

# A conjunctive analysis of Chinese multiple-condition comparatives

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## 1. Introduction

This paper explores the syntactic structure of comparatives in Mandarin Chinese. There are two basic patterns of Mandarin comparatives consisting of *bi*, as summarized in the following schemata. Note that *bi* is the counterpart of the English comparative marker *than*.

### (1) Basic Word Order of Chinese Bi-comparatives:

#### a. Simple Comparatives:

X bi Y (Adverbial) Adjective/Verb-complement (Measure Phrase)

#### b. Complex Comparatives:

X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>...bi Y<sub>1</sub>, Y<sub>2</sub>, Y<sub>3</sub>...(Adverbial) Adjective/Verb-complement (Measure Phrase)

As shown above, the comparison in (1a) involves only two single elements *X* and *Y*, and I refer to comparatives of this type as *simple comparatives*. On the other hand, the comparison in (1b) involves complex comparison between different pairs of conditions, i.e. *X*<sub>1</sub> vs. *Y*<sub>1</sub>, *X*<sub>2</sub> vs. *Y*<sub>2</sub>, *X*<sub>3</sub> vs. *Y*<sub>3</sub>, etc, and I refer to this kind of comparatives as *complex comparatives*. Examples of simple comparatives with adverbials and measure phrases are presented in (2a-d), while examples of complex comparatives are presented in (3a-b). In all these examples, adverbial phrases and measure phrases are not obligatory.

- |  |                    |
|--|--------------------|
| (2) a. Zhangsan bi Lisi (geng/hai) gao.<br>Zhangsan BI Lisi (even/still) tall<br>'Zhangsan is (much) taller than Lisi.'                  | (Matrix adjective) |
| b. Zhangsan bi Lisi gao (wu gongfen).<br>Zhangsan BI Lisi tall (five centimeter)<br>'Zhangsan is (five centimeters) taller than Lisi.'   | (Matrix adjective) |
| c. Zhangsan bi Lisi tiao-de (geng/hai) gao.<br>Zhangsan BI Lisi jump-PART (even/still) tall<br>'Zhangsan jumps (much) higher than Lisi.' | (Matrix verb)      |
| d. Zhangsan bi Lisi tiao-de gao (yi-xie).<br>Zhangsan BI Lisi jump-PART tall (one-CL)<br>'Zhangsan jumps (a little) higher than Lisi.'   | (Matrix verb)      |

- (3) a. *Double-condition Comparison*:  
Zhangsan zuo-zhe bi Lisi zhan-zhe (hai) gao (wu gongfen).  
 Zhangsan sit-STA BI Lisi stand-STA (still) tall (five centimeters)  
 ‘Lit.: Zhangsan is even five centimeters taller than Lisi when Zhangsan sits down whereas when Lisi stands up.’
- b. *Triple-condition Comparison*:  
Zhangsan zuotian zai chuang-shang bi Lisi jintian zai zhuozi-shang tiao-de (hai) gao (yi-xie).  
 Zhangsan yesterday at bed-up BI Lisi today at desk-up jump-PART (still) tall (one-CL)  
 ‘Lit.:Zhangsan jumped (a little) higher on the bed yesterday than Lisi jumped on the desk today.’
- c. *Quadruple-condition Comparison*:  
Zhangsan zuotian zai chuang-shang yong dan-jiao bi Lisi jintian zai zhuozi-shang yong shuang-jiao tiao-de (hai) gao (yi-xie).  
 Zhangsan yesterday at bed-up use single-foot BI Lisi today at desk-up use double-foot jump-PART (still) tall (one-CL)  
 ‘Lit.:Zhangsan jumped (a little) higher on the bed using one leg yesterday than Lisi jumped on the desk using both legs today.’

In previous studies, for example, Tsao, (1989) and Lin, (2009), etc, complex comparatives are referred to as *multiple-topic comparison*. However, the name of multiple-topic comparison itself is confusing to some degree. Consider the canonical topics in Mandarin Chinese ((4a) is topicalized as in (4b)):

- (4) a. Zhangsan bu chi jidan.  
 Zhangsan not eat egg  
 ‘Zhangsan does not eat eggs.’
- b. jidan Zhangsan bu chi.  
 egg Zhangsan not eat  
 ‘eggs, Zhangsan does not eat.’

