

Chinese aspect marker *-le* and its acquisition by American English speakers

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This study investigates the functions of the perfective marker *-le* and its acquisition by native speakers of American English from the perspective of the Aspect Hypothesis (Andersen and Shirai, 1994). We set out to test the predicted order regarding four verb categories in terms of their frequencies of *-le* marking. Our results confirmed that *-le* was most frequently used with achievement verbs by learners, but revealed deviated patterns of distribution in other categories when they were compared with those of native speakers of Chinese. We discussed our data further from the perspective of prototypicality, and provide pedagogical implications to Chinese as a foreign language.

Keywords: aspect marker *-le*, acquisition of Chinese, the Aspect Hypothesis, verb category

1. Introduction

In studies of tense-aspect morphology, it is crucial to distinguish two pairs of concepts: tense vs. aspect and grammatical aspect vs. lexical aspect. Though both tense and aspect are represented by grammaticalized morphological means, tense locates a situation on a time line (Comrie, 1985) while aspect, also called grammatical aspect, represents the internal temporal constituency of a situation. Different from grammatical aspect, lexical aspect refers to the inherent meaning encoded in lexical items that describe the situation. These lexical items are composed of verbs (or verb phrases) and are classified according to their temporal properties into the following four categories: state verbs, activity verbs, accomplishment verbs or achievement verbs (Vendler 1957, 1967). Shirai and Andersen (1995, p. 744) give definitions as the following: a) State verbs (STA) are verbs that have no dynamics, and continue without additional effort or energy being applied; b) Activity verbs (ACT) are verbs that are dynamic in nature, with no clear endpoint, and the phases

in the internal structure of an activity are homogeneous; c) Accomplishment verbs (ACC) differ from activities in that they do have a clear endpoint; d) Achievement verbs (ACH) are punctual, telic and dynamic and they differ from accomplishment verbs in that they happen instantaneously.

The four categories contrast in terms of three binary features: [\pm telic], [\pm punctual], and [\pm dynamic], as shown in Table 1. “[\pm telic] denotes whether the situation has an inherent endpoint; [\pm punctual] denotes whether the situation has duration; and [\pm dynamic] denotes whether energy is required for the situation to exist or continue” (cf. Shirai and Andersen, p. 744). The examples involving the verb “read”, as shown below, reveal that the complement a verb takes up should be considered in the classification of the verb. The word “read” by itself is an activity verb for the potential lack of an endpoint in the action it denotes. However, the quantized noun phrase “two books” entails an endpoint to the action of reading, therefore, “read” in “to read two books” should be classified as an accomplishment verb.

Table 1. Features and examples of verb categories

	Dynamic	Punctual	Telic	Examples
STA	–	–	–	be, love, want
ACT	+	–	–	dance, play, read
ACC	+	–	+	build a house, run a mile, read two books
ACH	+	+	+	win, realize, arrive

The relationship between grammatical aspect and lexical aspect in language acquisition is explored in the Aspect Hypothesis which states that the acquisition of tense-aspect morphology (grammatical aspect) is strongly influenced by the inherent semantic meaning of verbs (lexical aspect) (Andersen and Shirai, 1994). Put differently, learners choose whether and what grammatical aspect marker to use with certain verbs based on which category within lexical aspects the verbs belong to. More specifically, learners’ decision making depends on the temporal properties of the situation the verb or the verb phrase describes. For example, studies on second language (L2) acquisition of English have shown that the progressive is used more often by learners with activity verbs and simple past more often with achievement verbs (Bardovi-Harlig and Reynolds, 1995).

Initially based on L2 acquisition of Spanish (Andersen, 1984), the original claims of Aspect Hypothesis have evolved through different versions. A recent version (Shirai, 2004, chap. 5, p. 93) predicts that: (a) Past marking first appears on achievement/accomplishment verbs, and is eventually extended to activity and stative verbs; (b) In languages that encode the perfective/imperfective distinction,

imperfective past appears later than perfective past, and imperfective past marking begins with stative verbs, and finally to achievement verbs; (c) In languages containing progressive aspect, progressive marking begins with activity verbs, then extends to accomplishment and achievement verbs; (d) Progressive markings are not incorrectly overextended to stative verbs. The Aspect Hypothesis and its predictions have been extensively tested in L2 acquisition of English, French, Italian, Spanish, Japanese, Dutch, Catalan, Portuguese and Russian (see the studies reviewed in Bardovi-Harlig, 2000). Though there are a few studies (e.g. Kumpf, 1984; Rohde, 1996; Salaberry, 1998) that offer counterevidence, most of the studies support all four claims by the Aspect Hypothesis.

