

Aspectual Variation in Chinese Existentials: A Corpus-based Analysis

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Abstract

This paper provides a new perspective on an old issue regarding the aspectual alternation of LE and ZHE in Chinese existential constructions, which has mainly been discussed with introspective data in the past. This corpus study examines the variation between [NPLoc V-LE NP] and [NPLoc V-ZHE NP] forms, as shown in (1) and (2):

- (1) 家裡來了兩位大學生。

Jia-li lai le liang wei daxuesheng.
house-in come LE two CL college student
'There were two college students who came to our house.'

- (2) 桌上放著一個大蛋糕。

Zhuo-shang fang zhe yi ge da dangao.
table-on place ZHE one CL big cake
'There is a big cake (placed) on the table.'

In the current study, 260 types of verbs were examined and 2193 valid tokens were coded according to topicality, definiteness, animacy of the post-verbal NPs, as well as transitivity and semantic type of the verbs involved. This quantitative study has successfully identified linguistic factors that can account for the systematic aspectual variation in Chinese existentials. Results of the VARBRUL analysis indicate that semantic type of the verb plays an essential role in determining the choice between LE and ZHE, while animacy and topicality of the post-verbal NPs are less influential. This paper presents a fresh insight on aspectual alternation in Chinese existential constructions.

Keywords: existential construction, aspect markers LE and ZHE, corpus linguistics, Chinese, VARBRUL

1. Introduction

Cross-linguistically, existential sentences are shown to be systematically related to *there*-sentences and locative inversion sentences in many aspects, including their word-order, verbs involved as well as their fundamental locative nature (Freeze 1992). For examples, (1) and (2) are often addressed as Chinese existentials while (3) and (4) are locative inversions in English (Chen 2003) and Chicheŵa (Bresnan and Kanerva 1989) respectively:

- (1) 家裡來了兩位大學生。 (Xinhua News Agency¹)

Jia-li lai le liang wei daxuesheng.
house-in come LE two CL college student
'There were two college students who came to our house.'

- (2) 桌上放著一個大蛋糕。 (United Daily News)

Zhuo-shang fang zhe yi ge da dangao.
table-on place ZHE one CL big cake
'There is a big cake (placed) on the table.'

- (3) Behind the wall stood a unicorn. (Chen 2003:111)

- (4) Pa-m-chenga p-a-im-a nkhandwe. (Bresnan and Kanerva 1989:15)
sand PERF-stand fox
'On the sand is standing the fox.'

Syntactically, or superficially, examples (1)-(4) share the same form, i.e. [NP_{Loc} V NP], in which a locative expression precedes the predicate following by an NP. This similarity has resulted in the frequent but still controversial grouping of Chinese existential sentences with locative constructions in many studies (Huang 1987; Pan 1996; Huang and Her 1998; Du 1999; Lin 2008a; Lin 2008b; Zhang 2008). Not surprisingly, extensive debate has arisen about the extent to which the semantic, functional and distributional properties of sentences in (1)-(4) are alike within a single language or cross-linguistically.

¹ Except for few examples taken from previous studies, all the examples presented in this paper are authentic data drawn from the corpora, and each example is indicated by the name of its source corpus. For instances, United Daily News represents *Lianhe Zhishi Ku* 聯合知識庫, while Central News Agency is *Zhongyang Tongxunshe* 中央通訊社, Xinhua News Agency is *XinHuaShe* 新華社 and United Morning Paper in Singapore is *Xinjiapo Lianhe Zaobao* 新加坡聯合早報, respectively.

Moreover, many studies point out the complex interaction between the aspect markers LE and ZHE in Chinese existentials (Hu 1995; Du 1999; Yang and Pan 2001; Zhang 2008; Chen and Jing-Schmidt 2014). According to these studies, aspect markers may influence the selection of verbs, the classification and formation of existential sentences, determine the possibility of a co-existing agent and even affect the definiteness of the post-verbal NP. As illustrated above, there have been so many discussions carried out and abundant theoretical achievements been presented, we definitely need to provide a good reason to tackle this seemingly over-discussed issue.

There is a growing awareness among linguists from different paradigms that traditional introspective data may lead to unreliability and bias in linguistic analyses (Labov 1996; Bresnan et al. 2007; Gibson and Fedorenko 2013). Since natural occurring data often reflects a highly complex interplay of linguistic factors, in a metaphorical sense, existential phenomenon is like an elephant, a complex organism which is formed with different features and shaped by various parts. Many previous studies have focused on specific parts of this "elephant" and they all provided certain inspirational descriptions of Chinese existentials. With the help of statistical techniques and more open access to corpora today, this paper aims to describe the "elephant" from a new and reflective perspective. Hopefully, it can serve as a valuable addition to the literature on this old issue.

2. Focus of This Study

Aspect markers LE and ZHE have been a long interest in linguistics. In the current study, aspectual variation between the following constructions is discussed:

- (5) 紙上寫著一個字。 (Zhang 2008:900)

Zhi-shang xie-zhe yi ge zi.
paper-on write-ZHE (durative) one CL character

‘On the paper is written a character. (There’s a character written on the paper.)’

- (6) 紙上寫了一個字。 (Zhang 2008:900)

Zhi-shang xie-le yi ge zi.
paper-on write-LE (perfective) one CL character

‘On the paper was written a character.’

According to Zhang (2008), example (5) with durative ZHE is used to emphasize that

through the action of *xie* 'write', the character is on the paper and such a result is maintained; whereas example (6) with perfective LE simply comments that this piece of paper is already written on, i.e. it is not blank anymore. However, without a complete context, Zhang's claim seems a little hasty and lack of empirical support. My basic hypothesis is that aspectual alternation between (5) and (6) is due to different contextual influences, and each of them should have certain theoretical support from previous studies. As pointed out by Myhill (1992), analyzing texts from a large number of languages helps discover statistical regularities between functional parameters affecting the choice of alternations. This corpus survey aims to provide empirical evidence that may either support or challenge the related claims about this issue. Linguistic variables involved in the aspectual alternation in existential phenomenon will be concisely discussed in the following section, including topicality, definiteness, animacy of the post-verbal NPs, as well as transitivity and semantic type of the verbs involved.