In (4b) *jidan* ‘egg’ is a topicalized argument of the matrix verb *chi* ‘eat’. Unlike these true topics in (4b), in (1b)  $X_2$ ,  $X_3$ ,  $Y_2$ ,  $Y_3$ , etc, may not be arguments of the sentence, e.g. temporal phrases *jintian* ‘today’ ( $X_2$ ) and *zuotian* ‘yesterday’ ( $Y_2$ ) and location phrases *zai zhuozi-shang* ‘on the desk’ ( $X_3$ ) and *zai chuang-shang* ‘on the bed’ ( $Y_3$ ) in (3b). Since *bi* actually introduces multiple parallel conditions involved in the comparison, in this paper complex *bi*-comparatives are also referred to as *multiple-condition comparatives* to avoid confusion. In this sense the comparison in (3a) involves two pairs of conditions (as underlined in the sentence), i.e. *Zhangsan* vs. *Lisi* and *zuo-zhe* ‘sitting down’ vs. *zhan-zhe* ‘standing up’, whereas the comparison in (4b) involves three pairs of conditions, i.e. *Zhangsan* vs. *Lisi*, *zuotian* ‘yesterday’ vs. *jintian* ‘today’ and *zai chuang-shang* ‘on the bed’ vs. *zai zhuozi-shang* ‘on the desk’, and in (4c) there is one more pair of conditions, i.e. *yong dan-jiao* ‘using one leg’ vs. *yong shuang-jiao* ‘using both legs’.

Moreover, comparatives can also be constructed without the help of *bi*.

- (5) a. Zhe-gen shengzi chang na-gen shengzi wu gongfen.  
 this-CL rope long that-CL rope five centimeter  
 ‘This rope is longer than that rope in five centimeters.’

- b. Zhe-gen shengzi chang-yu na-gen shengzi.  
 this-CL rope long-SUFFIX that-CL rope  
 ‘This rope is longer than that rope.’

The examples in (5) illustrate the so-called *transitive comparatives* that can be formed with or without a suffix added to the matrix adjective.

This paper focuses on the syntax of *bi*-comparatives and the syntactic status of the comparative marker *bi*. I show that previous studies applying a DegP-shell hypothesis (e.g. Grano and Kennedy, 2011; Xiang, 2005; Lin, 2009) or a prepositional adjunct hypothesis (Liu, 1996; etc) have certain problems and cannot avoid over-generation. I argue that in Chinese the comparative marker *bi* is a coordinator, and the post-*bi* phrase is realized as the second conjunct.

This paper is organized as follows. In Section 2, I summarize and discuss previous studies on *bi*-comparatives. I show that previous analysis has certain problems. In Section 3, in light of the limited, I discuss the syntactic status of *bi*. In Section 4 I give a discussion on the syntax of *bi*-comparatives and how this analysis benefits to the explanation of our observations and avoids possible overgeneration that can be caused by previous analysis. In Section 5, major points in this paper are summarized.


## 2. Previous studies and problems

There are two major analyses of Mandarin *bi*-comparatives in the literature: 1) the DegP-shell hypothesis and 2) the prepositional adjunct hypothesis.

### 2.1 The DegP-shell hypothesis

The DegP-shell hypothesis is a recently popular approach in the literature to analyze Mandarin comparatives. This hypothesis has the assumption that *bi* is the head of the DegP, and when the DegP head position is empty, the matrix adjective must raise to take up this position, resulting in corresponding transitive comparatives as in (5a). According to the DegP-shell hypothesis, the structure of (5a) is as in (6).

(6) this rope [<sub>DegP</sub> long [that rope ~~long~~ five centimeters]



Detailed technical distinctions aside, Grano and Kennedy, (2011), Xiang (2005) and Lin (2009) are all studies following this approach.

Nevertheless, a DegP-shell structure must consider the possibility to accommodate all possible word candidates. For example, in Xiang, (2005) and Grano and Kennedy, (2011), the following monosyllabic adjectives are argued to represent some of the adjectives that can form transitive comparatives:

- (7) *gao* ‘tall’, *ai* ‘short’ (opposite of ‘tall’), *zhong* ‘heavy’, *qing* ‘light’, *chang* ‘long’, *duan* ‘short’ (opposite of ‘long’), *cu* ‘thick’, *xi* ‘thin’, *zao* ‘early’, *wan* ‘late’, *da* ‘big’/‘old’, *xiao* ‘small’/‘young’, *kuai* ‘fast’, *man* ‘slow’...

