



The Intervention Effect in Chinese Raising Construction: From Contiguity Theory Perspective

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Abstract. The raising construction in Chinese is different from the English, for which the displacement of the subject will be intervened by adverbial phrases and experiencer. This study will give a better explanation of the intervention effect of Chinese raising construction from the perspective of Contiguity Theory in the syntax-prosody field, and provide a crosslinguistic test for the hypothesis of Contiguity Theory. This study further induces the prosodic structure of raising structure with multiple raising verbs as well.

Keywords: Raising construction · Intervention effect · Contiguity Theory · Prosodic structure · Syntax-prosody

1 Introduction

In the field of generative grammar, traditional syntacticians assume that syntax is phonology-free, and phonology functions for the surface phonological representation after the narrow syntax. However, the emergence of prosodic phonology which suggests that there may be interaction between phonology and syntax greatly challenges the traditional view. Thus arousing the wave of studying the interface of syntax and phonology. As one of the prosodic phonological theories, the Contiguity Theory can explain the displacement phenomenon in natural languages, including English, French, Irish, Danish etc. Compared with English, the study of Chinese prosody is still at the beginning stage, so the Contiguity Theory has a very broad research prospect in Chinese.

This paper is trying to test whether Contiguity Theory can systematically explain raising construction in Chinese, including common raising construction, raising construction with an adverb phrase, raising construction with experiencer argument, and raising construction with multiple raising verbs. It will probably help to provide cross-linguistic evidence for Contiguity Theory and prosodic syntax.

2 Literature Review

At present, the research on Chinese raising construction is not in-depth. Li Yafei (1985) pointed out that raising verbs in Chinese include *keneng* (possible), *rongyi* (easy), *kaish*

(start), etc., and as the main verbs of sentences, raising verbs have selective restrictions on NP and V [1]. Huang Zhengde (1988) analyzed the semantic selection of some raising verbs in Chinese, such as *shi* (is), *you* (have), and *keyi* (can) [2]. Cao Fengfu (1996) assumed that it is the topic that is raised in raising construction. From the perspective of functionalism, he divides raising verbs into four categories: tense verbs, cognitive modal verbs, difficulty verbs, and frequency verbs [3]. Zhang Ruiming (2002) divided the raising verbs into three categories: cognitive modal verbs, aspect verbs, and difficulty verbs [4]. Liu Aiyang and Han Jingquan (2004) believe that the analysis mode of passive structure is essentially different from that of ascending structure, but both can be obtained through explicit shift operation, and the virtual component “it” of ascending structure comes from the clause complement of verb and acts as predicate before shift [5]. Yu haopeng (2012) analyzed the constraints of raising construction by using the optimality theory, and pointed out that the generation of Chinese raising construction depends on whether the input argument has topic characteristics, but he did not explain the motivation or process of raising construction [6, 7]. Wang Min (2008), He Yi (2008), Wu Yimin and Lv Luodan (2010), and He Wei (2012/2013) indicated that after the abandonment of the Government and Binding Theory, the Extended Projection Principle (EPP) can explain the generation process of Chinese raising construction, which satisfies the framework of the Minimalist Program [8–12]. However, as Liang Jing (2020) pointed out, although the EPP can explain some sentences of Chinese raising construction, it has not explained more complex changes in Chinese raising construction [13].

Although previous studies can initially explain the generation of Chinese raising construction within the framework of Minimalist Program, they cannot give a detailed explanation for the intervention effect on raising construction which may lead to changes in adverb phrase word order and argument word order, and the current interpretation has no good prediction ability.

3 Theoretical Framework

3.1 Chinese Raising Construction

In English, words like *seem*, *appear*, and *turn out* are usually called raising verbs. The syntax representation of raising verbs can be divided into two kinds: When the raising verb acts as a sentence predicate and causes the following embedded components in the sentence to be moved to the subject position of the matrix clause, a raising structure will be formed, as shown in example (1); When the complement clause is restrictive, the subject of the complement clause will not be promoted, and the expletive component “it”, is used as the subject of the matrix clause, as shown in example (2).

