang is thinking of the problem of Lisi or himself" and we do not know in what manner he is thinking. So, the meaning of the adjunct is excluded.

Let us turn to the null VPE of *xiang* 'want'. In (21a), there are two adjuncts in the antecedent. *Poqiede* 'eagerly' is a degree adverb modifying *xiang* 'want' and *ganjin* 'as soon as possible' modifies the verb *huidao* 'go back' in the VP. Interestingly, in (21b), only *ganjin* 'as soon as possible' is recovered while the interpretation of *poqiede* 'eagerly' is not included with a VPC. So, the meaning of adjunct which is adjoined to VP in the antecedent is included in the VPC.

(21) a.　Lisi　　　　poqiede　xiang　[VP ganjin　　　[VP　　huidao　　ziji-de　　jiaxiang]].

　　　　　Lisi　　　　eagerly　want　　　as.soon.as.possible　go.back　self-GEN　hometown

　　　　　'Lisi wants to go back to his hometown as soon as possible eagerly.'

　　b.　　Xiaowang　　　ye　　　xiang　*e*VPC.

　　　　　Xiaowang　　　also　　want

　　　　　'Xiaowang also wants to *e*.'

　　　　　e ='go back to Lisi's hometown as soon as possible.'　　　　　(Strict reading)

　　　　　e ='go back to Xiaowang's hometown as soon as possible.'　　(Sloppy reading)

Another piece of information from the example in (21) is that the sloppy reading is accessible in the null VPC of *xiang* 'want'.

　The sloppy reading is also observed with *xiang* 'think' with a null CC as shown in (22b). And the meaning of the adjunct *renzhende* 'seriously' adjoined to *xiang* 'think' is not included in the interpretation in (22b).

(22) a.　Lisi zai　　　renzhende　xiang　[CP　zenmeyang　huidao　ziji-de　　jiaxiang].

　　　　　Lisi now　　seriously　think　　　how　　　　　go.back　self-GEN　hometown

　　　　　'Lisi is thinking how he can go back to his hometown seriously.'

　　b.　　Xiaowang　　　ye　　　zai　　xiang　*e*CC.

　　　　　Xiaowang　　　also　　now　　think

　　　　　'Xiaowang is also thinking *e*.'

　　　　　e ='how Lisi can go back to Lisi's hometown.'　　　　　　（Strict reading)

　　　　　e ='how Xiaowang can go back to Xiaowang's hometown'　　(Sloppy reading)

Both strict reading and sloppy reading are available in the null NC of *xiang* 'think', the null VPC of *xiang* 'want', and the null CC of *xiang* 'think'. The meaning of adjunct adjoined to VP in the antecedent can be recovered in the null VPC of *xiang* 'want' rather than the null NC of *xiang* 'think'.

　Now let us examine the availability of extraction. The cases given in (23) and (24) show that the null VPC of *xiang* 'want' and the null CC of *xiang* 'think' both permit overt extraction out of them.

(23) Wo zhidao　na-ben　　shu*i*　Lisi　xiang　[VP　du *t*i　],

　　　I　know　　which-CL　book　Lisi　want　　　　read

na-ben   shuj   ta   bu   xiang   *e*VPC.

which-CL   book   3.SG   neg   want

'I know which book Lisi wants to read carefully, which book he does not *e*.'

(24) a. Wo   zhidao   na-ge   duii   jiaolian   zai   xiang   [women   neng   dabai *t*i]

I   know   which-CL team   coach   now   think   we   can   defeat

'I know which team the coach is thinking we can defeat.'

b. Lisi   zhidao   na-ge   dui   duizhang   zai   xiang   *e*CC.

Lisi   know   which-CL team   captain   now   think

Lit.'Lisi knows which team the captain is thinking (we can defeat).'

In (24a), overt *wh*-extraction of 'which team' is permissible. In (24b), the *wh*-phrase *na-ge dui* 'which team' is fronted, and the clausal complement of *xiang* 'think' is omitted. If *na-ge dui* 'which team' were an object of *xiang* 'think', the sentence should be interpretated as "Lisi knows which team the captain is thinking of." So, it must be extracted out of the missing clausal complement.