However, in fact, there is only a very limited set of monosyllabic adjectives that

can be used in Mandarin transitive comparatives, suggesting lexical specification plays an important role during the derivation. A shell-structure without lexical specification cannot avoid overgenerating such ungrammatical sentences as in (8a-c). Note that in (8a) *pang* ‘fat’ is just a personal property like *gao* ‘tall’ and *ai* ‘short’ in (7). Both matrix adjectives *qiang* ‘strong’ and *liang* ‘bright’ in (8b) and (8c) respectively are also frequently-used adjectives denoting properties of common entities.

- (8) a. \*Zhangsan pang Lisi yi-jin.  
       Zhangsan fat Lisi one-CL  
       Intended interpretation: ‘Zhangsan is one-pound heavier than Lisi.’  
       b. \*Zhangsan qiang Lisi yi-dian.  
       Zhangsan strong Lisi one-CL  
       Intended interpretation: ‘Zhangsan is a bit stronger than Lisi.’  
       c. \*Zhe-ge fangjian liang na-ge fangjian yi-dian.  
       This-CL room bright that-CL room one-CL  
       Intended interpretation: ‘This room is a bit brighter than that room.’

All intended interpretations in (8a-c) has to be realized by the corresponding *bi*-comparatives rather than transitive comparatives. Moreover, the raising of a degree adjective to an empty *bi*-position assumed in Xiang (2005) and Grano and Kennedy, (2011) cannot rule out the following ungrammatical sentence caused by the positioning of adverbial phrases as in (9b). The adverbs *hai* ‘still’ and *geng* ‘even’, as well as auxiliary verbs such as *yao* ‘will’, *keneng* ‘may’, etc, can only occur directly before an adjective or a verb, but cannot directly be followed by a measure phrase. The movement involved in (9b) is presented in (9c): similar to (6), the matrix adjective *chang* ‘long’ has to move to the DegP-head position.

- (9) a. Zhe-gen shengzi bi na-gen shengzi hai/geng/yao/keneng chang yidian.  
       This-CL rope BI that-CL rope still/ even/will/may long one-CL  
       ‘This rope is a bit longer than that rope.’  
       b. \*Zhe-gen shengzi chang na-gen shengzi hai/geng/yao/keneng yidian.  
       This-CL rope long that-CL rope still/even/will/may one-CL  
       c. \*this rope [<sub>DegP</sub> long [that rope still/ even/will/may ~~long~~ a bit]].

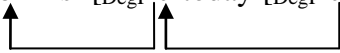


Note that (9b) is not grammatical even though it consists of a monosyllabic adjective selected from the list in (7), cf. (5a) and (9b).

Following the DegP-shell approach, Lin (2009) further argues that all Chinese comparatives are phrasal comparatives in nature, so that multiple-condition comparison should consist of multiple DegP shells. Take the multiple-condition comparative in (3b) (reduplicated in (10a)) as an example. According to Lin’s analysis, (3b) should have a structure as in (10b): *bi* is head of the DegP and it raises from within a lower DegP to a higher DegP head position.

- (10) a. Zhangsan zuotian zai chuang-shang bi Lisi jintian zai zhuozi-shang  
       tiao-de (hai) gao (yixie).  
       Zhangsan yesterday at bed-up BI Lisi today at desk-up jump-PART (still)  
       tall (one-CL)  
       ‘Lit.:Zhangsan jumped (a little) higher on the bed yesterday than Lisi  
       jumped on the desk today.’

b. Zhangsan [<sub>VP</sub> yesterday on the bed [<sub>DegP</sub> bi Lisi [<sub>DegP</sub> e today [<sub>DegP</sub> e on the desk [<sub>VP</sub> jump-PART still tall a bit]]]]



According to Lin's analysis, anything can be a degree argument, e.g. PP, VP, etc, as long as the degree arguments involved in each pair of conditions are semantically parallel to one another. A major problem of this analysis is overgeneration. Parallel conditions may not always be accommodated by *bi*-comparatives. The following shows some of the exceptions. First, a pair of different temporal phrases fulfills the requirement of semantic parallelism (i.e. *zuotian* 'yesterday' vs. *jintian* 'today' as in (11)) but may not lead to a grammatical sentence as illustrated below.

- (11) \*Zhe-gen shengzi zuotian bi na-gen shengzi jintian chang.  
 this-CL rope yesterday BI that-CL rope today long  
 Intended reading: 'this rope used yesterday is longer than that one used today.'

