

Thematic and Argument Structures of Mandarin *Si*-V and V-*Si* Compound Verbs

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Mandarin compound verbs containing *si* 'die' are numerous and intriguing with varying meanings of *si*. This study investigates the meanings, functions, and thematic structures of all *si*-compounds. It was found that there are five basic categories of verbal *si*-compounds. The most common type is the resultative *si*-compound with the prototypical meaning of 'to die.' The three types have the grammaticalized *si* meaning of 'to the extreme degree,' 'persistence,' and 'motionless and fixed state.' The last type is one derived through a process of causative construction either from unaccusative *si*-compounds or from lexical re-mapping of theta roles in a composite causal-caused event. The five types of *si*-compounds all show a systematic relation among themselves either via the grammaticalization of *si*, or via the syntactic process of resultativity and causativity. The former causes the meaning of *si* to change, and the latter, the thematic structure alternation in compound verbs.

Key words: Mandarin *si*-compound, causative, thematic structure, grammaticalization

1. Introduction

Chinese compound verbs are abundant and have been a fascinating topic in linguistic discussion. According to Tang (1988), the morphological structure of a lot of compound verbs is actually a miniature of syntactic structure. For instance, the verb compound *toutong* 'headache' is derived from the syntactic construction of the subject NP *tou* 'head' and the predicate VP *tong* 'ache'. Given this, the internal structures of Mandarin verb compounds must be various since there is a great variety of sentence structures. As different morphological structures lead to different meanings of words, we wanted to investigate how Mandarin verb compounds containing *si* 'die' in different positions, such as *ai-si* 'love-die' and *si-ding-zhe* 'die-stare-DUR.', differ in meanings and why *si* in different *si*-compounds such as *sha-si* 'kill-die' and *shui-si* 'sleep-die' display different meanings. How can morphological/syntactic structures account for these phenomena?

Previous Mandarin compound verb studies have mostly concentrated on resultative compounds such as *ku-shi* 'cry-wet' and *qi-lei* 'ride-tire' (e.g., Li 1990, Dai 2003, Huang 2006, Her 2007, Huang, Li & Li 2008). The first verb of a compound verb usually indicates the event that causes the result manifested in the second verb. In compositing the verbs, the two verbs' theta roles are merged or suppressed and then the new argument structures of the compound verb surfaces (Li 2011, Her 2007). This analysis can explain *si*-compounds of *sha-si* 'kill-die' or *bing-si* 'sick-die', but other *si*-compounds such as *re-si* 'hot-die' and *hen-si* 'hate-die'

cannot be interpreted so satisfactorily with this analysis. First, both *re-si* and *hen-si* only indicate that the degree of heat or hatred is extreme but do not mean actual death, unlike physical death in the resultative compounds of *sha-si* or *bing-si*. Second, *re-si* can have its experiencer theta role in an external argument position or in an internal argument position, as shown in (1a-b). There are numerous similar *si*-compounds such as *mang-si* ‘busy to death’, *lei-si* ‘tired to death’, and *qi-si* ‘angry to death’. Third, instead of the metaphorical meaning of extremely hot, *re-si* can also denote the literal meaning of someone’s death due to the heat and have an external causer in the subject position, as shown in (2a). Or *si* in the *zou-si* ‘walk to death’ compound can also indicate the extremity of ‘to death’ metaphorically in a similar causative construction, as shown in (2b). How the thematic structures vary and how the meaning of *si* changes in the *si*-compounds need a good explanation.

(1) a. 我熱死了。

wo re-si le

I hot-die CRS¹

‘I feel so hot that I could die.’

b. 熱死我了。

re-si wo le

hot-die I CRS

‘I feel so hot that I could die.’

(2) a. 粗心的媽媽熱死了她的小孩。

cuxin-de mama re-si le ta-de xiaohai.

careless-ADJ mother hot-die COM² her child

‘The careless mother caused her child to die from extreme heat.’

b. 這條山路會走死你。

zhe-tiao shanlu hui zou-si ni.

this-CL³ mountain.road will walk-die you

‘This mountain road can cause you to walk and be extremely tired out.’

This study aims to investigate and categorize *si*-compound verbs in Mandarin by classifying the different semantics of *si* in various *si*-compounds via analysis of the functional relation of *si* with the other verb inside such compounds and analysis of

¹ CRS, an abbreviation of ‘currently relevant state’, indicates the sentential-final particle, *le*.

² *Le* is an aspect maker attached to the end of a verb to indicate the completion of the verb in Mandarin. It will be henceforth denoted and abbreviated as ‘COM.’

³ CL is to mark classifiers, each of which categorizes a bunch of nouns into a specific class sharing some semantic features.

thematic and argument structures of the composited verbs. The remainder of the paper is organized into 4 sections. Section 2 presents the thematic structures of the most commonly seen *si*-compounds and the derivation processes of the resultative compounds. Section 3 demonstrates other types of *si*-compounds and also covers various interpretations of *si* as corresponding to different types of compounds. Section 4 compares thematic and argument structures in *si*-compounds and proposes an analysis to link transitive and intransitive *si*-compounds. Section 5 denotes the nature of *si* and explains why *si* always co-occurs with certain types of verbs in compounds. Section 6 summarizes and concludes the study.

2. Resultative *si*-compounds and derivation

Many *si*-compounds in Mandarin, such as *sha-si* ‘kill-die’, *bing-si* ‘sick-die’, *lei-si* ‘tired-die’, *dong-si* ‘freeze-die’, *ni-si* ‘drown-die’, are resultative in nature. From a relativism perspective, Tai (2003) asserts that while English resultative structures focus on the action aspect, Chinese resultative structures attend on the result aspect more. According to Her (2007), the resultative compounding is a very productive word formation process in Chinese morphology where two verbs merge, the first verb indicating the causal action or event while the second verb denotes the result state or event (Li 1990, Lin 1990). The two composited verbs can thus be referred to as V_{cau} and V_{res} , respectively. The resultative compound verb inherits the argument roles from both composited verbs (Huang & Lin 1992, Li 1995). According to Li (1990, 1995), Lin (1990), and Her (2007), the merging process of an either transitive or intransitive V_{cau} and a V_{res} (which is typically intransitive) results in the thematic structures in (3a) and (3b), respectively.

