The Acquisition of the English Tense-Aspect System by Cantonese ESL Learners

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Abstract The effect of lexical aspect has been observed in learners' tense-aspect marking, and it has been shown that there are three stages in learners' development of the tense-aspect system. However, these observations have been challenged with discussion on new foci of first language (L1) influence and input biases. In the present study, production data of five groups of Hong Kong English as a Second Language (ESL) learners were examined to address the challenges. The results of the study show that lexical aspect indeed affects learners' tense-aspect marking but the developmental path suggested in previous studies should be modified with added factors of relevant L1 features and classroom input patterns. The results also indicate that learners' development of the tense-aspect system is a continuum rather than a process with three stages. Pedagogical implications of the findings are also discussed.

Keywords Tense-aspect acquisition · Aspect hypothesis · Three-stage sequence · L1 transfer · Input biases

1 Introduction

In previous studies on systematic variation in tense use, beginning learners have been found to associate past perfective marking with [+telic] verbs and progressive marking with [-telic] verbs. This widely observed tendency was first referred to as "primacy of aspect" and later summarised as the Aspect Hypothesis (AH) (Shirai & Andersen, 1995). Along another line of research focusing on how the concept of time is expressed, learners have been observed to follow a three-stage sequence in using linguistic devices to express temporality from pragmatic to lexical and then to grammatical devices (Bardovi-Harlig, 1999). Although both the AH and the three-stage sequence have been attested in various studies, there have also been research findings showing that input biases or typological differences are more important contributing factors to the acquisition process of tense-aspect morphology.

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There are two reasons of particular interest to study the English tense-aspect acquisition process of Hong Kong ESL learners. First, there are correspondences between Hong Kong learners' first language properties and the learner tendencies observed in previous studies, so a study of Hong Kong learners' acquisition processes should shed light on the effects of language typologies on tense-aspect acquisition. In Chinese/Cantonese, the first language of Hong Kong learners, aspect marking is sensitive to lexical aspect just as learners' tense-aspect marking is sensitive to lexical aspect. And as a tenseless language, Chinese relies more on pragmatic and lexical devices to express temporality just as learners do during the first two stages of the three-stage acquisition sequence. Second, Hong Kong learners depend mainly on classroom instruction to learn English, so a study of their English production should allow us to examine the effect of language input in classroom settings.

There have been only a limited number of studies focusing on the tense-aspect acquisition by Hong Kong students. For example, Chan (2019) examined the roles of three different forms of classroom intervention, namely Processing Instruction, Traditional Instruction and Implicit Instruction, in the acquisition of the English simple past. Hong (2008) focused on the impact of lexical aspect and L1 transfer on the acquisition of the English simple past by Hong Kong secondary students. However, these studies have not dealt with the aforementioned correspondences between Chinese, the AH and the three-stage acquisition sequence. By focusing on the correspondences, the present research aims at identifying the roles of lexical aspect, typological differences, different linguistic devices of temporality and language input. The study will have direct implications for English language teaching in Hong Kong and second language acquisition theories in general.

2 The AH and the Three-Stage Sequence

2.1 The Aspect Hypothesis

A number of studies of the 1970s found that children tend to, at the beginning stages of learning their mother tongue, restrict their use of the simple past to [+telic] verbs, namely achievements and accomplishments such as *win the game*, *write a letter*; and restrict their use of imperfective aspect (progressive in English) to durative activities such as *run*, *work* (Antinucci & Miller, 1976; Bloom et al., 1980; Bronckart & Sinclair, 1973). These tendencies have come to be known as "primacy of aspect" (Andersen, 1989, 1991; Robison, 1990), according to which the semantic distinctions of aspectual prototypes of state and process, between telicity and atelicity, and also between punctuality and non-punctuality, are cognitively determined and early verbal morphology encodes these distinctions rather than distinctions of different time locations.