The present paper attempts to widen the database in non-Indo-European languages by testing the Aspect Hypothesis (more specifically its first prediction) by collecting and examining data on L2 acquisition of Chinese. Our goal is to test if verbal semantics plays an essential role in L2 acquisition of the Chinese aspect marker *-le*. Verb semantics in Chinese in relation to Vendler's four-category schemata has been widely discussed in literature (cf. Tai and Chou, 1975; Tai, 1984; Shi, 1988; Deng, 1985; Lin, 2004). Tai (1984) pointed out that accomplishments in English, when in past or perfect tenses, necessarily imply an attainment of the goal. Their supposed equivalents in Chinese do not contain such an implication as an inherent part of the meaning. To insure the attainment of a goal, Chinese resorts to resultative verb compounds. For example, "to study" in English is an activity verb, but "to learn" is an accomplishment verb. The Chinese equivalent for "to study" is *xue*, and for "to learn" is *xue-hui*. *Xue-hui* is a resultative verb compound with *xue* denoting action and *hui* result. As for achievements, many are also realized in the form of a resultative verb compound, e.g., "to find" in English is *zhao-dao* "seek-reach" in Chinese. Other achievements which are in a simple verb form with the endpoint and the result state of the event occurring instantaneously must co-occur with the inchoative aspect marker *-le* "become" to mark a change of state, as illustrated in *ta si-le* "he died". Shi (1988) extends Tai's generalization and argues that in general, languages have only two primitive verbal categories, state and activity. Accomplishments and achievements are complex categories. This idea was followed by Lin (2004) in studying the verbal system of Mandarin Chinese. In this paper, we adopt the four-category framework to facilitate our analysis to the acquisition of the aspect marker *-le*. As noted in Shirai (2004, Chapter 4, footnote 2, p. 93), for the acquisition of Chinese, the first prediction can be rewritten as "a perfective/completive marker first emerges with telic/punctual verbs". The present study adapted this hypothesized generalization as the following: the verb category that is most frequently used with *-le* (and may be acquired earliest or best) by learners of Chinese is achievements, which is then followed by accomplishments and activities; and the least frequently used category is states.

2. Background

2.1 The perfective marker *-le*

It is widely accepted that there are two distinct LEs in Mandarin. *-le* is a perfective marker and verb-final, and a sentence-final *le* as perfect marker (or an inchoative marker) signaling a change of state. Li and Thompson (1981) propose the sentence-final *le* as a perfect marker, claiming that the communicative function of *le* is to signal a Current Relevant State (CRS). That is, attaching *le* to the end of a sentence shows that a situation has special current relevance to some particular reference time. In this sense, the sentence-final *le* is similar in function as the perfect aspect in English, and can co-occur with the verb-final *-le* in one sentence. Compare the following minimal pair where (1) simply indicates a fact, and serves a good answer to “What did you do today?”, while (2) more likely serves as a response to “You didn’t do any reading today”.

- (1) wo kan-*le* liang ben shu.
I read-*le* two MEASURE-WORD book
“I read two books.”
- (2) wo kan-*le* liang ben shu le.
I read-*le* two MEASURE-WORD book *le*
“I read two books (already)! ”

Zhang (1995, p. 120) also argues that the two LEs share the same fundamental meaning of “contrast to previous state”. So, the present paper counts both LEs that share the same function as tokens of the perfective marker.

There is a general consensus among Chinese linguists that *-le* is a perfective aspect marker. However, there is no agreement on the definition of the “perfectivity” of *-le* (Li and Shirai, 2000; Duff and Li, 2002). The semantic and grammatical functions of *-le* are more elusive, as illustrated in the following pair that both use the verb *dao* “arrive”. The verb *dao* “arrive” takes the perfective marker *-le* in (4), but not in (3) even though the two describe the same situation of “arriving at the supermarket”. Note that in the English translation of (3), both verbs are obligatorily marked with past tense.

- (3) wo **dao** chaoshi mai-*le* xie cai.
I arrive supermarket buy-*le* some vegetables.
“I went to the supermarket and bought some vegetables.”
- (4) wo **dao-*le*** chaoshi jiu gei ni da dianhua.
I arrive-*le* supermarket then give you call phone
“I will call you once I arrive at the supermarket.”

An explanation to the optionality of *-le* has not arrived at consensus among Chinese linguistics (Deng, 2010). Chu (1998) proposes peak-marking function and anteriority-marking function. The peak-marking function views a whole series of situations as a single one and assigns *-le* to the peak situation. This explains why, in sentence (3), only *mai* “buy” is suffixed with *-le*. This function contrasts sharply with Romance languages where all the verbs denoting a series of actions must be marked with both tense and aspect. In addition to the peak-marking function, *-le* also carries the anteriority-marking function, which means that in a series of situations, *-le* signals that the second situation does not happen until the first situation (where *-le* is suffixed) ends. In (4), *da dianhua* “calling” will not happen until *dao chaoshi* “arriving at the supermarket” completes. So, *-le* is not needed for “calling” but required for “arriving”. But, it should be noted that unlike (4) where both *da* and *dao* events express some future events, *da* can take up *-le* when expressing a true past event, such as in *wo dao-le chaoshi jiu gei ni da-le dianhua* ‘I called you when I arrived at the supermarket’. Under such a case, both events would refer to some occurrences in the past, and the peak-function could then be activated as in (3). The *-le* after *dao* “arrive” becomes optional. (3) and (4) show that the grammaticality of *-le* goes beyond the sentence level. But unlike many Romance Languages where the aspectual contrasts exists mostly in the past, the complexity of *-le* multiplies as it can be used in the present, past and future. As shown in (5), the sentence *ta lai-le* “she come-*le*” can only be disambiguated in contexts (adapted from Duff and Li, 2002).