- (3) a. $V_{\text{cau}} \langle \theta_x \rangle + V_{\text{res}} \langle \theta_y \rangle \rightarrow V_{\text{cau}} - V_{\text{res}} \langle \theta_{x-y} \rangle$
 b. $V_{\text{cau}} \langle \theta_x \ \theta_y \rangle + V_{\text{res}} \langle \theta_z \rangle \rightarrow V_{\text{cau}} - V_{\text{res}} \langle \theta_{x-z} \ \theta_y \rangle$
 $V_{\text{cau}} - V_{\text{res}} \langle \theta_x \ \theta_{y-z} \rangle$

Si-compounds with *si* meaning ‘die’ in the V_{res} position, such as *bing-si* ‘sick-die’, *e-si* ‘hungry-die’, *ni-si* ‘drown-die’, *die-si* ‘fall-die’, *shuai-si* ‘stumble-die’, *sha-si* ‘kill-die’, *du-si* ‘poison-die’, *hai-si* ‘harm-die’, *ya-si* ‘suppress-die’, and *zhuang-si* ‘hit-die’ can all be interpreted this way with *si* showing the result of the V_{cau} action or event. One intransitive V_{cau} of *bing* ‘sick’ and one transitive V_{cau} of *du* ‘poison’ are given in (4a) and (4b) to show the derivation of such *si*-compounds in Mandarin.

(4) a. 張三病死了。

Zhangsan bing-si le
 Zhangsan sick-die CRS
 ‘Zhangsan was sick and then died.’

$\text{bing}_{\text{cau}} \langle \theta_{\text{張三}} \rangle + \text{si}_{\text{res}} \langle \theta_{\text{張三}} \rangle \rightarrow \text{bing}_{\text{cau}} - \text{si}_{\text{res}} \langle \theta_{\text{張三}} \rangle$

b. 張三毒死了三隻老鼠。

Zhangsan du-si le san-zhi laosu.
 Zhangsan poison-die COM three-CL mouse
 ‘Zhangsan poisoned and thus killed three mice’

$\text{du}_{\text{cau}} \langle \theta_{\text{張三}} \theta_{\text{老鼠}} \rangle + \text{si}_{\text{res}} \langle \theta_{\text{老鼠}} \rangle \rightarrow \text{du}_{\text{cau}} - \text{si}_{\text{res}} \langle \theta_{\text{張三}} \theta_{\text{老鼠}} \rangle$

According to the DOR (direct object restriction) principle of Simpson (1983), the result of the resultative compounds is always predicated on the object, if there is one, not on the subject. Huang (2006), however, proves that this principle is not always true in Mandarin, such as in the case of *chi-ni* ‘eat-tired’, and that the choice of theta roles depends on the semantics of the V_{res} . Even so, DOR is a general principle and the V_{res} of *si* in the above-mentioned compounds is always predicated on the object instead of the subject. Hence, the thematic structure of the compounds is always $V_{\text{cau}} - V_{\text{res}} \langle \theta_x \theta_{y-z} \rangle$, not $V_{\text{cau}} - V_{\text{res}} \langle \theta_{x-z} \theta_y \rangle$.

Though the resultative analysis can account for the above-mentioned *si*-compounds, this analysis is not very satisfactory in the following *si*-compounds, in which *si* does not mean ‘to die’. Such *si*-compounds come in several different categories and will be discussed in the following sections.

3. Grammaticalized *Si*-compounds and *si*-interpretations

In addition to resultative *si*-compounds with *si* meaning ‘to die’, there are several other types of *si*-compounds in Mandarin. First, compounds such as *shui-si* ‘sleep-die’ and *shuo-si* ‘talk-die’ have the verb *si* denoting a frozen and motionless state. Second, in compounds such as *ai-si* ‘love-die’, *hen-si* ‘hate-die’, *xianmu-si* ‘desire-die’, and *ganga-si* ‘embarrass-die’ the verb *si* means ‘to an extreme degree.’ Third, when *si* is the first component of a compound, such as *si-ding-zhe*⁴ ‘die-stare-DUR.’, *si-chan-zhe* ‘die-tangle-DUR.’, it denotes the meaning of a very firm manner in doing an action. All these *si*-compounds are very different from the resultative *si*-compounds in their

⁴ *Zhe* is a durative aspect marker attached to the end of a verb in Mandarin. It is henceforth denoted and abbreviated as ‘DUR.’

thematic and argument structures.

3.1 *Si* denoting a motionless state

Liu (2006) analyzes all the possible lexical and grammaticalized meanings of *si* in Chinese words and phrases. According to her, *si*, after a verb in a compound, can become grammaticalized as a complement of the verb meaning either ‘die’ (under the feature ‘-life’) in resultative compounds as we have already seen, or ‘motionless’ (under the feature ‘-motion’) in compounds such as *du-si* ‘block-die’, *ding-si* ‘nail-die’ with non-animate subjects as shown in (5). I propose that grammaticalized *si*, under the ‘-motion’ feature, does not need to have this non-animate limitation and can take both animate and non-animate subjects, as demonstrated in (6). The evolved feature of ‘-motion’ and hence of ‘being firm or fixed’ in *si* is because of the similarity in appearance to ‘loss of life.’ When an animal loses its life, it will become motionless and gradually turns stiff in appearance. Consequently, the concepts of death ‘loss of life’, motionless ‘fixed and no movement’, and without flexibility ‘stiff and rigid’ are all metaphorically associated in *si*, especially in *si*-compounds.

(5) a. 洞口堵死了。

dong-kou du-si le.
hole-mouth block-die CRS
‘The hole was blocked firmly.’

b. 木板釘死了。

mu-ban ding-si le.
wood-plank nail-die CRS
‘The wood plank was nailed firmly.’

c. 門鎖死了。

men suo-si le.
door lock-die CRS
‘The door was firmly locked.’

