

Transitivity in Light Verb Variations in Mandarin Chinese -- A Comparable Corpus-based Statistical Approach

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Abstract

This paper adopts a comparable corpus-based approach to light verb variations in two varieties of Mandarin Chinese and proposes a transitivity (Hopper and Thompson 1980) based theoretical account. Light verbs are highly grammaticalized and lack strong collocation restrictions; hence it has been a challenge to empirical accounts. It is even more challenging to consider their variations between different varieties (e.g. Taiwan and Mainland Mandarin). This current study follows the research paradigm set up in Lin et al. (2014) for differentiating different light verbs and Huang et al. (2014) for automatic discovery of light verb variations. In our study, a corpus-based statistical approach is adopted to show that both internal variety differences between light verbs and external differences between different variants can be detected effectively. The distributional differences between Mainland and Taiwan can also shed light on the re-classification of syntactic types of the taken complement. We further argue that the variations in selection of arguments of light verb in two Mandarin variants can in fact be accounted for in terms of their different degree of transitivity. Higher degree of transitivity in Taiwan Mandarin in fact show that light verbs are less grammaticalized and hence consistent with the generalization that varieties away from the main speaking community should be more conservative.

1 Introduction

In modern Chinese, there exists a kind of semantically bleached verbs which are called light verbs. They are similar to English light verbs (e.g., take rest, give advice) in the sense that the light verb does not contain any eventive information and the predicative content mainly comes from its taken complement (e.g., Jespersen, 1955; Zhu, 1985) while the light verb itself may only contributes aspectual information. LVC in English

has been comprehensively studied in both theoretical (e.g., Butt and Geuder 2001, Cattell, 1984) and computational approaches (e.g., Tu and Dan, 2001), while in Chinese, the identification and differentiation of LVC especially the LVC variations between different language varieties may be more complicated. Due to the semantic versatility, Chinese light verbs usually do not have strong collocation restrictions, e.g., 進行/加以/搞/做研究 *jinxing/jiayi yanjiu* ‘do research’. However, collocation constraints are sometimes found with these light verbs, e.g., 進行/*加以 会议 *jinxing/*jiayi huiyi* ‘have a conference’; ?進行/加以 考慮 ?*jinxing/jiayikaolv* ‘give consideration’. The challenge is even greater when we compare different variants of the Mandarin, i.e., Taiwan and Mainland Mandarin. Huang and Lin (2013) have found that even with the very limited collocation constraints, light verb variations still exist: Taiwan light verbs tend to take more types of NPs and even VPs as its complements, for instance, LVC like 進行處理臨時提案 *jinxing/chuli/linshi/ti'an* ‘to process the supplementary proposal’ can only be found in Taiwan corpus. We should also note that light verbs in Chinese can take both verbs, deverbal nouns, and eventive nouns, while the morphological status of these categories are typically unmarked (Lin et al., 2014), that may make the identification more complicated. For example, we have found several inconsistencies in the POS tagging for the taken complements. In “國家語委現代漢語通用平衡語料庫” (CNcorpus), when either “戰鬥” *zhandou* “battle” or “鬥爭” *douzhen* “fight” is used individually, it is annotated as a Verb. But if they appear after the light verb, the annotation results are sometimes confusing, as shown below:

1. a. 每日/nt 都/d 在/p 進行/v 劇烈/a 的
/u/連綿/a 的/u 戰鬥/v
meiri douzai jinxing juliede lianmiande zhandou

“Every day they are having fierce and continuous battles.”

b. 進行/v 了/u 堅決/a 的/u 鬥爭/n
jinxing le jianjue de douzheng
“had a resolute fight”

In 1a&b, both “戰鬥” *zhandou* “battle” and “鬥爭” *douzheng* “fight” are modified by the attribute in De construction, but with different tagging. The inconsistent annotation results may bring a variety of inconveniences for grammatical analyses.

Another difficulty for identifying and differentiating Chinese LVC is that in Chinese the difference between light verbs as well as variations are very subtle and complex to be observed, and also this kind of differences are more tend to be frequency or preference difference instead of grammaticality dichotomies which is unlikely to be studied by using the traditional approach. Therefore, in our study, to identify the subtle tendency difference between different light verbs as well as light verb variations, a statistical corpus-based approach based on annotated comparable corpus is adopted, following the research paradigm set up in Lin et al. (2014) and Huang et al. (2014). Our current study further show that the variation differences can further imply the transitivity difference between different speaking communities and this result is also consistent with the generalization that a smaller speaking community away from the main speaking community tends to be more conservative.

