
A Corpus-based Lexical Semantic Study of Mandarin Verbs of *zhidao* and *liaojie*

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Abstract

This study intends to explore a Chinese synonym pair “liaojie” and “zhidao” via the Chinese GigaWord Corpus. Detailed analysis of the pair is conducted to reveal their different semantic and syntactic features. In particular, the author analyzed the event structure module and role module of the two words based on MARVS theory and tested that the two meanings of “liaojie” are two senses instead of two meaning facets. This study demonstrates that a corpus is a powerful tool for examining synonyms and that MARVS theory is practical for distinguishing senses and meaning facets.

1 Introduction

A large number of synonyms in modern Chinese can be found. These synonyms have very similar meanings and can sometimes be used interchangeably. However, they often demonstrate subtle differences in terms of syntax, semantics and pragmatics, which are difficult to distinguish even for native speakers.

1.1 The Theoretical Framework

The module-Attribute Representation of Verbal Semantics (MARVS) is a theory of the representation of verbal semantics that is on the basis of Mandarin Chinese data (Huang et al., 2000). The theory put forward event structure modules and role modules and two sets of attributes: event-internal attributes and role-internal attributes. Through analysis of the model, the differences of synonyms can be presented more transparently.

1.2 The Corpus

In recent years, the corpus has been widely used as a tool for comparative analysis of synonyms. Sketch engine has been proved as a powerful tool for

lexicography and language research as it is able to explore corpora as well as build and manage corpora (Hong, 2014).

This study utilizes Annotated Chinese Gigaword Corpus¹ containing over 1.4 billion words from Taiwan Central News Agency, Mainland Xinhua News Agency and Lianhe Zaobao in Singapore with the combination of the powerful linguistic research tool, Chinese Word Sketch (CWS), containing core functions such as word sketch, concordance, and thesaurus (Kilgarriff et al., 2014).

1.3 Previous Studies

Zhang (2000) studied the event module of “zhidao” and “liaojie” and identified “zhidao” is completive resultative and “liaojie” is a dual process-state. Lai (2008) conducted a semantic analysis of seven verbs of perception, including “zhidao”, and classified them into groups according to their semantic features. Chen (2009) analyzed the verbs of “zhidao” and “mingbai” and followed on-prototypical interrogatives. Liu and Hu (2008) regarded “zhidao” as a cognizer belonging to the knowing frame and are connected with knowledge and proposition.

2. Initial Observation

1.1 Two Words in Dictionary

As shown in Table 1, the meanings of the two words demonstrate great similarities. Both dictionaries use close synonyms to define them, making it hard for learners to distinguish the nuances between the two words.

It is worth noticing that the meaning of “zhidao” contains one sense with the meaning of knowing as the centre. However, the meaning of “liaojie” consists of two layers of meanings. One is to understand and comprehend. Another is to investigate and inquire about. Whether the two different meanings are “meaning facets or two

¹<http://wordsketch.ling.sinica.edu.tw/cws/>

senses remains a question to be solved. MARVS stipulates that each sense of a verb form encodes a unique eventive information representation. (An, 2003). We will conduct MARVS analysis of the two words to distinguish the “liaojie” and “zhidao” and to explore whether “liaojie” contains two meaning facets or senses.

	現代漢語詞典 (第7版) The Contemporary Chinese Dictionary (The 7th Edition)	新世紀漢英大 詞典 New Century Chinese- English Dictionary
liaojie 了解	动词；①知道 得清楚； ②打听；调查	①Understand; comprehend; ②investigate; inquire about
zhidao 知道	动词；对于事 实或道理有认 识；懂得	Know; realize; understand; be aware of

Table 1. Explanation of liaojie and zhidao in the dictionary

2.2 Two Words in Corpora

When searching in Gigaword2all, “liaojie” has a frequency of 296,823 as a verb and frequency of 184 as a noun, while “zhidao” has a frequency of 88,185 as a verb only, as shown in Table 2. The initial search has revealed that the nomination of “liaojie” has not been shown in the dictionary. The following sections will compare the two words in terms of lexical and grammatical relations.