(6) a. 張三睡死了。

Zhangsan shui-si le.
Zhangsan sleep-die CRS
‘Zhangsan was so sound asleep that he became motionless.’

b. 只見張三醉死在沙發上。

zhi jian Zhangsan zui-si zai shafa-shang.
just see Zhangsan drunk-die on sofa-top
‘Zhangsan was seen drunk and motionless on the sofa.’

c. 你別把話說死了。

ni bie ba hua shuo-si le.

you not BA⁵ word say-die CRS

‘Don’t say words so definitely and leave no room for flexibility.’

In this type of *si*-compound, *si* has gone through grammaticalization, a process in which a lexical or content word loses some or all of its lexical meaning and starts to fulfill a more grammatical function. The prototypical meaning of *si* is ‘to die’ or ‘to be dead,’ which means to lose life as displayed in the feature ‘-life’ in the resultative compounds. Over time, *si* gradually evolved and became grammaticalized into meaning of ‘no motion’ or ‘no flexibility’ as the complement of another verb in a compound. This semantic evolution is natural since living creatures usually are unconscious and turn rigid and motionless after death, and therefore *si* contains the semantic feature ‘-motion’. Later this type of *si* can also appear with other action verbs that have nothing to do with life just to denote the meaning of a jammed condition or condition with no flexibility, such as in *suo-si* ‘lock-die’ and *ka-si* ‘jam-die’. The *si* in the compounds in (6) can be paraphrased in other synonymous complement phrases with the meanings indicated above, as shown in (7). These complement phrases illustrate that *si* in this type of compound functions like a complement to modify the preceding verb, denoting the motionless, rigid state of a dead creature.

(7) a. 張三睡得像死人一樣。

Zhangsan shui-de xiang siren yiyang.

Zhangsan sleep-DE⁶ like dead-person same

‘Zhangsan slept so soundly that he was like a dead person.’

b. 張三醉得一動也不動。

Zhangsan zui-de yi-dong-ye-bu-dong.

Zhangsan drunk-DE one-move-just-not-move

‘Zhangsan was so drunk that he did not move at all.’

c. 你別把話說得沒有轉圜餘地。

ni bie ba hua shuo-DE mei-you zhuanhuan yudi.

you not BA word say-DE no turn-around space.

‘Don’t say it in such a way that it leaves you no room for other options.’

⁵ BA here indicates the BA -construction in Mandarin, which leads the object in a preverbal position.

⁶ The DE phrase after the verb in Mandarin is a complement phrase used to modify the action of the preceding verb.

3.2 *Si* denoting an extreme degree

Another type of *si*-compound is actually very common, with *si* occurring after psychologically perceptive verbs or adjectives (Chiu 2001), such as *ai-si* ‘love-die’, *hen-si* ‘hate-die’, *xiang-si* ‘miss-die’, *qi-si* ‘angry-die’, *xianmu-si* ‘admire-die’, and *jidu-si* ‘envy-die’. Many Chinese linguists have noticed such compounds and proposed different syntactic analyses for *si*. Chao (1968) interprets *si* as an intensive complement while Zhu (1982) regards it as a predicate complement to show the excessive degrees of the previous verb in the compound. Some examples of such *si*-compounds are shown in (8).

- (8) a. 張三累死了。
 Zhangsan lei-si le.
 Zhangsan tired-die CRS
 ‘Zhangsan was so tired that he felt he could die.’
- b. 考試題目難死了。
 kaoshi timu nan-si le.
 test question difficult-die CRS
 ‘The test questions are so difficult that we could die.’

In addition to the ‘-motion’ complement, *si* can also function in a compound as a complement to manifest an extreme degree of the descriptive state of the preceding verb. Liu (2006:10) proposes that the ‘excessive degree’ meaning of *si* is also a result of grammaticalization, one derived from the concept of ‘towards the end of the time string.’ Adopting this view, we propose that the evolution of the meaning of *si* from ‘to die’ to ‘to the extreme degree’ could have come from the concept of ‘from birth to death’ with death showing the extreme end, and thus towards the extreme degree, as illustrated in the diagram in (9). The concept could have evolved from a temporal extension of ‘till the time of death’ to an intensity extension of ‘to the extreme degree.’

- (9) ‘to die’ means ‘towards the extreme’
 birth —————> to die, to the extreme

Due to the semantics of the intensity extension, *si* always co-occurs with verbs of perception. This includes emotions such as *gaoxing* ‘happy’, *nanguo* ‘sad’, *xia* ‘scared’, *zhaoji* ‘worried’, and mental and psychological states such as *ben* ‘stupid’, *jingming* ‘tactful’, and *jiaohua* ‘cunning’. With such a combination, *si* is

to indicate the intensified degree of mentality. However, since *si* displays the extreme degree of the previous stative verb, any kind of verb or adjective that is measurable or gradable in degree can appear with *si*, as exemplified in (10). Sometimes the combination might sound odd in isolated phrases, but given the proper context, *si*-compounds are all very natural and productive in Mandarin, as illustrated in (11).

(10) Verbs that can co-occur with *si* in a compound

a. taste predicates

suan ‘sour’, *tian* ‘sweet’, *ku* ‘bitter’, *la* ‘spicy’, *xian* ‘salty’

b. measurement predicates

yuan ‘far’, *chang* ‘long’, *gao* ‘high’, *zhai* ‘narrow’

c. temperature predicates

leng ‘cold’, *bing* ‘icy’, *re* ‘hot’, *liang* ‘cool’, *tang* ‘burning’

d. speed predicates

man ‘slow’, *kuai* ‘quick’

e. appearance predicates

piaoliang ‘beautiful’, *chou* ‘ugly’, *pang* ‘fat’, *fei* ‘fatty’, *zang* ‘dirty’

f. predicates relating to physical or psychological state

zhang ‘stuffed’, *shou* ‘skinny’, *e* ‘hungry’, *mang* ‘busy’, *fan* ‘annoyed’, *jinzhang* ‘nervous’, *ganga* ‘embarrass’

(11) 這首詩長死了，背不起來。

zhe-shou shi chang-si le. bei bu-qi-lai.

this-CL poem long-die CRS memorize not-rise-come

‘This poem is so long. (I) cannot memorize it all.’