The ideas of "primacy of aspect" have also been applied to analyses of L2 tense-aspect acquisition and found support in many studies (Anderson, 1989, 1991;

Robison, 1990; Bardovi-Harlig & Bergström, 1996; Collins, 2002; among others). Shirai and Andersen (1995) summarised the learner tendencies in their Aspect Hypothesis, which makes two key predictions: (1) learners will initially restrict past or perfective marking to achievements and accomplishments, and later gradually extend the marking to activities and then statives; and (2) in languages that have progressive aspect, progressive marking begins with activities and then extends to accomplishments and achievements.

Although the AH has gained widespread support, there have also been studies that challenge the claims of the AH. One early criticism levelled against the ideas of "primacy of aspect" arose from Andersen's (1993) Distributional Bias Hypothesis (DBH), which suggests that the learner tendencies of associating the past perfect to telic situations and the progressive to durative activities can also be found in the interaction among adults. The skewed distribution in learners' use of tense-aspect morphology may be the effect of bias in input. To avoid input bias, Mueller (2018) carried out an experimental study to teach 40 English native speakers an artificial language in which "types and tokens of lexical aspect and past and present morphology were balanced". His results showed that the interaction between lexical aspect and morphological marking is non-significant. Mueller suggested that the effects of lexical aspect may be absent in the early stages of second language acquisition or may be caused by distributional biases in second language input. Bertinetto et al. (2015) also challenged the AH and argued for a typologically oriented and morphologically sensitive approach. They believed that children do not have a predefined strategy and it is the morphological structure of individual languages that children rely on for relevant information. They provided data to show that the explicitly marked categories are learned before latent categories. For example, temporality morphology may be developed earlier than aspect-related morphology in German because German "first and foremost provides overt marking of the past/present/future contrast" (p. 1163). Ayoun and Salasberry (2008) also showed the strong impact of input biases. Their learners' data show that states are consistently past-tense marked more often than telic events, which, they argued, is the result of the fact that states are, in input data, not only few and frequent, but also consistently past-tense marked.

2.2 The Three-Stage Acquisition Sequence

The AH describes learners' systematic variation in tense use. Along another line of research, how the concept of time is expressed by L2 learners has been examined. It is found that pragmatic and lexical devices are used to express temporality in learner varieties that lack verbal morphology or even verbs (von Stutterheim & Klein, 1987; among others). Schumann (1987) studied the language of five uninstructed basilang (the earliest stage of second language development) speakers and his findings showed that "there is a stage prior to either aspect or tense where learners rely solely on the pragmatic functions of adverbs, calendric expressions, sequentiality, and context (implicit reference) to express temporality" (Schumann, 1987, p. 38).

Trévise (1987) and Véronique (1987) also noted that beginning learners tend to use conjunctions, chronological ordering and adverbials rather than tense morphology to express temporality. As Bardovi-Harlig (1999) summarised, studies along this line "basically agree as to the linguistic devices employed and the order in which they apply: The expression of temporality exhibits a sequence from pragmatic to lexical to grammatical devices".

The term "three stages" has been used to describe this sequence. However, as Bardovi-Harlig (2000) suggested, the characteristic use of a certain kind of device is not equal to the exclusive use of that kind and the shift from relying more on pragmatic devices and lexical devices to relying more on grammatical devices is gradual. The term "three stages" does not provide an accurate description of the gradual and overlapping shift from pragmatic to lexical and then to grammatical devices.

Scholars from different theoretical standpoints have developed different theories to account for the staged tense-aspect acquisition process. Schumann (1987) distinguished the pragmatic component (general cognition) from the computational component (specialised for the acquisition of morphosyntax) in the human cognitive system and assumed that basilang speakers may have acquired their language by applying the pragmatic component rather than the specialised computational component to linguistic input (Schumann, 1987, p. 38). Giacaline Ramat (1992) explained the staged development by paralleling the language-learning process and the grammaticalisation process of historical language change. In terms of historical language change, the expressions of temporality have not been grammaticalised into the tenses in Chinese, and the Chinese relies more on pragmatic and lexical devices to express time. There has been no research on how a tenseless first language affects the "staged" development.

