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 Corpus\(^1\) 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 and “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://words.kin.cal.poly.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.

| 现代汉语词典 (第7版) | 新世纪汉英大词典 New Century Chinese-English Dictionary |
|------------------|----------------------------------|
| liaojie 了解 | zhidao 知道 |
| 动词：①知道得清楚； ②打听；调查 | 动词：对于事实或道理有认识；懂得 |
| ① Understand; comprehend; ② investigate; inquire about | 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.

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.

2.2 Observation via CWS

2.2.1 Nominalization

As stated above, liaojie has been used as a nous in gigaword2all for 184 times, while zhidao does not show the same usage. Liaojie, as a nous, 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 grammatical 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.

#### Table 4: Only patterns of “liaojie”

| Modifier | Object  | Subject | Modifiers | Objects | Subjects |
|----------|---------|---------|-----------|---------|----------|
| 相互     | 民情     | 彼此     | 7207 87.6 | 58 29.9 |
| 實地     | 災情     | 大眾     | 3683 83.1 | 60 26.5 |
| 進步     | 民權     | 世人     | 5200 63.2 | 27 25.7 |
| 更加     | 煩惱     | 國人     | 2270 61.0 | 50 25.6 |
| 倍     | 痛苦     | 公平會   | 813 57.7 | 21 23.2 |
| 像     | 傷病     | 美方     | 411 54.8 | 23 20.5 |
| 太     | 美     | 雙方     | 473 50.7 | 53 18.2 |
| 夠     | 社情     | 道民     | 205 46.8 | 28 16.7 |
| 及時     | 情     | 警方     | 744 46.2 | 48 15.9 |
| 互相     | 始末     | 各界     | 529 46.0 | 39 15.8 |
| 非常     | 實況     | 單位     | 840 44.5 | 56 12.9 |
| 相當     | 報      | 者者     | 879 43.4 | 30 12.2 |

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

| Modifier | Object | Subject |
|----------|--------|---------|
| 民情     | 彼此   | 58 29.9 |
| 災情     | 大眾   | 60 26.5 |
| 民權     | 世人   | 27 25.7 |
| 煩惱     | 國人   | 50 25.6 |
| 痛苦     | 公平會 | 21 23.2 |
| 傷病     | 美方   | 23 20.5 |
| 美     | 雙方   | 53 18.2 |
| 社情     | 道民   | 28 16.7 |
| 情     | 警方   | 48 15.9 |
| 始末     | 各界   | 39 15.8 |
| 實況     | 單位   | 56 12.9 |
| 報      | 者者   | 30 12.2 |

#### Table 6: Only patterns of “zhidao”

| Modifier | Object | Subject |
|----------|--------|---------|
| 明明     | 122    | 51.1    |
| 怎麼     | 180    | 36.7    |
| 哪裡     | 37     | 32.4    |
| 從不     | 44     | 25.2    |
| 大概     | 22     | 22.6    |
| 哪裡     | 20     | 19.7    |
| 當     | 53     | 19.6    |
| 即已     | 24     | 19.0    |
| 便     | 73     | 18.6    |
| 不可能   | 58     | 18.1    |
| 大都     | 30     | 17.4    |
| 似乎     | 28     | 14.9    |

| Modifier | Object | Subject |
|----------|--------|---------|
| 明明     | 122    | 51.1    |
| 怎麼     | 180    | 36.7    |
| 哪裡     | 37     | 32.4    |
| 從不     | 44     | 25.2    |
| 大概     | 22     | 22.6    |
| 哪裡     | 20     | 19.7    |
| 當     | 53     | 19.6    |
| 即已     | 24     | 19.0    |
| 便     | 73     | 18.6    |
| 不可能   | 58     | 18.1    |
| 大都     | 30     | 17.4    |
| 似乎     | 28     | 14.9    |
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 renkou chengzhang.
People started to understand that population growth must be suppressed.

(3) 该中心開始收集、瞭解我國對進口食品的檢驗規定。
Gai zhongxin kaishi 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) 他们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 peng liaojie2 wan qingkuang.
Zhoue 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) 帮助青少年多了解自己的家乡 (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) 都有必要立刻了解。
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) 我们打算在了解详细情形后，再作适当反应。
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.

We need to respond appropriately after we understand the details.

(15) 我们第一次知道月球南极拥有水储存。
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) 小时候不知道舅公是个物理学家。
Xiaoshihou bu zhidaoshu 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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