Liu (2006:9) also indicates that the *si* in a compound could come from a complement phrase like *dao-si* ‘to death’ as in *ben-dao-si* ‘stupid-to-death’. Adopting this, I found that the *si*-compounds above in (8), (10), and (11) are all derived from and hence can all be paraphrased with the synonymous phrasal complements of *de-yao-ming* ‘DE-want-life’ or *de-yao-si* ‘DE-want-die’, as shown in (12), meaning the *si* is a degree complement indicating the extreme degree of the preceding gradable stative verb in the compound. Due to this, though *si* does not mean physiological death, here it represents metaphorical death. *Si*, therefore, can be ambiguous, meaning either physiological or metaphorical death in *si*-compounds where the pre-*si* verb can actually cause death, such as in *lei-si* ‘tired-die’, *re-si* ‘hot-die’ or *leng-si* ‘cold-die’, or only metaphorical when the pre-*si* verb cannot cause death, such as in *mei-si* ‘pretty-die’, *tian-si* ‘sweet-die’ or *man-si* ‘slow-die’.

- (12) 我不去。那個地方{遠得要命 / 遠得要死 / 遠死了}。
 wo bu qu. na-ge difang {yuan-de-yao-ming / yuan-de-yao-si / yuan-si le}
 I not go that-CL place far-DE-want-life / far-DE-want-die / far-die CRS
 I don't want to go. That place is so far I could die.

The mutuality of 'death' with 'to the extreme' is quite understandable. According to Liu (2006, 2008), the meaning of 'to die' or 'death' was originally taboo in human languages. Yet, this negative word, when added and combined with a predicate, can magically break the taboo in its semantic property and be converted to an intensifier, meaning 'to an excessive extent.' This phenomenon not only exists in Mandarin but is also observed in many other languages. Some examples in English are given in (13).

- (13) a. The air is *deadly* cold.
 b. She is *dying* to know whether you love her or not.
 c. It's *bloody* wonderful.

3.3 *Si* denoting a firm and persistent manner

The next type of *si*-compound has *si* in the initial position with examples like *si-bu-chengren* 'die-not-admit', *si-bu-ken* 'die-not-willing', *si-ding-zhe* 'die-stare-DUR.', and *si-yao-zhe* 'die-bite-DUR.'. The semantic nature of *si* here shows a firm and persistent manner in carrying out the action of the following verb. The position of *si* in the compound gives a hint as to its function. As the manner adverb always modifies the verb from the left in Mandarin predicate phrases, *si* in this type of compound is to the left of the verb and functions like a modifier, in contrast to being a predicate or a complement as it is in other *si*-compounds. Tang (1988) interprets the morphological structure of this type of compound as a 'modifier-modifinee' relation.

Liu (2006:9) considers that *si* evolved from *zhi-si* or *dao-si* 'till die' phrases before the verb and eventually combined with the verb after some syntactic and morphological changes of deletion and reanalysis, as shown in (14). Hence, the grammaticalized *si* denotes a meaning of persistence and firmness in the manner of doing the action of the following verb. Naturally, the meaning of 'persistence' is a semantic extension from the attitude of someone doing something till s/he dies.

(14) Evolution of *si*-V compounds (from Liu, 2006:9)

dao-si ye bu chengren	si-ye bu chengren	si bu chengren	si-bu-chengren
till-die also not admit	die-also not admit	die not admit	die-not-admit
—————→		—————→	
<i>dao</i> gets deleted after weakening		<i>ye</i> gets deleted	structure reanalyzed

Si-compounds of this type can be categorized into two kinds according to the verb following *si* in the compound. The first kind is an action verb with the durative marker *zhe*; the second is an achievement verb in its negative form. Since *si* denotes the persistence of the following action, the following verb has to be compatible with a durative marker. Stative verbs, which neither denote an action nor are agreeable with the durative marker, will never occur in this type of *si*-compound. Achievement verbs are ‘-durative’ in feature (Smith 1994); however, when they are negated, they become ‘+durative’ and can co-occur with *si* to denote persistence. Examples of these two categories are given in (15).

(15) a. Action verbs with *zhe* marker

死盯著	死咬著	死抓著
si-ding-zhe	si-yao-zhe	si-zhua-zhe
die-stare-DUR	die-bite-DUR	die-grab-DUR
stare persistently	bite persistently	grab persistently
死佔著	死煩著	死哭著
si-zhan-zhe	si-fan-zhe	si-ku-zhe
die-occupy-DUR	die-annoy-DUR	die-cry-DUR
occupy persistently	annoy persistently	cry persistently
死拉著	死撐著	死賴著
si-la-zhe	si-cheng-zhe	si-lai-zhe
die-drag- DUR	die-hold- DUR	die-refuse- DUR
drag persistently	hold persistently	refuse persistently

b. Achievement verbs in negative form

死不承認	死不肯
si-bu-chengren	si-bu-ken
die-not-admit	die-not-willing
not admitting persistently	not-willing persistently

死不悔改	死不覺悟
si-bu-huigai	si-bu-juewu
die-not-repent	die-not-aware
not repenting persistently	not aware persistently

As grammaticalization is always characterized by desemanticalization, i.e., semantic bleaching, the semantic contents of *si* in all three types of *si*-compounds above are hence slightly different from the original core meaning of *si*, ‘to die’. The semantic bleaching causes partial loss of the lexical content of *si*, but retains the meaning of its grammatical content. Since the grammaticalizations are towards three different functions, *si* in the three grammaticalized *si*-compounds denotes different interpretations.