3. Theoretical Background

3.1 Topicality of the Post-verbal NP

Zhang (2008) investigates the LE/ZHE alternation in Chinese Locative Inversion Constructions like (5) and (6) and argues that only with ZHE does the structure express presentational focus; while LE is used to show how the action expressed by the verb affects the locative and its main function is to comment on the locative. Based on Zhang's viewpoints, post-verbal NPs introduced by ZHE seem to have more chance to be the subsequent topic in discourse due to the presentational function of this structure. However, in her discussion on text coherence, Giora (1985) argues that the most elementary device used for introducing future topics to the discourse is to present them in the foregrounded section of a given sentence. According to Binnick (1991:379), "perfective and imperfective are associated with foreground and background respectively, ..." When we integrate Giora and Binnick's arguments, it seems that post-verbal NPs introduced by the perfective aspect marker LE should be foregrounded and become a better candidate for the subsequent topic, and this happens to challenge Zhang's claim. Which argument can better reflect the usage pattern of these two forms? In order to answer this question, this quantitative study will examine the interaction between aspectual alternation and topicality of the post-verbal NPs with authentic data drawn from the corpora.

3.2 Definiteness of the Post-verbal NP

Definiteness Effect in existential sentences is an often-mentioned and cross-linguistic phenomenon, which generally stands for the ungrammaticality of definite NPs occurring in this construction (Safir 1982). According to Givón (2001), locative role is generally definite due to its being elements of the frame in natural discourse, hence this study will focus on definiteness of the post-verbal NPs.

Du (1999) argues that the perfective aspect marker LE is more related to indefinite NPs while the imperfective aspect marker ZHE to definite NPs. The following examples and their English translations are drawn from Du (1999):

- (7) 床上躺著 John/他。 (Du 1999:342)

Chuang shang tang zhe John / ta.
bed on lie ZHE John / 3sg.
'On the bed was lying John / him.'

- (8) *床上躺了 John/他。 (Du 1999:342)

*Chuang shang tang le John / ta.
bed on lie LE John / 3sg.
'On the bed was lying John/him.'

According to Du (1999), ZHE can occur with definite post-verbal NPs such as John and personal pronoun *ta* 'he', while LE cannot, in particular with examples containing intransitive verbs such as *tang* 'to lie down' and *zuo* 'to sit.' This corpus survey will examine the correlation between definiteness of post-verbal NPs and the LE/ZHE alternation in Chinese existentials, assuming LE tends to occur with indefinite post-verbal NPs while ZHE may occur with both definite and indefinite NPs more freely as argued by Du (1999).

3.3 Animacy of the Post-verbal NP

According to Leung and Williams (2006), features like animacy and semantic (thematic) role are closely related to grammatical processes, and are expected to be relevant to the distribution of function words. Since the aspect markers LE and ZHE are two of the most frequently addressed function words in studies on Chinese existentials, I assume animacy of the post-verbal NPs should have certain relationship with their distributional patterns.

As story lines are typically advanced by people who deliberately initiate events or perform actions at issue, NPs with agency and volitionality tend to occur with foregrounded clauses. Based on Binnick's (1991) fundamental distinction of perfective and imperfective aspects, I assume animate NPs are more likely to occur with LE in Chinese existentials since the perfective aspect is more related to foregrounding. Whether this assumption is valid or not will depend on the data-driven corpus survey.

3.4 Transitivity of the Verb

Cross-linguistically, most if not all, verbs involved in locative inversion are intransitive (Bresnan and Kanerva 1989; Levin and Rappaport Havov 1995; Dowty 2001; Chen 2003). However, as observed in Chinese existentials, in addition to intransitive verbs, a large number of transitive verbs are also used in [NP_{Loc} V NP] construction.

Meanwhile, as pointed out by Hopper and Thompson (1980:271), aspect is systematically correlated with the degree of transitivity of the verb. If the aspect is perfective, the interpretation -- other things being equal -- has properties allowing the clause to be classified as more transitive; if the aspect is imperfective, the clause can be shown on independent grounds to be less transitive. And this aspectual distinction seems to be sustained with Huang's (1987:228) observation that both transitive verbs and intransitive verbs can be suffixed with ZHE in existentials, while LE is acceptable in the case of transitive verbs.

Based on the brief discussion above, my preliminary assumption is that LE is more likely to occur with transitive verbs while ZHE tend to co-occur with intransitive verbs in Chinese existentials. We will see if this postulation can be statistically supported in the corpus survey².

3.5 Semantic Type of the Verb

There has been a long controversial issue on the classification of verbs that can occur in Chinese existentials, and as far as we know, no agreement has been reached so far (Fan 1963; Song 1981; Huang 1987; Nie 1989; Hu 1995; Chu 1997; Liu et al. 2001;

² The measure for verbs' transitivity in this survey is based on their compatibility with the *ba*-construction in Chinese. Since many scholars agree that high transitivity is indeed characteristic of *ba* (Thompson 1973; Sun 1995; Liu 1999), I assume this to be a rational testing in my coding process. If the verb at issue can occur with *ba*, it will be coded as transitive verb, otherwise it will be coded as intransitive verb in this quantitative analysis.

Yang and Pan 2001; Wang 2003, among many others). This study has no intention to exhaust the entire list of verbs in Chinese existentials, which is technically impossible and practically unhelpful for a meaningful discussion. Therefore, verbs involved in Chinese existentials will be categorized with a more semantic and cognition-based criterion in this study.

Yang and Pan (2001) classify existential sentences with verbs such as *lai* 'come,' *qu* 'go' and *si* 'die' as *proto-existentials* since these verbs basically denote existence or coming into/out of existence of some entity with respect to a location. Accordingly, verbs that carry the lexical meaning of existence are grouped as *Appearance/Disappearance Verb* in this study. Typical examples are *chu* 'appear,' *lai* 'come,' *pao* 'escape,' *zou* 'leave,' *diu* 'lose,' *diao* 'drop or lose,' *qu* 'go,' *si* 'die' and verbs compounding with them such as *fei-lai* 'fly and (appear)' and *pao-chu* 'run out'.

Meanwhile, many verbs used in Chinese existentials do not denote lexical meaning that is related to existence or non-existence. For instance:

- (9) 箱子裡面躺了一個可愛的小男嬰。 (Udndata)
 Xiangzi limian tang-le yi ge ke'ai de xiao nanying.
 box inside lie-LE one CL cute DE little baby boy
 'There a cute little baby boy lying in the box.'
- (10) 鍋裡正煮著小米粥。 (Udndata)
 Guo-li zheng zhu-zhe xiaomizhou.
 pot-in just cook-ZHE millet gruel
 'There is millet gruel cooking in the pot.'