As illustrated in section 2, *xiang* 'hope' can only take an overt *v*P as its complement. Compared with *xiang* 'hope', *xiwang* 'hope' enjoys a freer usage. Either a CP or a *v*P can be the complement of *xiwang* 'hope' as shown in (25).

(25) a.   Laoli   {xiwang/ *xiang}   [CP   haizi   qu   Shanghai].

Laoli   hope   hope   child   go   Shanghai

'Laoli hopes that his child goes to Shanghai.'

b.   Laoli   {xiwang/ xiang}   [*v*P   rang   haizi   qu   Shanghai].

Laoli   hope   hope   let   child   go   Shanghai

'Laoli hopes to let his child goes to Shanghai.'

When *xiang* 'hope' takes a *v*P complement in the antecedent, extraction is possible for the null complement of *xiang* 'hope'. Such extraction is possible even when *xiwang* 'hope' takes a *v*P complement in the antecedent as shown in (26).

(26) Wo   bu   zhidao   na-ge   chengshii   nainai   {xiang/xiwang}[*v*P   rang

I   NEG   know   which-CL city   grandma hope   hope   let

Lisi   qu   *t*i],   na-ge   chengshii   nainai   bu   **xiang**   *e*.

Lisi go   which-CL city   grandma NEG   hope

Lit. 'I don't know which city grandma hopes that Lisi goes to, which city grandma does not hope.'

The example (12) in Section 2 showed that when *xiwang* 'hope' takes a CP complement in the antecedent, the null complement of *xiang* 'hope' can successfully get interpretations. However, this null complement of *xiang* 'hope' resists extraction as shown in (27a). Extraction is only possible for the null complement of *xiwang* 'hope' as shown in (27b).

(27) Wo   bu   zhidao   na-ge   chengshi$_i$ nainai   **xiwang** [$_{CP}$ Lisi   qu t_i],

    I   NEG   know   which-CL   city   grandma   hope   Lisi   go

    'I don't know which city grandma hopes that Lisi goes to.'

  a. *na-ge   chengshi$_j$ nainai   bu   **xiang** *e*.

    which-CL   city   grandma   NEG   hope

    Lit. 'which city grandma does not hope *e*.'

  b. na-ge   chengshi$_j$ nainai   bu   **xiwang** *e*.

    which-CL   city   grandma   NEG   hope

    Lit. 'which city grandma does not hope *e*.'

In (26) and (27a), it appears that the null complement of *xiang* 'hope' allows extraction only when *v*P overtly appears in the antecedent.

    The evidence presented thus far is organized below in Table 1:

Table 1. The results of the tests

	Sloppy reading	Adjunct-inclusion reading	Extraction
Null NC ('think')	OK	NO	----
Null VPC ('want')	OK	OK	OK
Null CC ('think')	OK	OK	OK
Null complement ('hope')	----	----	*v*P antecedent: OK CP antecedent : NO

４．Discussion

From the table above, it is clear that the null NC of *xiang* 'think' permits sloppy reading, indicating that it is not a pronominal. And it cannot recover the meaning of an adjunct in the antecedent suggesting that it is smaller than a VP. Strong evidence for the presence of internal structures has been found when extraction is available for the null VPC of *xiang* 'want' and the null CC of *xiang* 'think'. Both of them allowing sloppy reading also indicates that they are not pronominals.

    In contrast, the null complement of *xiang* 'hope' prohibits such extraction when a CP is taken as complement of *xiwang* 'hope' in the antecedent. This finding suggests that under this circumstance the null complement of *xiang* 'hope' does not contain a syntactic representation. In this section, I will show another piece of evidence to support this idea and then provide an analysis for it.

4.1　Deep anaphora taken by xiang 'hope'

    Based on the above test results, it is very likely that the null complement of *xiang* 'hope'

does not contain any syntactic representation. Furthermore, if a constitute does not contain an internal structure, it is not able to be an antecedent for a pronoun (Grinder and Postal 1971, Bresnan 1971). The English example is shown in (28).

(28) a.* He said that one of us had to give up his seat, so Sue volunteered *e*, because **it**

was too narrow for her anyway. *e* = to give up **her seat**

b. He said that one of us had to give up his seat, so Sue volunteered to give up **her seat**,

because **it** was too narrow for her anyway.   (Hankmar & Sag 1976)

With a null complement in (28a), the pronoun *it* cannot get interpreted, while with the structure fully expressed, the pronoun *it* can refer to Sue's seat as shown in (28b).