4. Causativity in *si*-compounds

In addition to the grammaticalized *si*-compounds above, the syntactic variations and alternation of argument structures in *si*-compounds contribute to a new category of *si*-compound, too, though there is not much meaning alternation involved here. Syntactic variations reveal that the transitivity of the *si*-compounds is intriguing. For instance, the compound *re-si* is sometimes intransitive as in (16a) but sometimes transitive as in (16b).

(16) a. 那只小狗熱死了。

na-zhi xiao-gou re-si le
that-CL little-dog hot-die CRS

i. ‘The little dog feels so hot that it could die.’

ii. ‘The little dog died from over heat.’

b. 車內四十度的高溫熱死了那只小狗。

che-nei si-shi-du de gao-wen
car-inside four-ten-degree DE high-temperature

re-si le na-zhi xiao-gou

hot-die COM that-CL little-dog

‘The 40-degree temperature inside the car

caused the little dog to die from overheating.’

Sentence (16a) is ambiguous and has two possible readings as shown above. The first reading indicates that the little dog feels hot and this is metaphorically similar to the extreme degree of death. Given such meaning, a compound should consist of the structure ‘verb+degree phrasal complement’, with the *si* showing the

feeling of extremity. The second reading, however, is quite different. It is a resultative reading of physiological death, meaning the little dog experiences extreme heat, which causes it to die. These readings derive from two different *si*-compounds with different internal structures, as discussed in Section 3.2 and Section 2, respectively.

The transitivity actually depends on the transitivity of the verb before *si*. If the verb is transitive with an agent or experiencer subject and a patient or theme object, then the *si*-compound can be transitive, as shown in (17). On the other hand, if the verb is intransitive with an experiencer or theme subject, then the *si*-compound is intransitive, as shown in (18).

(17) a. 張三殺死李四了。

Zhangsan sha-si Lisi le. (Zhangsan: agent; Lisi: patient)

Zhangsan kill-die Lisi CRS

‘Zhangsan killed Lisi.’

b. 張三愛死小妹了。

Zhangsan ai-si Xiaomei le. (Zhangsan: experiencer; Xiaomei: theme)

Zhangsan love-die Xiaomei CRS

‘Zhangsan loves Xiaomei so much that he could die.’

(18) a. 張三累死了。

Zhangsan lei-si le. (Zhangsan: experiencer)

Zhangsan tired-die CRS

‘Zhangsan is extremely tired.’

b. 地板滑死了。

diban hua-si le. (diban: theme)

ground-plank slip-die CRS

‘The floor is extremely slippery.’

But in (16b), the transitivity is not due to the transitive verb, since the verb *re* is not transitive. Here, the transitivity of the *si*-compound is derived from the causative structure, 使得 *shide* ‘cause’. Therefore a causative theta role can be added in the matrix subject position since the causer is always the most prominent theta role and stands highest, according to the Lexical Mapping Principle (Her 2007, Huang 2012), as shown in (19a). After the conflation, the causative NP, *gao-wen* ‘high-temperature’, overrides the original thematic structure and becomes the external argument of the *si*-compound, and the experiencer and theme theta roles are compressed into one argument (via suppressing one argument, see Her 2007, Li 2011) and become the internal argument of the *si*-compound, as shown in (19b).

- (19) a. 車內四十度的高溫使得那只小狗熱死了。
 che-nei si-shi-du de gao-wen shide
 car-inside four-ten-degree DE high-temperature cause
 na-zhi xiao-gou re-si le.
 that-CL little-dog hot-die CRS
 ‘The 40-degree temperature inside the car caused
 the little dog to die from overheating.’
- b. 車內四十度的高溫熱死了那只小狗。
 che-nei si-shi-du de gao-wen re-si le na-zhi xiao-gou.
 re-si < causer < experience_i theme_i>>
 gaowen xiaogou xiaogou

This kind of causative structure is not unusual in *si*-compounds. In all of the examples in (20), a causative NP is first added as an external causer and then conflated into the *si*-compound and becomes the subject NP. This is the same syntactic process described in (19b). Huang (2006) asserts that a causativity construction like this is done by adding an external argument onto the original event clausal complement containing *si*-compound verbs such as *qi-si* ‘angry-die’, *lei-si* ‘tire-die’, *xiao-si* ‘laugh-die’, and *men-si* ‘suffocate-die’. An example sentence with its derivation process is illustrated in (21a-b). After the derivation, the semantics of the causative light *v* is ‘shi-qisi’ ‘cause to feel extremely angry’, the phonetic realization of which is still *qi-si* in Chinese.

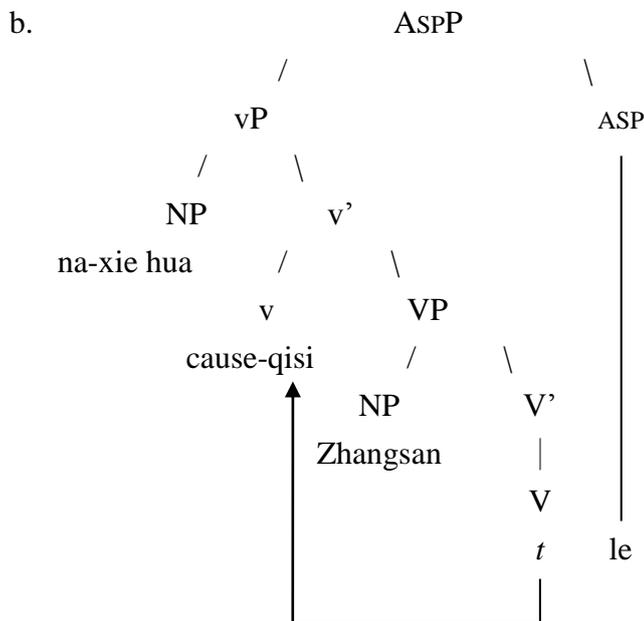
- (20) a. 那些話氣死了張三。
 na-xie hua qi-si le Zhangsan.
 that-several words angry-die COM Zhangsan
 ‘Those words made Zhangsan extremely angry.’
- b. 這種氣氛悶死了我們。
 zhe-zhong qifen men-si le women.
 this-kind atmosphere suffocate-die COM we
 ‘This kind of atmosphere made us feel extremely suffocated.’
- c. 張三的笑話會笑死你。
 Zhangsan de xiaohua hui xiao-si ni.
 Zhangsan DE joke will laugh-die you
 ‘Zhangsan’s jokes will make you laugh to death.’