2 Methodology

2.1 Data collection

The data for this study is extracted from Annotated Chinese Gigaword corpus (Huang, 2009) which was collected and available from LDC and contains over 1.1 billion Chinese words, with 700 million characters from Taiwan Central News Agency and 400 million characters from Mainland Xinhua News Agency.

Basically, in our study we focus on two pairs of light verbs, 進行 *jinxing* “proceed” and 加以 *jiayi* “inflict”, 做 *zuo* “do” and 搞 *gao* “do”. These four are among the most frequently used light verbs in Chinese (Diao, 2004) and previous studies have conducted several studies on distinguishing these two pairs (e.g., Zhou, 1987; Diao, 2004) while no clear conclusion has been drawn yet.

About 400 sentences are randomly selected for each light verb, half from the Mainland Gigaword sub-corpus and the other from the Taiwan Gigaword sub-corpus, which resulted in 800 sentences in total.

2.2 Feature annotation

For each sentence, we manually annotated 13 features which may help to distinguish different light verbs in each variant as well as the light verb variations among different variants (Zhu, 1985; Cai, 1982; Huang et al., 1995 among others). The features cover semantic (e.g., the semantic type of taken complements), syntactic (e.g., the syntactic type of taken complements) as well as discourse (e.g., the connotation of the context) levels. The detailed annotation schema and examples are shown in **Appendix 1**. To facilitate the annotation as well as statistical analyses, most of the factors have binary choices (yes or no). The annotator is a trained expert on Chinese linguistics. Any ambiguous cases were discussed with another two experts in order to reach an agreement.

3 Data analysis

In our study, we used Chi-square test to test for the significance of the co-occurrence of each factor with each individual light verb. The tool we used is SPSS v.21. All the results are transformed (Standardized pearson residuals $e_{ij} > \text{ or } < 1.9$ (Agresti 2011)) into signs. The results of Chi-square test show that both differences among light verbs and variation difference can be detected by our statistical method and the features we selected are also effective in making the distinction.

Basically, two kinds of comparisons from different dimensions were conducted in our study. One is the variety internal comparison, and we are going to examine the subtle difference within the same pair (e.g., between 進行 *jinxing* “proceed” and 加以 *jiayi* “inflict”). Another comparison is the variety external comparison, in which we can investigate the variation differences of the same light verb in different varieties.

3.1 Difference between light verbs

For the variety internal comparison within each light verb pairs, our results show that both pairs in both varieties can be differentiated by most of the

annotated factors (i.e., those where they have contrasting positive/negative tendencies to appear (P-value<0.05)). We can take the Mainland data as an example, the Chi-square test results are shown in table below (some features which do not show significant correlation would be omitted in the table).

3.1.1 Differentiation between 進行 and 加以

Features		進行	加以
Complement Types	Event noun	+	-
	De-verbal noun	-	+
Event complement at subject position		+	-
Take aspectual marker (le)		+	-
Take marker (guo)		0	0
Durative event		+	-
Formal event		-	+
Psychological event		-	+
Event involving interaction of the agent and patient		+	-
Accomplishment event		-	+
Attributive of the complement		+	-
Connotation of the Complement	Positive	0	0
	Neutral	+	-
	Negative	-	+

Table 1.comparison between ML 進行 and 加以

According to table 1, 進行 *jinxing* and 加以 *jiayi* in Mainland can be differentiated by most of the factors. For example, Mainland 進行 *jinxing* “proceed” has a preference of taking Event Noun (e.g., 進行會議/賽事 *jinxing huiyi/saishi* “have a conference/play a game) as the complement while 加以 prefers to take verbs (e.g., 加以提高/修改 *jiayi tigao/xiugai* “to improve/revise”). 進行 differs from 加以 *jiayi* “inflict” in that it also has preference in taking aspectual marker *le* (進行了激烈的戰鬥 *jinxing le jilie de zhandou* “have a fierce fight”), taking durative events (進行會議 *jinxing huiyi* “have a conference”), interactive events (e.g., 進行磋商 *jinxing cuoshang* “have a negotiation”) and complements which have attributives (進行長時間的討論 *jinxing changshijiande taolun* “have a long-time

discussion”), whereas 加以 *jiayi* “inflict” shows dis-preference over these features. In contrast, 加以 *jiayi* prefers to take psychological event as the complement (加以考慮 *jiayi kaolv* “give consideration”) while 進行 does not (??進行考慮 *jinxing kaolv* “give consideration”).