3 The Present Study

As discussed in the above subsections, the AH faces the challenges of input biases and the effect of typological differences, and there has been no research on how a tenseless first language affects the "three-stage" sequence. To address these challenges, a study of Hong Kong ESL learners' production data is needed for two reasons. First, the typological differences of English and Chinese will shed light on our understanding of the roles of lexical aspect, L1 transfer and different linguistic devices of temporality. Second, the learning setting of Hong Kong students also allows examination of the role of input.

3.1 Research Questions

To examine the roles of lexical aspect, typological differences, different linguistic devices of temporality and classroom input in the tense-aspect acquisition of Hong Kong ESL learners, a cross-sectional study was designed to answer the following questions:

- What are the developmental features of Cantonese ESL learners' acquisition of the English tense-aspect system?
- In what ways do typological differences affect the predictions of the Aspect Hypothesis?
- In what ways do typological differences affect the three-stage development of temporality expressions?
- In what ways does classroom input affect the tense-aspect acquisition process?

Answers to these questions will enhance our understanding of Cantonese ESL learners' development of the English tense-aspect system and shed new light on tense-aspect teaching and learning.

3.2 Participants

The present cross-sectional study involved five groups of Hong Kong learners: Grade Five (10 years old) in primary schools, Form One (12 years old), Form Three (14 years old) and Form Five (16 years old) in secondary schools, and university year one (19 years old) (hereafter P5, F1, F3, F5 and U1, respectively). The five groups represented five English proficiency levels from the late beginning to the advanced. As practical constraints did not allow us to administer placement tests, the participants were chosen with much deliberation to ensure their representativeness. The secondary school participants were chosen from two different Band 3 schools (out of a scale of five bands with Band 1 having the highest scoring students and Band 5 the lowest scoring students).[1] Primary schools have no banding, so several classes were chosen from three different government-funded schools. The university participants were from two University English I classes from a middle ranking university. University English I at this university is offered to students from different departments: History, Humanities, Geography and so on (not including students from the English Department). The deliberate selection of participants, together with the large sample size and statistical support, was sufficient in ensuring the representativeness of the sample population.

P5 was chosen as the lowest level because an examination of textbooks and the government language education guide has shown that some major tense-aspect forms have not yet been taught to students before P5. Hong Kong students mainly depend on

[1] Each of the final three years of primary schools concludes with examinations, which determines the secondary school banding.

Table 1 Details of the data

Level	No. of students involved	No. of sentences coded
P5	270	2235
F1	49	519
F3	56	1212
F5	30	686
U1	48	823

classroom instruction to learn English. English textbooks introduce language features from the simpler to the more complex. For P1 and P2, only the simple present and the present continuous are used. The simple past is introduced in the final chapters of P3 textbooks. The past continuous and the present perfect are introduced in P5 (Yang et al., 2000; *CDC English Language Curriculum Guide*, 2004; *CDC English Language Education Key learning Area Curriculum Guide*, 2017).

3.3 Data

To identify the developmental features of Cantonese ESL learners' acquisition of the English tense-aspect system, written data produced by the participants during class time of 50–60 min were collected. To elicit more variety in tense-aspect marking, the genre of narration was chosen because it usually requires more past tense-aspect forms (Biber et al., 1999). The participants were asked to narrate a personal story or a news story. Only the P5 participants were given the beginning of a story and asked to continue the story. The researchers were told that the P5 participants had no experience of writing narratives in English and that they could not think of anything interesting to write during a given period of time. The given beginning goes like this: "*Once upon a time, in a faraway place, there lived a queen who was mean and greedy. One Day a stranger knocked at the castle door*…." (Table 1).[2]

Although we did not obtain equal numbers of participants for the five levels due to practical constraints,[3] we managed to involve at least 30 students for each group and obtain at least 500 coded sentences for each level. More importantly, with the help of χ^2 statistic, the significance levels of the figures were tested as presented in Sect. 4.

[2] The given introductory sentences were not coded for examination.

[3] First, more P5 students were recruited to make up for their inability to write much. Second, the classes involved for other levels were of different sizes.