- (5) *ta lai-le.*
 she come-*le*
 a. “There she comes.” (Present: She is entering the room.)
 b. “She came.” (Past: I saw her arriving just now.)
 c. “She is coming/will come.” (Future: She will come here.)

In the above interpretations, (5c) are more dependent on contexts than (5a) and (5b), as shown in *deng ta lai-le, wo zai gaosu ni xijie*, “I will tell you the details after she comes”.

What is more, as stated in Lin (2004), Chinese perfective *-le* is not grammaticalized to mark tense, but is tense-like in terms of temporal interpretation, which makes its interpretation not like a pure aspect marker in some cases. This is different from English where past tense has to be marked in all past contexts and quite often is used to express habitual past. As shown in (6), with or without *-le*, the sentence is fine. Without *-le* the sentence can express a habitual event regardless of the time (past, present or future). But the sentence with *-le* cannot express the present and future event. It can only express pastness or completion, and in (5), with the universal temporal phrase *mei-ge-zhoumuo* “every weekend”, it indicates

a reading of habitual past, or the repetitive occurrences of the event “going to my dad’s house”. So, *-le* does not always indicate pastness or completion. Such complexity adds to the challenge in L2 learning of Chinese.

- (6) wo mei-ge zhoumuo dou qu (-le) wo baba jia kan ta.
 I every-CL weekend all go-*le* my dad house see him
 “I went to my dad’s house to see him every weekend.”

2.2 Verb categories in Chinese

To facilitate the examination of *-le* in L2 acquisition of Chinese, this paper follows Vendler’s (1957, 1967) classification to divide Chinese verbs involved in the study into four categories. The aspect marker *-le* indicates completive, and the type of closure depends on the verb it is associated with or the contexts it is used in (cf. Chao, 1968; Zhu, 1981 as cited in Xiao, 2001). Tai (1984) pointed out that the supposed Chinese equivalents of the English past or perfect tenses do not contain an implication of attainments as an inherent part of the meaning. As mentioned in Section 1, to insure the attainment of a goal, Chinese resorts to resultative verb compounds (RVCs). For example, “to study” in English is an activity verb, and “to learn” is accomplishment. The Chinese equivalent for “to study” is *xue*, and for “to learn” is *xue-hui*. *Xue-hui* is an RVC with *xue* ‘study’ denoting action and *hui* ‘know’ result. Achievement verbs in Chinese are also often realized as well in the form of an RVC, e.g., “to find” in English is *zhao-dao* “seek-reach” in Chinese. Other achievements which are in a simple verb form with the endpoint and the result state of the event occurring instantaneously must co-occur with the sentence-final or inchoative *-le* meaning “become”, e.g., *si-le* “died”. Shi (1988) extends Tai’s generalization and argues that in general, languages have two primitive verbal categories, i.e., state and activity, whereas accomplishments and achievements are complex categories. In a similar fashion, Xiao (2001) argues that the perfective marker *-le* does not encode an endpoint, as endpoints are encoded in verbs themselves for accomplishments and achievements whereas activities and states have no natural endpoints in their inherent meaning. Li (2000) proposes a classification scheme that contains two more categories for Chinese verbs: semelfactive and mixed telic-stative verbs. The former includes punctual verbs that indicate repeated events when combined with progressive aspect, and the latter are unique in Chinese. Mixed telic-stative verbs encode either the process of a telic action or the state resulting from that action, depending on which aspect marker they take. For example: the verb *chuan* can mean either to “put on” when combined with the progressive marker *zai* or “wear” when combined with the perfective marker *-le*.

Following the four-way classification scheme, the present paper classifies semelfactive verbs into activities according to the contexts in which they occur, as situations denoted by semelfactive verbs describe instantaneous (repeatable) situations without result or outcome. We classify telic-stative verbs into two categories according to contexts: accomplishments and states, with states resulting from telic situations. Furthermore, there are some special features in Chinese verbs that merit our attention. First, the very notion of “verb” in Chinese is quite different from that in English. There exists a category in Chinese called adjectival predicate, which resembles the category of adjectives in English. For example:

- (7) ta hen gaoxing.
 He/she very happy.
 “He/she is very happy.”

As the adjective “happy” in Chinese can take its predicate use without the verb “to be”, with the adverb “hen (very)” modifying “happy”. Following Chu (1983)’s proposal, the present paper classifies these adjectives as adjectival predicates, hence state verbs.