John seems to be talented. (1)

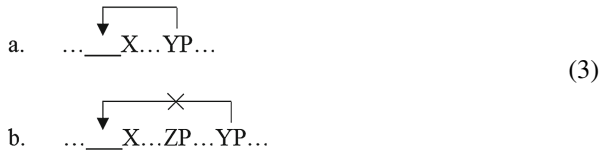
It seems that John is talented. (2)

In Chinese, according to Zhang Ruiming (2002), raising verbs can be divided into three kinds: cognitive modal verbs, including *kanqilai* (*seem*), *shi* (*be*), *yinggai* (*might*), *keneng* (*may*), *hui* (*will*), *haoxiang* (*appear to*), aspect verbs, including *you* (*have*),

meiyou (not have), kaishi (start to), tingzhi (stop) and difficulty verbs, including rongyi (be easy to), nan (be difficult to), zhide (worth) [4]. Similarly, sentences with raising verbs can represent raising structure or non-raising structure, the former being more complicated in its syntax. In addition to raising subjects in the embedded clause to the matrix clause, the object in the embedded clause can also be raised, or the subject and object can be raised simultaneously, or no components in the embedded clause are raised with no expletive components filling the subject of the matrix clause.

3.2 Intervention Effect in Raising Construction

The intervention effect refers to a phenomenon that a certain element, as an intervener, appears between the other two elements, leading to ungrammaticality of the sentence. Similarly, the intervention effect in A-movement constructions exists: the movement in (3a) with the A-movement properties can be intervened in (3b).



For instance, in the derivation of raising structure, the adverb phrase and experiencer argument can probably cause the intervention that components that should have been raised cannot move to the matrix clause, which is called defective intervention, as shown in (4). However, the structure of (5) is grammatical, which indicates that defective intervention in Chinese depends on the position of an intervener.

*yuehan kanqilai(*duiyu mali laishuo/ * zai huiyi shang)you caihua.*
*John seem(*for Mary/ * in meeting)have talent*
‘John seems(to Mary/in the meeting)to have talents.’ (4)

yuehan(duiyu mali laishuo/zai huiyi shang) kanqilai you caihua.
John(for Mari/in meeting)seem have talents
‘John seems(to Mary/in the meeting)to have talents.’ (5)

3.3 Prosodic Hierarchy Theory and Universals of Prosodic Structure

The core theory of prosodic phonology are Prosodic Hierarchy theory and universals of prosodic structure, proposed by Selkirk (1984/1986) and Nespor and Vogel (1986) who

illustrated that prosodic structure is a hierarchical structure including intonational phrase (ι), phonological phrase (φ) and prosodic word (ω) from high to low, each following the Strict Layer Hypothesis [14–16]. Although the phonemic combination pattern and prosodic pattern in Chinese are different from those in English, the prosodic hierarchy in Chinese can also be divided into three layers according to Li and Lin [17].

3.4 Contiguity Theory

Under the prosodic framework, the Contiguity Theory was proposed by Norvin Richards (2016). The core idea is that prosodic parameters and morphological parameters together lead to syntactic differences between different languages and phonology and syntax probably operate simultaneously in the process of the narrow syntax, resulting in overt movement operations [18]. To be specific, Contiguity Theory demands the expression of probe-goal relationship in the prosodic structure in which the goal must be contiguity prominent in a specific constituent formed by probe and goal. To illustrate the phenomenon of movement in different languages, Branan (2018) summarized Contiguity in Toto:

- a. *Contiguity: A Goal must be contiguity prominent within a φ that dominates a probe that Agrees with it.*
- b. *Contiguity prominent: G is contiguity prominent within φ_1 if no other φ lies between G and the prosodically active edge of φ_1 , and φ_1 dominates G.* (6)

At the same time, according to the prediction of Branan, syntactically left-headed and prosodically left-active language, Chinese included, will require the constituent of probe and goal has no prosodic phrase intervening within it if the goal is at the right side of the probe [19, 20].

4 Contiguity Analysis of Chinese Raising Construction

4.1 Common Raising Construction

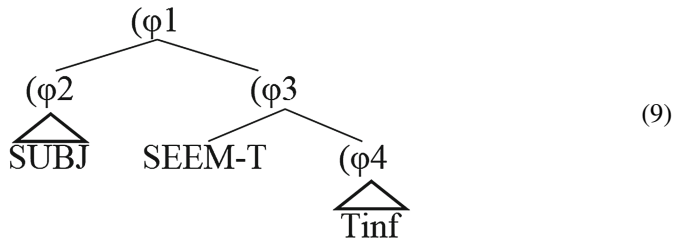
For non-raising construction (7), the subject yuehan is the goal of embedded T. In Chinese, expletives cannot appear in the subject position, but in the φ_1 , v and CP are in Agree relationship. According to the Contiguity Theory, φ_1 dominates v and CP, and there is no prosodically active boundary intervening between the v and CP. Similarly, φ_2 dominates the subject and embedded T, and there is no prosodically active boundary intervening between the subject and the left edge of φ_2 . Therefore, both contiguity prominence of goal are not broken.