Second, a topic can be realized as Patient at the sentence-initial or sub-topic position as a result of object-preposing in Mandarin as in (12a), but two parallel Patient topics may not necessarily form a grammatical *bi*-comparative as in (12b). (12b) suggests that object-preposing seems not to be well accommodated in *bi*-comparatives. This is also the case when there is another overt subject in the post-*bi* standard, as in (12c).

- (12) a. Zhangsan ji bu xihuan chi, yu xihuan chi.  
 Zhangsan chicken not like eat, fish like eat  
 'Chicken, Zhangsan does not like to eat, but fish, Zhangsan likes to eat.'  
 b. ??Zhangsan yu bi ji xihuan chi.  
 Zhangsan fish BI chicken like eat  
 Intended reading: 'Zhangsan likes to eat fish more than chicken.'  
 c. \*Zhangsan yu bi Lisi ji xihuan chi.  
 Zhangsan fish BI Lisi chicken like eat  
 Intended reading: 'Zhangsan likes to eat fish more than Lisi likes to eat chicken.'

Third, there is a word-order constraint after *bi*: the positions of multiple conditions after *bi* seem not to be interchangeable. For example,

- (13) a. Zhangsan xuexi bi Lisi gongzuo renzhen. (bi + NP + VP)  
 Zhangsan study BI Lisi work serious  
 'Zhangsan is more serious about study than Lisi is about work.'  
 b. \*Zhangsan xuexi bi gongzuo Lisi renzhen. (bi + VP + NP)  
 Zhangsan study BI work Lisi serious  
 c. ?xuexi Zhangsan bi gongzuo Lisi renzhen. (bi + VP + NP)  
 study Zhangsan BI work Lisi serious  
 (14) a. Zhangsan dui diren bi Lisi dui pengyou hao. (bi + NP + PP)  
 Zhangsan to enemy BI Lisi to friends good  
 'Zhangsan is nicer to enemies than Lisi is to friends.'

- b. \*Zhangsan dui diren bi dui pengyou Lisi hao. (bi + PP + NP)  
 Zhangsan to enemy BI to friends Lisi good
- c. ?dui diren Zhangsan bi dui pengyou Lisi hao. (bi + PP + NP)  
 to enemy Zhangsan BI to friends Lisi good
- (15) a. Zhangsan zhongwen bi Lisi riwen jiang-de hao. (bi + NP<sub>1</sub> + NP<sub>2</sub>)  
 Zhangsan Chinese BI Lisi Japanese speak-PART good  
 ‘Zhangsan speaks Chinese better than Lisi speaks Japanese.’
- b. \*Zhangsan zhongwen bi riwen Lisi jiang-de hao. (bi + NP<sub>2</sub> + NP<sub>1</sub>)  
 Zhangsan Chinese BI Japanese Lisi speak- PART good
- c. ?zhongwen Zhangsan bi riwen Lisi jiang-de hao. (bi + NP<sub>2</sub> + NP<sub>1</sub>)  
 Chinese Zhangsan BI Japanese Lisi speak- PART good

The ungrammaticality of (13b), (14b) and (15b) suggests that components in the post-*bi* position must stay in original word order. Even though structural parallelism can be achieved by changing the word order of the components before *bi* in order to accommodate the word order change of the post-*bi* components, the sentences are still not completely natural, as shown in (13c), (14c) and (15c), unless a pause is added after the initial phrase of the sentence indicating overt mark of topicalization.

In this paper I will not only focus on exploring the syntactic structure of *bi*-comparatives in Mandarin Chinese, but I will also try to look into how the proposed analysis can avoid above overgeneration.

## 2.2 The prepositional adjunct hypothesis

The prepositional adjunct hypothesis assumes that the *bi*-phrase is an adjunct of the matrix adjective or verb, as in, for example, Liu, (1996). To derive a sentence like (16a), comparative deletion must be generally allowed in Mandarin. The structure of (16a) is presented in (16b).

- (16) a. Zhangsan zai chuang-shang (tiao) bi Lisi tiao-de gao.  
 Zhangsan at bed-up (jump) BI Lisi jump-PART tall  
 ‘Lit.:Zhangsan jumps higher on the bed than Lisi.’
- b. Zhangsan on the bed jump [PP bi [CP Lisi ~~on the bed~~ jump]] jump-  
 PART tall.