Secondly, RVCs are a special category composed of a verb and a resultative complement to indicating “reaching some end state brought about by V1” as *da-si* ‘hit-dead’ in (8), “the completion of an event without supplying a literal result state” as *mai-diao* ‘sell-drop’ in (9), or “directional” as *pao-guo* ‘run-over’ in (10), (cf. Li and Thompson, 1981; Lin, 2004). As RVCs are considered to be forming a whole morphologically and logically, the present study follows Li and Bowerman (1998) to classify RVCs as achievement verbs.

- (8) wusong da si le laohu.
 Wusong hit dead LE tiger
 “Wusong beat the tiger to death.”
- (9) zhangsan zhongyu mai diao le chezi.
 Zhangsan finally sell drop LE car
 “Zhangsan finally sold the car.”
- (10) wo pao guo qiao le.
 I run over bridge LE
 “I ran over the bridge.”

2.3 Interaction between *-le* and verb categories

The perfective marker *-le* can be used with all four verb categories in Chinese, but its meaning may change when combined with different categories. Basically, *-le* indicates completion or termination with telic verbs (accomplishments and

achievements) and simply realization with atelic verbs (states and activities) as shown by the following examples (adapted from Xiao 2001, p. 632–633).

(11) State

Yang Qinxian jiu *jubei-le* zhe-lei renwu de quanbu tezheng.
 Yang Qinxian then possess-*le* this-type people DE all characteristics
 “Yang Qinxian bears all of the characteristics of such kind of person.”

(12) Activity

yi-ge xiao nühai beishang de *ku-le* qilai.
 one-CL little girl sadly DE cry-*le* Jup.
 “A little girl began to cry sadly.”

(13) Accomplishment

na hanzi zuo you *xunshi-le* yi-fan, disheng dao...
 that man left: right look-*le* one-CL, low:voice say...
 “The man took a look around himself, and said in a low voice...”

(14) Achievement

tamen di'er tian shangwu shidian jiu *dida-le* mudidi.
 they 2nd day morning 10 o'clock already reach-*le* destination
 “They arrived at their destination at 10 o'clock the next morning.”

In (13), *-le* is attached to an accomplishment verb phrase *xunshi-le yi-fan* “took a look around himself” and denotes termination. In (14), *-le* is attached to an achievement verb *dida* “reach” and denotes completion. But in (11) and (12), since *-le* is paired with a state verb and an activity verb respectively, it does not give the sense of completion or termination.

Xiao’s (2001) analysis of a corpus composed of 124,164 Chinese characters confirms that native speakers of Chinese use *-le* with all the above verb categories. The distribution patterns across the verb categories are congruent with what the Aspect Hypothesis predicts. As shown in Table 2 adopted from Xiao (2001, p. 631), the perfective marker *-le* is most frequently used with achievements and least with states. The distribution is interpreted as a result of more natural association between the marker and two categories: accomplishments and achievements, since the two groups are both telic and *-le* is sensitive to endpoint (Xiao, 2001).

Table 2. Numbers of *-le* in four verb categories by native speakers

STA	ACT	ACC	ACH	Total
48	135	326	510	1019
4.7%	13.2%	32%	50.1%	100%

2.4 Acquisition of aspect in Chinese: L1

Though aspect is a prominent grammatical feature in Chinese, there are few studies that have directly examined the acquisition of aspect in Chinese. Three major studies involving Chinese children's acquisition of aspects are discussed as follows.

Erbaugh (1992) reports a study of four Mandarin-speaking children from two to three years old. The perfective marker *-le* appeared first among the aspect markers and the number of *-le* tokens was immense. Five features were found to trigger the perfective marking. The five features, ranging from the most to the least important were: pastness of event, clear endpoint, re-enactment potential, transitivity and agentivity. The category "clear endpoint" reveals the influence of inherent lexical aspect on the acquisition of grammatical aspect markers because verbs with a "clear endpoint" correspond to telic verbs (accomplishments and achievements) which in turn are predicted by the Aspect Hypothesis to be closely related to perfective markers. In the study, *-le* occurred very often with RVCs which play a critical role in marking endpoints in durative verbs in Chinese. The results seem to support the Aspect Hypothesis in that the perfective *-le* is more strongly associated with telic verbs (achievements and accomplishments) than atelic verbs.

Li and Bowerman (1998) examine the acquisition of aspect markers: *-le*, *-guo*, *-zhe* and *zai*, by 135 Mandarin-speaking children from four to six years old. They found a consistent association of imperfective markers with atelic verbs and of the perfective marker with telic verbs. Stative and semelfactive verbs patterned in general like activity verbs. Comparing their data with that in English acquisition, they pointed out that there is a more absolute association in Chinese: between perfective aspect and telic verbs, between imperfective aspect and atelic verbs. Across all age groups in their study, Chinese children used almost exclusively telic verbs with perfective aspect and atelic verbs with imperfective aspect. They claim that the results did not support the Prototype Hypothesis (Andersen, 1993) which claims that the associations are initially based on prototypical uses and later expanded to non-prototypical cases. Their data suggest instead that the associations remain strong across all age groups and get stronger over time. In other words, the use of aspect markers concentrates on the prototypical associations instead of spreading across four types of verbs. So, their findings support the prototypical associations predicted in the Aspect Hypothesis, but not the predicted developmental patterns. Such observation is unique for Chinese, as Shirai (2004, p. 101) points out that in many cross-sectional and longitudinal studies on the acquisition of English, "the prototypical association is stronger for the intermediate level than for the beginning level".