3.4 Data Processing

All data collected were entered into computer, and sentences were coded in different ways for different purposes. We excluded from data analysis: i. formulaic expressions like *hello*, *how are you* and *bye*; ii. imperative sentences like *come in*, *go away* and *sit down*; iii. verb-less sentences like *Now that man in prison*; and iv. sentences containing verbs whose past tense form and present tense form are the same orthographically, such as *put*, *cut* and *read*; because all these are not useful indicators of tense-aspect use.

The data, either personal stories or news stories, were all about narratives of past events, so in the majority of cases only past tenses (including largely the simple past, the past progressive and the past perfect) were required. When the sentences were examined in context, it was not difficult to figure out whether a sentence was describing a past situation, but there were difficulties in dealing with morphological tense marking. For example, there were cases where the regular past form *–ed* was used for irregular verbs like *understanded* for *understood*; there were also cases where either the simple past tense or another past tense-aspect form was acceptable because different factors interacted in determining the choice of temporal marking. To solve these problems, two principles were followed: (1) whenever a regular past tense ending *–ed* is used for an irregular verb, *understanded* for example, consider it "the simple past tense intended" but not "the simple past tense correctly used"; and (2) whenever a sequence of clauses describes situations/events in chronological order, assume that the English simple past is appropriate for the finite verbs in them. Other past tense-aspect forms were considered required only when they were used by the students in an acceptable way or when they were definitely needed due to reverse-order report or juxtaposition of one foreground event against the background of one on-going event.

All the finite verbs[4] in the past time sentences were examined to: (1) find out what past tense-aspect form was actually used; and (2) determine what tense-aspect form should be appropriate.

To examine the impact of aspect, the aspectual class of each verb was coded. Several linguistic tests developed or used by Verkuyl (1972, 1989), Dowty (1979) and Smith (1997) were used to determine the membership of a verb in its linguistic context.

To find out what linguistic devices were more relied upon to express temporality, the sentences in our database were divided into two types:

> Type (a): sentences that contain temporal adverbials, including deictic temporal expressions like *long ago* and *yesterday*; anaphoric adverbials like *then*, *after*, *at that time* and *on that*

[4] In any recognisable clause, only one verb was considered to be finite unless two finite verbs were conjoined by *and* as in *The police arrived and caught the robbys* (1026:01–12).

Table 2 Different past tense-aspect forms required at different levels

Levels	Sp		Ppr		Pp		Pppr		Other	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
P5	1908	99.3	10	0.5	2	0.1	0	0	2	0.1
F1	544	95.1	13	2.3	12	2.1	0	0	3	0.5
F3	1447	97.1	28	1.9	15	1	0	0	0	0
F5	717	91.8	22	2.8	28	3.6	0	0	14	1.8
U1	1027	90.6	30	2.7	52	4.6	2	0.2	22	1.9

f = frequency; Sp = simple past; Ppr = past progressive; Pp = past perfect; Pppr = past perfect progressive; Other = past tense-aspect forms other than the above listed

day; calendric temporal phrases like *in 1993*; temporal adverbial clauses introduced by *when*, *before*, *while*, etc.; and other temporal expressions like *in my primary school years*.[5]

Type (b): sentences that contain no temporal adverbials.

The coding was done by two researchers independently. Disagreements were solved by discussions among members of the research group.

4 Tense-Aspect Developmental Features

Table 2 summarises what past tense-aspect forms are required for all the finite verbs in past contexts.

Table 2 shows a gradual change in the participants' narrative structure. At the lowest level, namely P5, the students relied on chronological ordering and created few obligatory contexts (less than 1%) for tense-aspect forms other than the simple past. At F1 and F3, the percentages are much higher at 4.9% and 2.9%, respectively. At higher levels, namely P5 and U1, more and more obligatory contexts (close to 10%) were created for tense-aspect forms other than the simple past because the participants constructed more varied narrative structures with some cases of reverse-order report and more temporal adverbial clauses to provide background information therein. The differences between P5 and F1 and between P5 and F3 were significant (P5 versus F1:$\chi^2 = 46.22$, $p < 0.001$; P5 versus F3: $\chi^2 = 23.78$, $p < 0.001$). The difference between F3 and F5 + U1 was also significant ($\chi^2 = 51.349$, $p < 0.001$).