3.1.2 Difference between 做 and 搞

The light verbs 做 *zuo* “do” and 搞 *gao* “do” can also be differentiated effectively by using the same method, as shown below:

Features		做	搞
Complement Types	Event noun	+	-
	De-verbal noun	-	+
VO complement		0	0
Take aspectual marker (le)		+	-
Take aspectual marker (guo)		0	0
Durative event		0	0
Attributive of the complement		+	-
Connotation of the Complement	Positive	-	+
	Neutral	+	-
	Negative	-	+

Table 2.comparison between ML 做 and 搞

做 *zuo* “do” and 搞 *gao* “do” are also differed in POS feature in the sense that 做 *zuo* has the preference in taking Noun as the complement (e.g., 做工作/手術/活動 *zuo gongzuo/shoushu/huodong* “do job/operation/activity”) while 搞 *gao* tends to take verbal complement (搞批發/改革 *gao pifa/gaige* “do wholesale trade/make reform”). Moreover, 做 *do* also significantly prefers the complements which have attributive (e.g., 做了很長時間的工作 *zuole henchang shijiande gongzuo* “have been working for a very long time”) while 搞 *gao* shows the opposite preference.

3.2 Difference between different varieties

With respect to the external comparison of the same light verb in different varieties of Chinese, the result of statistical analyses can also present the tendency differences. As shown in the tables below,

3.2.1 进行 in Taiwan and Mainland

Features		ML	TW
Complement Types	Event noun	0	0
	De-verbal noun	0	0
	VP	-	+
VO complement		-	+
Take aspectual marker (le)		+	-
Take aspectual marker (guo)		0	0
Event involving interaction of the agent and patient		+	-
Connotation of the Complement	positive	+	-
	neutral	-	+
	negative	-	+

Table 3.comparisonbetween 进行 in ML and TW

As presented in table 3, the usage of 进行 *jinxing* in Mainland and Taiwan have differences at semantic, syntactic as well as discourse level. The most obvious difference is that the Taiwan 进行 *jinxing* can take VPs as the complement, as in 處理 臨時提案 *chuli linshi ti'an* “process the interim proposal”. This specific usage of Taiwan might shed light on the classification of light verb complements. It may indicate different status of taken complements in each variety is located in the process of de-verbalization. We will discuss this in detail in the following section.

Also, the result demonstrates that TW 进行 *jinxing* is more likely to take VO compounds, as in 進行開票/投票 *jinxing kaipiao/toupiao* “ballot-counting/voting”. With respect to the semantic property of the taken complement, 进行 *jinxing* in Mainland tends to co-occur more with interactive complements like 磋商/商討 *cuoshang/shangtao* “hold a negotiation”.

3.2.2 加以 in Taiwan and Mainland

加以 *jiayi* shows the similar tendency as 进行 *jinxing* between Mainland and Taiwan, as shown in table 4.

Features		ML	TW
Complement Types	Event noun	0	0
	De-verbal noun	+	-
	VP	-	+
VO		-	+
Durative event		-	+

Formal event		0	0
Psychological event		+	-
Accomplishment event		+	-
Connotation of the Complement	positive	+	-
	neutral	0	0
	negative	0	0

Table 4.comparisonbetween 加以 in ML and TW

Similar with 进行 *jinxing*, 加以 *jiayi* in two varieties also differ in that TW 加以 *jiayi* has preference in taking VP and VO complements while 加以 *jiayi* in Mainland shows the opposite preference. The examples like 加以調整實用性 *jiayitiaozhengshiyongxing* “make adjustment to the practicability” can only be found in Taiwan data. And also, Mainland 加以 *jiayi* tends to co-occur more with psychological (e.g., 加以考慮 *jiayikaolv* “give consideration”) and accomplishment (e.g., 加以澄清 *jiayi chengqing* “make clarification”) event while Taiwan 加以 *jiayi* prefers durative events (e.g., 加以學習/瞭解 *jiayi xuexi/liaojie* “to learn”).

3.2.3 做 zuo in Taiwan and Mainland

The variation difference of 做 *zuo* mainly lies in the constraints of the taken complements. Taiwan 做 *zuo* almost has no constraints in taking the complements while the complements of Mainland 做 *zuo* are relatively limited in types. Examples show that Taiwan 做 *zuo* can take a wide range of complements compared to Mainland 做. LVCs as 做人身攻擊 *zuo renshengongji* “make personal attack”, 做環保 *zuo huanbao* “protecting the environment”, 做競賽 *zuo jingsai* “have competition” can only be found in Taiwan data.