As illustrated in (9), *tang* 'lie' is used to describe the manner of existence of the entity, i.e. *xiao nanying* 'little baby boy;' while *zhu* 'cook' in (10) is the action that results in the existence of the entity, i.e. *xiaomizhou* 'millet gruel.' According to Talmy (2000b), a motion event is often associated with certain external *co-event* components such as manner or cause. Therefore, verbs related to concepts like *posture*, *growing*, *emission*, and *movement* will be categorized in this study as *Manner Verb* since they are used to portray a certain manner of existence of the presented entity. Typical examples include *fei* 'fly,' *you* 'swim,' *zuo* 'sit,' *zhan* 'stand,' *zhang* 'grow,' *mao* 'sprout,'...etc. On the other hand, verbs related to *cooking*, *construction*, *creation*,

placement, and *wearing* are grouped as *Cause Verb* since they are used to express the main cause that is responsible for or results in the being of the entity at issue, and typical examples include *xie* 'write,' *hua* 'draw/paint,' *tie* 'paste,' *kao* 'grill; bake,' *bang* 'tie,' *gai* 'build'...etc.

Based on the discussion above, verbs examined in this study are classified into three semantic types, namely (a) *Appearance/Disappearance Verb*; (b) *Manner Verb* and (c) *Cause Verb*.

4. Methodology

4.1 Data Sources

Most of the data in this study were drawn from the Chinese Word Sketch, a combination of the Chinese GigaWord Corpus (Huang et al., 2005) with the tool of Word Sketch Engine (Kilgarriff et al., 2004). The corpus contains about 1.12 billion Chinese characters from Central News Agency (ZhōngYāng TōngXùnShè) in Taiwan, Xinhua News Agency (XīnHuáShè) in China and United Morning Paper (Xīnjiāpō Liánhé Zǎobào) in Singapore. In general, the texts in the sizeable corpora are authentic and natural; they cover three representative speech communities of Mandarin Chinese, and the data is open to the research community, which is an important feature of corpus linguistics (Stubbs, 2001). Besides, additional data are drawn from United Daily News (Udndata, Liánhé Zhīshì Kù), which digitally assembles all the news from United Daily News Group during the past sixty years in Taiwan. Since newspaper texts cover many topical domains with different genres, and are written by authors with diverse backgrounds, I assume that the usage patterns found in this type of data can be representative for modern Chinese usage in general, for written texts in particular.

4.2 Sampling

To ensure that the most frequently used verbs are generally included in this survey, monosyllabic action verbs in the Top 5,000 words from Word List with Accumulated Word Frequency in Sinica Corpus 3.0 (1998) are targeted for the data collection. The accumulated frequency of the 5,000 words has reached 95.3% of the 5 million words corpus and this coverage is supposed to be satisfactory for a proper generalization of my analysis. There are totally 263 monosyllabic action verbs investigated and 166 of them are used with either LE or ZHE. Since it is impossible to include all the valid tokens available

in the huge corpora, only the first 20-30 occurrences of tokens for each verb were included in my database and some obviously over-lapping ones were excluded. There are 2193 valid tokens collected for this study.

4.3 Statistic Tool

A VARBRUL program (a logistic regression analysis) is adopted for the statistical testing of the data. Since VARBRUL allows us to gradually narrow the analysis to those factor groups and factors that can be said with a certain degree of probability to correlate with variation (Tagliamonte 2006), it will be used in this study to: (a) compare the distributional patterns of [NP_{Loc} V-LE NP] and [NP_{Loc} V-ZHE NP] forms in the corpora, (b) identify linguistic factors that can account for their distributions, and (c) rank the factors according to their weight on constraining the aspectual variation.³

5. Results

5.1 General Distribution of the Two Forms

After the first run of VARBRUL, the raw numbers and percentages of the two forms are presented in Table 1.

Table 1: General Distribution of the Two Forms

Factor Groups	[NP _{Loc} V-LE NP] tokens (percentage)	[NP _{Loc} V-ZHE NP] tokens (percentage)	Total
Topicality of post verbal NP			
Post-verbal NP is the subsequent topic	323 (52.6%)	291 (47.4%)	614
Post-verbal NP is NOT the subsequent topic	676 (42.8%)	903 (57.2%)	1579
Definiteness of post-verbal NP			
Post-verbal NP is indefinite	925 (48.8%)	969 (51.2%)	1894
Post-verbal NP is definite	74 (24.7%)	225 (75.3%)	299
Animacy of post-verbal NP			
Post-verbal NP is animate	246 (50.6%)	240 (49.4%)	486
Post-verbal NP is inanimate	753 (44.1%)	954 (55.9%)	1707
Transitivity of the verb			
Transitive verb	808 (44.0%)	1029 (56.0%)	1837
Intransitive verb	191 (53.7%)	165 (46.3%)	356

³ A factor weight measures the influence that each factor has on the variant under discussion. If the VARBRUL weight is above 0.5, it indicates the application of the rule is favored, meaning 'it's likely to occur' in probabilistic terms. On the other hand, values of less than 0.5 signify a disfavored factor restricting rule application and value of 0.5 means that the factor has no significant effect on the choice between the two forms.

Semantic type of the verb			
Appearance/Disappearance Verb	110 (93.2%)	8 (6.8%)	118
Cause Verb	658 (44.2%)	832 (55.8%)	1490
Manner Verb	231 (39.5%)	354 (60.5%)	585
Total N	999 (45.6%)	1194 (54.4%)	2193

5.2 Significant Factors Identified

The coded 2193 tokens were then run by GoldVarb X program. Significant factor groups were then identified through a binomial step-up/step down analysis. Only one factor group was eliminated in this run, i.e. transitivity of the verb, which means this factor failed to have a significant effect on the application value of the two forms in the data. As illustrated in Table 2, the four remaining factor groups were identified as significant at the .05 level, indicating they all contribute to the choice of [NP_{Loc} V-LE NP] and [NP_{Loc} V-ZHE NP] forms in this survey.