The following table presents what tense-aspect forms were actually supplied by the participants (Table 3).

While past forms were predominantly required, they were seriously underused. Three important patterns can be observed:

- High percentages of the verbs were not tense-aspect marked;

[5] Temporal adverbials of these types were selected because they help organise temporal sequences or indicate temporal location in narratives. Frequency adverbials, like *always* and *often*, were not included because they do not help indicate temporal sequences.

Table 3 Different tense-aspect forms supplied by the students

Form / Levels	Base	%	SP	%	Prp	%	Pp	%	Prc	%	Pc	%	Oth	%	Total No. of finite verbs
P5	1023	53.2	838	43.6	0	0	3	0.16	32	1.7	4	0.2	22	1.2	1922
F1	274	47.9	248	43.4	14	2.4	3	0.5	4	0.7	2	0.3	27	4.7	572
F3	586	39	797	53.5	6	0.4	17	1.1	0	0	25	1.7	59	4	1490
F5	158	20	476	61	22	2.8	28	3.6	18	2.3	13	1.6	66	8.4	781
U1	154	14	859	75.8	14	1.2	35	3	2	0.17	29	2.6	40	3.5	1133
Total	2195	37.2	3218	54.5	56	0.95	86	1.5	56	1	73	1.2	214	3.6	5898

* Base = simple present or base form, Sp = simple past; Prp = present perfect, Pp = past perfect; Prc = present continuous; Pc = past continuous; Oth. = other forms

- The percentages of tense-aspect marked verbs grew with proficiency levels;
- Of the tense-aspect marked verbs, the simple past was the most frequently used form. The percentages of complex tense-aspect forms were very low and only slowly increased with proficiency levels.

The above two tables give a general view of patterns in the development of tense-aspect acquisition of Cantonese ESL learners. The learners indeed had serious problems using appropriate tense-aspect forms. They also seriously underused tense-aspect morphology. Even when they did tense-aspect mark verbs, they used mostly the simple past. The other tense-aspect forms only added up to small percentages of the total tensed verb tokens.[6]

5 Lexical Aspect and Tense-Aspect Marking

5.1 Lexical Aspect and Perfective Past Marking

Table 4 shows the relationship between different types of verb constellation and the use of perfective past morphology (simple past and past perfect). In addition to the traditional four aspectual types, modal verbs were added because they appear frequently and show special characteristics.

The five types of verb can be roughly put into three groups: i. modals; ii. telic types, namely states and activities; and iii. atelic types, namely accomplishments and achievements. The following are the tendencies observed for the three groups:

- Correct rates with modals were low from P5 to F5, and there was a great improvement for U1;
- Correct rates of the atelic group (states and activities) were much lower than those of the telic group (accomplishments and achievements).

It is also worth noting that the second and third groups were not monolithic. There were differences among their members:

- Of the atelic group, correct rates of activities were in general lower than those of states.
- Of the telic group, correct rates for accomplishments were consistently lower than those for achievements.

To sum up, the findings suggest an expansion path of tense-aspect morphology like this:

$$\text{achievements} > \text{accomplishments} > \text{states} > \text{activities} \quad (1)$$

[6] In the data examined, there were instances of overused *be*s (ungrammatically inserted before verbs of various kinds, e.g. *Then the queen is shouted*.). See Yang (2014) for an in-depth discussion on the reasons and functions of overused *be*s.

Table 4 Lexical aspect and perfective past marking

Levels	Modal		State[7]		Activity		Accomplishment		Achievement	
	Inst.*	Cor. rates** (%)	Inst	Cor. rates (%)	Inst	Cor. rates (%)	Inst	Cor. rates (%)	Inst	Cor. rates (%)
P5	35	43	487	39.8	90	34.1	417	48.4	628	82.4
F1	20	45	119	36	56	43	179	55	102	70
F3	50	46	333	63.7	181	50.3	392	72.4	337	86.9
F5	65	51.1	189	61.5	73	54.8	239	74.5	138	87.7
U1	117	77.8	379	83.9	138	82.6	257	87.9	128	87.5

* Inst. = Instances that require perfective past marking (including simple past tense and past perfect tense)
** Cor. Rate = rate of correct past marking tokens supplied

[7] Passive voice sentences and sentences with overused *be*s were excluded because the kind of *be* in them becomes the main carrier of tense and the nature of the main verb is no longer important.