A major problem of this analysis that, as we can see above, multiple-condition comparison must consist of parallel conditions, i.e. pairs of conditions, but there is no such a rule for adjuncts in Mandarin Chinese that it can make sure the post-*bi* conditions therein must be both structurally and semantically parallel to the pre-*bi* conditions. As long as the adjunct prepositional phrase is grammatical itself, it should not influence the grammaticality of the base sentence. However, the fact that Mandarin Chinese does not have clausal comparatives such as *comparative subdeletion* (Bresnan, 1973), etc, directly contradicts this hypothesis. An example of comparative subdeletion is presented in (17a). (17b) is its ungrammatical Chinese counterpart. In (17b) there is only one condition before *bi*, i.e. *Zhe-gen shengzi* ‘this rope’ but in the post-*bi* position there are two conditions, i.e. *na-gen shengzi* ‘that rope’ and *(hen) chang* ‘(very) long’. We can see clearly that in (17b) non-parallelism of conditions connected by *bi* can result in an ungrammatical

sentence though the post-*bi* phrase is grammatical.

- (17) a. This rope is longer than that rope is long.  
b. \*Zhe-gen shengzi [bi na-gen shengzi (hen) chang] chang.  
this-CL rope BI that-CL rope (very) long long  
Intended interpretation: ‘This rope is longer than that rope is long.’

Moreover, this analysis assumes that Chinese has such clausal comparatives as comparative deletion as in (16b), where all the components headed by *bi*, e.g. *Lisi zai chuang-shang tiao* ‘Lisi jumps on the bed’ in (16b), are projected as a CP. However, this PP-internal CP hypothesis is not compatible with common phenomena of PP adjuncts and can rarely apply to canonical PP structures in Mandarin. For example,

- (18) a. \*Zhangsan ba [Lisi zuotian mai-le ditu] diu le.  
Zhangsan BA [Lisi yesterday buy-ASP map] lose-ASP  
b. \*Zhangsan anzhao [Lisi zuotian mai-le ditu] zhaodao-le yiyuan  
Zhangsan based.on [Lisi yesterday buy-ASP map] find-ASP hospital

In both sentences in (18a) and (18b), without the help of the nominalizer *de*, neither the *ba*-construction nor the canonical preposition *anzhao* ‘based on’ can accommodate a non-nominalized clausal CP. The question that why only *bi* can introduce a CP within a prepositional phrase is still unanswered.

In this paper I argue that *bi* is not a preposition but a coordinator. I will show that the proposed analysis can avoid such overgeneration.

### 3. The syntactic status of *bi*

In this section, I discuss the syntactic status of *bi* and show evidence supporting the analysis of *bi* as a coordinator. The direct evidence for such a conjunctive analysis comes from the comparison between *bi* and other canonical coordinators such as *he* ‘and’ and *gen* ‘together with’ (Zhang, 2008).

- (19) a. *Single-condition Comparison*:  
Zhangsan he/gen Lisi yiyang gao.  
Zhangsan and/together.with Lisi equal tall  
‘Zhangsan has the same height with Lisi.’  
b. *Double-condition Comparison*:  
Zhangsan zai chuang-shang he/gen Lisi zai zhuzi-shang tiao-de yiyang gao.  
Zhangsan at bed-up jump and/together.with Lisi at desk-up jump-PART equal tall  
‘Zhangsan jumped the same height on the bed with Lisi on the desk.’  
c. *Triple-condition Comparison*:  
Zhangsan zuotian zai chuang-shang he/gen Lisi jintian zai zhuzi-shang tiao-de yiyang gao.  
Zhangsan yesterday at bed-up and/together.with Lisi today at desk-up jump-PART equal tall  
‘Zhangsan jumped the same height on the bed today with Lisi jumping on the desk yesterday.’

As shown above, similar to *bi*, both *he* ‘and’ and *gen* ‘together with’ can also be used to construct comparison denoting similarity between compared items. Moreover, *he* ‘and’ and *gen* ‘together with’ exhibit such similarities to *bi* that multiple-condition comparison is also available with *he* and *gen*. Parallel conditions (as underlined above) can be seen in canonical conjunctive structures consisting of *he* and *gen* as shown in (19). The similarities between *bi* and the canonical coordinators *gen* and *he* suggest that in *bi*-comparatives the comparative marker *bi* should be analyzed systematically in a similar way, i.e. *bi* is a coordinator rather than a preposition. This is supported by the following evidence.