Features		ML	TW
Complement Types	Event noun	+	-
	De-verbal noun	-	+
Event complement at subject position		+	-
Take aspectual marker (le)		+	-
Take aspectual marker (guo)		0	0
Durative event		0	0
Formal event		-	+
Accomplishment event		-	+

Table 5.comparison between 做 in TW and ML

The table suggests that the light verb 做 *zuo* in Taiwan has the similar preference of taking V as the objects (same with 進行 *jinxing* and 加以 *jiayi*, e.g., 做表示/考量 *zuo biaoshi/kaoliang* “make official statement/give consideration), while Mainland 做 *zuo* is more likely to co-occur with event noun as 工作/活動/手術 *gongzuo/huodong/shoushu* “do work/activity/operation”.

TW 做 is also likely to take formal event as the complement (政府對上述事件做表示 *zhengfu dui shangshu shijian zuobiaoshi* “the government made official statement for this affairs”) while more informal complements can be found in Mainland usages (做小生意/買賣 *zuo xiaoshengyi/maimai* “doing small business”).

3.2.4 搞 *gao* in Taiwan and Mainland

The difference of 搞 *gao* in two varieties show the opposite tendency compare to the light verb 做 *zuo* in the sense that 搞 *gao* in Mainland can take a quite wide range of objects while in Taiwan, 搞 *gao* can only appears in political context with the negative meaning.

Features		ML	TW
Complement Types	Event noun	-	+
	De-verbal noun	+	-
Event complement at subject position		+	-
Take aspectual marker (le)		+	-
Formal event		-	+
Event involving interaction of the agent and patient		+	-
Accomplishment event		0	0
Attributive of the complement		+	-
Connotation of the Complement	positive	+	-
	neutral	+	-
	negative	-	+

Table 6.comparison between 搞 in TW and ML

As shown in table 6, the taken complement of Taiwan 搞 *gao* has significant correlation with the feature “negative context”.

Examples like 搞形式主義/和平演變/分裂/抹黑 *gao xingshizhuyi/hebingyanbian/fenlie/mohei*

“take formalism approach/make peaceful evolution/cause state disruption/throw mud”are typical usages which are frequently appeared in Taiwan corpus. In contrast, Mainland 搞 *gao* can take a variety of complements, including both formal (搞國有企業經營 *gao guoyouqiye jingying* “managing state-owned enterprises”) and informal event (搞批發 *gao pifa* “do wholesale trade”), interactive events (搞辯論 *gao bianlun* “engage in debate”) and complements with attribute (搞了很長時間的科技承包 *gaole henchang shijiande keji chengbao* “begin technology contract manufacturing for a very long time”). Also, the polarity of the context for Mainland 搞 *gao* can be both positive (搞先進性學習 *gao xianjinxing xuexi* “learn about advanced nature”).

In general, for 做 *zuo* and 搞 *gao* in both Mainland and Taiwan, we can summarize as the usage of Taiwan 做 *zuo* is semantically much lighter than its Mainland counterparts in the sense that it can take a much wider range of complements under different context, whereas in Mainland 搞 *gao* may be semantically more bleached than its Taiwan counterparts because Taiwan 搞 *gao* can barely be used in other context except for political context with the negative meaning.

4 The syntactic type of taken complement

Agreement has been reached that only a small part of noun can be taken by light verbs (e.g., 會議/賽事 *huiyi/saishi* “conference/competition”) while most of the complements taken by 進行 *jinxing* are originally verbs (e.g., 進行研究/改革 *jinxing yanjiu/gaige* “do research/make reform”). But unlike common verb, these taken complements, being in the object position, has already possessed some properties of nominal phrase in terms of its syntactic behavior (e.g., Zhu, 1985). Evidence as shown below,

- a. The eventive complement usually cannot take another object : *進行研究這份文檔 *jinxing yanjiu zhefen wendang* “conduct research on this document”;
- b. The eventive complement cannot be modified by adverbial directly : *進行在會議中研究 *jinxing za ihuiyizhong yanjiu* “do research on the conference” ;

- c. The complement can be modified by the attribute : 進行長達十年的研究 *jinxing changda shiniande yanjiu* “conduct a long-term research” ;
- d. It can be questioned by 什麼 *shenme* “what” instead of 怎麼樣 *zenmeyang* “how”: 在進行什麼? “What is being proceeded?” *在進行怎麼樣? *zai jinxing zenmeyang* “*How is being proceeded?”