In Mandarin Chinese, *nali* 'that place' can refer to a place in the antecedent. In (29), the reflexive pronoun *ziji* can refer to Laoli (matrix reading) or "one of us" (embedded reading). When the verb *xiwang* 'hope' takes a null complement and *nali* 'that place' refers to either Laoli's hometown or Mali's hometown as shown in (29a).

(29) Laoli$_i$ shuo   women zhong you-ge ren$_j$ xiwang   gongsi

Laoli   say   1.PL   among exist-CL person hope   company

banqu   ziji-de$_{i/j}$ jiaxiang.

move.to   self-GEN hometown

'Laoli$_i$ says [one of us]$_j$ hopes that the company goes back to his$_{i/j}$ hometown.'

a. ranhou   Mali   chengren   shi   ta   **xiwang**   *e*$_{CC}$, yinwei

then   Mali   admit   FOC   3.SG   hope   because

nabian   fangjia   pianyi.

there   house.price   cheap

'Then Mali admits that it is she that hopes *e* because the house price of <u>that place</u> is cheap.' (that place = ^{OK}Laoli's hometown, ^{OK}Mali's hometown)

b. ranhou   Mali   chengren   shi   ta   **xiang**   *e*,

then   Mali   admit   FOC   3.SG   hope

yinwei   nabian   fangjia   pianyi.

because   there   house.price   cheap

'then Mali admits that it is she that hopes *e*, because the house price of <u>that place</u> is cheap.' (that place = ^{OK}Laoli's hometown, ^{X}Mali's hometown)

In contrast, in (29b), when *xiang* 'hope' takes a null complement, *nali* 'that place' can only be interpreted as "Laoli's hometown." If there were a syntactic representation in the null complement, there must be a reflexive expression which could get a local interpretation such as "Maili's hometown." This example indicates that there is no internal syntactic representation in the null complement of *xiang* 'hope'.

Based on the facts that the null complement of *xiang* 'hope' forbids extraction and resists a local reading for reflexives, I propose that it is a deep anaphor.

4.2　C-selection and s-selection of *xiang* 'think/want/hope'

Grimshaw (1979) presents evidence and claims that syntactic category and semantic type of complements are selected independently by the predicate. For example, a verb can select categorial types for its complements (c-selection) and semantically selects arguments of certain types such as question and proposition (s-selection). For example, in (30), *ask* and *wonder* require a question type of argument semantically, and both of them can take CPs as their complements. The NP complement is only compatible with *ask*. As shown in (31), NP is not c-selected by *wonder* but is c-selected by *ask*[2].

(30) a.　Mary asked {what time it was /the time}.

　　 b.　Mary wondered {what time it was /*the time}.　　　　　　　(Pesetsky 1982)

(31) a.　ask　　　　　　 1) s-selects question　　2) c-selects CP and NP

　　 b.　wonder　　　　 1) s-selects question　　2) c-selects CP

In addition to verbs, Odijk (1997) points out that modals in English (i.e., *can, will, must*) can c-select VPs and s-select propositions although they do not assign case to its argument or a theta role to its subject.

First, let us come back to the data involving the modal *xiang* 'want'. *Xiang* 'want' s-selects propositions and c-selects VPs. Considering the facts that extraction is possible for the null VPC of *xiang* 'want', I adopt the deletion analysis which assumes that the null complement contains a full syntactic representation and the phonological form is deleted. As demonstrated in (32), the grey shade indicates phonological deletion.

(32) a.　*xiang* 'want'　　　s-selects: arguments of proposition

　　　　　　　　　　　 c-selects: VPs (can be phonologically deleted)

　　 b.　[TP　　 Lisi　 [Mod　*xiang* 'want' [VP　⋯　]]]

　　　Xiang 'think' is a main verb which s-selects arguments of question type and c-selects NPs or CPs. Since sloppy reading is possible for the null NC and extraction is permissible for the null CC, fully constructed syntactic representations are involved and the deletion analysis is possible. The derivation is shown in (33).