(kanqilai(yuehan hen you cai) φ_1) φ_1

seem John very is talented
 ‘It seems that John is very talented.’ (7)

For common raising construction (8), the subject *yuehan* must satisfy two Agree relationship: it must be contiguity prominent within embedded T and matrix T. Before raising movement, the contiguity situation is the same as the non-raising construction. After the movement, as schematized, φ_1 dominates the subject and both T in the movement, and no prosodically active boundary appears between the subject and the left boundary of φ_2 , so that the contiguity of the subject and T is not violated. The tree diagram of its prosody is shown in (9):

(yuehan kanqilai)(yuehan hen you cai) φ_2 φ_1
John seem John very have talent
 ‘John seems John to be very talented.’ (8)

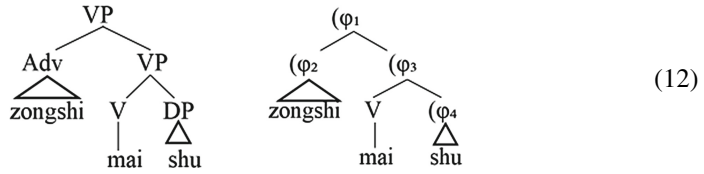
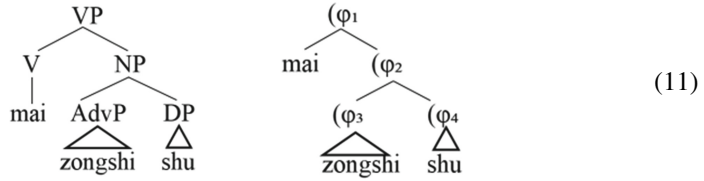


Therefore, common raising construction in Chinese satisfies the Contiguity Theory for there is no prosodically active boundary appearing between the subject and the left prosodic boundary that the subject lies in, which is compatible with the feature of the contiguity prominence of the goal.

4.2 Raising Construction with Adverb Phrase

For left-active languages, like Chinese, adverbs cannot appear between verbs and direct objects. According to Richards (2016), verbs and objects satisfy Agree relationship as well so that adverbs will prevent the contiguity in which the goal is no longer contiguity prominent over the probe. Prosodic boundary φ_2 was introduced by the adverb phrase and intervenes between the verb and the left boundary of φ_2 which dominates AdvP and DP, resulting in the invalid contiguity prominence of the object in φ_2 , as is shown in the tree diagram (11):

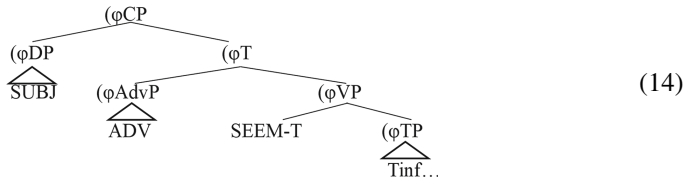
- a. **mai zongshi shu*
buy always book
 ‘buy always book’
- b. *zongshi mai shu*
always buy book
 ‘always buy book’ (10)



In (12), ϕ_2 introduced by adverb does not destroy the contiguity of verb and direct object and the object satisfies the contiguity prominence in ϕ_3 , so it is grammatical in Chinese.

Adverb phrase in raising construction follows the above prosodic structure as well. For (13) which is grammatical in Chinese, ϕCP is the only prosodic domain that dominates the subject and T and no prosodically active boundary appears between the left boundary of ϕCP and the subject, so the subject is contiguity prominent. Under ϕT , the order of adverb phrases and raising verbs is consistent with the order proved above and ϕTP is contiguity prominent in ϕVP , as schematized in (14):

((yuehan) ϕDP ((zai huiyi shang) $\phi AdvP$
 (kanqilai(yuehan hen you caihua)
 ϕTP) ϕVP) ϕT ϕCP .
John in meeting seem John very have
talent
‘John seems during the meeting to be very
talented.’



