

Decomposing Collectivity in Mandarin Chinese**Jia-Chi Yu (余家綺)**

Abstract. This work examines two collective adverbs *yiqi* ‘together’, and *gongtong* ‘jointly’. I propose that *gongtong* is actually more restricted than *yiqi* in syntax and semantics. In semantics, *gongtong* needs to modify VPs which can be done cooperatively by plural arguments, whereas *yiqi* can freely modify any VPs, and thus derives ambiguous readings. In syntax, *yiqi* can be adjoined to vP or VP, but *gongtong* cannot be adjoined to the vP-internal position. I will show that their different syntactic positions can explain their different semantic behaviors. Moreover, I also compare *yiqi* with another adverbs *tongshi* ‘at the same time’, and claim that *yiqi* quantifies co-event arguments, but *tongshi* quantifies separate event arguments.

1. Introduction

This paper examines two collective adverbials *yiqi* ‘together’, and *gongtong* ‘jointly’ in Mandarin Chinese. As (1b-c) shows, these two words bring a collective reading to the sentence in which they occur.

- (1) a. Zhangsan he Lisi chuxi huiyi.
Zhangsan and Lisi attend meeting
‘Zhangsan and Lisi attend the meeting.’
- b. Zhangsan he Lisi yiqi chuxi huiyi.
Zhangsan and Lisi together attend meeting
‘Zhangsan and Lisi attend the meeting together.’
- c. Zhangsan he Lisi gongtong chuxi huiyi.
Zhangsan and Lisi jointly attend meeting
‘Zhangsan and Lisi jointly attend the meeting.’

Note that (1a) is vague between the distributive reading and the collective reading. It can mean that *Zhangsan* and *Lisi* attend the meeting as individuals or that *Zhangsan* and *Lisi* attend the meeting as a group. However, if we add the collective modifiers *yiqi* and *gongtong* into the sentences, the ambiguity is eliminated. Only the collective reading is left, as in (1b) and (1c).

Although, it would seem that these two collective modifiers behave similarly, they are actually distinct from each other in their syntactic and semantic properties. Therefore, in this paper, I will show that *gongtong* is more restricted than *yiqi* in syntax and semantics using solid evidence.

This paper is organized as follows. Section 2 briefly reviews previous research on *yiqi* and discusses related problems. Section 3 discusses the previous studies on *gongtong* and clarifies the semantic properties of *gongtong*. Section 4 presents syntactic structures of *yiqi*, *gongtong*, and another adverb *tongshi*, and proves that their different syntactic distributions matches their semantic behaviors. Section 5 is the conclusion.

2. Semantic Properties of *Yiqi* and Related Problems

Lü (1980, p. 608) mentions that the collective modifier *yiqi* can be a noun or an adverb. When *yiqi* serves as a noun, it usually occurs with the word *zai* ‘at’, and sometimes carries implications of deliberate accompaniment or entails a close relationship between focused subjects. See the following examples:

- (2) Zhexie nian lai, women yizhi zai yiqi.
 these year come we constantly at together
 ‘We have constantly stayed together over these years.’
- (3) Daxue si nian, women shenghuo zai yiqi.
 university four year we live at together
 ‘We lived together for four years while at university.’
- (4) Zhexie wenti yinggai fang zai yiqi lai kaolu.
 these problem should put at together come consider
 ‘These problems need to be considered together.’

In (2), the word *zai* functions as the main verb of the sentence, and *yiqi* denotes the location. In (3) and (4), *zai* ‘at’ serves as a preposition and forms a postverbal locative construction [V *zai* NP_{Loc}] with the main verb, such as *shenghuo* ‘live’, and *fang* ‘put’.

On the other hand, when *yiqi* is an adverb, it is similar to “together” in English. See (5) and (6).

(5) Women yiqi gongzuo le ba nian.
 we together work PERF eight year
 ‘We worked together eight years.’

(6) Women yiqi daoda zhongdian.
 we together arrive end
 ‘We arrived at the end together.’

Kuo (2007, p. 75) further proposes that *yiqi* ‘together’ has four different usages: the collective-action use, the coordinated-action use, the temporal proximity use and the spatial-temporal proximity use, as shown in (7) - (10).

(7) **The collective-action use**
 Naxie nanren yiqi taiqi gangqin.
 those man together lift piano
 ‘Those men lift a piano together.’

(8) **The coordinated-action use**
 Yuehan he Mali yiqi xiang na-yi-ge wenti.
 John and Mary together think that-one-CL problem
 ‘John and Mary think about that problem together.’

(9) **The temporal proximity use**
 Yuehan he Mali yiqi kaoshi.
 John and Mary together take.exam
 ‘John and Mary took the exam together.’

(10) **The spatial-temporal proximity use**
 Yuehan he Mali zuo zai yiqi.
 John and Mary sit at together
 ‘John and Mary sat together.’

According to examples (7) - (10), the collective modifier *yiqi* behaves like the adverbial *together*.¹ In (7), *yiqi* presents the collective-action use, in which *Laowang* and *Laoli* lifted the piano with each other's help. Next, (8) shows how *yiqi* demonstrates the coordinated-action use which *Laowang* and *Laoli* both thought about the same problem. Then, in (9), *yiqi* expresses the temporal proximity use, in which *Laowang* and *Laoli* took the exam at the same time. Finally, (10) shows how *yiqi* exhibits the spatial-temporal proximity use, in which *Laowang* and *Laoli* sat in the same location and at the same time.

Chuang (2008, p. 40) follows Kuo's analysis (2007) and agrees that *yiqi*, as a collective modifier, has four different usages, but he emphasizes that the temporal and the spatial proximity uses are primary uses, and that the coordinated-action use or the collective-action use is derived by the extension of the temporal or spatial proximity of action or activities. One of his examples is as follows.

- (11) Zhangsan he Lisi yiqi zai shudian gongzuo.
 Zhangsan and Lisi together at bookstore work
 'Zhangsan and Lisi work in a bookstore together.'

Chuang (2008) argues that the salient reading of (11) is the collective reading which indicates that *Zhangsan* and *Lisi* form a group by being employees of the **same** bookstore. Note that if *Zhangsan* and *Lisi* work in two **different** bookstores, the collective reading would fail. This manifests the fact that the collective reading intrigued by *yiqi* is derived from spatial proximity of actions or activities.

However, the counterexample of Chuang's (2008) proposal can be found. That is, Lasersohn (1990b, p. 22) notes that the collectivizing use of *together* does **not** require spatial proximity, as in (12).

- (12) John and Mary made \$10,000 together.

Although certain types of group actions by their very nature require the members of the groups to be near each other in space, this requirement imposed by the sentence about John and Mary actually follows the physical nature of piano-lifting, and not from the semantics of *together*, as in (13).

¹ Moltmann (2004) suggests that there are at least four prominent readings that the adverbial *together* displays: the collective-action reading, as in (1a); the coordinated-action reading, as in (1b); the spatiotemporal-proximity reading, as in (1c); and the temporal-proximity reading, as in (1d).

- (1) a. The men lifted the piano together.
 b. John and Mary climbed the mountain together.
 c. John and Mary sat on the beach together.
 d. John and Mary took the exam together. (Moltmann 2004, p. 308)

(13) John and Mary lifted a piano together.