Huang (2000)'s study of strategies two Mandarin-speaking children used to refer to the past shows children resorted most frequently to the perfective marker

-le, as opposed to their mothers who used mainly temporal adverbs to establish past time. Children used the perfective marker *-le* predominantly with RVCs, therefore, it appears that their use of the perfective marker was associated with the inherent semantic aspect of verbs. The author claims that early perfective marking is strongly associated with pastness, and then resorts to the Prototype Hypothesis to explain the influence of lexical aspect on the acquisition of grammatical aspect. The reason why RVCs and pastness are associated with perfective marking is that these two features are among the prototypical features of perfective aspect: [+unitary], [+result state], [+punctual] and [+past].

2.5 Acquisition of aspect in Chinese: L2

Compared with studies on L1 acquisition, there is not much more research effort devoted to L2 acquisition of Chinese aspect. Wen (1995) interviewed fourteen English-speaking learners of Chinese at two proficiency levels, and proposed that verb-final *-le* and sentence-final *le* are functionally different and thus learned differently in L2 acquisition. Verb-final *-le* has perfective aspect function while sentence-final *le* signals a change of state. The frequency and accuracy of uses suggest that L2 learners acquire the verb suffix *-le* earlier than sentence-final *le*, which agrees with Erbaugh's observation of L1 acquisition (1985, 1992). Wen also points out that L2 learners usually use the verb-final *-le* for verbs with an inherent endpoint encoded in their lexical meaning or when a durative verb is expressed with a clear-cut endpoint.

Later, Duff and Li (2002) by examining both oral and written works of college students enrolled in Chinese programs, find that L2 learners, particularly those with lower proficiency levels, tend to undersupply *-le* in oral narratives, but to oversupply it with certain state and activity verbs. It is explained that the initial instruction and awareness that Mandarin does not have tense, combined with early interlanguage simplification, led L2 learners to suppress all grammatical marking for past and/or perfective events. Increased exposure to that form later on allowed learners to consciously produce and even overproduce *-le* with quantified or other specific objects. Moreover, most correct use of *-le* co-occurred with accomplishment or achievement verbs with quantified or specific object, while incorrect suppliance occurred with state verbs or those in nonperfective situations. The authors propose that L2 learners had a smaller repertoire of inherently perfective verbs, so they attached *-le* to more generic and less prototypically perfective verbs.

Most recently, Yang (2016) investigates the acquisition of perfective *-le* from the perspective of the Aspect Hypothesis, focusing on the impact of typological differences and the Relevance Principle proposed in Bybee (1985). The study examines 60 compositions from Chinese interlanguage corpus containing production

by English-speaking learners from low to high levels. The learning model derived from the study is totally consistent with the prediction in the Aspect Hypothesis. However, unlike the learning of aspect marker in other languages, there are more overuses than underuses. Yang argues that different languages may observe the same natural principle in different ways and the Aspect Hypothesis needs modification in this aspect.

3. The present study

Our literature review suggests a lack of direct focus on and thus a need of empirical tests of the Aspect Hypothesis from the perspective of Chinese as an L2, though much effort has been put on the relationship between lexical and grammatical aspect in Chinese. The present study aims to examine the influence of lexical aspect on the acquisition of *-le* in Chinese by native speakers of American English (AE). Under the framework of the Aspect Hypothesis, we predict that the verb category that is most frequently used with *-le* by L2 learners of Chinese is achievements, followed by accomplishments and activities and the least frequently used category is states.

3.1 Participants

We recruited twenty AE students (nine female and eleven male) who enrolled in the Chinese language classes at a major southern state university. The range of the students' age is from 18 to 24. They all participated on a voluntary basis. By the time of the study, the participants had studied Chinese for four semesters, in classes by the same instructor using the same textbooks and teaching materials.

3.2 Data collection

The participants write three compositions of personal narratives, which have been shown to generate a more balanced distribution of perfective and imperfective (Camps, 2002). Topics of the three narratives were:

T1: What did you and your family do during the winter break?

T2: Talk about things you used to do when you were 16 years old. Give examples of specific events.

T3: What did you do last weekend? Compare that to what you used to do on weekends when you were in high school.

The topics are given to students in English instead of in Chinese to make sure that they understand what the topics call for. The compositions are required to be written in Chinese characters.

3.3 Data coding

All compositions are analyzed and coded by the authors who are native speakers of Chinese. A marker is counted correct if both its form and the placement are right. Obligatory and overgeneralization contexts are recorded. Obligatory contexts are where an aspect marker is needed (either supplied or not by the learner). Overgeneralization is when a marker is not needed in the context but provided by the learner. The two types together form the Relevant Contexts (RCs). All verbs in the RVCs are recorded and classified into states, activities, accomplishments and achievements, according to the operational tests in Shirai and Andersen (1995, p. 749) which provides precise description of the procedures for determining inherent lexical aspect. Finally, associations of markers and verb categories are calculated and analyzed.