Table 2: Significant Factors that Affect the Aspect Choice

Factor Groups	[NP _{Loc} V-LE NP]		[NP _{Loc} V-ZHE NP]	
	VARBRU L Weight	Tokens/ Percentage	VARBRU L Weight	Tokens/ Percentage
Semantic type of verb				
Appearance/Disappearance Verb	0.937	110 (93.2%)	0.063	8 (6.8%)
Cause Verb	0.487	658 (44.2%)	0.513	832 (55.8%)
Manner Verb	0.399	231 (39.5%)	0.601	354 (60.5%)
<i>Range</i>	0.538			
Definiteness of post-verbal NP				
Post-verbal NP is indefinite	0.535	925 (48.8%)	0.465	969 (51.2%)
Post-verbal NP is definite	0.290	74 (24.7%)	0.710	225 (75.3%)
<i>Range</i>	0.245			
Topicality of post-verbal NP				
Post-verbal NP is the subsequent topic	0.563	323 (52.6%)	0.437	291 (47.4%)
Post-verbal NP is NOT the subsequent topic	0.476	676 (42.8%)	0.524	903 (57.2%)
<i>Range</i>	0.087			
Animacy of post-verbal NP				
Post-verbal NP is animate	0.553	246 (50.6%)	0.447	240 (49.4%)
Post-verbal NP is inanimate	0.485	753 (44.1%)	0.515	954 (55.9%)
<i>Range</i>	0.068			
Total		999 (45.6%)		1194 (54.4%)

Input probability	0.463	0.537
Total Chi-square = 10.0512 < 11.070 (df = 5), p < .05		
Chi-square/cell = 0.4569		
Log likelihood = -1404.572		

As shown in Table 2, the input probability of 0.463 and 0.537 indicate that the chance for LE and ZHE to be realized in the corpus data are averaged at 46.3% and 53.7% respectively, [NP_{Loc} V-LE NP] form is slightly less preferred than [NP_{Loc} V-ZHE NP] form. As the total Chi-square has a value of 10.051, less than 11.070 (df = 5, p < 0.05), it means the four factor groups are independent from each other and the results are reliable. As summarized in Table 3, LE form and ZHE form tend to be chosen under different linguistic conditions in real use:

Table 3: Linguistic Conditions for the Choice Between LE Form and ZHE Form

Conditions favor [NP _{Loc} V-LE NP]	Conditions favor [NP _{Loc} V-ZHE NP]
Appearance/Disappearance Verb	Manner Verb
Post-verbal NP is indefinite	Post-verbal NP is definite
Post-verbal NP is the subsequent topic	Post-verbal NP is NOT the subsequent topic
Post-verbal NP is animate	Post-verbal NP is inanimate

In addition to illustrating the favorable environments for LE and ZHE forms, we can also find out the influence of the factors according to their VARBRUL factor weights on Table 2. As pointed out by Tagliamonte (2006), *range* is calculated by subtracting the lowest VARBRUL weight from the highest VARBRUL weight in a factor group. The higher the range value, the more effect the factor group has on the dependent variable. Therefore, four significant factor groups are ranked according to their degree of effect on the LE/ZHE alternation as follow:

- (11) Semantic type of verb (0.538) > Definiteness of post-verbal NP (0.245) >
 Topicality of post-verbal NP (0.087) > Animacy of post-verbal NP (0.068)

Overall, semantic type of verb has the highest impact on the choice of LE and ZHE among four selected factor groups, followed by definiteness and topicality of post-verbal NPs, while animacy of post-verbal NPs is the one with lowest impact. Results of this corpus survey show that factors identified in previous studies indeed influence the usage

pattern of aspect markers LE and ZHE in Chinese existentials, and some of the factors can better account for their distributional patterns in the corpus.

In the following section, I will first consider the reasons why a certain factor was eliminated and what the elimination may tell us. Then, I will examine factor groups that could significantly account for the LE/ZHE alternation in Chinese existentials with a cognitive-based explanation.

6. Discussion

6.1 Factor Eliminated

In this quantitative study, only one factor group, i.e. transitivity of the verb, failed to account for the LE/ZHE alternation in Chinese existentials. In other words, this factor group does not contribute substantially to the observed variation in my data. As a result, no claims can be made about LE and ZHE variation in relation to the transitivity of the verb. However, I am still curious about the fact that most of the collected data in this study are associated with transitive verbs, i.e. 1837 tokens are with transitive verbs and 356 tokens with intransitive verbs respectively, which is against the argument made by Quirk et al. (1985) that intransitive verbs are much more frequently used in existential constructions cross-linguistically. There are at least two explanations that may account for this puzzled outcome.

Firstly, numbers of the targeted transitive verbs and intransitive verbs were unequal right at the beginning. Among the Top 5,000 words from Word List with Accumulated Word Frequency in Sinica Corpus 3.0 (1998), there are 238 one-syllable transitive action verbs and only 25 intransitive ones under investigation. Therefore, it is reasonable to find more tokens with transitive verbs in this survey.

Secondly, as pointed out by Hopper and Thompson (1980:266), transitivity is a relationship which obtains through a clause. It is not restricted to one constituent or pair of constituents. If we integrate this viewpoint with some grammarians' argument that constructional valence is more determinant than verbal valence in Chinese (Zhang 1999; Shen 2000; Wang 2003), this outcome actually offers a piece of empirical evidence that constructions are more influential than the aspect markers on determining argument structures of the verbs at issue. It is very likely that once a typical transitive verb fills in the V slot of an existential construction, its transitivity will be "bleached" since the core

function of existentials is to portray the existence of specific entities, instead of what the Actor does to the entity or what influence the entity receives from the action. For example:

- (12) 如今，院子裡打了四眼水窖，利用集雨窖貯存的雨水，她不再為吃水發愁。
(Xinhua News Agency)

Rujin, yuanzi-li da-le si yan shuijiao, liyong jiyujiao
now yard-in dig-LE four CL water vault use rain vault
chucun de yushui, ta bu zai wei chi shui fachou.
save DE rain she no more for eat water worry
'Now, four rain vaults have been dug in the yard which are used to collect
rainwater, therefore she no longer needs to worry about water supply.'

As shown in (12), transitive verb *da* 'to hit; to dig' can associate with Chinese existential construction without difficulty. I would argue that it is constructional coercion in the sense of Goldberg (1995) that makes the transitive verbs behave as if they were intransitive in Chinese existentials. It is important to reconsider how we define transitivity of the verbs properly. However, since this issue goes beyond the scope of present study, I will leave it for further investigation for the moment.

In the following section, my discussion will focus on significant factors that can account for the LE/ZHE alternation in Chinese existentials.