First, canonical prepositional phrases in Mandarin cannot adjoin directly to a circumstantial (temporal or location phrases) as illustrated in (20b) and (21b) but the *bi*-phrase seems to be able to occur directly in front of circumstantials as illustrated in (20c) and (21c).

- (20) a. Zhangsan zai jiaoshi-li xiang Lisi wen-le liang-ge wenti.  
Zhangsan at classroom-in to Lisi ask-ASP two-CL question  
‘Zhangsan asked Lisi two questions in the classroom.’  
b. \*Zhangsan xiang Lisi zai jiaoshi-li wen-le liang-ge wenti.  
Zhangsan to Lisi at classroom-in ask-ASP two-CL question  
c. Zhangsan bi Lisi zai jiaoshi-li duo wen-le liang-ge wenti.  
Zhangsan BI Lisi at classroom-in more ask-ASP two-CL question  
‘Zhangsan asked two more questions than Lisi in the classroom.’
- (21) a. Zhangsan xingqi-yi xiang Lisi wen-le liang-ge wenti.  
Zhangsan Monday to Lisi ask-ASP two-CL question  
‘Zhangsan asked Lisi some questions on Monday.’  
b. \*Zhangsan xiang Lisi xingqi-yi wen-le liang-ge wenti.  
Zhangsan to Lisi Monday ask-ASP two-CL question  
c. Zhangsan bi Lisi xingqi-yi duo wen-le liang-ge wenti.  
Zhangsan BI Lisi Monday more ask-ASP two-CL question  
‘Zhangsan asked two more questions than Lisi on Monday.’

The above contrasts suggest that the position of the *bi*-phrase is higher than that of canonical adjunct PPs. The *bi*-phrase is not a PP.

Second, a typical PP in Mandarin can occur only after auxiliary verbs as in (22a), but not before them as in (22b). But the *bi*-phrase can occur in front of auxiliary verbs as in (22c).

- (22) a. Zhangsan yinggai/keneng/bixu xiang Lisi wen liang-ge wenti.  
Zhangsan ought.to/may/must toward Lisi ask two-CL question  
‘Zhangsan ought to/may/must ask Lisi two questions.’  
b. \*Zhangsan xiang Lisi yinggai/keneng/bixu wen liang-ge wenti.  
Zhangsan toward Lisi ought.to/may/must ask two-CL question  
c. Zhangsan bi Lisi yinggai/keneng/bixu duo wen liang-ge wenti.  
Zhangsan BI Lisi ought.to/may/must many ask two-CL question  
‘Zhangsan should/may/must ask two more questions than Lisi.’

This suggests a higher position for the *bi*-phrase than the position of canonical PP adjuncts, and provides further evidence against analyzing *bi* as a preposition.

Third, similar to canonical conjunctions, the *X bi Y* cluster as a whole can be



topicalized. Topicalization of canonical conjunctions consisting of *he/gen* is presented in (23a), cf. (19a). Similarly, the *X bi Y* cluster in (23b) can also be topicalized as in (23c).

- (23) a. Zhangsan *he/gen* Lisi *wo juede* *yi*yang gao.  
 Zhangsan and/together.with Lisi I think equal tall  
 ‘Zhangsan and Lisi I think have the same height.’  
 b. *wo juede* Zhangsan *bi* Lisi *hai/yao* gao *yi-xie*.  
 I think Zhangsan BI Lisi still/will tall one-CL  
 ‘I think Zhangsan is a bit taller than Lisi.’  
 c. Zhangsan *bi* Lisi *wo juede* *hai/yao* gao *yi-xie*.  
 Zhangsan BI Lisi I think still/will tall one-CL  
 ‘Zhangsan I think is a bit taller than Lisi.’

Topicalization requires the topicalized item(s) be syntactically realized as a constituent. This supports the argument that the *X bi Y* cluster in *bi*-comparatives is a constituent.

Fourth, two *X bi Y* clusters can be conjoined with one another, as illustrated in (24b), similar to canonical conjunctions consisting of *he* or *gen*, as in (24a).

- (24) a. Zhangsan *he/gen* Lisi *yiji* Wangwu *he/gen* Chenliu *dou* *yi*yang gao.  
 Zhangsan and/together.with Lisi and Wangwu and/together.with Chenliu  
 all equal tall  
 ‘Zhangsan and Lisi, as well as Wangwu and Chenliu, all have the same height.’  
 b. Zhangsan *bi* Lisi *yiji* Wangwu *bi* Chenliu *dou-yao* gao *yi-xie*.  
 Zhangsan BI Lisi and Wangwu BI Chenliu all-will tall one-CL  
 ‘Zhangsan is a little taller than Lisi, and Wangwu is a little taller than Chenliu.’