Furthermore, Kuo (2007) and Chuang (2008) do not consider the importance of the predicates which *yiqi* modifies. In fact, Moltmann (2004, p. 309) points out the readings that *together* may display are in part determined by the content of the predicate, as shown in (14).

- (14)
- a. predicate describing actions (*lift the piano, solve the problem*)
→group action, #spatiotemporal proximity
 - b. predicates describing activities (*think about the problem, talk about politics*) →coordinated action, #spatiotemporal proximity
 - c. stative predicates, predicates of movement (*sit on the beach, fall into the water*) →spatiotemporal proximity
 - d. predicates describing (nonsocial) activities (*take the exam*) →temporal proximity

The example in (14) shows that different predicates may influence the readings of the collective modifier *together*. Actually, the Mandarin *yiqi* also exhibits the same properties. See the examples below.

(15) Zhangsan he Lisi yiqi zhuan le wubaiyuan.
Zhangsan and Lisi together earn PERF five hundred dollars
'Zhangsan and Lisi earn five hundred dollars together.'
(coordinated action reading)

(16) Zhangsan he Lisi yiqi tai gangqin.
Zhangsan and Lisi together lift piano
'Zhangsan and Lisi lift the piano together.'
(group action reading)

(17) Zhangsan he Lisi yiqi jiehun.
Zhangsan and Lisi together marry
'Zhangsan and Lisi got married together.'
(temporal proximity reading)

- (18) Zhangsan he Lisi zuo zai yiqi.
 Zhangsan and Lisi sit at together
 ‘Zhangsan and Lisi sat together.’
 (spatiotemporal proximity reading)

In (15), it is obvious that the collectivizing use of *yiqi* does not require spatial proximity. The example in (16) requires *Zhangsan* and *Lisi* to be near each other due to the physical nature of piano-lifting. In (17), the verb *jiehun* ‘marry’ is an inherent collective predicate, but when it co-occurs with *yiqi*, the collective reading may disappear. The reading of the sentence is converted to the temporal proximity reading. As a result, (17) means that *Zhangsan* and *Lisi* got married at the same time, but it does not mean that *Zhangsan* got married to *Lisi*. In (18), it is clear that the temporal proximity reading of *yiqi* needs to be in the postverbal position, and the verb *zuo* ‘sit’ is a stative predicate, so (18) conveys the spatiotemporal proximity reading.

A question arises here. Could we provide a unified analysis to generalize different readings of *yiqi*? Liao (2017) presents a possible answer to this question and claims that the collectivizing adverbial *yiqi* has two main uses. The first one is a team relationship which has a cumulative interpretation only, and the other one is a pure spatio-proximity which has either a distributive or a cumulative interpretation. Most importantly, **agents volition** is the critical factor for the shift of the two main uses, and *yiqi* adjoins to Cause’ or *v*’ for the meaning shift. Consider the following examples.

- (19) Zhangsan he Lisi yiqi da-le wu-ge penti.
 Zhangsan and Lisi together emit-perf. five-CL sneeze
 ‘Zhangsan and Lisi sneezed five times together.’
- (20) Zhangsan he Lisi yiqi mai-le wu-ben shu.
 Zhangsan and Lisi together sell-PERF five-CL book
 ‘Zhangsan and Lisi sold five books together.’

In (19), the sneeze-emitting event is usually not conducted volitionally, so the sentence receives a pure spatio-temporal proximity reading. In this scenario, *yiqi* may be adjoined to *v*’ in [-volition] case, and may allow cumulative (5 sneezes in total) or distributive readings (5 sneezes each). On the other hand, in (20), the book selling action is usually carried out volitionally, so the sentence has a team reading. Besides, *yiqi* may be adjoined to cause’ to get [+volition] case, but it may only allow the cumulative interpretation (5 books in total).

However, let us consider the example below.

- (21) a. Zhangsan he Lisi yiqi mai-le yi-ding maozi.
 Zhangsan and Lisi together buy-PERF one-CL hat
 ‘Zhangsan and Lisi bought a hat together.’
- b. Zhangsan he Lisi yiqi **ge** mai-le yi-ding maozi.
 Zhangsan and Lisi together each buy-PERF one-CL hat
 ‘Zhangsan and Lisi each bought a house together.’

In (21a), the action of buying a hat is usually conducted volitionally, so the sentence may derive a team reading. Moreover, in Liao’s (2017) analysis, it is impossible for the team reading to get a distributive interpretation. Thus, (21a) means that *Zhangsan* and *Lisi* cooperated to buy one hat in total. In other words, if the overt distributive operator *ge* is added into the sentence, as in (21b), the sentence would be assumed to be ungrammatical because Liao (2017) argues that the overt distributive operator has a semantic clash with the collectivizing adverb, as in (22). Furthermore, (22) indicates that in English, it is ungrammatical for the distributor and the collectivizing adverbial to co-occur in the sentence.

- (22) *John and Mary **each** went to Cleveland **together**.

Nevertheless, (21b) is indeed an acceptable sentence indicating that *Zhangsan* and *Lisi* accompanied each other for their own hat-buying subevents (i.e. distributive interpretation). This phenomenon conflicts with Liao’s (2017) proposal. Apparently, in Mandarin Chinese, *yiqi* does not have this restriction. Therefore, in this paper, I propose that *yiqi* can have either a distributive or cumulative interpretation even when it is involved in the team reading. Furthermore, *yiqi* is not only less strict than the English *together*, but it is freer than the other collective adverb *gongtong*. In fact, *gongtong* cannot co-occur with the overt distributor *ge*, as shown in (23).

- (23) *Zhangsan he Lisi **gongtong ge** mai-le yi-ding maozi.
 Zhangsan and Lisi jointly each buy-PERF one-CL hat

Accordingly, in the next section, I will show the grammatical properties of *gongtong* and the differences between *yiqi* and *gongtong* in detail.

3. Semantic Properties of *Gongtong*

Kuo (2007) argues that the Mandarin modifier *gongtong* ‘jointly’ is an agent-oriented adverb and that its focused element needs to be plural. Moreover, *gongtong* cannot co-occur with inherent distributive predicates or with predicates expressing an action. As a result, *gongtong* only has the collective or coordinated-action use. Consider the sentences in (23)-

(25).

- (23) a. Laoban he yuangong **yiqi** chuangye.
 Boss and employees together start an enterprise
 ‘The boss and the employees start an enterprise together.’
- b. Laoban he yuangong **gongtong** chuangye.
 Boss and employees jointly start an enterprise
 ‘The boss and the employees jointly start an enterprise.’
- (24) a. Zhangsan he Lisi **yiqi** shuijiao.
 Zhangsan and Lisi together sleep
 ‘Zhangsan and Lisi slept together.’
- b. *Zhangsan he Lisi **gongtong** shuijiao.
 Zhangsan and Lisi jointly sleep
- (25) a. Zhangsan he Lisi **yiqi** qili.
 Zhangsan and Lisi together stand up
 ‘Zhangsan and Lisi stood up together.’
- b. *Zhangsan he Lisi **gongtong** qili.
 Zhangsan and Lisi jointly stand up

The example in (23a) is ambiguous between the temporal proximity reading and the collectivizing reading. However, in (23b), only collectivizing reading is derived. That is, the boss and the employees just started their enterprise cooperatively. The example in (24a) shows that *yiqi* can co-occur with the inherent distributive predicate *shuijiao* ‘sleep’, whereas the ungrammaticality of (24b) reveals that *gongtong* cannot co-occur with the inherent distributive predicate *shuijiao* ‘sleep’. In (25), the verb *qili* ‘stand up’ is also the inherent distributive predicate, so *yiqi* is compatible with the verb *qili*, but *gongtong* is not.