6.2 Significant Factors for LE/ZHE Alternation

6.2.1 Animacy of Post-verbal NP

As shown in Table 1, NPs introduced into discourse by existential constructions tend to be inanimate. Within the 2193 tokens, 1707 (77.8%) of them are inanimate while only 486 (22.2%) hits are animate. As participants with volitionality and agency tend to co-occur with highly transitive clauses (Hopper and Thompson 1980), this result offers a piece of empirical evidence of the low-transitivity attribute of Chinese existential constructions. Since volitional participants tend to deliberately initiate events or perform actions, which is against the fundamental feature of existentials, it is reasonable to see limited tokens with animate NPs in our data. Therefore, examples with animate NPs like (14) are much less than examples with inanimate NPs like (13):

- (13) ……主要街道路口圍著黑色大布條，大教堂甚至也插上黑色旗，……

(Central News Agency)

Zhuyao jiedao lukou wei-zhe heise da butiao,
main street intersection wrap-ZHE black big strip of cloth
da jiaotang shenzhi ye cha shang heise qi.
big church even also stick on black flag

'Intersections of the main streets were covered with big strips of cloth, and even on the big church was stuck with black flags.'

- (14) ……大門前圍了不少警察，以防勞工團體有較激烈的動作，……

(Central News Agency)

Damen qian wei-le bushao jingcha, yi
main entrance front surround-LE many policemen so as to
fang laogong tuanti you jiao jilie de dongzuo,
prevent labor organization have more drastic DE action

'At the front entrance many policemen were gathered so as to prevent the labor organization from taking more drastic actions.'

In (14), post-verbal NP *jingcha* 'policemen' is a volitional NP which is fore-grounded after being introduced with LE on the scene, and then plays the role as the Actor of the subsequent event. As illustrated in Table 2, LE form is favored by animate NPs (factor weight 0.553) and disfavored by inanimate NPs (factor weight 0.485), and this tendency further highlights the distinction between LE and ZHE regarding their foregrounding and backgrounding attributes.

With the discussion above, we can realize that animate NPs and inanimate NPs may make different contributions to discourse once they are introduced on the scene. Though the range of this factor group is relatively small in our survey, i.e. 0.068 only, it is still identified as one statistically significant factor with certain influence on the alternation between LE and ZHE in Chinese existentials.

6.2.2 Topicality of Post-verbal NP

One of the most frequently mentioned functions of Locative Inversion Construction is to introduce a new participant onto the scene and then talk about it (Langacker 2001). A typical example in Chinese existentials may look like this:

- (15) 場邊的高地上搭了個草棚，草棚中掛著幾幅神像畫，畫下供著一個大豬頭。
(Xinhua News Agency)

Changbian de gaodi-shang da-le ge caopeng, caopeng-zhong
ground-side DE highland-on build-LE CL straw shed straw shed inside
gua-zhe ji fu shenhuaxiang, hua-xia gong-zhe
hang-ZHE several CL religious portrait portrait-under worship-ZHE
yi ge da zhutou.
one CL big pig head
'On the side of the highland is built a straw shed, inside the shed are several
religious portraits for worship, and under the portraits is a big pig head.'

As shown in (15), post-verbal NP *caopeng* 'straw shed' is newly introduced in the scene and then becomes the topic of the subsequent clause. This example perfectly demonstrates the most typical function of Locative Inversion Construction. However, as shown in Table 1, regardless of LE/ZHE alternation, post-verbal NPs introduced by existential constructions rarely become the subsequent topic in our data. Among the 2193 valid tokens, only 614 of them (28.0%) did perform this function, while up to 1579 tokens (72.0%) didn't. For instance:

- (16) 地震雖然已經過了二十二天，但是山村中仍搭著多頂帳篷，據居民表示，現在仍心有餘悸，寧可住屋外較安心。
(Central News Agency)

Dizhen suiran yijing guo-le er-shi-er tian danshi
earthquake though already pass-LE twenty-two days however
shancun zhong reng da-zhe duo ding zhangpeng,
mountain village in still set-ZHE many CL tent
ju jumin biaooshi xianzai reng xinyouyuji ningke
according to resident express now still scared rather
zhu wu wai jiao anxin.
live house outside comparatively feel at ease
'Though the earthquake took place 22 days ago, there remain many tents set in
the mountain village. According to the residents, they'd rather stay outside of
the house due to the lingering fear.'

Examples like (16) constitute 72.0% in our survey, which indicates that 'presenting an

entity as the subsequent topic' is NOT the typical function of Chinese existential constructions. Therefore, equating this construction with Locative Inversion Construction in other languages might mislead the related analysis since they function differently in discourse.

In addition, results of this survey also challenge Zhang's (2008) conclusion that post-verbal NPs introduced by ZHE have more chance to be the subsequent topic due to the presentational function of the structure. According to the factor weights shown in Table 2, LE turns out to be slightly more favored (value= 0.563) than ZHE when post-verbal NP is the subsequent topic. And this actually supports the argument made by Hopper and Thompson (1980:281), the fore-grounded parts are the actual sequential events in oral narratives. As shown in this study, NPs introduced by V-LE are foregrounded and have more chance to be active participants in the subsequent event.

6.2.3 Definiteness of Post-verbal NP

Result of this study supports the cross-linguistic tendency that post-verbal NPs tend to be indefinite in existentials. As shown in Table 1, within the 2193 tokens, indefinite NPs are found in 1894 tokens (86.4%) while definite NPs are only found in 299 tokens (13.6%). As pointed out by Sabar (2010), it is redundant to assert the existence of an entity which the hearer is actively aware of at the time of utterance; therefore, it is expected to see tokens of indefinite NPs outrank tokens with definite NPs in the data.

Furthermore, when I refer to the factor weights shown in Table 2, LE form is slightly favored (value= 0.535) with indefinite NPs and obviously disfavored (valued= 0.290) with definite NPs. This result supports Du's (1999) argument that the aspect marker LE tends to occur with indefinite post-verbal NPs. For instance:

- (17) 他們檢查了一個申報是男性及兒童茄克衫、外套及紡織品的郵包，結果發現裡面藏了三件受管制的防彈衣。 (United Morning Paper in Singapore)
- | | | | | | | | | |
|------------|------------|-------|-----------------|---------|---------|----------|------------------|--------|
| Tamen | jiancha-le | yi | ge | shenbao | shi | nanxing | ji | ertong |
| they | check-LE | one | CL | declare | COP | male | and | kids |
| jiakeshan, | waitao | ji | fangzhipin | de | youbao, | jieguo | faxian | |
| jacket | overcoat | and | textile fabrics | DE | package | turn out | find | |
| limian | cang-le | san | jian | shou | guanzhi | de | fangdanyi. | |
| inside | hide-LE | three | CL | be | control | DE | bulletproof vest | |

'The staff at the air-transport team...they checked a package claimed to be containing male and kids' jackets and textile fabrics, however, they found three controlled bulletproof vests.'