In our analysis, special attention is paid to the negation of *-le*: *mei* (*-you*) ‘not(-have)’, with *-you* being the suppletive form of *-le* as stated in Wang (1965). So, every time *-le* (or its negation) is used, correctly or not, the phrase containing the marker is recorded; and so is its underuse (needed but not used).

3.4 Results

Our AE learners of Chinese used in total 113 tokens of *-le* and 16 cases of *mei* (or *mei-you*), the distribution of which is shown in Table 3. The learners’ use of the negation of *-le* is quite accurate since there is only one oversupply and one under-supply in all 16 cases. In comparison, the use of *-le* is more problematic. Underuse seems a common issue for our learners who showed far more cases of underuse than overuse (53 vs. 20). The accuracy rate of *-le* is fairly low in both obligatory and relevant contexts, which suggests two-fold difficulty with *-le*: when to use it, and when NOT to use it.

Table 3. Overall use of *-le* and its negation by learners

	Tokens used (in obligatory contexts)	Overuse	Underuse	Accuracy in obligatory contexts	Accuracy in relevant contexts
<i>-le</i>	113(93)	20	53	43%	35.4%
<i>mei(meiyou)</i>	14(15)	1	1	93.3%	87.5%

Mei(-you), the negation of *-le*, has a much less complicated function. The semantic meaning of *mei(-you)* is stable so that learners understand accurately when to use it and when not to use it. The perfective marker *-le*, on the other hand, does not have a clear semantic meaning (completion, termination or simply realization, determined by what type of verbs it is used with), which poses a big challenge for L2 learners. Besides, *-le* does not resemble any phenomenon found in English with different meanings of *-le* being uniformly translated into past tense.

We then calculated the distribution of *-le* across verb categories, as shown in Table 4.

Table 4. Uses of *-le* across verb categories by language groups

		STA	ACT	ACC	ACH	Total number of cases
L2 learners	Frequency	3.7%	41%	3.7%	51.6%	60
	Accuracy	33.3%	32.1%	33.3%	39.6%	
Native speakers*	Frequency	4.7%	13.2%	32%	50.1%	1019

* based on Xiao (2001)

The Aspect Hypothesis proposes that learners are influenced by the inherent lexical aspect in verbs. Then, *-le* in Chinese should be used most frequently with achievement verbs, which is confirmed as over half of the uses by L2 learners are associated with achievements. It may be interpreted that our learners were guided by the inherent semantics and thus mark *-le* more often with its most prototypical association: achievements. Their preference is the same as that of the native speakers as shown above. Distributions in the remaining three categories, however, by L1 and L2 groups are significantly different. L2 learners showed a much stronger preference towards activities than the other two categories, whereas L1 speakers' second choice is accomplishments followed by activities and states. Clearly, L1 speakers' data is much more consistent with the prediction of the Aspect Hypothesis. If our L2 learners were indeed influenced by the lexical aspect of the verbs, we would expect a higher accuracy for achievements than for other categories, which however is not confirmed in our data as the accuracy rates across categories are not significantly different from each other with the achievements showing a slight advantage over others.

3.5 Discussions

Our study finds that L2 learners used *-le* much more frequently, as frequently as native speakers do, with achievements more than other three categories. The second most frequently marked verb category by L2 learners is activities, and then a striking drop in use with both accomplishments and states. The former finding

seems to lend some support to the Aspect Hypothesis in that both learners and native speakers appear to be influenced by the inherent semantic meanings encoded in verbs and therefore would mark the perfective *-le* most frequently with achievements. The frequency of use with the other three verb categories, however, cannot be accounted for by the Aspect Hypothesis, or rather, the pattern observed goes against the predicted order of frequency (from high to low): achievements → accomplishments → activities → states.

According to the Aspect Hypothesis, learners, especially those at lower proficiency levels, are more restricted in their grammatical aspect marking in that their use of the aspect markers is more skewed toward the prototypical categories. In other words, the percentage of achievements marked by the perfective aspect (e.g. *-le* in Chinese and the simple past in English) by learners should be higher in learners' use than in native speakers' use. This phenomenon can be accounted for by the Prototype Hypothesis (Andersen, 1993) as an attempt to account for distribution patterns of the tense-aspect morphology over verb categories in the Aspect Hypothesis. Since perfective aspect views situations as a single whole and telic verbs (accomplishments and achievements) have an endpoint encoded in the verb meaning, the two can be easily associated together. In other words, the association between perfective aspect and telic verbs is more prototypical than the association between perfective aspect and atelic verbs (activities and states).

Secondly, our L2 learners' accuracy with not only achievements but also all verb categories is equally low, which again cannot be explained by the Aspect Hypothesis. The Hypothesis predicts that learners will find it hardest to apply a perfective marker to states, but easiest with achievements (Shirai, 2004). In fact, no category is better than others, indicating that our learners may find all equally confusing or not helpful in their decision on the use of *-le*. Error examples committed by our L2 learners are shown below.