Now, a question arises. Why can *yiqi* co-occur with inherent distributive predicates, but *gongtong* cannot? Chuang (2008, p. 57) provides one possible answer to this question. That is, Chuang suggests that *gongtong* functions as a strict part-structure modifier, which establishes the integrity by property-overlapping and responsibility-sharing, not with the temporal or spatial proximity of actions or activities. However, the inherent distributive predicates, such as *shuijiao* ‘sleep’ or *qili* ‘stand up’ are actions performed by an individual, and only that individual can take the responsibility of either sleeping or standing up. Thus, those inherent distributive predicates cannot fulfill the semantic requirement of *gongtong*. By contrast, *yiqi* can form the integrity or group by the temporal or spatial proximity of the actions or activities, so it allows co-occurrence with inherent distributive predicates, and

induces the temporal or spatial proximity reading. To explicitly explain his assumption, Chuang also points out that *gongtong* can be an adnominal element, but *yiqi* does not have this property. See (26) and (27).

- (26) a. *gongtong* *de* *mengxiang*
 together MOD dream
 ‘A common dream’
- b. **yiqi* *de* *mengxiang*
 together MOD dream
 (Intended) ‘A together dream’

- (27) a. Ouzhou -*gongtong* -*ti*
 Europe together community
 ‘European Community’
- b. *Ouzhou -*yiqi* -*ti*
 Europe together community
 (Intended) ‘European Community’

Thus, (26a) and (27a) show that *gongtong* can be an adnominal modifier, but *yiqi* cannot be adnominal, as in (26b) and (27b). The reason is that a group element induced by *yiqi* has to consider the possibilities of the temporal or spatial proximity because the integrity which *yiqi* intrigues is usually a consequence of activities or actions. On the other hand, *gongtong* only introduces groups or integrated wholes via property-overlapping or responsibility-sharing. As a result, *gongtong* can be in the adnominal position because it does not need to consider the temporality or proximity.

In short, according to Kuo (2007) and Chuang (2008), the prominent difference between *gongtong* and *yiqi* lies in that *gongtong* forms a group by property-overlapping or responsibility, whereas *yiqi* induces the integrity via temporal or spatial proximity.

However, in this work, I claim that *gongtong* can actually co-occur with inherent distributive predicates. Let us observe the examples below.

- (28) a. *Zhangsan han Lisi **gongtong** chi fan.
 Zhangsan and Lisi jointly eat rice
- b. Zhangsan han Lisi **gongtong** **chi** **yi-wan** **fan**.
 Zhangsan and Lisi jointly eat one-CL rice
 ‘Zhangsan and Lisi eat a bowl of rice jointly.’

- (29) a. *Zhangsan han Lisi **gongtong** **shuijiao**.
 Zhangsan and Lisi jointly sleep
- b. Zhangsan han Lisi **gongtong** **zai xingqitian** **shuijiao**.
 Zhangsan and Lisi jointly on Sunday sleep
 ‘Zhangsan and Lisi see a movie jointly on Sunday.’
- (30) a. *Zhangsan han Lisi **gongtong** **paobu**.
 Zhangsan and Lisi jointly run
- b. Zhangsan han Lisi **gongtong** **zai caochang** **paobu**.
 Zhangsan and Lisi jointly on playground run
 ‘Zhangsan and Lisi run jointly on the playground.’

Note that (28a) shows that *gongtong* cannot co-occur with the distributive predicate *chi fan* ‘eat meal’, but if the semantic content of VP which *gongtong* modifies emphasizes the similarity that plural argument could share, the sentence would become grammatical, as in (28b). In (29a), the verb *sleep* is a distributive predicate, so (29a) is ungrammatical. However, if we add a time phrase into the sentence, the sentence can fulfill the requirement of *gongtong*. That is, *Zhangsan* and *Lisi* slept, but they slept jointly on Sunday. The time phrase *on Sunday* provides the temporal proximity for the action of *sleeping*. Similarly, *paobu* ‘run’ as a distributive predicate is not compatible with *gongtong*, as in (30a). However, if the locative phrase *zai caochang* ‘on the playground’ is added into the sentence, *gongtong* can form a group via the spatial proximity of a plural action, which *Zhangsan* and *Lisi* conduct, as in (30b).

Based on the above observation, it is clear that the collectivizing adverb *gongtong* needs plural arguments to act collectively or cooperatively, as in (31).

- (31) a. Zhangsan he Lisi **gongtong** kefu kunnan.
 Zhangsan and Lisi jointly overcome difficulty
 ‘Zhangsan and Lisi jointly overcame the difficulties.’
- b. Dajia **gongtong** baohu huanjing.
 we jointly protect environment
 ‘We jointly protect the environment.’

In (31a) and (31b), both VPs, which *gongtong* modify, *overcoming the difficulties* and *protecting the environment*, can allow plural arguments to act cooperatively, so the sentences are acceptable. However, when VPs fail to fulfill this requirement as shown in the above examples, additional similarities must be included for plural arguments sharing or acting cooperatively.

More evidence exists to support my proposal. Consider the following examples:

- (32) a. *Zhangsan he Lisi gongtong qili.
 Zhangsan and Lisi jointly stand up
 b. Zhangsan he Lisi gongtong qili **guzhang**.
 Zhangsan and Lisi jointly stand up clap
 ‘Zhangsan and Lisi jointly stood up and clapped.’
- (33) a. *Zhangsan he Lisi gongtong weixiao.
 Zhangsan and Lisi jointly smile
 b. Zhangsan he Lisi gongtong **dui xiaohai weixiao**.
 Zhangsan and Lisi jointly to children smile
 ‘Zhangsan and Lisi jointly smiled at the children.’

In (32a), *gongtong* can co-occur with inherent distributive predicates if VPs are modified by *gongtong* entailing **purposes or goals** which are shared by plural arguments. That is, *Zhangsan* and *Lisi* stood up and clapped together. If the purpose is not added to the sentence, the sentence will be ungrammatical, as in (32b). In (33a), the VP, *weixiao* ‘smile’, as an inherent distributive predicate, cannot fulfill the semantic requirement of *gongtong*, but if **the goal phrase** is added into the sentence, the sentence will become acceptable, as shown in (33b).

Therefore, we can conclude that the collective adverb *gongtong* requires VPs, which it modifies to entail similarities, purposes, or goals because *gongtong* forms the integrity only through collective or coordinated actions performed by plural entities. On the other hand, *yiqi* is relatively free for the semantic requirements. In the next section, I will show that the different semantic requirements between *yiqi* and *gongtong* could be explained in the syntax.