This provides further evidence for the constituent nature of the *X-bi-Y* cluster, since coordination requires conjuncts to be syntactically realized as constituents.

## 4. The conjunctive analysis of *bi*-comparatives and its benefits

Similar to conjunctions where a variety of structures can be conjoined by coordinators, a variety of structures can occur at the post-*bi* position, e.g. the PP, the VP, the classifier phrase, sentences, etc. For example,

- (25) a. Zhangsan *dui* *diren* *bi* *dui* *pengyou* hao. [PP]  
 Zhangsan to enemy BI to friends good  
 ‘Zhangsan is nicer to enemies than he is to friends.’  
 b. Zhangsan *gongzuo* *bi* *xuexi* *renzhen*. [VP]  
 Zhangsan work BI study serious  
 ‘Zhangsan is more serious about work than study.’  
 c. *jidan* *shi-ge* *bi* *yi-ge* *zhu-de* *jiu*. [ClassifierP]  
 egg ten-CL BI one-CL boil-DE long  
 ‘ten eggs take longer to boil than one egg.’

- d. Zhangsan yong shou xie zi bi Lisi yong diannao da zi kuai. [Clause]  
 Zhangsan use hand write word BI Lisi use computer type word fast  
 ‘Zhangsan writes by hand faster than Lisi typing on a computer.’

The parallelism between the pre-*bi* and post-*bi* conditions are very similar to the symmetric coordination properties of coordinators *he* and *gen*. Mandarin Chinese relies on different coordinators to distinguish natural symmetric coordination (conjuncts are semantically related to one another) from asymmetrical coordination (conjuncts are not semantically related to one another) (see, e.g. Zhang, 2008). Coordinators *he* and *gen* cannot accommodate asymmetrical coordination as illustrated in (26b) while *erqie* is compatible with asymmetrical coordination as illustrated in (26c).

- (26) a. Zhangsan he/gen Lisi zai paobu.  
 Zhangsan and/together.with Lisi ASP run  
 ‘Zhangsan and Lisi are running.’  
 b. \*wu dian de shihou, Zhangsan zai paobu he/gen Lisi cong chuang-shang  
 diao-le xialai.  
 five o’clock GEN time, Zhangsan ASP run and/together.with Lisi from  
 bed-up drop-ASP down  
 Intended reading: ‘at five o’clock Zhangsan was running and/while Lisi  
 dropped on the ground from the bed’.  
 c. wu dian de shihou, Zhangsan zai paobu erqie Lisi cong chuang-shang  
 diao-le xialai.  
 five o’clock GEN time, Zhangsan ASP run and Lisi from bed-up drop-ASP  
 down  
 ‘at five o’clock Zhangsan was running and/while Lisi dropped on the  
 ground from the bed’.

The similarities between *bi* and *he/gen* suggest that *bi* is also a *he/gen* type coordinator in the sense that it cannot accommodate asymmetrical coordination. This is confirmed by the ungrammaticality of clausal comparatives as in (17b). Since *bi* cannot accommodate asymmetrical coordination, it requires that the conjuncts it connects be semantically related. Therefore, each condition involved in the comparison must have a parallel semantic counterpart. As a result, the syntactic structures and the overall syntactic statuses of the conjuncts connected by *bi* must be similar to one another, e.g. being both DPs or both VPs, etc, as we have seen above. Take comparative subdeletion (e.g. 17b, reduplicated in 27a) as an example: since the structures of two conjuncts are not parallel to each other (there being no counterpart of (*hen*) *chang* ‘(very) long’ in the pre-*bi* phrase), *bi* is conjoining a simple DP and a complex AP, resulting in asymmetrical coordination. Since *bi* is not compatible with asymmetrical coordination, comparative subdeletion such as (17b) is not acceptable in Mandarin.