Example (17) shows a typical co-occurrence of LE and an indefinite NP. As mentioned above, LE is used to form the story lines and provide the fore-grounded information. Therefore, indefinite NPs containing relatively new information perfectly fit in contexts with LE, since indefiniteness is a way to signal a foregrounding entity (Du 1999). On the contrary, definite NPs have less chance to co-occur with LE; only 74 tokens of definite post-verbal NPs were found in LE form in the database. For instance:

- (18) 中山堂是五十年前中國戰區台灣省接受日本投降的會場，今天是台灣光復節，中山堂前不只插了中華民國國旗，也插了中國國民黨的黨旗，還有美國的國旗，... (Central News Agency)

Zhong-shan-tang shi wushi nian qian Zhong Guo zhanqu Taiwan
 Zhong-shan Hall COP fifty year before China war zone Taiwan
 sheng jieshou Riben touxiang de huichang, jintian shi Taiwan
 Province accept Japan surrender DE site today COP Taiwan
 Guangfujie, Zhong-shan-tang qian bu zhi cha-le
 Retrocession Day Zhong-shan Hall front not only stick-LE
 Zhong Hua Min Guo guoqi, ye cha-le Zhong Guo Guomindang
 Republic of China national flag also stick-LE KMT Party
 de dangqi, haiyou Meiguo de guoqi, ...
 GEN party flag, plus USA GEN national flag
 'Zhongshan Hall was the place where Taiwan Province of China war zone
 accepted the surrender of Japan fifty years ago. Today is Taiwan Retrocession
 Day. Not only were the national flags of ROC stuck in front of the Hall, but
 there were also KMT's party flags and USA national flags.'

According to Chang (2004), the tendency of the post-verbal NPs to be indefinite in existentials is a reflex of the tendency to be informationally new. As long as some context information is given, a definite NP can convey novel information and thus appear in an existential sentence (Chang 2004:10). In (18), adverbials such as *bu-zhi* 'not only,' *ye* 'also'

and *hai* 'still' all convey semantic properties like 'extra-expectedness' or 'being different from presupposition.' Therefore, I suppose these elements may contribute to the novel reading of the definite NPs so as to license the co-occurrence of LE and a definite NP.

In addition, Du (1999) also points out that an old entity is more acceptable with ZHE due to its back-grounding effect. According to the factor weights on Table 2, ZHE form is much favored (value= 0.710) with definite NPs. Therefore, Du's argument is statistically supported in this study. Example (19) illustrates a typical instance:

- (19) 任職於某通訊公司的黃崑峰(二十四歲)表示，今天中午十二時三十分許，
駕著車號 SC-5070 自小客車從台一線轉入水上鄉，車後座坐著未婚妻黃
幸娟，當時發現有輛自小客車似乎在找路，... (Central News Agency)

Renzhi yu mou tongxun gongsi de Huang Kunfeng
serve at a communication company DE Huang Kunfeng
(ershisi sui) biao shi, jintian zhongwu shier shi
(twenty-four year-old) said today noon twelve o'clock
sanshi fen xu, jia-zhe chehao SC-5070 zixiaokeche
thirty minutes around drive-ZHE number SC-5070 private car
cong Tai yi xian zhuan ru Shuishang xiang,
from Tai no.1 route turn into Shuishang Township
che houzuozuo-zhe weihunqi Huang Xingjuan, dangshi
car back seat sit-ZHE fiancée Huang Xingjuan, thereupon
faxian you liang zixiaokeche sihu zai zhao lu,...
find exist one-CL private car seem DUR look for way
'Huang Kunfeng (24 years old) who serves at one communication company
said that, around twelve thirty noon today, he was driving his car number
SC-5070 turning into Shuishang Township from Route Tai-1. his fiancée
Huang Xingjuan was sitting at the back seat. He noticed that there was a private
car that seemed looking for the way...'

In (19), the underlined existential construction with ZHE is used to provide "supportive and subsidiary background information" in the discourse, since the main participant in this event is the driver *Huang Kunfeng*, instead of his fiancée *Huang Xingjuan*, who was just sitting at the back seat as a passenger, therefore, this minor

participant is introduced on the scene with an existential construction with ZHE so as to indicate she is not the main focus of the whole event.

Based on the discussion above, we can realize that LE and ZHE show different degrees of association with definite and indefinite NPs mainly due to their fundamental distinctive functions of fore-grounding and back-grounding.

6.2.4 Semantic Type of Verb

According to the range shown on Table 2, semantic type of verb has the highest impact (range = 0.538) on the LE/ZHE alternation among all the factor groups examined. I will discuss distributional patterns of these two forms in each semantic type of verb and provide some possible cognitive motivations behind the phenomenon in this section.

6.2.4.1 Cause Verb

In this survey, Cause verb has the highest token frequency among the three types of verb. As shown in Table 1, up to 1490 tokens out of 2193 tokens were coded as Cause verb, accounting for 67.9% of the database. Since this type of verbs denotes the cause leading to the being of the entity at a given location, this result reveals an interesting feature of this construction, i.e. the omission of the causer. A question pops out when I refer to the abundant data coded as Cause verb: Why is the causer of the existential event omissible?

As argued by Goldberg (2001:510), "cross-linguistically, focal elements must be expressed. This follows from the fact that they are not predictable: they must be expressed in order to be identified." In the same vein, I suppose that causers are omissible in Chinese existentials because they are either non-focal or predictable, and sometimes even unidentifiable. The corresponding examples for these three possibilities are presented in the following discussion.