4. The Interaction between *Yiqi*, *Gongtong* and *Tongshi*

So far, we have discussed the semantics of *yiqi* and *gongtong*, and tried to figure out their similarities and dissimilarities. Now, in this section, we will focus on their syntactic distributions and deal with related problems.

4.1 The Hypothesis

In the previous sections, I focused on the semantic requirement of *yiqi* and *gongtong* and proved that *yiqi* is actually less strict than *gongtong* in its semantic restrictions. The following examples can demonstrate their distinctions more accurately.

- (34) Zhangsan he Lisi **tongshi** huode-le nuobeier-jiang.
 Zhangsan and Lisi at.the.same.time get-PERF Nobel-prize
 ‘Zhangsan and Lisi got the Nobel Prize at the same time.’
 a. Zhangsan and Lisi got the Noble Prize in different areas.
 b. *Zhangsan and Lisi got the Nobel Prize in the same areas.
- (35) Zhangsan he Lisi **yiqi** huode-le nuobeier-jiang.
 Zhangsan and Lisi together get-ASP Noble-Prize
 ‘Zhangsan and Lisi got the Noble Prize together.’
 a. Zhangsan and Lisi got the Noble Prize in the same area.
 b. Zhangsan and Lisi got the Noble Prize in different areas.
- (36) Zhangsan he Lisi **gongtong** huode-le nuobeier-jiang.
 Zhangsan and Lisi jointly get-ASP Noble-Prize
 ‘Zhangsan and Lisi jointly got the Noble Prize.’
 a. *Zhangsan and Lisi got the Noble Prize in different areas.
 b. Zhangsan and Lisi got the Noble Prize in the same area.

As we see, (35) is ambiguous. It can mean that *Zhangsan* and *Lisi* got the Nobel Prize in the same area or in different areas. For instance, the first situation reveals that *Zhangsan* got the Nobel Prize in chemistry, whereas *Lisi* got the Nobel Prize in physics at the same time. The second situation shows that *Zhangsan* and *Lisi* won the Nobel Prize in chemistry cooperatively. In contrast, (34) can only mean that *Zhangsan* and *Lisi* got the Nobel Prize in different areas, and (36) suggests that *Zhangsan* and *Lisi* can only get the Nobel Prize in the same area.

I propose that the distinction between (34), (35), and (36) originates from two factors. The first factor is in regard to their semantic properties. First, the adverb *tongshi* quantifies **separate event arguments** because it is not a collective adverb, which turns a sum into an atomic group. (c.f. Link 1983 & 1984) Instead, *tongshi* just expresses that plural individuals conduct an action at the same time. As for *yiqi*, it quantifies **co-event arguments** because it turns plural entities into an atomic group, and the members of the group can perform an action in a collective manner or at the same time. Thus, *yiqi* derives the ambiguity. Lastly, *gongtong* focuses on the **actions or intentions** that VPs contain. That is, *gongtong* needs to modify VPs, which can be done cooperatively via plural arguments. As a result, *gongtong* can quantify only one event argument.

The second factor is about their different structural positions. Therefore, in the next section, I will examine the structural positions of *yiqi*, *gongtong* and *tongshi*. Furthermore, I will also prove that their different semantic requirements could be explained in the syntax.

4.2 The Structural Position of *yiqi*, *gongtong* and *tongshi*

In this section, I examine the structural positions of *yiqi*, *gongtong* and *tongshi* and propose that *yiqi* can be adjoined to ν P or VP, but *gongtong* and *tongshi* cannot be adjoined to positions that are ν P internal. The evidence is provided in the following paragraph.

First, the phrase structure I assume is presented below:

(37) CP > TP > AspP > ν P > VP

Elements such as time adverbs, modal adverbs, and aspect adverbs are assumed to be adjoined to TP or AspP; locatives and subject-oriented adverbs are adjoined to ν P; and manner adverbs are adjoined to VP.

Now, first look at the syntactic distributions of *yiqi*. *Yiqi* can only occur after elements that are adjoined to TP or AspP; for example, time adverbs, modal adverbs, and aspect adverbs. See (38) and (39) for examples.

(38) Time adverb

- a. Zhangsan he Lisi shang-xingqu yiqi jiao-le yi-pian
 Zhangsan and Lisi last-week together hand-Asp one-CL
 zuoye gei laoshi.
 assignment to teacher
 ‘Zhangsan and Lisi handed in their assignments to the teacher last week together.’
- b. *Zhangsan he Lisi yiqi shang-xingqu jiao-le yi-pian
 Zhangsan and Lisi together last-week hand-Asp One-CL
 zuoye gei laoshi.
 assignment to teacher

(39) Modal adverbs

- a. Zhangsan he Lisi huoxu yiqi qu-le taibei.
 Zhangsan and Lisi perhaps together go-ASP Taipei
 ‘Zhangsan and Lisi perhaps went to Taipei together.’
- b. *Zhangsan he Lisi yiqi huoxu qu-le taibei.
 Zhangsan and Lisi together perhaps go-ASP Taipei

(40) Aspect adverbs

- a. Zhangsan he Lisi tongchang yiqi chumen.
 Zhangsan and Lisi usually together go outside
 ‘Zhangsan and Lisi usually go outside together.’

- b. *Zhangsan he Lisi yiqi tongchang chumen.
 Zhangsan and Lisi together usually go outside

The examples in (38)- (40) show that the structural position of *yiqi* is lower than TP, AspP, because the occurrence of *yiqi* before elements that are adjoined to TP or AspP is ungrammaticality.

Second, *yiqi* can appear either before or after elements that are adjoined to *vP*, such as locatives and subject-oriented adverbs:

(41) Locatives

- a. Naxie xiaohai zai maidanglao yiqi chi hanbao.
 those kids at McDonald's together eat hamburger
 'Those kids ate hamburgers together at McDonald's.'
- b. Naxie xiaohai yiqi zai maidanglao chi hanbao.
 those kids together at McDonald's eat hamburger
 'Those kids ate hamburgers together at McDonald's.'

(42) Subject-oriented adverbs

- a. Tamen kaixindi yiqi tiaowu.
 they happily together dance
 'They dance together happily.'
- b. Tamen yiqi kaixindi tiaowu.
 they together happily dance
 'They dance together happily.'

The examples in (41) and (42) reveal that *yiqi* can be adjoined to *vP* because *yiqi* can appear either before or after *vP*-level elements.

Lastly, *yiqi* can appear before or after elements that are *vP* internal:

(43) Manner adverbials

- a. Gongren-men yiqi xinkudi gai fangzi.
 worker-PL together laboriously build house
 'Workers laboriously built the house together.'
- b. Gongren-men xinkudi yiqi gai fangzi.
 worker-PL laboriously together build house
 'Workers laboriously built the house together.'

(44) *ba*-phrases

- a. Naxie gongren yiqi ba fangzi chai le.
 those worker together BA house tear down PERF
 ‘Those workers tore down the house together.’
- b. Naxie gongren ba fangzi yiqi chai le.
 those worker BA house together tear down PERF
 ‘Those workers tore down the house together.’