However, there is another type of causative construction used with *si*-compounds, where the causer is from an original argument inside the causal event. In this case,

instead of adding an argument from outside, the causer argument is derived through a syntactic process by suppressing another argument NP, usually an agent NP. Due to this, the *si*-compounds here are normally not lexicalized as morphological words and are therefore not found in the dictionary. Examples such as the *chi-si* ‘eat-die’, *zuo-si* ‘work-die’, and *du-si* ‘study-die’ are given in (22).

(21) a. 那些話氣死張三了。

[_{vP} [_{CAUSER} na-xie hua qi-si [_{EVENT} Zhangsan *t*]]] le
 [_{vP} [_{CAUSER} that-several words angry-die [_{EVENT} Zhangsan *t*]]] CRS
 ‘Those words made Zhangsan extremely angry.’



(22) a. 那種藥會吃死你。

na-zhong yao hui chi-si ni.
 that-kind medicine will eat-die you.
 ‘Taking that kind of medicine will make you die.’

b. 這種工作會做死你。

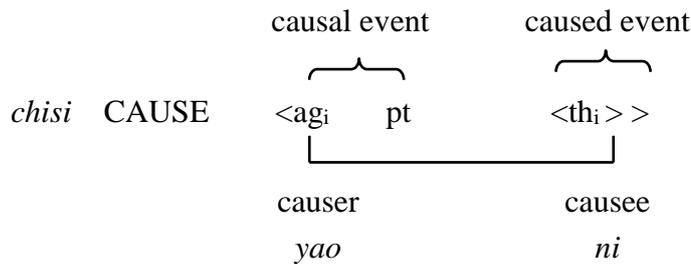
zhe-zhong gongzuo hui zuo-si ni.
 this-kind job will work-die you
 ‘Doing this kind of job will make you work to death.’

c. 這種論文會讀死人。

zhe-zhong lunwen hui du-si ren.
 this-kind paper will study-die person
 ‘Studying this kind of papers will tire a person to death.’

The derivation procedure of these causative *si*-compounds is a little complicated. Based on the Unified Mapping Principle in Her (2007), first, the original agent argument in the causative event becomes the internal argument; then the theme or patient argument becomes the external argument in the outmost emerged compound after linking the same argument in both the causal and the caused events via co-indexing. Let's take (22a) as an example and see the derivation process in (23). Originally, the causal event 'you take that kind of medicine' causes the caused event 'you die.' The agent NP *ni* 'you' in the causal event is co-indexed with the theme NP *ni* 'you' in the caused event and then emerges as the internal argument of the causee. The patient NP *yao* 'medicine' in the causal event emerges as the external argument of the causer after the suppression of the agent NP *ni* 'you.'

- (23) 那種藥會吃死你。
 na-zhong yao hui chi-si ni.
 that-kind medicine will eat-die you
 'Taking that kind of medicine will make you die.'



The analysis above shows that causative *si*-compounds can be derived from two different structures. One is from creating a causative structure by adding an external argument onto an event containing a *si*-compound verb. When the *si*-compound has only one experiencer argument, it usually has the nature of an unaccusative verb, which has the variation of externalizing the internal argument, as shown in (24a-b). With this syntactic alternation, it is therefore always possible and easy to have a causer as an external argument and have the original argument of the *si*-compound in the internal argument position, as shown in (24a'-b'). Other one-place predicate resultative compounds without *si*, as shown in (25a-b), do not have such freedom in internal-external variation, nor can they have causative constructions, as in (25a'-b').

- (24) a. 我熱死了。 / 熱死我了。
 wo re-si le. / re-si wo le.
 I hot-die ASP hot-die I CRS
 'I feel so hot that I could die.'

- a' 這天氣熱死我了。
 zhe tianqi re-si wo le.
 this weather hot-die I CRS
 'This weather makes me feel so hot that I could die.'
- b. 張三嚇死了。 / 嚇死張三了。
 Zhangsan xia-si le. / xia-si Zhangsan le.
 Zhangsan scare-die CRS / scare-die Zhangsan CRS
 'Zhangsan was scared to death.'
- b' 這突然的槍聲嚇死張三了。
 zhe turan de qiangsheng xia-si Zhangsan le.
 this sudden DE gun.sound scare-die Zhangsan CRS
 'The sudden gunshot made Zhangsan scared to death.'
- (25) a. 我看懂了。 / *看懂我了。
 wo kan-dong le. / *kan-dong wo le.
 I look-understand CRS / hot-die I CRS
 'I looked and understood it.'
- a' *這本字典看懂我了。
 *zhe-ben zidian kan-dong wo le.
 this-CL dictionary look-understand I CRS
 (intended meaning: 'This dictionary makes me look and understand it.')
- b. 張三長高了。 / *長高張三了。
 Zhangsan zhang-gao le. / *zhang-gao Zhangsan le.
 Zhangsan grow-tall CRS / *grow-tall Zhangsan CRS
 'Zhangsan has grown tall.'
- b' *牛排長高張三了。
 *niupai zhang-gao Zhangsan le.
 steak grow-tall Zhangsan CRS
 (intended meaning: 'Steak makes Zhangsan grow tall.')