Previous studies have numbers of debates on which syntactic type do these verbal-like complements belong to. Some studies consider the taken complement as a 名動詞/動名詞 “nominal verb” which has both nominal and verbal properties (e.g., Zhu, 1985; Chen, 1987) while others hold the opinion that the complement has already been transferred from the original verb to a typical noun through the process of nominalization (e.g., Xiao, 1955; Li, 1990).

However, in our study based on large corpora, we find that the actual usages may be much more complex than what has been presented in the previous studies, especially when we take the variation differences into consideration. In Taiwan corpus, light verbs can be followed by a variety of NPs (e.g., 進行議程 / 君子之爭 *jinxing yicheng/junzizhizheng* “to carry out the assembly’s agenda/having a gentleman’s dispute”). Besides, although previous studies all claim that the light verb cannot take a Verb-Object phrase as the complement (e.g., Zhu, 1985; Hu and Fan, 1994; Qiu, 1994; Du, 2011 among others), in Taiwan corpora we have found examples like 進行處理臨時提案 *jinxing chuli linshi ti’an* “process the interim proposal” in which the complements taken by 進行 and 加以 can be a VO phrase. And the VO phrase can even be modified by adverbial (2):

2. 政府目前正進行對中非共和國提供養魚、養蝦的技術。

Zhengfu muqianzheng jinxing dui zhongfeigongheguo tigong yangyu yangxia de jishu

“The government is now providing the technology of fish and shrimp farming for the Central Africa Republic.”

This may pose a challenge to the traditional classification. Therefore, in our annotation

standard, we distinguish these types of taken complements in terms of their syntactic types: event noun, de-verbal noun and VP. And our comparative study show that there are also distributional variation differences between different varieties of Mandarin Chinese.

Event noun refers to a subtype of noun which lexically encodes eventive information, including event structure and time (Wang et al, 2011). The proportion of taking a noun as the complement is relatively small (e.g., for 進行, about 20.1% in Mainland). Taiwan can take more types of NPs (e.g., 進行感恩之旅 *jinxing gananzhilv* “have thanksgiving trips”) with a little bit lower frequency (18.87%). Since the definition of an event noun is clear, we mainly focus on differentiation of the other two types (de-verbal noun and VP).

In our proposal, we argue that “研究” *yanjiu* “research” in “進行可行性研究” *jinxing kexingxing yanjiu* “do research on the practicability” and “進行研究可行性” *jinxing yanjiu kexingxing* “do research on the practicability” belong to different syntactic types. Generally speaking, the “研究” *yanjiu* “research” in the former one can be considered as a de-verbal noun which has undergone the process of de-verbalization. While in “進行研究可行性” *jinxing yanjiu kexingxing* “do research on the practicability”, “研究” *yanjiu* “research” should still be considered as typical verbs. The whole phrase should be a VP. We will illustrate this issue in detail.

Shi (2011) differentiates two kinds of eventive phrases which can appear in the object position, by using a set of syntactic tests.

3. a. 我們需要注意環境保護。

Women xuyao zhuyi huanjing baohu

“We need to pay attention to

- b. 我們需要注意保護環境。

Women xuyao zhuyi baohu huanjing

“We need to pay attention to environmental protection.”

He argues that due to its internal nominal structure and the typical nominal syntactic behavior, 保護 *baohu* “protect” in sentence 3a should be considered as a Noun (can be modified by attribute). But in sentence 3b, “保護” *baohu* “protect” here still has syntactic behavior of verbs (e.g., can take object and complement). The whole

phrase “保護環境” *baohu huanjing* “protect the environment” still has the verbal internal structure (V-O structure) and can be used as predicate as in “我們要保護環境” *women yao baohu huanjing* “We need to protect the environment.” (Shi, 2011).

With respect to light verb constructions, the variation differences we have observed in our data can be well classified by this standard. For the usage of Mainland LVC, the patient can only appear before the eventive complement, either before the light verb (4a) or between light verb and the taken complement with DE (b), which shows the typical properties of a Noun.