Table 5 Distribution of temporal adverbials across levels

Levels	Type (a) sentences (with temporal adverbials)	%	Type (b) sentences (without temporal adverbials)	%
P5	165	9.7	1538	90.3
F1	174	34.9	325	65
F3	254	21.5	925	78.5
F5	153	26.7	419	73.3
U1	228	30.9	509	69

Finally, it is worth noticing that there was a very long non-acquisition period for past marking on modals, states and activities and only at university level. The participants' marking of these verbs reached or was close to the generally recognised acquisition level (80–90% of appropriate use).

5.2 Lexical Aspect and Progressive Marking

The participants used a limited number of progressive tokens. In total, only 128 tokens were found: 5 on states, 80 on activities, 44 on accomplishments and 1 on achievements. The overall picture seems to support the AH, but the spread of the progressive form from activities to accomplishments as hypothesised by Shirai and Andersen (1995) is not obvious. The numbers of tokens will not be pursued any further as they are too small to carry much statistical significance.

6 The Presence/Absence of Temporal Adverbials and Tense-Aspect Marking[8]

All the data sentences were put under two categories: Type (a) with temporal adverbials and Type (b) without temporal adverbials. The following table presents their distribution (Table 5).

The following observations can be made: (1) at P5, a very low percentage (9.7%) of sentences contained temporal adverbials; (2) at F1, many more sentences contained temporal adverbials (34.9%); (3) at the higher levels (from F3 to U1), the percentages seemingly stabilising within the range from 21.5 to 30.9%. χ^2 values showed that there was a significant increase of Type (a) sentences from P5 to F1 ($\chi^2 = 187.87$, $p < 0.001$) and there was a significant decrease of Type (a) sentences from F1 to F3

[8] Sections 6 and 7.4 are parts of a published paper by Yang and Huang (2004). They were revised and incorporated into this chapter to present a more comprehensive view of Hong Kong ESL learners' tense-aspect acquisition process.

Table 6 Presence/absence of temporal adverbials and tense-aspect use

Levels	Type (a) sentences			Type (b) sentences			Overall past marking
	Finite verbs	Verbs with acceptable past marking*	%	Finite verbs	Verbs with acceptable past marking	%	%
P5	206	67	32.5	1716	778	45.3	44
F1	172	66	38.4	400	187	46.8	44.2
F3	293	170	58	1197	675	56.4	56.7
F5	165	136	82.4	616	391	63.5	67.5
U1	298	255	85.6	835	676	81	82.2

* Including different past tense-aspect forms

($\chi^2 = 32.77$, $p < 0.001$). Differences between F3 and F5 ($\chi^2 = 5.848$, $p > 0.01$) and between F5 and U1 ($\chi^2 = 2.74$, $p > 0.05$) were not very significant.

Table 6 summarises the relationship between appropriate or acceptable past marking and the presence/absence of temporal adverbials in past contexts.

At P5, significantly fewer finite verbs in Type (a) sentences (**with** temporal adverbials) bore past marking than finite verbs in Type (b) sentences (**without** temporal adverbials) (32.5 versus 45.3%, $\chi^2 = 754.87$, $p < 0.001$). A similar phenomenon occurred to F1 with 38.4% of the finite verbs in Type (a) sentences and 46.8% of the finite verbs in Type (b) sentences bearing past marking ($\chi^2 = 77.45$, $p < 0.001$). However, from F3 up, the reverse of what was found between P5 and F1 was observed: significantly more finite verbs in Type (a) sentences were past-tense marked than finite verbs in Type (b) sentences (F3: 58 versus 56.4%, $\chi^2 = 179$, $p < 0.001$; F5: 82.4 versus 63.5%, $\chi^2 = 21.9$, $p < 0.001$; U1: 85.6 versus 81%, $\chi^2 = 22.26$, $p < 0.001$).