6.2.4.1.1 Non-focal Causer

- (20) 台北市議會今天下午召開大會，每位議員桌上都擺了一份中央研究院寄給議會的公函，公函中表示，希望不要在南港山豬窟興建垃圾場。

(Central News Agency)

Taibei shi yihui jintian xiaowu zhaokai dahui, mei-wei
 Taipei City council today afternoon hold meeting every-CL

yi yuan zhuo-shang dou bai-le yi-fen Zhong-yang-yanjiuyuan ji
member table-top all put-LE one-CL Academia Sinica send
gei yihui de gonghan, gonghan zhong biao shi, xiwang
to council DE official letter official letter in indicate wish
buyao zai NanGang ShanZhuKu xingjian lesechang.

not to ZAI NanGang ShanZhuKu build dump

'Taipei City Council held a meeting this afternoon. On the table of each member was provided with an official letter sent by Academia Sinica, indicating the opinion against building the dump at ShanZhuKu in NanGang.'

As shown in (20), the main topic of this text is the meeting held at Taipei City Council about the issue of building a dump in NanGang. Existential construction with Cause verb *bai* 'to put; to place' is used here to introduce an official letter sent by Academia Sinica on the scene and then talk about it in the subsequent discourse, therefore, who actually carried out the action of 'putting the letter on the table' is neither important nor relevant to the main issue. Consequently, its omission is reasonable and fits in economic principles, i.e., the well-known 'least effort with maximal effect' in language communication proposed by Zipf (1949).

6.2.4.1.2 Predictable Causer

- (21) 額頭上打了肉毒桿菌後，有些人會有眉毛下垂的情形。

(Central News Agency)

Etou-shang da-le rouduganjun hou, youxie ren hui you
forehead-on inject-LE Botox after some people may have
meimao xiachui de qingxing.
eyebrows droop DE situation

'Some people may have droopy eyebrows after injected with Botox on the forehead.'

As shown in (21), the causer (doer) of the Botox injection is not expressed in this text, however, it is predictable and inferable from the context. Since it is a common sense that Botox injections are medical treatments, they are supposed to be given by medical professionals in normal situations. Therefore, it is redundant to express who actually

performed the injections in this context since the causer is not what the speaker concerns about at the moment. The side effect, *meimao xiachui* 'droopy eyebrows,' is the informative focus in this sentence. Therefore, I assume that communicative economic principles, once again motivate the omission of the causer in this type of existential constructions.

6.2.4.1.3 Unidentifiable Causer

- (22) 今年4月，警方在一個池塘裡發現了一具男孩的屍體，身上綁著木塊。
(Xinhua News Agency)

Jinnian siyue, jingfan zai yi ge chitang-li faxian-le yi ju
this year April police at one CL pond-in find-LE one CL
nanhai de shiti, shen-shang bang-zhe mukuai.
boy DE dead body body-on tie-ZHE woodblock
'This April, police found a dead boy in a pond, whose body was tied with
woodblocks.'

Example (22) illustrates a typical situation in police/forensic investigations at a crime scene. Since a crime scene is a location where a crime was committed, or a site where activities related to the crime took place, it may contain important physical evidence which needs to be collected to investigate the crime so as to find out WHO should be responsible for it. Since the causer of the crime is often unidentifiable at the time of the investigation, entities left at the scene are the key elements to solve the case. That's why existential constructions are frequently used for describing the existence of the physical evidence in similar scenarios.

Huang (2013) examines a large number of verbalizations in the Chinese pear narratives and finds that for each scene examined there is usually one or at most two favored and stabilized verbalizations, with variability around the stabilized forms. As reflected in the current survey, I notice that in scenes such as stage designing or crime scene investigations, existential constructions with Cause verbs is one of the most favored and stabilized verbalizations due to pragmatic concern. And I consider this as the third motive for causer omission in existential constructions.

In addition, it is interesting to find that LE and ZHE occur with Cause verbs with extremely close likelihood in this survey. As illustrated in Table 2, LE form is a little

disfavored (value= 0.487) and ZHE form is slightly favored (value= 0.513). Since a value of 0.50 in VARBRUL analysis means that the factor has no significant effect on the variation, it may explain why distinction between LE and ZHE in this type of existential can be very difficult for studies merely based on introspective judgments and theory-biased data.

6.2.4.2 Appearance and Disappearance Verb

According to Table 2, Appearance/Disappearance verbs show a very different distributional pattern compared with Cause verbs. LE form is strongly favored (factor weight= 0.937) and ZHE form is strongly disfavored (factor weight= 0.063) with this type of verbs, and this result is highly concordant with the viewpoint proposed by Hu (1995) and Yang and Pan (2001), since they argue that only LE is compatible with this type of verb. As pointed by Hu (1995), LE is used when the change is emphasized. Since Appearance verbs denote a change from non-existence to the existence of entity at issue, while Disappearance verbs denote the opposite direction of change, in situations like (23) and (24), LE form is strongly favored:

- (23) 林口電廠二號機組的鍋爐部分上午出了問題，使台電今天供電能力減少約二十萬千瓦。 (Central News Agency)

Linkou dianchang er hao jizu de guolu bufen shangwu
Linkou power producer two number set GEN boiler part morning
chu-le wenti, shi TaiDian jintian gong dian
appear-LE problem cause Taipower today provide electricity
nengli jianshao yue ershi wan qianwa.
ability decrease about twenty thousands kilowatt
'Boiler part of the second set at Lincou power producer had a problem this morning, leading to a decrease of electricity providing of Taipower Company up to twenty thousands kilowatt.'

- (24) 眼鏡上掉了一個螺絲，只好到眼鏡店走一趟。 (Xinhua News Agency)

Yanjing-shang iao-le yi ge luosi, zhihao dao
glasses-on miss-LE one CL shank have to go
yanjingdian zou yi tang.
eyeglasses store visit one time

'Since one of the shanks on the glasses was missing, I had no choice but went to an eyeglasses store.'

As shown in (23) and (24), both Appearance verb *chu* 'come out' and Disappearance verb *diao* 'miss' can occur with LE due to its change of state characteristic. However, as mentioned earlier, the alternation between LE and ZHE is graded instead of absolute grammatical or ungrammatical. Examples of Appearance verbs associating with ZHE are still available in the corpora. For instance:

- (25) 當天，台灣北邊有愛倫颱風，南部則有熱帶性低氣壓威脅，北部還出著太陽，南部卻大雨連下好幾天，... (Central News Agency)
- Dangtian, Taiwan beibian you Ailun taifeng, nanbu ze
on that day Taiwan the north have Ellen Typhoon the south while
you redaixing diqiya weixie, beibu hai chu-zhe
have tropical depression threat the north still appear-ZHE
taiyang, nanbu que dayu lian xia haoji tian.
the sun the north however heavy rain continuously fall quite a few day
'On that day, to the north of Taiwan came Typhoon Ellen, while southern
Taiwan was threatened by tropical depression; when the sun came out in the
north, the southern part was suffered from the heavy rain for a few days...'