The examples in (43) and (44) show that *yiqi* can appear before or after elements that are *vP* internal.

Here is a brief summary of the structural position of *yiqi*: The position it adjoins is lower than TP and AspP but it can be adjoined to the *vP* internal position.

Now, let us examine the syntactic position of another collective modifier, *gongtong*.

First, *gongtong* like *yiqi* can only occur after elements that are adjoined to TP or AspP; for example, time adverbs, modal adverbs, and aspect adverbs. See (45)- (47) for illustration.

(45) Time adverb

- a. Zhangsan he Lisi shang-xingqi gongtong wancheng-le
 Zhangsan and Lisi last-week jointly finish-PERF
 yi-xiang jihua.
 one-CL project
 ‘Zhangsan and Lisi jointly finished the project last week.’
- b. *Zhangsan he Lisi gongtong shang-xingqi wancheng-le
 Zhangsan and Lisi together last-week finish-PERF
 yi-xiang jihua.
 one-CL project

(46) Modal adverbs

- a. Tamen huoxu gongtong mai-le yi-dong fangzi.
 They perhaps jointly buy-PERF one-CL house
 ‘Perhaps they bought the house jointly.’
- b. *Tamen gongtong huoxu mai-le yi-dong fangzi.
 They jointly perhaps buy-PERF one-CL house

(47) Aspect adverbs

- a. Zhangsan he Lisi tongchang gongtong chumen.
 Zhangsan and Lisi usually jointly go outside
 ‘Zhangsan and Lisi usually go outside jointly.’
- b. *Zhangsan he Lisi gongtong tongchang chumen.
 Zhangsan and Lisi jointly usually go outside

The examples in (45)- (47) show that the structural position of *gongtong* is lower than TP and AspP because the appearance of *gongtong* before elements that are adjoined to TP or AspP results in ungrammatical sentences.

Second, *gongtong* can occur either before or after elements that are adjoined to vP, such as locatives and subject-oriented adverbs. See (48) and (49).

(48) Locatives

- a. Zhangsan he Lisi gongtong zai taibei ban yanchanghui.
 Zhangsan and Lisi jointly in Taipei hold concert
 ‘Zhangsan and Lisi jointly held the concert in Taipei.’
- b. Zhangsan he Lisi zai taibei gongtong ban yanchanghui.
 Zhangsan and Lisi in Taipei jointly hold concert
 ‘Zhangsan and Lisi held the concert jointly in Taipei.’

(49) Subject-oriented adverbs

- a. Zhangsan he Lisi gongtong kaixindi shang-tai ling
 Zhangsan and Lisi jointly happily on-stage receive
 jiang.
 award
 ‘Zhangsan and Lisi jointly and happily received the award on the stage.’
- b. Zhangsan he Lisi kaixindi gongtong shang-tai ling jiang.
 Zhangsan and Lisi happily jointly on-stage receive award
 ‘Zhangsan and Lisi jointly and happily received the award on the stage.’

The examples in (48) and (49) indicate that *gongtong* can appear either before or after vP-level elements.

Finally, VP-level elements in Mandarin Chinese include *ba*-phrase (in the “disposal” construction), goal, source, manner, and instrumental adverbials. It is clear that *gongtong* can only occur before these elements. See the following examples:

(50) Manner adverbials

- a. Shibing-men gongtong xinkudi dabai diren.
 soldiers-PL jointly laboriously defeat enemy
 ‘Soldiers jointly and laboriously defeated the enemy.’
- b. *Shibing-men xinkudi gongtong dabai diren.
 soldiers-PL laboriously jointly defeat enemy

(51) Source adverbial

- a. Zhangsan he Lisi gongtong congriben daihui jinianpin
 Zhangsan and Lisi jointly fromJapan bring souvenir
 ‘Zhangsan and Lisi jointly bring souvenirs from Japan.’
- b. *Zhangsan he Lisi congriben gongtong daihui jinianpin
 Zhangsan and Lisi fromJapan jointly bring souvenir

(52) *ba*-phrases

- a. Zhangsan he Lisi gongtong ba haizi fuyang zhangda.
 Zhangsan and Lisi jointly BA children bring up grow up
 ‘Zhangsan and Lisi jointly brought up children.’
- b. *Zhangsan he Lisi ba haizigongtong fuyang zhangda.
 Zhangsan and Lisi BA children jointly bring up grow up

The sentences in (50) -(52) suffice to prove that *gongtong* cannot be adjoined to V’. This indicates that the structural position of *gongtong* is higher than VP.

So far, we realized that *gongtong* is different from *yiqi* in that *gongtong* cannot be adjoined to positions which are *vP* internal, whereas *yiqi* can be adjoined to *vP* or VP.

Now, let us discuss the structural position of adverb *tongshi* ‘at the same time’. Consider the examples below.

(53) Modal adverb

- a. Zhangsan he Lisi huoxu tongshi chi fan.
 Zhangsan and Lisi perhaps at the same time eat meal
 ‘Perhaps Zhangsan and Lisi ate meals at the same time.’
- b. *Zhangsan he Lisi tongshi huoxu chi fan.
 Zhangsan and Lisi at the same time perhaps eat meal

(54) Time adverb

- a. Zhangsan he Lisi shang-xingqi tongshi jiao-le
 Zhangsan and Lisi last-week at the same time hand-PERF
 yi-pian zuowen.
 one-CL composition
 ‘Zhangsan and Lisi handed in their compositions last week at the same time.’
- b. *Zhangsan he Lisi tongshi shang-xingqi jiao-le
 Zhangsan and Lisi at the same time last-week hand-PERF
 yi-pian zuowen.
 one-CL composition

(55) Aspect adverbs

- a. Zhangsan he Lisi changchang tongshi chumen.
 Zhangsan and Lisi often at the same time go outside
 ‘Zhangsan and Lisi often go outside at the same time.’
- b. *Zhangsan he Lisi tongshi changchang chumen.
 Zhangsan and Lisi at the same time often go outside

As we see above, (53) -(55) show that the structural position of *tongshi* is lower than TP and AspP because the appearance of *tongshi* before elements that are adjoined to TP or AspP leads to ungrammaticality.

Now, let us turn to observe the interaction between *tongshi* and *vP*-level elements such as locatives and subject-oriented adverbs. It seems that *tongshi* can occur either before or after *vP*-level elements, as shown in (56) and (57).

(56) Locatives

- a. Zhangsan he Lisi tongshi zai shichang mai-le
 Zhangsan and Lisi at the same time at market buy-PERF
 yi-he jidan.
 one-CL egg
 ‘Zhangsan and Lisi bought a box of eggs at the market at the same time.’
- b. Zhangsan he Lisi zai shichang tongshi mai-le
 Zhangsan and Lisi at market at the same time buy-PERF
 yi-he jidan.
 one-CL egg
 ‘Zhangsan and Lisi bought a box of eggs at the market at the same time.’

(57) Subject-oriented adverbs

- a. Zhangsan he Lisi tongshi kaixindi shang-tai
 Zhangsan and Lisi at the same time happily on-stage
 ling jiang.
 receive award
 ‘Zhangsan and Lisi happily receive awards on the stage at the same time.’
- b. Zhangsan he Lisi kaixindi tongshi shang-tai
 Zhangsan and Lisi happily at the same time on-stage
 ling jiang.
 receive award
 ‘Zhangsan and Lisi happily receive awards on the stage at the same time.’