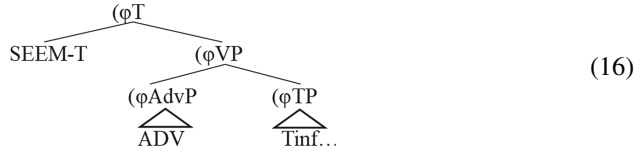
Equation (15) does not conform the order of adverb and verb in Chinese because $\phi AdvP$ will disable the contiguity prominence of ϕTP . The tree diagram of ϕT is shown in (16):

* ((yuehan) ϕDP (kanqilai((zai huiyi
 shang) $\phi AdvP$ (hen you caihua) ϕTP) ϕVP) ϕT)
 ϕCP .
John seem in meeting very have

talent

'John seems during the meeting to be very talented.'

(15)



Therefore, contiguity can explain Chinese raising construction with adverb phrases very well. If the adverb phrase appears before the raising verb, the contiguity of the raising verb and TP will be violated.

4.3 Raising Construction with Experiencer Argument

Although both Chinese and English are left-headed and left-active languages, the structures of raising construction with experiencer argument of these two languages are different. As seen in following examples, the experiencer appears on the right side of the raising verbs in English, while in Chinese, the experiencer cannot appear on the right side of the raising verb, but it is acceptable to appear on the left side.

John seems to Mary to be talented. (17)

a. *yuehan duiyu mali kanqili hen you cai.*

John to Mary seem very have talent

'John seems to Mary to be very talented.'

b. **yuehan kanqilai duiyu mali hen you cai.*

John seem to Mary very have talent

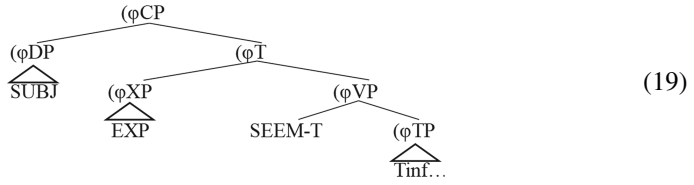
'John seems to Mary to be very talented.'

(18)

The different order of raising verbs and experiencer arguments may be attributed to two reasons. First, from the perspective of semantics, in English, raising verbs allow the external argument to be expletive “it” and experiencers. In Chinese, experiencer argument cannot be added directly at the end of the raising verb *kanqilai* without changing the raising verbs semantically. Second, from the perspective of functionalism, “to Mary” in English acts as the attributive component of “seem”, but in Chinese, there is no direct corresponding component. In (18a), *duiyu mali* act as object adverbial, which is also a distinctive grammatical feature that Chinese possesses. Consequently, if *duiyu mali* is treated as adverbial, the raising construction with experiencer argument is the same as raising construction with the adverb phrase, which accords with the statement predicted by Richards (2019) that the intervention pattern of experiencer for a raised subject and embedded T is the same as that of adverb [20].

Therefore, the prosodic structure of Chinese raising construction with experiencer argument is similar to that of Chinese raising construction with an adverb phrase, as

shown in (19). The insertion of XP does not bother the prosodically boundary of subject and TP so that subject satisfies contiguity prominence within φ CP and TP satisfies contiguity prominence within φ VP.

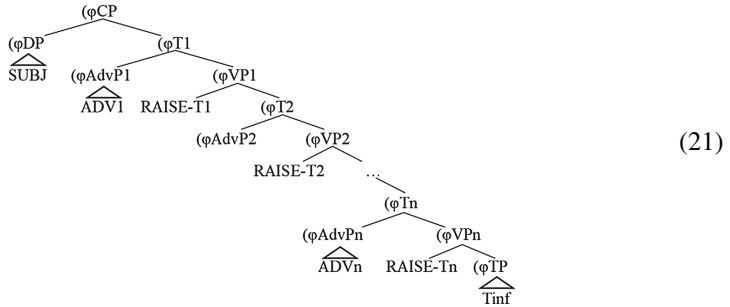


In brief, the disparity in the word order of raising verbs and experiencer argument are originated in the essential differences between English and Chinese languages in semantics and grammar, but this does not affect the similarity of English and Chinese prosodic structure which is expressed by the Contiguity Theory.