7 Discussion

7.1 L1 Reinforcement of the Aspect Hypothesis

The study results presented in Sect. 5.1 showed a clear spread of the appropriate use of the perfective past marking from the telic group to the atelic group. At P5, correct rates for accomplishments and achievements (48.4% and 82.4% respectively) were much higher than those of states and activities (39.8% and 34.1% respectively). For the higher levels, the correct rates of the atelic group rose gradually and the gap between the two groups narrowed. The results in general support the AH. However, compared with the results of the previous studies, the participants' non-acquisition period of the atelic group seems much longer. At F5, after the students had received

formal instruction of English for 11 years (at least 1760 class hours), the correct rates of states and activities were still low at 61.5% and 54.8%, respectively. Even at U1, correct rates of states and activities were still significantly lower than those of accomplishments and achievements.

The tendency predicted by the AH is generally regarded as a phenomenon in early stages of language acquisition. For example, in Bardovi-Harlig and Reynolds's (1995) study of 182 speakers of different first languages, only the learners at the beginning level (Level 1 out of a seven-level programme) performed more poorly than the F5 students in the present study.

A study by Zhao and Shen (1984) showed that 75% of the use of the Chinese perfective marker *le/jo* matched the English simple past, so it is highly likely for the participants to take *le/jo* as the equivalent of the English simple past. While the English simple past freely occurs on any kind of verbs, *le/jo* occurs only in sentences that present situations with endpoints (Yang, 2011). Accomplishments and achievements are telic situations containing intrinsic natural endpoints, and *le/jo* can freely occur with them, whereas states and activities are atelic events and *le/jo* usually does not co-occur with them. The occurrence pattern of *le/jo* in Chinese corresponds to the universal learner tendency of marking telic verbs only in the early stages of language acquisition. As both the learner tendency and the constraint on *le/jo* occurrences reflect a natural tendency in morphology attachments as captured in Bybee's Relevance Principle (1985), they seem to reinforce each other. It is this reinforcement that leads to a delay in the spread of the past tense marking to atelic verb types.

7.2 The Expansion Path of Perfective Past Marking

The two key predictions of the AH lump achievements and accomplishments together as the ([+telic]) group, and activities and states together as the ([-telic]) group. Are these two groups truly monolithic? Conflicting answers can be found in different studies. Bardovi-Harlig and Bergström (1996) found that the [+telic] group showed the same level of past marking (46.4% and 47.1% of appropriate marking, respectively), and the [-telic] group showed similar levels of past marking (15% and 17.2% appropriate marking, respectively). Bardovi-Harlig and Reynolds' study (1995) produced similar findings. However, Andersen's (1986) study found that both [punctual] and [dynamic] were important features to distinguish achievements ([+punctual]) from accomplishments ([-punctual]) in the [+telic] group and activities ([+dynamic]) from states ([-dynamic]) in the [-telic] group. He suggested that the perfective past spreads from achievements, to accomplishments, then to activities and finally to states; and the imperfective past spreads in the opposite direction from states, to activities, to accomplishments and finally to achievements. Bardovi-Harlig's (1998) oral data also showed that many more achievements received perfective past marking than accomplishments, although her written data suggested that achievements and accomplishments seemed to pattern together. Andersen and Shirai (1996)

proposed a four-stage expansion path of the perfective past:

achievements > accomplishments > activities > states (2)

The findings of the present study support the path in (1) repeated in (3) below:

achievements > accomplishments > states > activities (3)

The first half of (3) is the same as (2) but the second half is different in which states go before activities. In Bardovi-Harlig and Bergström's (1996) study, states also showed higher appropriate past marking than activities. As their study emphasised only the spread of past marking from telic verbs to activities, the differences between states and activities were not pursued.

In the following subsections, it will be argued that the four-stage expansion path suggested by Andersen and Shirai (1996) is theoretically sound but it should be modified.