However, *tongshi* can only appear before elements in which are vP internal:

(58) Manner adverbials

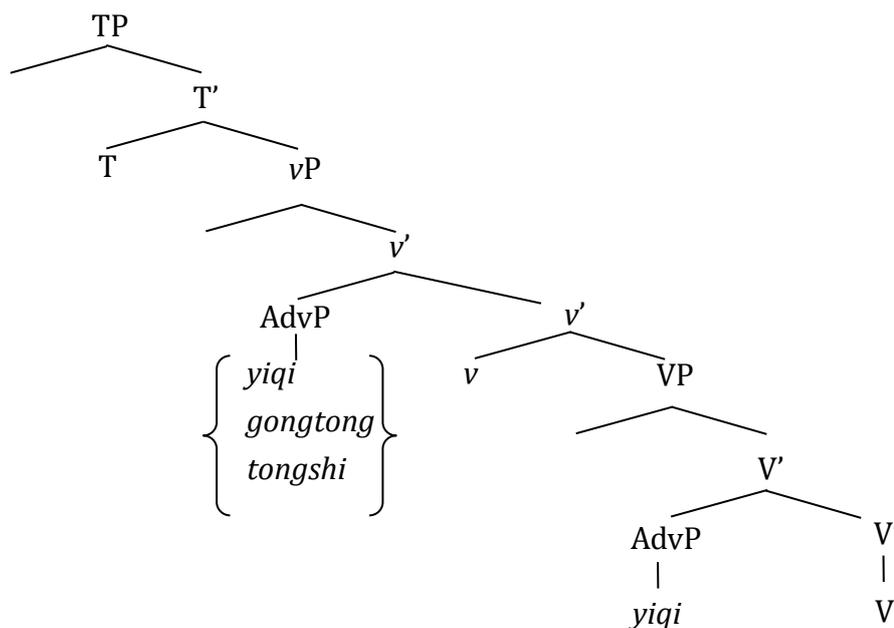
- a. Tamen tongshi henhen-de zuo-le Lisi yi-dun.
 they at the same time fiercely bust-PERF Lisi one-CL
 ‘They gave Lisi a fierce bust at the same time.’
- b. *Tamen henhen-de tongshi zuo-le Lisi yi-dun.
 they fiercely at the same time bust-PERF Lisi one-CL

(59) *ba*-phrases

- a. Tamen tongshi ba boli dapole.
 they at the same time BA glass break PERF
 ‘They broke the glass at the same time.’
- b. *Tamen ba boli tongshi dapole.
 they BA glass at the same time break PERF

In summary, *yiqi* can be adjoined to vP or VP, but *gongtong* and *tongshi* cannot be adjoined to the vP-internal position. See (60) for illustration.

(60)



4.3 Quantificational Requirements

Based on the structural positions of *yiqi*, *gongtong*, and *tongshi*, unlike from *yiqi*, *gongtong* and *tongshi* cannot be adjoined to positions which are vP internal. This distinction helps us solve the puzzle we mentioned earlier, which was noted in (34)- (36), and is repeated in (61)- (63).

(61) Zhangsan he Lisi **tongshi** huode-le nuobeier-jiang.

Zhangsan and Lisi at.the.same.time get-PERF Nobel-prize

‘Zhangsan and Lisi got the Nobel Prize at the same time.’

- a. Zhangsan and Lisi got the Noble Prize in different areas.
- b. *Zhangsan and Lisi got the Nobel Prize in the same areas.

(62) Zhangsan he Lisi **yiqi** huode-le nuobeier-jiang.

Zhangsan and Lisi together get-ASP Noble-Prize

‘Zhangsan and Lisi got the Noble Prize together.’

- a. Zhangsan and Lisi got the Noble Prize in the same area.
- b. Zhangsan and Lisi got the Noble Prize in different areas.

(63) Zhangsan he Lisi **gongtong** huode-le nuobeier-jiang.

Zhangsan and Lisi jointly get-ASP Noble-Prize

‘Zhangsan and Lisi got the Noble Prize jointly.’

- a. * Zhangsan and Lisi got the Noble Prize in different areas.
- b. Zhangsan and Lisi got the Noble Prize in the same area.

Obviously, *yiqi* in (62) induces ambiguity and allows for two different readings. By contrast, *gongtong* and *tongshi* only allow for one interpretation. How can this distinction be explained via syntax? Consider the following examples.

- (64) a. Tamen tongshi gongkai qingzhu xingongsi
 they at the same time publicly celebrate new company
 de chengli.
 MOD establishment
 ‘They publicly celebrate the establishment of a new company at the same time.’
- b. *Tamen gongkai tongshi qingzhu xingongsi
 they publicly at the same time celebrate new company
 de chengli.
 MOD establishment
- (65) a. Zhangsan he Lisi yiqi gongkai chengren zuixing.
 Zhangsan and Lisi together publicly confess crime
 ‘Zhangsan and Lisi publicly confess their crimes together.’
- b. Zhangsan he Lisi gongkai yiqi chengren zuixing.
 Zhangsan and Lisi publicly together confess crime
 ‘Zhangsan and Lisi confess their crimes together publicly.’
- (66) a. Zhangsan he Lisi gongtong gongkai chuxi huiyi.
 Zhangsan and Lisi jointly publicly attend meeting
 ‘Zhangsan and Lisi jointly attend the meeting publicly.’
- b. Zhangsan he Lisi gongkai gongtong chuxi huiyi.
 Zhangsan and Lisi publicly jointly attend meeting
 ‘Zhangsan and Lisi publicly attend the meeting jointly.’

According to Yang (2013, p. 31), the adverb *gongkai* ‘publicly’ presupposes that one public situation exists, and thus, what it modifies is no bigger than a single event. Furthermore, Huang (1982) mentions that c-command determines the adverbial scope, and this is the reason responsible for the contrast between (64)- (66).

As we see in (65) and (66), when co-occurring with *gongkai*, no matter whether *yiqi* or *gongtong*, they occur inside or outside the c-command domain of *gongkai*, which is identical to the domain of a single event, so the sentences are grammatical. This is because *yiqi*-quantification is very flexible. It can quantify a single event or different events. In

addition, *gongtong* allows to quantifying single events, so whether *gongtong* is inside the c-command domain of *gongkai* or not, the sentences are grammatical, even though *gongtong*-quantification is stricter than *yiqi*-quantification.

On the contrary, in (64), *tongshi* must occur outside the scope of *gongkai*, as in (64a), because *tongshi* can only range over different events. Occurring inside the scope of *gongkai* makes *tongshi* fail to quantify over different events, and therefore, it fails to satisfy the requirement of *tongshi*-quantification, as in (64b).

Note that even though both *yiqi* and *tongshi* can quantify different events, they might have subtle differences. In fact, as I mentioned earlier, *yiqi* actually quantifies co-event arguments, but *tongshi* quantifies separate event arguments. The reason for this is that *yiqi* induces a group, and the members of a group act cooperatively or at the same time. On the contrary, the plural arguments of *tongshi* do not form a group. Instead, it is two or more individuals performing an action at the same time. Thus, *tongshi* quantifies separate event arguments. I will discuss the difference between *yiqi* and *tongshi* in more detail in section 4.4.