4.4 Raising Construction with Multiple Verb

Due to the special properties of some raising verbs in Chinese, such as *keneng* (may) and *yinggai* (should), which have different function in raising construction, the Chinese raising construction with multiple raising verbs will be more complex. Based on the prosodic structures obtained from the previous demonstration, this section hopes to summarize the prosodic structure of raising construction with multiple raising verbs in Chinese. On the premise of recursion of prosodic syntax, raising construction should not violate the contiguity prominence of the subject in φ CP and contiguity prominence of TP in φ VP, with the following prosodic structure:

$$\begin{aligned}
 & ((SUBJ)\varphi DP((ADV1)\varphi AdvP1(RAISE - \\
 & T1((ADV2)\varphi AdvP2(RAISE - T2 \dots ((ADVn) \\
 & \varphi AdvPn(RAISE - \\
 & Tn(Tinf)\varphi TP)\varphi VPn)\varphi Tn \dots)\varphi VP2)\varphi T2)\varphi VP1) \\
 & \varphi T1)\varphi CP.
 \end{aligned}
 \tag{20}$$



5 Conclusion

Chinese raising construction, including common raising construction, raising construction with adverb phrases, and raising construction with experiencer argument, can be predicted by the Contiguity Theory properly. That the subject in raising construction is contiguity prominent before and after raising ensures the grammaticality of raising movement, and the order of adverb phrases and experiencer argument are decided by the requirement of contiguity prominence of TP as well. The prosodic structure of Chinese raising construction with multiple raising verbs is induced in this study, which is expected to be verified by more practical data. It is worth discussing that the framework of the Contiguity Theory mainly referenced in Branen [19] has some defective predictions in some properties, such as *wh-in-situ*, of left-active and left-headed language. He assumed that left-active language disallows *wh-in-situ*, but many Chinese language studies can deny this statement. Therefore, the framework of the Contiguity Theory needs to be further improved and confirmed by cross-linguistic evidence.

References

1. Y.-H. A. Li, Abstract Case in Chinese [J], Diss. Los Angeles, USC, 1985.
2. C.-T. J. Huang, On 'be' and 'have' in Chinese [J], The bulletin of the institute of History and philosophy, Vol. LIX, Part I, Taipei, Taiwan, 1988.
3. F. F. Cao, Raising verbs in Chinese [J], Chinese language, 1996(03): 172-182.
4. R. M. Zhang, On Chinese raising verbs[D], Guangdong University of foreign studies, 2002.
5. A. Y. Liu, J. Q. Han, Syntactic study of raising construction [J], Journal of Shanghai Foreign Studies University, 2004(05): 11-18.
6. H. P. Yu, The generation of English and Chinese raising construction[J], Journal of Zhengzhou Institute of Aeronautical Industry Management (Social Science Edition), 2012, 31(03): 68-71.
7. H. P. Yu, A comparative study of Chinese and English raising verbs under the framework of Optimality Theory [J], Journal of Henan Normal University, 2012, 39(03): 243-245.
8. M. Wang, Research on raising construction under the Minimalist Program [J], Journal of Jilin Institute of education, 2008(09): 105-107.
9. Y. He, A comparative study of English and Chinese raising constructions [D], Central South University, 2008.
10. Y. M. Wu, L. D. Lv, A comparative study of English and Chinese raising constructions [J], Journal of Henan Normal University (Philosophy and Social Sciences), 2010, 37(06): 235-237.
11. W. He, A study of Chinese raising verbs in Generative Grammar [J], Journal of Mudanjiang University, (09), 65-66+68.
12. W. He, Research on Chinese lifting structure [D], Xiangtan University, 2013.
13. J. Liang, Chinese raising predicate and raising construction hypothesis [J], Overseas English, 2020(12): 67-68.
14. E. Selkirk, Phonology and Syntax: The Relation between Sound and Structure [M], Cambridge, MA: MIT Press, 1984.
15. E. Selkirk, On derived domains in sentence phonology [J], Phonology, 1986.
16. M. Nespor, I. Vogel, Prosodic Phonology [M], Dordrecht: Foris Publications, 1986.
17. A. J. Li, M. C. Lin, Speech corpus of Chinese discourse and the phonetic research [A], In A. Li, M. Lin, X. Chen et al. (Eds.), Proceedings of ICSLP 2000[C], Beijing: International Phonetic Association, 2000: 13-19.

18. R. Norvin, Contiguity Theory [M], Cambridge, Mass: MIT Press, 2016.
19. B. Kenyon, Relationship preservation, Doctoral dissertation [D], MIT, 2018.
20. R. Norvin, Detecting Contiguity-Prominence [J], 2019.

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