Word	Tag	Freq. in gigaword2all
Liaojie 了解	verb	296,823
	noun	184
Zhidao 知道	verb	88,185

Table 2. Overall distribution of the word “liaojie” and “zhidao” in gigaword2all

2. Data Analysis

2.1 Finding the pair words from Thesaurus

The Thesaurus function in CWS provides words that resemble the key word in terms of collocation automatically. We set a maximum number of items of 60 and click show similar words, and the first result of liaojie and zhidao is each other, as shown in Table 3. It is demonstrated that the pair words are similar to each other semantically and grammatically.

liaojie		zhidao	
Similar word	Similarity	Similar word	Similarity
zhidao 知道	0.43	liaojie 瞭解	0.43
guanxin 關心	0.39	juede 覺得	0.368
rang 讓	0.322	dezhi 得知	0.354
queren 確定	0.332	queding 確定	0.301

Table 3. Similar words of liaojie and zhidao

2.2 Observation via CWS

2.2.1 Nominalization

As stated above, liaojie has been used as a noun in gigaword2all for 184 times, while zhidao does not show the same usage. Liaojie, as a noun, can be the object of “jinxing” (conduct), xuyao (require), cujin (promote).

The collocation of “ju liaojie” (according to the understanding of) occurs 79,764 times (26.9%), which is a salient usage of “liaojie”.

2.2.2 Reduplication

“Liaojie” is found to have a morphological change of reduplication. In Chinese, verbal reduplication adds new grammatic meaning and grammatical function rather than produce new vocabularies (Guo et al., 2018). When “liaojie” is reduplicated, it is used in a tentative aspect and indicating the time duration of “liaojie” is short and the momentum is small.

(1) 让他们也瞭解瞭解香港的過去。

Rang tamen ye liaojie liaojie xianggang de guoqu.

Let them also try to understand the past of Hong Kong.

2.2.3 Finding Grammatical Patterns Through *Sketch Diff*

By utilizing the function of *Sketch Diff*, the CWS can provide grammatical and collocational behaviour of a pair of words and demonstrate their common patterns and only patterns. When we search “liaojie” and “zhidao” in gigaword2all and set the minimum frequency of 20, a maximum number of items in a grammatical relation of the common block of 25, and a maximum number of items in a grammatical relation of the exclusive block of 12. Click the show diff button, the most frequent results of modifier, object and subject are shown in Table 4, 5 and 6.

Comparing the two key words, we found that: (1) “liaojie” can be modified by adverbs such as “進一步” (further) “更加” (more) “太” (much) “非常” (very) to indicate the degree of “liaojie”. (2) The subjects of “liaojie” tend to be a group of people such as “大眾” (people) “世人” (ordinary people), and a party (美方 American side), an authority representative, while the subjects of “zhidao” mostly are individuals such as “我” (I) “你” (you). (3) the object of “liaojie” are mainly situations, and the objects of “zhidao” are person, name and a simple matter.

瞭解	21	14	7	0	-7	-14	-21	知道
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Modifier 66796 54661 5.2 8.3	Object 139112 48115 3.7 2.5	Subject 5342 3390 0.6 0.7
不 6765 28166 54.2 81.4	案情 1376 23 60.7 12.8	我 69 335 21.2 46.3
才 231 4781 18.6 68.4	真相 1239 241 52.2 35.7	大家 86 148 27.8 38.4
都 798 5455 23.6 56.8	實情 397 39 51.8 26.1	我們 95 220 23.6 38.0
更 1795 73 46.9 8.8	自己 110 2481 24.6 48.3	他 408 418 29.1 33.4
只 33 1460 1.8 45.7	情況 6761 415 48.1 19.0	民眾 294 92 32.4 21.2
真正 681 35 44.1 9.9	狀況 3031 130 47.0 13.9	他們 134 147 23.4 27.8
就 99 2264 3.9 43.7	詳情 433 91 46.1 31.1	她 49 106 16.0 27.4
多 1160 49 43.1 7.2	何時 22 297 8.4 45.3	人 124 284 14.0 27.3
先 889 61 41.1 10.2	內情 224 78 43.8 35.3	人們 26 33 17.0 21.7
能 2608 786 40.2 24.4	誰 52 401 9.8 41.7	人民 111 22 16.5 5.7
事先 135 221 30.9 39.4	心聲 521 27 40.0 12.2	市民 32 22 15.2 14.0
確實 382 82 38.3 20.0	想法 523 68 39.9 21.0	政府 61 22 6.0 2.0
應該 652 526 37.1 35.7	情形 1797 122 37.6 12.9	總統 26 21 2.1 3.1
能夠 634 72 37.0 12.3	我 250 834 12.0 36.6	
早 26 238 10.4 36.3	原委 105 20 36.0 20.9	
必須 972 213 36.0 17.9	嚴重性 211 73 35.0 28.1	
無從 103 56 35.9 28.9	他們 1716 1276 28.0 34.8	
可以 1316 605 35.7 26.5	重要性 574 108 34.7 21.5	
最 525 57 35.7 11.3	死因 174 22 34.1 16.2	
清楚 122 155 30.5 35.2	你 78 292 10.8 33.5	
當然 58 123 23.8 34.8	他 1248 2285 12.5 32.2	
隨時 239 21 33.9 9.2	需求 1120 43 31.3 4.4	
要 1936 880 33.6 24.4	處境 211 27 31.0 14.5	
完全 454 39 33.6 8.2	它 304 441 17.1 30.9	
並 1530 62 33.1 0.8	對方 354 148 30.7 27.5	