Another example will help to explain the difference between *yiqi* and *gongtong*.

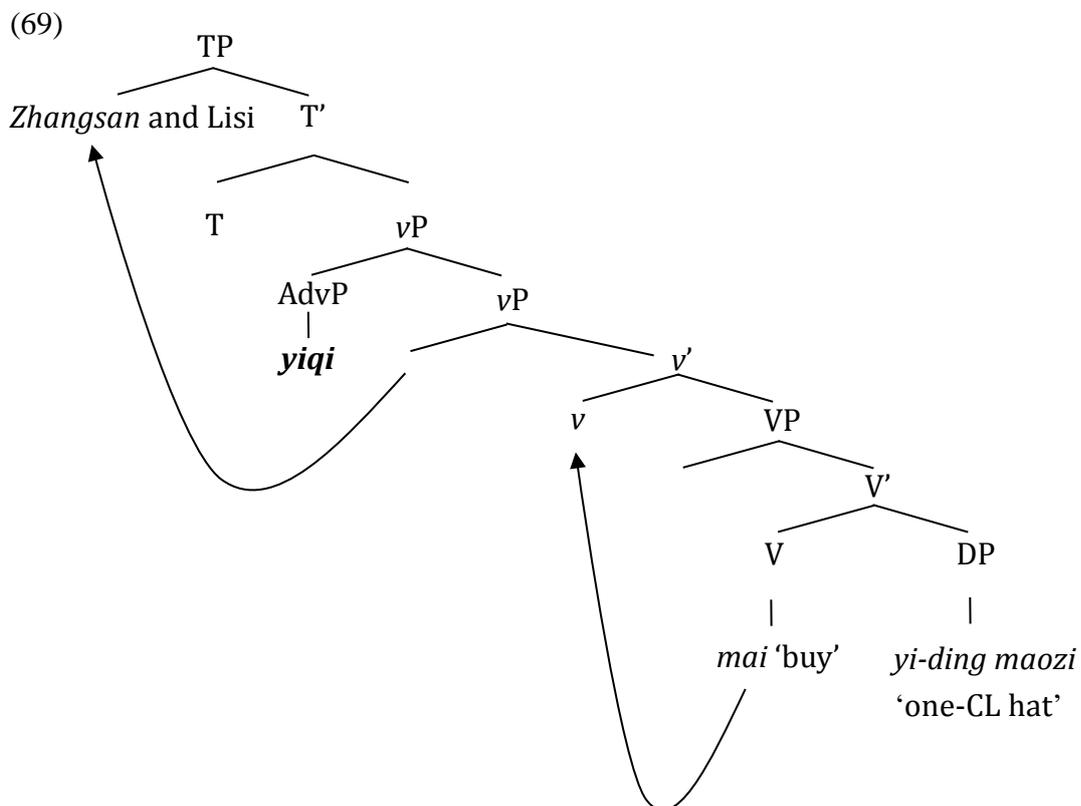
- (67) a. Zhangsan he Lisi yiqi ge mai-le yi-ding maozi.
 Zhangsan and Lisi together each buy-PERF one-CL hat
 ‘Zhangsan and Lisi each bought a house together.’
- b. *Zhangsan he Lisi gongtong ge mai-le yi-ding
 Zhangsan and Lisi jointly each buy-PERF one-CL
 maozi.
 hat

If our hypothesis is on the right track, *yiqi*-quantification is very flexible, so it can quantify co-event arguments, and allows for two interpretations. One is a cumulative reading in which *Zhangsan* and *Lisi* cooperated to buy one hat. The other one is a distributive reading in which *Zhangsan* and *Lisi* accompanied each other for their own hat-buying subevents. Thus, it may allow co-occur with the distributor *ge* ‘each’, as in (67a). However, *gongtong* has a strict quantificational requirement, so it cannot derive a distributive reading. As a result, *gongtong* cannot co-exist with the distributor *ge*, as in (67b).

Now, another point that is worth discussing. As we noted earlier, *yiqi* can be adjoined to the vP or VP position, but *gongtong* cannot. The question is what the consequences will be when *yiqi* is adjoined to the vP or VP position? I propose that when *yiqi* is adjoined to the vP position, it takes a whole event as its argument, and turns plural entities into an atomic group. However, when *yiqi* is adjoined to the VP position, it modifies the manner of actions or activities. Let us consider the below sentence.

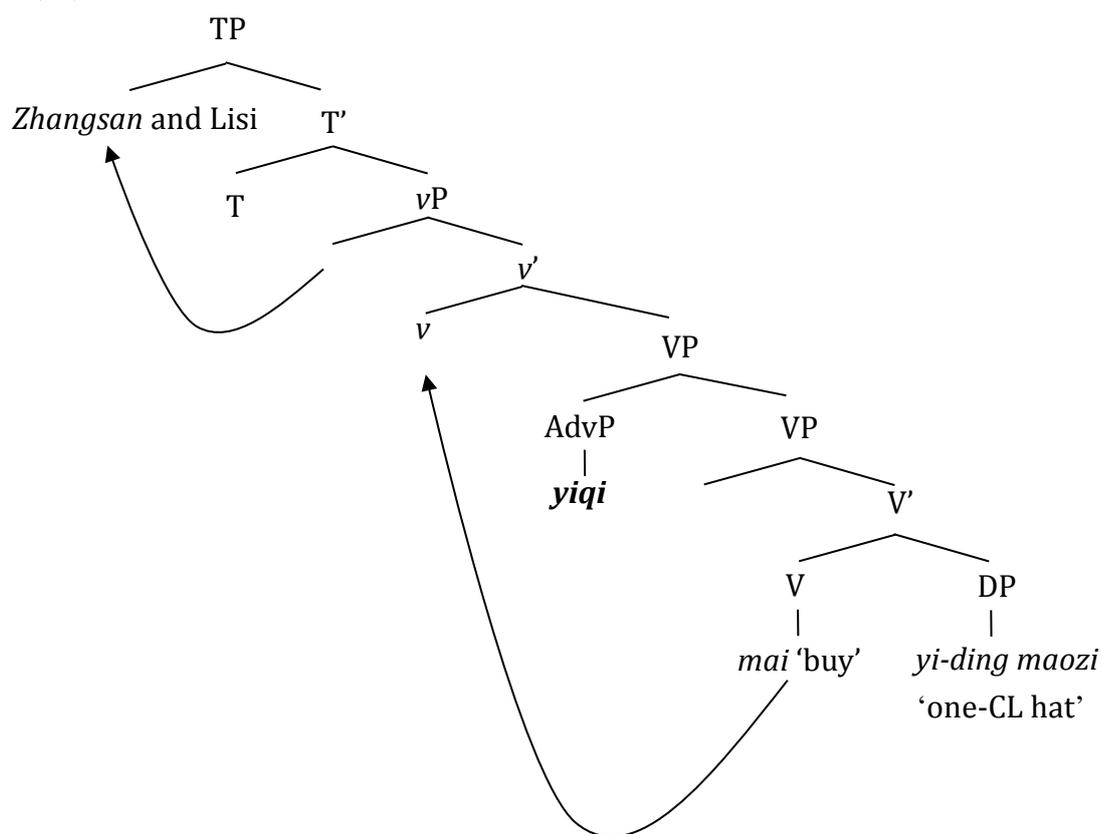
- (68) Zhangsan he Lisi yiqi mai-le yi-ding maozi.
 Zhangsan and Lisi together buy-PERF one-CL hat
 ‘Zhangsan and Lisi each bought a hat together.’