(33) a.　*xiang* 'think'　　　s-selects: arguments of question

　　　　　　　　　　　 c-selects: NPs or CPs

　　 b.　[TP　　 Lisi　 [VP　*xiang* 'think' [NP/CP　⋯　]]]

Finally, I will turn to *xiang* 'hope'. What is clear is that *xiang* 'hope' s-selects arguments of event type and c-selects *v*Ps. Nevertheless, *xiang* 'hope' can also take a deep anaphor as its

complement. The syntax of deep anaphora is still under discussion. As pointed out by the reviewer, one plausible way to analyze the null complements of *xiang* 'hope' is to assume that *xiang* 'hope' can optionally c-select *v*P. When *xiang* 'hope' takes a *v*P as its complement, the *v*P can be phonologically omitted if it overtly occurs in the antecedent as illustrated in (34b)[3].

(34) a. *xiang* 'hope'   s-selects: arguments of event

                              c-selects: *v*Ps (optionally)

   b. [TP   Grandma [VP *xiang* 'hope' [*v*P light verb + CAUSE [CP ···]]]]]

   c. [TP   Grandma [VP *xiang* 'hope' [*e*deep anaphor (s-selected only)]]]

When *v*P is not c-selected, the semantic requirement of *xiang* 'hope' can still be satisfied and the contents are saturated pragmatically. In this case, the deep anaphor is syntactically empty as shown in (34c).

   The other way is to assume that deep anaphora belongs to a kind of null category[4]. Lin (2022) argues that the null clausal complement in Taiwan Southern Min is also deep anaphora, which can be analyzed a null epithet. If this analysis also works for the null clause-like complement of *xiang* 'hope', then we can assume that *xiang* 'hope' can c-selects deep anaphora (null epithets) in addition to *v*Ps as shown in (35a).

(35) a.   *xiang* 'hope'   s-selects: arguments of event

                              c-selects: *v*Ps or deep anaphora (null epithets)

   b.   [TP   Grandma [VP *xiang* 'hope' [*e*deep anaphora (c-selected, s-selected)]]]

When deep anaphora is c-selected, it receives interpretations through semantic methods according to the semantic requirement of *xiang* 'hope' as illustrated in (35b).

5．Concluding remarks

The findings reported in this paper shed new light on four types of null complements including null NC, null VP (*v*P), null CC and deep anaphora in Mandarin Chinese. I have examined their properties through the sloppy reading test, the adjunct-inclusion reading test and the extraction test. Based on these facts, I propose that the null NC of *xiang* 'think' is not a pronominal and its size is smaller than the size of a VP due to its resistance to adjunct-inclusion reading. Since extraction is permissible for the null VPC of *xiang* 'want' and the null CC of *xiang* 'think', I propose that fully constructed syntactic representations must be involved and the deletion analysis provides a good explanation for these properties. This study also shows that *xiang* 'hope' can take null *v*Ps or deep anaphora as its complements. Under the selection theory, I have proposed two ways to analyze deep anaphora of *xiang* 'hope'. Further studies are needed for this problem.

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Note

1　The following abbreviations are used in this paper: ASP = aspect, COMP = complement, CP = complementizer phrase, DP = demonstrative phrase, GEN = genitive, MOD = modal, NEG = negation, NOM= nominative , POL = polarity, PTCL= particle, TOP = topic maker, VP = verb phrase, 1/2/3=first/second/third person, PL=plural, SG=singular

2　Pesetsky (1982) holds the opinion that NPs require cases and since *wonder* cannot assign any case to its arguments, *wonder* cannot take NP complements. In this study, I will follow Grimshaw (1979) taking c-selection as a restriction for subcategorization.

3　*Xiang* 'hope' shares similar properties with the modal *xiang* 'want' in combination with temporal adverbs and negation. On the other hand, verbs such as *xihuan* 'like' or *tongyi* 'agree' which express mental activities also share such properties. For convenience, I analyze *xiang* 'hope' as a verb in this study.

4　In the literature, there are differences in the term of null category. For example, deep anaphora can be analyzed as a free variable in null *pro*-form (Depiante 2000), a null epithet (Lin 2022) or a true empty category (Li 2005, 2014).

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