Table 5: Common patterns of “liaojie” and “zhidao”

Modifier 66796 5.2	Object 139112 3.7	Subject 5342 0.6
相互 7267 87.6	民情 389 46.6	彼此 55 29.9
實地 3663 83.1	災情 948 46.5	大眾 60 26.5
進一步 5200 63.2	現況 678 42.9	世人 27 25.7
初步 2270 61.0	民瘼 83 42.5	國人 50 25.6
更加 813 57.7	疾苦 221 42.1	公平會 21 23.2
甚 411 54.8	備忘錄 496 41.2	美方 25 20.5
太 473 50.7	來龍去脈 146 40.3	雙方 53 18.2
夠 205 46.8	社情民意 76 37.8	選民 28 16.7
及時 744 46.2	僑情 64 36.0	警方 48 15.9
互相 529 46.0	始末 118 34.7	各界 36 15.8
非常 840 44.5	實況 268 34.3	單位 56 12.9
相當 679 43.4	真諦 87 32.0	業者 30 12.2

Table 4: Only patterns of “liaojie”

Modifier 54661 8.3	Object 48115 2.5	Subject 3390 0.7
明明 122 51.1	下落 181 37.6	你 102 38.1
怎麼 180 36.7	答案 120 33.2	誰 61 33.3
哪裡 37 32.4	名字 125 27.6	您 22 25.8
從不 44 25.2	去向 44 26.4	你們 21 23.8
大概 22 22.6	何處 47 26.1	自己 30 12.6
那裡 20 19.7	大勢 31 24.4	
當 53 19.6	賓拉登 51 24.0	
即已 24 19.0	姓名 93 23.7	
便 78 18.6	您 50 21.9	
不可能 56 18.1	丈夫 62 21.2	
大都 30 17.4	兒子 90 20.7	
似乎 28 14.9	本·拉丹 21 20.5	

Table 6: Only patterns of “zhidao”

3. Event Module:

As mentioned above, “liaojie” contains two layers of meaning. For the convenience of the following discussion, the author marks the meaning of “understand and comprehend” as liaojie1 and the meaning of “investigate and inquire about” as “liaojie2”.

When searching liaojie and zhidao with “開始” (start to) within one token in left context, both the words got concordances, indicating that the event structure of the two words contains boundary as a start point. “了” (already) and “完” are regarded as a marker to indicate that the action has already happened, which can mark the finish point of the action. However, in sentences (5) and (7), “了” signified that the action has occurred, but the state of “liaojie” and “zhidao” will remain, so the two words do not have an end point module. However, in (5), the action of “liaojie2” has finished so that “liaojie2” has a role of the ending point.

(2) 人民也開始瞭解必須抑制人口成長。

Renmen ye kaishi **liaojie1** bixu yizhi renkou chengzhang.

People started to understand that population growth must be suppressed.

(3) 該中心開始收集、瞭解我國對進口食品的檢驗規定。

Gai zhongxin kaishi shouji, **liaojie2** wo guo dui jinkou shipin de jianyan guiding.

The center began to collect and investigate our country’s inspection regulations on imported food.

(4) 他們已開始知道台灣的水準。

Tamen yi kaishi zhidao TaiWan de shuizhun.

They started to know the standard of Taiwan.

(5) 讓我們瞭解了許多內幕。

Rang women **liaojie1** le xuduo neimu.

Let us understand much insights.

(6) 周德剛瞭解完情況。

Zhoude gang **liaojie2** wan qingkuang.

Zhou De just inquired about the situation.

(7) 我們知道了許多負面的事。

Women zhidao le xuduo fumian de shi.

We knew many negative things.