4. a. 對分配制度進行改革

Dui fenpeizhidu jinxing gaige
“making reforms of distribution system”

b. 進行分配制度的改革

jinxing fenpeizhidu de gaige
“having reformation of distribution system”

But in Taiwan specific usage, the object “改革” *gaige* “reform” can be followed by the patient “分配制度” *fenpeizhidu* “distribution system” (5a), which shows that “改革” *gaige* “reform” here still remains the property of a typical verb of taking another object. Moreover, “改革分配制度” *gaige fenpeizhidu* “make reforms of distribution system” as a VO phrase is considered as a VP in the sense that it has the verbal internal structure (V-O structure) and can be used as predicate (政府改革分配制度 *zhengfu gaige fenpeizhidu* “government is making reforms of the distribution system”). And also, the whole VO phrase as a VP can be modified by adverbial (5b). Hence, we use “VP” to distinguish it from a de-verbalized Nominal Phrase (分配制度的改革 *fenpeizhidu de gaige* “the reformation of distribution system”).

5. a. 進行改革分配制度

Jinxing gaige fenpeizhidu
“to make reforms of distribution system”

b. 政府目前正進行對有關部門改革分配制度

zhengfu muqian zheng jinxing dui youguanbumen gaige fenpeizhidu
“The government now is making reforms of distribution system in all relevant departments.”

In this regard, we adopt Shi(2011)’s analysis and treat the 改革 *gaige* “reform” in mainland

usage as a de-verbal noun which has been transferred from the verb through the process of de-verbalization. While in Taiwan specific usage, “改革” *gaige* “reform” keeps the verbal characteristic of taking another object (e.g., 進行改革分配制度 *jinxing gaige fenpeizhidu* “make reforms of distribution system”). Moreover, we have also found examples are showing that in Taiwan usages, the when eventive complement is modified by a prepositional structure, *de* is not always necessary (6).

6. . 進行對大陸宣傳.

Jinxing dui dalu xuanchuan
“conduct propaganda to Mainland”

While in Mainland, in this context, “*de*” has to appear to license the sentence (e.g., 進行對大陸的宣傳 *jinxing dui dalu de xuanchuan* “conduct propaganda to Mainland”). As prepositional structure cannot modify an NP directly without *de* (e.g., Huang and Liao, 2007), what we found in Taiwan data is another evidence to prove that the taken complement in Taiwan usage can be a real verb.

In our study, we clearly differentiate three types of taken complements: event noun, de-verbal noun and VP which can cover all the examples we have observed in the corpus. This may also help with the annotation standard for POS tagging in the corpus. Back to the problematic annotation result we have mentioned in 1a and 1b, it would be very clear according to our analysis. Both “戰鬥” *zhandou* “battle” and “鬥爭” *douzhen* “fight” here should be treated as a de-verbal noun. But if they are followed by another object, it should be treated as a verb.

One thing should be addressed is that in Taiwan corpus, both constructions are commonly used, i.e., the patient can front the complement (進行可行性研究 *jinxing kexingxing yanjiu* “conduct research on the practicability”) as well as follow it (進行研究可行性” *jinxing yanjiu kexingxing* “conduct research on the practicability”) while in Mainland only the former construction is acceptable. This displays that Taiwan light verb has less constraints in taking the complements (can take both NP and VP, with and without *de*). There are more alternative patterns for LVC in Taiwan. Also, for the examples which VPs are taken as the

complements, light verbs can be omitted without changing the grammatical acceptability of the sentences. The light verb itself can be totally redundant. As shown below:

7. a. 先(進行)調整 國內有關法律以做好配合歐盟司法合作案件

Xian (jinxing) tiaozheng guonei youguan falv yi peihe oumeng sifa hezuo anjian

“make adjustment on relevant laws in order to cooperate with EU judicial cooperation cases”

In contrast, in Mainland usages, although light verb does not contribute to the eventive information, it is still compulsory in order to license the sentences structure.

b.*政府正對少年兒童(進行)正確消費教育

Zhengfu zhengdui shaonianertong (jinxing) zhengque xiaofei jiaoyu

“The government is educating the young children about consumption view.”

5 Transitivity in Light Verb Variations

Based on their distributional differences in syntactic type of the taken complements between Taiwan and Mainland Mandarin, we further argue that the light verb itself may differ in its degree of transitivity between these two varieties. Taiwan light verbs may have a higher degree of transitivity compared to its Mainland counterparts. The most obvious evidence is that Taiwan light verbs have the tendency of taking more types of NP and VPs as the complements with less collocation constraints. It is ‘more transitive’ in the sense that it is more likely to be used transitively in different contexts.