The other structure is the result of a syntactic process concerning re-doing lexical mapping with the theta roles on the arguments available in the causal and caused events. The agent NP in the causal event must be identical to the theme NP in the caused event and later after conflation suppressed to be the internal argument of the new *si*-compound, as shown in (23). These syntactically derived *si*-compounds are unique and productive in Modern Chinese. Since they are formed only through a syntactic procedure, they are not recognized as words or compounds morphologically and are rarely found in the dictionary. It could be that they are still new and need time to be included in the dictionary. The other more likely reason is that there are already various *si*-compounds with various meanings of *si*, causing confusion and ambiguity as

will be depicted in the following. Hence, this type of *si*-compound is syntactic and can be distinguished from morphological *si*-compounds in both meaning and structure.

The two causative constructions of *si*-compounds above make us ponder further on how the meaning of *si* has changed. Originally *si* meant ‘die’ or ‘death,’ which is negatively received. However, with time *si* evolved to mean ‘excessiveness’ in one of its grammaticalized meanings, and the excessiveness can even override and bleach the negative ‘death’ semantics to become an intensifier depicting extremity in emotion or activity that is gradable (Liu 2008). It is interesting that this evolution has occurred in numerous languages around the world. In Chinese, the extremity of *si* further enables *si*-compounds to easily take on an external causer theta role which is blended into a new thematic structure via either of the syntactic derivations mentioned above.

Another area to ponder upon is the impact the extremity of *si* has on semantic and syntactic structures, especially in the case of modern Mandarin Chinese. We notice that in addition to the alternation from physiological death to metaphorical excessiveness, *si*, once it is associated with another verb and turned into a compound, can influence syntactic argument structures. Liu & Hu (2013) observed that via the human cognitive mechanism, the extremity of *si* can be conceived as equivalent to a complete overturn from life to death and thus affects the thematic structure whereby the experiencer of an emotional state is turned to be an affected undergoer and thus causes the swapping of argument positions. A typical example taken from Liu & Hu (2013) is shown in (26).

- (26) a. 我羡慕死他的好運了。
 wo xianmu-si ta de haoyun le.
 I envy-die he DE good luck CRS
 ‘I envy his good luck to death.’
- b. 他的好運羡慕死我了。
 ta de haoyun xianmu-si wo le.
 He DE good luck envy-die I CRS
 ‘I envy his good luck to death.’
 His good luck made me envious to death of him.’

With such rich variations, *si*-compounds can easily generate ambiguity between a physiological and metaphorical death, as in (27a), or between an experience or causer argument in the subject position, as in (27b). Hence, the contextual information is very important in Chinese. Moreover, syntactic formation is also a clue in interpreting *si*. For instance, in (28), the compound *shui-si* ‘sleep-die’ can only take a causative reading, not the motionless reading of *si*. The verb of *shui* ‘sleep’ is intransitive and

consequently the compound *shui-si* can only have an external argument, such as in (6) *Zhangsan shui-si le* ‘Zhangsan was sound asleep and motionless’. However, in (28), there is an internal argument *ni* ‘you’ and an external argument of event ‘(*ni*) *zhe-yang shui-xia-qu*’, which hence acts as a causer. And the agent argument of the causal event, i.e., *ni* ‘you’, is identical with the theme argument of the caused event, making it possible to have the causative syntactic derivation of a new *si*-compound as illustrated in (23). Hence, there is no ‘motionless’ reading but only a ‘causative’ reading for *shui-si* in (28).

(27) a. 有一個人熱死了。

You yi-ge ren re-si le.

Have one-CL person hot-die CRS

i. ‘There was one person who died of over heat.’

ii. ‘There was one person who felt so hot that he could die.’

b. 你們想死我了。

nimen xiang-si wo le.

you (pl.) miss-die I CRS

i. ‘I missed you guys so much that I could die.’

ii. ‘You guys missed me so much that you could die.’

(28) 這樣睡下去會睡死你。

zhe-yang shui-xia-qu hui shui-si ni.

this-way sleep-go-down will sleep-die you

‘Sleeping this way will make you sleep forever and never wake up.’

5. Co-occurrence in *si*-compounds

From the observations and discussion above, we can understand that *si*-compounds in Mandarin are abundant and varied with different internal structures. The semantics of *si* vary with its structures, grammatical functions, and the verbs with which it co-occurs, although *si*-compounds display an organized system. A brief summary of all the *si*-compounds discussed in this paper is outlined in Table 1.

The most common *si*-compounds are resultative compounds, with the *si* in the final position of the compound showing the result of death due to the action of the preceding verb. Because of this, the co-occurring verb naturally is an action verb that causes the death. Some examples are *sha-si* ‘kill-die’, *du-si* ‘poison-die’ and *ya-si* ‘suppress-die’.

There are two complement types of *si*. The first, deriving its meaning from death to show a motionless or fixed state, positioned in the final position of the compound,

indicates the figurative state of ‘being dead’ due to a previous action. Hence, the co-occurring verb is usually an action verb that can produce a motionless state like sleeping or a fixed state without flexibility like being jammed. Some examples are *zui-si* ‘drunk-die’, *shui-si* ‘sleep-die’, and *ding-si* ‘nail-die’. The other kind, deriving its meaning from ‘to death’ to show extremity or the end of life, also positioned in the final position of the compound, displays the degree of extremity on the preceding perceptual or gradable verb. In its figurative meaning, *si* shows the excessive degree of emotion or an extreme psychological condition and naturally co-occurs with state verbs, which usually describe a state and are gradable in degree. Some examples are *chou-si* ‘ugly-die’, *qi-si* ‘angry-die’, *re-si* ‘hot-die’, and *hen-si* ‘hate-die’.

The next type of *si*-compound has *si* in the initial position of the compound. As manner adverbs always modify their verbs from the left in Mandarin, *si* here shows that it is an adverbial modifier in function instead of a predicate or a complement. The position of *si*, hence, also accords with its morphological function inside the compound. Deriving from its original meaning of death, *si* here indicates a persistent manner in doing something till one dies. Since it shows persistence in carrying out an action, the co-occurring verb is naturally an action verb with a durative marker *zhe* to emphasize continuity. Alternatively, the following verb can also be a negated achievement verb, which also has a ‘+durative’ feature after being negated. Some examples are *si-ding-zhe* ‘die-stare-DUR’, *si-bu-chengren* ‘die-not-admit.’, and *si-chan-zhe* ‘die-entangle-DUR’.