(15) State

(shang ge yue) wo zai jia dai yi-ge xingqi
 (last CL month) I at home stay one-CL week
 "I stayed at home for a week (last month)."

(16) Activity

shang zhoumo wo gen wo nanpengyou qu kan dianying
 last weekend I with my boyfriend go see film
 "My boyfriend and I went to see a film last weekend."

(17) Accomplishment

(shang ge zhoumo) wo gen nanpengyou qu kan yi-ge dianying
 (last CL weekend) I with boyfriend go see one-CL film
 "My boyfriend and I went to see a film (last weekend)."

(18) Achievement

qunian women qu haibian
 (last year) we go seaside
 “We went to the seaside last year.”

In the above four error examples, *-le* should be added after *dai* ‘stay’, *kan* ‘see’ and *qu* ‘go’. *Dai* ‘stay’ is state verb and it has no dynamics or inherent endpoint. The direction verb *qu* “go” belongs to the type of achievements since it is dynamic and has a destination. The phrase *kan dianying* ‘see-movie’ differs from *kan yi-ge dianying* ‘see one-CL movie’ in that the former one involves no endpoints while the latter one has very clear endpoint because of the quantified phrase *yi-ge dianying*. Therefore, *kan dianying* is seen as an activity while *kan yi-ge dianying* is seen as an accomplishment.

Taking both the distribution and accuracy rates into consideration, in order to use the aspect marking in a more target-like way, L2 learners have to be more rigid instead of more relaxed with the marking. This finding echoes that of Li and Bowerman (1998) which reports that L1 Chinese children used telic verbs (achievements and accomplishments) almost exclusively with perfective aspect. In fact, the association between atelic verbs (states and activities) and imperfective markers becomes stronger, rather than weaker, while the association between atelic verbs and perfective aspect becomes weaker over time. So, our findings indeed along with those in Li and Bowerman seem to put the universality of the Prototype Hypothesis in question.

Chinese is not the only language where the developmental sequence predicted in the Aspect Hypothesis has been challenged. Robison’s (1995) cross-sectional study of learners of English shows that the percentages of progressive marking used with activities from level I (lowest) to Level IV (highest) increased from around 50% to 80%. The percentages of past marking used with achievements also increased from around 40% to around 55%. These trends are not all in consistency with the Aspect Hypothesis that predicts more uses restricted to prototypes by learners at lower levels than those at advanced levels. That the present study records more activities verbs marked by L2 learners seems a challenge to the Aspect Hypothesis and Prototype Hypothesis. According to the Prototype Hypothesis, accomplishments instead of activities are more closely associated with perfective aspects and therefore, should be marked more frequently by *-le*.

Our overall findings provide partial support to the Aspect Hypothesis, but at the same time also put in doubt the universality of the Prototype Hypothesis. We propose the following as an attempt to account for the discrepancies between our data and the predictions in the Aspect Hypothesis and the Prototype Hypothesis. Firstly, there might be language-specific reasons. As reviewed and discussed in

earlier sections, unlike English, most verbs in Chinese only indicate an attempt rather than an attainment of goals. Verbs in Chinese frequently resort to RVCs, such as *ti-dao* “kick down”, *qie-kai* “cut open”, or *reng-diao* “throw away”, to express completion, hence achievements and accomplishments (cf. Tai, 1984; Smith, 1991, 1997; Li and Shirai, 2000; Lin, 2004). RVCs as a special category of verbs seem to hold keys to some findings in the present study. It is in many occasions with the resultative complements (the R in RVC, such as *dao* “down”, *kai* “open”, and *diao* “away” in the examples) that activities can express attainment of a goal. L2 learners in the present study, however, may have interpreted activities as achievements and therefore associated *-le* with them. This explains why there was a high percentage of activities marked with *-le*. In fact, the forms used do not necessarily convey the meaning in the learners’ mind or the target language meaning for that form. Studies on the acquisition of tense-aspect morphology faithfully record the forms that learners use as data base for analysis. In this way, researchers assume that learners know the inherent lexical aspect of the verbs they use and that they attach markers according to the inherent semantics of the verbs. But the problem is that L2 learners do not necessarily understand the inherent lexical aspect as L1 speakers do. Unless examining the learners’ online processing of verb perception, we will not truly know what criterion learners use in assigning the aspect marker.

Secondly, verbs in Chinese take quantified objects that can be modified by a number and a measure-word or classifier. Measure words are mandatory for Chinese nouns and are almost always used before nouns. Quantified objects are frequently used in Chinese, which by indicating the boundary of the situation, would make the verb phrase denoting accomplishment type of situations and often require *-le* in past contexts. L2 learners in the present study did not seem to associate the use of *-le* with quantified objects and thus had underused the marker in half of the total contexts where the marker should be used.