Besides this, the semantic properties of the taken complements also demonstrate the higher transitivity of Taiwan light verbs. Hopper and Thompson (1980) have proposed 10 parameters to identify the degree of transitivity. According them, an action can be easier transfer to a patient which is individuated, Taiwan and Mainland light verbs do show variations in this property. Both previous study (Huang and Lin, 2013) and our data show that in Taiwan corpus, light verbs can be followed by more types of event nouns (e.g., 進行議程/君子之爭 *jinxing yicheng/junzizhizheng* “to carry out the assembly's agenda/having a gentleman's dispute”), this may indicate that the complements

of Taiwan light verbs tend to be more highly individuated. Since the event noun, compared to either de-verbal noun or VP, may have more ‘nouny’ or ‘referential’ property, which may refer to higher degree of individuality. Also, as we have shown in section 3 and 4, Taiwan light verb has the preference of taking VP as the complements while the Mainland counterparts prefer de-verbal nouns. VP like “改革分配制度” compared to the de-verbal noun “改革”, is obviously higher in individuality as the patient is overt. Also, as the patient is already there, the affectedness of the objects in Taiwan preference is also higher. These two both indicate the higher transitivity of Taiwan light verbs.

Another important issue we would like to address is that the higher degree of transitivity in Taiwan Mandarin in fact show that Taiwan light verbs are less grammaticalized, hence more ‘verbal’ and in fact more conservative in terms of bleaching of verbal properties. This is consistent with the generalization that varieties away from the main speaking community should be more conservative.

6 Conclusion

In the current study, we have showed that our comparable corpus-based statistical approach can identify comparative differences which are challenging for human analysis. Either internal comparison within one variety or external comparison between different varieties can be differentiated effectively. Furthermore, the semantic and syntactic feature set we used in our study could also be used for future studies on other light verbs as well as other lexical categories.

Based on statistical result, we also argue that the variation difference in collocation may due to their variation in the degree of transitivity. , Moreover, the higher transitivity of Taiwan light verbs also indicates the conservatism of Mandarin in Taiwan which is consistent with the generalization that the languages in immigrant speaking communities tend to be more conservative.

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Appendix A: Annotation schema for LVC

Feature	example
1. occur with other light verbs Yes or no	開始進行討論 <i>kaishi jinxing taolun</i> 'start to discuss'
2. the complement of a light verb is in the V(erb)-O(bject) form Yes or no	進行投票 <i>jinxing tou-piao</i> 'proceed cast-ticket 'to vote'
3. take aspectual marker Zhe, le, guo or no	ASP.zhe/le/guo (進行著/了/過 戰鬥 <i>jinxing-zhe/le/guozhandou</i> 'is fighting'/have fight/fight)
4. Event complement of a light verb is in subject position Yes or no	比賽在學校進行 <i>bisaizaixuexiao jinxing</i> game at school proceed 'The game was held at the school')
5. The part-of-speech of taken complement Event noun, deverbal noun or VP	Event Noun/de-verbal noun (進行戰爭/戰鬥 <i>jinxing zhanzheng/zhandou</i> 'tofight') VP (進行處理臨時提案 <i>jinxing chulilishiti'an</i> 'process interim proposal')
6.the complement is a Spontaneous/controllable event Yes or no	進行投票 <i>jin4xing2/tou2piao4</i> 'to vote'
7. the complement is durative event Yes or no	進行戰鬥 <i>jinxing zhandou</i> 'to fight'
8. the complement: is formal event Yes or no	進行國事訪問 <i>jinxing guoshifangwen</i> 'to pay a state visit'
9. the complement is psychological event Yes or no	加以反省 <i>jiayifanxing</i> 'to retrospect')
10. the event denoted by the complement involves interaction Yes or no	進行討論 <i>jinxing taolun</i> 'to discuss'
11. the complement is accomplishment event Yes or no	進行解決 <i>jinxing jieju</i> 'to solve'
12. Connotation of the Complement Negative, neutral or positive	進行破壞 (negative) <i>Jin4xing2/po4huai4</i> 'do harm to' 進行表揚 (positive) <i>Jin4xing2/biaoyang2</i> 'speak highly of'

13. Attributive of the complement Yes or no	進行一次長達八小時的比賽 <i>jin4xing2/bi3sai4</i> 'have an eight-hour competition'
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