Table 1. Brief summary of *si*-compounds in Mandarin

Compound examples	Internal structure	Meaning of <i>si</i>	Constituting Verb
<i>shasi</i> ‘kill-die’ <i>dusi</i> ‘poison-die’	Resultative compound	‘To die’ physiologically as a result state	Action V - <i>si</i>
<i>zuisi</i> ‘drunk-die’ <i>dingsi</i> ‘nail-die’	V-complement	In a motionless or fixed state like being dead	Action V - <i>si</i>
<i>chousi</i> ‘ugly-die’ <i>hensi</i> ‘hate-die’	V-complement	Figurative death to depict extremity and intensity	State V - <i>si</i>
<i>si-ding-zhe</i> ‘die-stare-Dur.’ <i>si-bu-chengren</i> ‘die-not-admit.’	Adv-V	Persistently in a durative action	Si- Action V-DUR.; Si-not- achievement V
<i>resi</i> ‘hot-die’ <i>chisi</i> ‘eat-die’	Causative	‘to die’ as in a resultative compound; ‘to death’ to display to an extreme degree	Unaccusative <i>si</i> -compound. <i>Transitive V + si</i>

The last type is the most intriguing type of *si*-compound because the original thematic structure has been altered due to the added causative argument. There are two ways to add causativity. The first is to add in an extra causer argument and make it an external argument; the original theme/experiencer argument becomes the internal argument, as illustrated in (29-30a-b). This causative construction can only be conducted on unaccusative *si*-compounds (Huang 2006). Transitive resultative *si*-compounds with an agent theta role are not unaccusative verbs since the external argument has been occupied by an agent, and therefore cannot undergo this alternation, as shown in (30c).

(29) a. 張三熱死了。

Zhangsan re-si le.

Zhangsan hot-die CRS

1. 'Zhangsan feels so hot that he could die.'

2. 'Zhangsan died from overt heat.'

b. 車內45度的高溫熱死張三了。

che-nei si-shi-wu-du de gao-wen

car-inside four-ten-five-degree DE high-temperature

re-si Zhangsan le

hot-die Zhangsan CRS

1. 'The hot temperature of forty-five degrees inside the car caused Zhangsan to feel extremely hot.'

2. 'The hot temperature of forty-five degrees inside the car caused Zhangsan to die from overt heat.'

(30) a. 張三熱死了。

Zhangsan re-si le.

resi: experiencer/theme < \emptyset > (unaccusative V)

Zhangsan

b. 車內45度的高溫熱死張三了。

che-nei si-shi-wu-du de gao-wen re-si Zhangsan le.

resi: causer < experiencer/theme > (causative V)

gao-wen Zhangsan

c. 李四殺死了張三。

Lisi sha-si le Zhangsan.

sha-si: agent < patient/theme > (transitive resultative V with agent)

Lisi Zhangsan

The other way of achieving causativity is via a syntactic process in which the

thematic structure is re-organized from the lexical re-mapping of the theta roles as discussed in the second half of Section 4. This causativity requires both a causal event and a caused event and the agent in the causal event needs to be identical with the theme theta role in the caused event. After the causative construction, the patient argument in the causal event becomes the external causer argument and the agent gets compressed with the theme theta role to become the internal theme argument of the new causative *si*-compound, as shown in (23). Owing to this, this kind of *si*-compound always constitutes a transitive action verb and *si*. As the caused event indicates an extreme outcome of someone's death, literally or metaphorically, the causal event usually means drastic or constant activities that cause a person to die or be in a miserable condition similar to dying. Such a syntactic formation of the *si*-compound is quite productive in modern Chinese and some examples are shown in (31).

(31) a. 這種烈酒會喝死張三。

Zhe-zhong liejiu hui he-si Zhangsan.

this-kind strong-liquor will drink-die Zhangsan.

'Drinking this kind of strong liquor will make Zhangsan die.'

b. 這檔股票玩死了張三。

Zhe-dang gupiao wan-si-le Zhangsan.

This-CL stock play-die-COM Zhangsan

Playing this stock made Zhangsan suffer greatly.

c. 那個漂亮女生會追死你

na-ge piaoliang nüsheng hui zhui-si ni.

that-CL beautiful girl will chase-die you

'Chasing that beautiful girl will tire you to death.'

6. Conclusion

This study examines the internal structures of all verbal *si*-compounds in Mandarin. There are five basic categories of *si*-compounds based on the analysis of the position, function, and meaning of *si*, the thematic structure of the composing verbs, and the derivational process of the *si*-compound. The first is the resultative *si*-compound which is formed by combining an action verb with *si*, showing the result. This type of compound involves both the morphological merging of two verbs and the syntactic re-mapping of the theta roles of the composing verbs. Next, three other types of *si*-compound can be identified from the different grammaticalizations of *si*. It is concluded that the position of *si* in the compound denotes different

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中文裡含有死字複合動詞的論旨與論元結構

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中文複合詞裡含有死字的複合動詞十分繁多而且語意變換奧妙有趣，本研究即探討這些複合動詞裡死字的意義、功能、及論旨結構。研究結果為中文裡有基本五類的動詞性死複合詞，首先最普遍的為表結果的死複合動詞，死的含意為最原始的「死掉」意義；之後的三種死複合詞都具有語法化的死，意義各為「致極端的程度」、「執著持續」、「無動靜僵住狀態」；最後一種死複合動詞是由經由句法使動結構過程形成，它可以是從非受格性的死複合動詞變化而來，或是由原因-結果兩事件合併過程經由詞彙論旨角色的重新分配而成。這五類死複合動詞看似不同但彼此有系統性關聯，或由語法化的關係相連接，或經由結果結構或使動結構的句法過程相連接；前者造成死字語意的些微變換，後者造成複合動詞內部論旨結構的換位。

關鍵詞：中文死複合動詞、使動、論旨結構、語法化