Thirdly, unlike in English where some achievement verbs can be used with progressive marking to indicate the process, achievement verbs in Chinese can only be combined with perfective markers. In other words, the association between *-le* and achievement verbs is stronger in Chinese than in many other languages. This phenomenon may account for the fact that native speakers use *-le* more frequently with achievements than L2 users. In this sense, our findings appear to agree with Duff and Li (2002) who stated that the reason why their learners did not use as many *-les* as the native speakers do was that learners did not know enough RVCs or other achievements. Because of their limited vocabulary and also of the complexity of RVCs, our L2 learners did not use RVCs often and thus used much fewer *-les*. Similarly, since accomplishments are also mostly compounds (verb + complement), our learners may have difficulties retrieving or forming accomplishments

while writing. What is more, accomplishments in Chinese inevitably involve quantified objects, which add more difficulties to L2 acquisition.

Fourthly, recall that our L2 learners only took Chinese classes for four semesters. Their proficiency in Chinese may not be high enough to allow the influence of lexical aspect to take place. They used *-le* accurately less than half of the obligatory contexts, which is lower than those reported in other studies. For instance, a re-analysis of Bardovi-Harlig's study (1992) by Shirai (2004) shows that the accuracy rate for the marking of simple past with achievement verbs in obligatory context is 63.2% (p. 97) for the lowest level out of the six proficiency levels. In terms of the use of LE, Deng (2010) reports an accuracy rate of 82.7% by first year Chinese-as-a-second-language learners, and Wen (1997) reported 68% for the lower-level learners. As our L2 learners had only been exposed to Chinese for a short period of time in formal situations, it is highly likely that they have not yet had a good understanding of the semantics of the verbs they used and/or they had false ideas regarding the functions of *-le*; either of which results in a pattern deviant from the prediction in the Aspect Hypothesis. Some previous studies also reported observations against the Aspect Hypothesis due to the low proficiency level of the learners. The Japanese learner of English in Kumpf (1984) only marked past on states, and the poor usage is interpreted as a result of too low a level to show productive use of verbal morphology (Bardovi-Harlig, 2000). As the present study focuses on L2 Chinese beginners in formal settings and on verb categories only, interpretations of our findings should be cautious and may be inconclusive to the Aspect Hypothesis. We propose that predictions on aspect acquisition should take into consideration of learners' proficiency levels, as their knowledge in verb semantics determines how they understand the relationship between the marking of *-le* and lexical aspects. Also, future research should include not only an examination on verb category but also on verbal arguments as well. As discussed above, the verbal arguments such as the quantified object may influence the situation type. It is worth investigating what kinds of verbal arguments may influence the situation type of the verbal phrases and how L2 learners acquire these verbal phrases.

4. Conclusions and pedagogical implications

This study aimed at an evaluation of predictions in the Aspectual Hypothesis by examining the use of Chinese aspectual marker *-le* in compositions by native speakers of American English. It was hypothesized that in L2 writing, the verb category most frequently marked with *-le* would be achievements, and the least frequently marked be states. Our data confirm that L2 learners indeed used *-le* most often with achievements, which lends support to the first half of our hypothesis.

However, the predicted order in frequency of use (from high to low: achievements, accomplishments, activities and states) is not borne out. In fact, activities are as almost frequently marked by *-le* as achievements, whereas accomplishments and states are equally rarely marked. Our findings raise questions to the universality of the Prototype Hypothesis that successfully predicts the highest frequency of the most prototypical category (achievements) but fails to foresee that the next category in line of prototypicality, i.e., accomplishments, occurred as infrequently as the least prototypical category, states.

We then compare the distribution of *-le* uses across verb category by L2 learners with that by native speakers, which reveals deviation in learners' production from the native patterns. As native speakers' distribution is consistent with the prediction by the Aspect Hypothesis, our comparison data bring forth the necessity that L2 learners should be taught the prototypical associations of Chinese verbs. This may help them develop an awareness of the relationship between verb meanings and aspects in Chinese, therefore benefit their use of the aspect marker *-le*. In addition to an enhanced awareness of general associations, we propose that the complexity of *-le* should also be given sufficient pedagogical attention, such as *-le*'s discourse function, its use in habitual past context, and with quantified objects.

Overall, since *-le* has complex functions and especially when the optionality of *-le* is still up for debate among Chinese linguists, the learning of *-le* is bound to be challenging and difficult for non-native speakers of Chinese. Though *-le* is verb final, its use is highly dependent on the discourse instead of individual verbs or sentences alone. Therefore, it would be helpful if pedagogical discussion of *-le* should be presented in contexts. Acquisition of the meaning of *-le* and its use is like developing a "sense" of its functions since no list of rules or explanations can be exhaustive. Exposure to a diversity of materials should be encouraged as well so as to help learners develop coherence in contexts.

Acknowledgements

This study is supported in part by the Language Fund (EDB (LE)/P&R/EL/164/07) from the Standing Committee on Language Education and Research of the Hong Kong Government. We thank Professor Chauncey Chu for his input in the earlier drafts, and Dr. Mengbin Liu for her assistance in data analysis.

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