Though the tokens like (25) are very rare in the current survey (8 hits in total), however, this result still provides a good example of why a generalization based on distributional tendency can explain more than a rule-based one. After all, there is always exception in language use.

6.2.4.3 Manner Verb

Finally, as shown in Table 2, Manner verbs prefer ZHE form and disfavor LE form. The factor weight for LE form to be realized in this type is only 0.399, and 0.601 for realization of ZHE form. Since Manner verbs are used to portray a certain manner of existence of the presented entity, the main function of the existential construction with Manner verb is to give a picture of the on-going state of the BE_{Loc} event, not the change from the previous state to the new one. That's why the imperfective aspect marker ZHE is preferred with Manner verbs in real usage. For instance:

- (26) 那是一個到處植滿美麗花卉植物的小鎮，還有一條安靜的小河穿過，河畔長著綠色長草，河裡游著天鵝及水鴨。 (United Daily News)

Na shi yi ge dao chu zhi-man meili huahui zhiwu
that COP one CL everywhere plant-full beautiful flower plants
de xiao zhen, hai you yi tiao anjing de xiao he
DE little town also have one CL quiet DE little river
chuanguo, hepan zhang-zhe lüse chang cao, he-li
go though river bank grow-ZHE green long grass river-in
you-zhe tian'e ji shuiya.
swim-ZHE swan and teal

'That was a little town with beautiful flowers and plants growing everywhere.
There was also a quiet small river that went through it. On the river bank grew
green long grass, while in the river swans and teals were swimming.'

As illustrated in (26), both static Manner verb like *zhang* 'grow' and dynamic Manner verb like *you* 'swim' can occur with ZHE in existential constructions, denoting a vivid description of the scene with entities (*changcao* 'long grass,' *tian'e* 'swans' and *shuiya* 'teals') existing there in specific styles (growing and swimming). The main topic of the whole paragraph is the little town, i.e. *xiaozhen*, hence the two underlined existential constructions with ZHE are used for providing detailed descriptions of the river in this little town, instead of highlighting entities introduced by them. Once again, Binnick's (1991) argument that imperfective aspect is used to supply supportive or subsidiary background information, such as description, characterization, and commentary, is supported in this survey. Among the 585 tokens of Manner verb data, ZHE is found in 354 (60.5%) tokens while LE is used in 231 (39.5%) tokens. One of the LE form examples is presented in (27):

- (27) 他頸子的右後側還長了個腫瘤，大約有橘子大小，原因不明。
(Central News Agency)

Ta jingzi de you houce hai zhang-le ge
his neck GEN right back side also grow-LE (one) CL
zhongliu, dayue you juzi daxiao, yuanyin buming.
tumor about have tangerine size cause unclear

'A tumor was growing at the right back side of his neck, about the size of a tangerine. The causes of it were unclear.'

As shown in (27), existential constructions with LE are used for foregrounding the entity at focus. The Post-verbal NP, i.e. *zhongliu* 'tumor,' is introduced in the discourse and then becomes the subsequent topic in the text. And this is the typical condition where LE form is used with Manner verbs in the corpus. The main difference between (26) and (27) is exactly the contrast between features of backgrounding and foregrounding hold by the aspect markers ZHE and LE respectively.

6. Conclusion

This paper provides a good example of how to tackle an old issue with a new method. With the help of the statistical tool VARBRUL, the complex interaction between aspectual alternation and discourse conditions in Chinese existentials are examined. Based on the distributions of [NP_{Loc} V-LE NP] and [NP_{Loc} V-ZHE NP] forms, this corpus survey provides a piece of quantitative evidence that LE and ZHE are chosen under different linguistic conditions.

The results of statistical analysis indicate that semantic type of verb has the strongest effect on the choice of LE and ZHE among all the linguistic factors examined in this survey, followed by definiteness, topicality and animacy of the post-verbal NPs. Among the linguistic factors examined in this investigation, only transitivity of the verb has no significant impact on the choice between LE and ZHE in existential constructions.

According to cognitive linguists, many aspects of language are motivated instead of being arbitrary. They are explainable in terms of how they relate to our daily experience of the world. As illustrated in this study, in real language data, the number of cases per context is highly variable and messy. With the theoretical foundation provided by previous studies, this corpus study serves as the "glue" to put various pieces together, and these two types of research methods indeed complement each other. From the VARBRUL analysis of the distributions of the linguistic factors related to the aspectual alternation between LE and ZHE, we now have a more profound understanding of how Chinese speakers present viewpoint in a linguistic domain in real use. This is a little step that may lead us to see the "elephant" from a new perspective.

Due to the length of the paper, some interesting issues demand further investigations, such as whether there is similar distributional pattern in spoken Chinese if proper data can be collected and analyzed with the same method. Furthermore, since the data is collected from three different geographical sources, I also wonder whether there is dialectal or regional variation among Taiwan, China and Singapore in terms of the LE/ZHE alternation.

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基於語料庫之時貌變異分析：以漢語存現句為例

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摘要

本研究從量化的角度檢視影響時貌標記「著」與「了」的多重變項，以現代漢語存現句為例，藉由分析句式 [NP_{Loc} V-ZHE NP] 如「桌上放著一個大蛋糕」與 [NP_{Loc} V-LE NP] 如「家裡來了兩位大學生」所出現的上下文環境，探討各種語言變項對於兩種時貌標記出現的影響。

本論文透過中文詞彙特性速描系統 (the Chinese Word Sketch) 以及聯合知識庫 (Udn.data) 檢視 260 個高頻動詞，共蒐集了 2193 筆之真實語料，以應用軟體 VARBRUL 進行迴歸分析，並使用遞增 (step-up) 和遞減 (step-down) 方式，找出最適合的自變項組合來解釋帶有「著」與「了」的存現句式之出現語境。研究結果顯示，以下四個語言變項對於這兩個時貌標記在存現句式中的出現有顯著影響，按照其解釋量由高至低依序為：動詞的語義類別、動詞後名詞片語的定指性 (definiteness)、主題性 (topicality) 以及生命性 (animacy)。

關鍵詞：存現句式 時貌標記了/著 語料庫語言學 漢語 迴歸分析