(8) 他一直能瞭解民眾的想法。

Ta yizhi neng **liaojie1** minzhong de xiangfa.

He always knows people’s thought.

In (8), “liaojie1” sustain a period of time, indicating the module of process.

Meanwhile, “liaojie” also collocates with “持續” (continuously), demonstrating that the extent of liaojie deepens, so the event structure of liaojie belongs to state as well.

(9) 監控小組將持續瞭解公會醫師使用的勞保單情形。

Jiankong xiaozu jiang chixu **liaojie2** gonghui yishi shiyong de laobaodan qingxing.

The monitoring team will continue to understand the labour insurance policies used by doctors.

Moreover, the action of “zhidao” belongs to state and punctuality as the state of zhidao last and cannot be changed, and the transfer of state of not “zhidao” to “zhidao” happens in a second.

The following table lists the event module of “liaojie” and “zhidao” in the above discussion.

Words	Event module
liaojie1	.///
liaojie2	.^^^.
zhidao	/.—

Table 7: Event module of the pair

3.1 Role Module

As cognition verbs, “liaojie” and “zhidao” are mostly used as a predicate in sentences and require the participant role of an experiencer. The experiencers of “liaojie” are predominantly a group of people, a party, and an organization. “zhidao” collocates with common individuals in most cases.

“liaojie” tend to collocate with situations that are goals or targets of the experiencer. The experiencer of “liaojie” tend to be a group of people or authorities. Thus, the experiencer of “liaojie” is [+authoritative].

(10) 今天詢問重點是想進一步瞭解他與人結怨情形 (target)

Jintian xunwen zhongdian shi xiang jinyibu **liaojie2** ta yu ren jieyuan qingxing.

The focus of the inquiry today is to further understand the situation of his grudges.

In this sentence, *liaojie* is interpreted as “investigate” so the grudges should be the aim of the action of *liaojie*.

(11) 幫助青少年多瞭解自己的家鄉 (goals)
Bangzhu qingshaonian duo **liaojie1** ziji de jiaxiang.
To help teenagers to know more about their hometown.

In this sentence, *liaojie* is interpreted as know, hometown is the

(12) 都有必要立刻瞭解。

Dou you biyao like *liaojie2*.

It is necessary to investigate right now.

In this case, the experiencer and patient are both omitted, as it is shown in previous contexts.

(13) 目前病情(goals)尚不知道。

Muqian bingqing shang bu zhidao.

The patient’s condition is unknown at present.

The goals of *zhidao* can occur before the word. It can be concluded that “*liaojie1*” tend to have goals, and “*liaojie2*” will connected by targets.

3.2 Inherent Attributes

Modifiers such as “更加” (more) “進一步” (furthermore) can collocate with “*liaojie*”, meaning the degree of “*liaojie*” is subject to change. We then use +scalable.

(14) 我們打算在瞭解詳細情形後，再作適當反應。

Women dasuan zai *liaojie* xiangxi qingxing hou, zai zuo shidang fanying.

We intend to respond appropriately after we understand the details.

As a verb of knowing, the epistemic value of the pair is also examined.

(15) 我們第一次知道月球南極擁有水儲存。

Women diyici zhidao yueqiu nanji yongyou shui chucun.

For the first time, we know that the South Pole of the Moon has water storage.

(16) 小時候不知道舅公是個物理學家。

Xiaoshihou bu zhidao jiugong shi ge wulixue jia.

When I was litter, I didn’t know that my uncle was a physicist.

Through (15) and (16), the object clauses of “*zhidao*” carry the assumption that statement is a true fact, while “*liaojie*” is a non-factive verb.

	control	gradable	factive
Liaojie1	-	-	-
Liaojie2	+	+	-
Zhidao	-	-	+

Table 8: Inherent attribute of the pair

Based on the discussion above, the two meanings of “*liaojie*” have different eventive modules. Thus, “*liaojie*” has two senses instead of two meaning facets.

4. Conclusion

In this study, the author differentiates two near synonyms of “*liaojie*” and “*zhidao*” in Mandarin Chinese through Chinese Word Sketch and the Sketch English. The nominal and reduplication use of “*liaojie*” is revealed, which has not been shown in dictionaries. The author also examines that the two meanings of “*liaojie*” are two senses as they belong to different eventive modules. Furthermore, the nuances of “*liaojie*” and “*zhidao*” is explored through event module and role module analysis, and their inherent attributes are discussed.

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