In fact, in (68), the collectivizing *yiqi* allows two different readings: a distributive or a cumulative reading. When *yiqi* is adjoined to *vP*, it derives the subject-oriented interpretation, as illustrated in (69). In (69), *yiqi* is adjoined to *v'* and turns plural entities *Zhangsan* and *Lisi* into an atomic group. Besides, *yiqi* also takes a whole event as its argument. Thus, the sentence in (68) can have the cumulative reading. That is, *Zhangsan* and *Lisi* as a group cooperated to buy one hat in total.



On the other hand, when *yiqi* is adjoined to VP, it derives the manner interpretation. See (70) for illustration.

(70)



As we see in (70), when *yiqi* is adjoined to V' , it selects the VP as its argument, and takes scope over the action of buying a hat. As a result, (68) illustrates a situation in which *Zhangsan* and *Lisi* accompanied each other for their own hat-buying subevents (i.e., distributive interpretation).

Therefore, it is clear that different syntactic positions of *yiqi* may result in different interpretations. Now, examine the case of *gongtong*. The collective adverb *gongtong* only allows team readings (collective or coordinated readings). The reason for this is that *gongtong* can only be adjoined to vP , and serves as a subject-oriented adverb. As a result, *gongtong* cannot modify the manner of actions or activities. Furthermore, it also needs plural entities to form a group and modifies predicates, which can be done cooperatively via plural arguments. Obviously, *gongtong* is actually stricter than *yiqi* in syntax and semantics.

In conclusion, it is clear that either in semantics or in syntax, *gongtong* is stricter than *yiqi*. However, what about *yiqi* and *tongshi*? In semantics, *tongshi* quantifies separate event arguments, but *yiqi* quantifies co-event arguments. How is this phenomenon explained in syntax? In the next section, I will show that *tongshi* is not a collective adverb, and this may lead to distinctions between *yiqi* and *tongshi*.

4.4 The Distinctions between *Yiqi* and *Tongshi*

The two adverbs *yiqi* and *tongshi* seem to behave similarly because both adverbs are able to

express temporal proximity reading, as shown in (71).

- (71) a. Zhangsan he Lisi tongshi chumen.
 Zhangsan and Lisi at the same time go outside
 ‘Zhangsan and Lisi went outside at the same time.’
 b. Zhangsan he Lisi yiqi chumen.
 Zhangsan and Lisi together go outside
 ‘Zhangsan and Lisi went outside together.’

Thus, (71a) shows that *Zhangsan* and *Lisi* went outside at the same time, but they did not need to start out in the same place. For instance, *Zhangsan* could be in Taipei when he went outside, whereas *Lisi* could be in Hualien when he went outside. However, in (71b), *Zhangsan* and *Lisi* must start out on their way in the same place. The reason for this is that even though *tongshi* can express a temporal proximity reading, it is still not a collective adverb. The evidence is as follows.

First, Haegeman (1994, p. 260) mentions that the English *together* requires a plural antecedent. Furthermore, the relationship between *together* and the antecedent is local. See (72) for an example.

- (72) a. The boys left together.
 b. *The boy left together.
- (73) *The boys said [_{CP} that [_{IP} Mary left together]].

The grammaticality of (72a) as opposed to the ungrammaticality of (72b) suggests that *together* needs to be related to a plural NP in an argument position. Now, let us look at the Mandarin *yiqi*.

- (74) a. Zhangsan he Lisi yiqi chifan.
 Zhangsan and Lisi together eat meal
 ‘Zhangsan and Lisi ate a meal together.’
 b. *Zhangsan yiqi chifan.
 Zhangsan together eat meal
- (75) *Zhangsan he Lisi shuo [_{CP} Wangwu yiqi likai-le.]
 Zhangsan and Lisi say Wangwu together leave-PERF

As we see in (74), *yiqi* also needs a plural NP in its argument position. Furthermore, (75)

indicates that *yiqi* needs to obey the Locality Condition.

Nevertheless, it is unnecessary for *tongshi* to have a plural NP in its argument position.

- (76) a. Zhangsan tongshi ting yinyue he xie zuoye.
 Zhangsan at the same time listen music and write assignment
 ‘Zhangsan listened to music and wrote assignments at the same time.’
- b. *Zhangsan yiqi ting yinyue he xie zuoye.
 Zhangsan together listen music and write assignment

In (76a), *tongshi* takes a singular NP as its argument, but it needs to modify coordinated VPs to express two actions being performed at the same time. However, (76b) shows that *yiqi* must take a plural NP as its argument.

In summary, as evidence shows, *tongshi* is not a collective adverb. It just conveys that plural entities formed by a sum operator conduct an action at the same time. In contrast, *yiqi* is indeed a collective adverb, and it turns plural entities into an atomic group. This group can perform an action in a collective manner or at the same time. Therefore, *tongshi* actually quantifies separate event arguments because there are two individuals performing an action at the same time rather than acting cooperatively. On the contrary, *yiqi* quantifies co-event arguments because plural entities form a group and act cooperatively or at the same time.

5. Conclusion

In this work, I claim that although *yiqi* and *gongtong* are considered the counterparts of the English *together*, they are actually distinct from each other in their lexical meanings and uses. I propose that the syntactic and semantic requirements of *yiqi* are less restricted than those of *gongtong*. In fact, *yiqi* may intrigue different interpretations of sentences, such as a team reading or a pure temporal-proximity reading, whereas *gongtong* can only allow a team reading, and it needs to modify a VP, which can be done cooperatively by plural arguments. This distinction can be accounted for by their different structural positions. That is, *yiqi* can be adjoined to *vP* or *VP*, whereas *gongtong* can only be adjoined to *VP*. When *yiqi* is adjoined to *vP*, it may have a subject-oriented interpretation, and results in a cumulative reading. However, when *yiqi* is adjoined to *VP*, it has a manner interpretation, and results in a distributive reading. This fact proves that even in the team reading, *yiqi* still allows for the distributive interpretation. As for *gongtong*, it is indeed an agent-oriented adverb that is proposed by Kuo (2007). Thus, it cannot have a distributive reading.

Furthermore, I point out that *yiqi* can quantify a single event or different events, but *gongtong* and *tongshi* cannot. In fact, *gongtong* can only quantify a single event, whereas *tongshi* can only quantify different events. I propose that the factor responsible for this

distinction can be found in the syntax.

Lastly, I also compare *yiqi* with another adverb *tongshi*. I propose that *tongshi* is not a collective adverb and that it quantifies separate event arguments, but *yiqi* is a collective adverb and quantifies co-event arguments.

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