- (27) a. \*Zhe-gen shengzi [bi na-gen shengzi (hen) chang] chang.  
 this-CL rope BI that-CL rope (very) long long  
 Intended interpretation: ‘This rope is longer than that rope is long.’  
 b. \*[[<sub>DP</sub> Zhe-gen shengzi] [bi [<sub>AP</sub> na-gen shengzi (hen) chang]]] chang.  
 This-CL rope that-CL rope (very) long long

This analysis gives a hint for why there is no such clausal comparative in

Mandarin Chinese. Note that neither the DegP-shell hypothesis nor the prepositional adjunct hypothesis can provide satisfactory explanation for this phenomenon. In general the fact that there is no comparative subdeletion in Mandarin Chinese is a natural result of *bi*'s sensitivity to asymmetrical coordination and its selectivity of the conjuncts it conjoins.

Moreover, coordination requires that either conjunct in the *bi*-comparative be able to construct a grammatical sentence with the rest part of the sentence otherwise the conjunction as a whole cannot be grammatical. This explains why the sentence in (11) is not grammatical: neither the conjunct can individually form a grammatical sentence with the matrix adjective as shown in (28b-c). (11) is reduplicated as in (28a).

- (28) a. \*Zhe-gen shengzi zuotian bi na-gen shengzi jintian chang.  
           this-CL rope yesterday BI that-CL rope today long  
           Intended reading: 'this rope used yesterday is longer than that one used today.'  
       b. \*zhe-gen shengzi zuotian chang.  
           this-CL rope yesterday long  
       c. \*na-gen shengzi jintian chang.  
           that-CL rope today long

The ungrammaticality of (12b) (reduplicated in (29b)) can be explained in a similar way: object preposing is only natural with contrastive contexts (i.e. not natural when used alone as in (29a)) so that neither conjunct in (12b/29b) can individually form a grammatical construction with the matrix VP *xihuan chi* 'like to eat'. Coordination also requires that each conjunct conjoined by *bi* be a constituent. Note that in (12c) (reduplicated in (29c)) neither conjunct is a grammatical constituent as shown in (29d).

- (29) a. ??Zhangsan ji xihuan chi.  
           Zhangsan chicken not like eat, fish like eat  
           'Chicken, Zhangsan does not like to eat, but fish, Zhangsan likes to eat.'  
       b. ??Zhangsan yu bi ji xihuan chi.  
           Zhangsan fish BI chicken like eat  
           Intended reading: 'Zhangsan likes to eat fish more than chicken.'  
       c. \*Zhangsan yu bi Lisi ji xihuan chi.  
           Zhangsan fish BI Lisi chicken like eat  
           Intended reading: 'Zhangsan likes to eat fish more than Lisi likes to eat chicken.'  
       d. \*Zhangsan yu/\*Lisi ji  
           Zhangsan fish/Lisi chicken

The constituent requirement of both conjuncts conjoined by *bi* can be confirmed by the observations in (13-15). Take (13a-b) (reduplicated in (30a-b) respectively) as examples:

- (30) a. Zhangsan xuexi bi Lisi gongzuo renzhen. (bi + NP + VP)  
           Zhangsan study BI Lisi work serious  
           'Zhangsan is more serious about study than Lisi is about work.'  
       b. \*Zhangsan xuexi bi gongzuo Lisi renzhen. (bi + VP + NP)  
           Zhangsan study BI work Lisi serious

c. \*gongzuo Lisi  
work Lisi

(VP + NP)

As shown above, changing the word order will result in an ungrammatical form as in (30c) for the second conjunct. It thus cannot serve as a grammatical constituent in the post-*bi* conjunct and the ungrammaticality in (30b) thus follows.

## 5. Concluding remarks

In this paper I investigate the syntax of multiple-condition comparatives in Mandarin Chinese. In order to get a systematic analysis, I look into both simple comparatives and complex comparatives. I show that previous analyses such as the multiple-DegP-shell hypothesis and the prepositional adjunct hypothesis are both problematic. Not only are they vague about why there is no clausal comparative in Mandarin but they also cannot avoid overgeneration. Based on the parallelism between the comparative marker *bi* and canonical coordinators such as *he* ‘and’ and *gen* ‘together with’, I propose a new analysis. I argue that in Mandarin the comparative marker *bi* is a coordinator conjoining two natural symmetric conjuncts. This analysis seems to be able to provide an explanation for Mandarin’s lack of clausal comparatives (e.g. comparative subdeletion, etc) since *bi*, similar to *he* and *gen*, cannot accommodate asymmetrical coordination. This analysis also seems to be able to avoid certain overgeneration that is inevitable in previous analysis and account for several properties of the *bi*-comparatives, e.g. the word order constraint in the second conjunct, etc.

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