7.2.1 The Modified Four-Stage Expansion Path of Perfective Past Marking

The difference between achievements and accomplishments is the presence/absence of the feature [punctual], and the difference between states and activities is the presence/absence of the feature of [dynamic]. The function of perfective past marking is to locate a situation in the past and provide an entirety view of the situation, so its basic meanings are [+past] and [+entirety]. Punctuality is not one of the basic meanings. It is only indirectly relevant to the basic meanings because punctual events are more likely to view in their entirety. As an indirectly relevant feature, punctuality creates a shorter distance between achievements and accomplishments than that between the telic group and the atelic group. This distance can be shortened or even erased by the factors discussed in the later part of this subsection.

Like the [±punctual] feature, [±dynamic] is not one of the meaning components of the perfective past either. It may be argued that dynamic events are more likely to terminate than states and thus easier to view in their entirety, because it takes energy to maintain them while states can sustain without provision of energy. However, this argument is not strong, and it is very likely that the distance between activities and states is even shorter than that between achievements and accomplishments.

Of the three features that distinguish aspectual verb classes, [±telic] is the most important one in determining the expansion path of perfective past marking. The other two features are only indirectly relevant to the meanings of the perfective past, and the distinctions created by them can be weakened or even erased. That is why the distinction between the [+telic] group and the [-telic] group is always attested, but the distinction among members within each of the two groups is not always there. Andersen and Shirai's (1996) expansion path can be maintained with some modifications as shown below:

(Achievements ≥ Accomplishments) > (Activities ≥ States) (4)

First, the path in (4) acknowledges the two stages: the telic group > (precedes) the atelic group. Then within each of the two groups, the symbol " ≥ " is used to indicate that there may be two separate stages, namely Type A > Type B; or the two stages may merge, namely Type A = Type B. Either " > " or " = " will obtain in learner language depending on two factors.

7.2.2 The Factors that Affect the Order Within the [+telic] Group and the [-telic] Group

The first factor is the types of language production. The inconsistent findings in the previous studies resulted partly from the fact that different types of language production data were examined. One of the strengths of the present study is the use of free production data, but this strength also led to one of its limitations: the verbs available for investigation were not evenly distributed. The uneven distribution may be a factor that affected the judgement of the expansion path of perfective past marking.

First, the verbs were not evenly distributed across different aspectual classes (Table 7).

The numbers of different activity verbs were more than twice as many as those of states, and the same was true of accomplishments verbs against achievements verbs.

Second, more states and achievements were found among the top most frequently used verbs.

A total of 10 out of the 19 different verbs listed in Table 8 were either states (*be*, *have*, *feel, want* and *know*) or achievements (*say*, *see*, *ask*, *shout* and *find*). The top two most frequent verbs were *be* (state) and *say* (achievement). The past marking of these two verbs as shown in Table 9 may affect the overall correct rates presented in Table 4.

A comparison of Tables 9 with 4 shows that the correct past marking rates of either *be* or *say* were higher than the overall rates of states and achievements.

According to Giacalone Ramat (1992), *be* seldom occurs untensed. As Table 9 shows, there was a higher percentage of past marking on *be* than on other stative verbs. This higher percentage may counterbalance the disadvantageous [-dynamic]

Table 7 Numbers of different verbs in each aspectual class at different levels

Level	States	Activities	Accomplishments	Achievements
P5	13	32	49	19
F1	11	33	47	18
F3	15	43	47	20
F5	17	56	82	21
U1	30	66	99	32

Table 8 Top 8 most frequently used finite verbs

Levels	Verbs and numbers of tokens							
P5	Say (397)	Be (377)	See (83)	Go (95)	Open (74)	Want (41)	Ask (50)	Give (37)
F1	Be (88)	Go (87)	Say (57)	Come (15)	Wait (14)	Take (12)	Find (9)	Give (9)
F3	Be (188)	Say (134)	See (93)	Go (117)	Run (60)	Ask (46)	Tell (33)	Catch (26)
F5	Be (142)	Say (53)	Go (41)	think (35)	Have (25)	know (22)	want (21)	see (19)
U1	Be (314)	Have (34)	Feel (28)	Go (38)	Know (25)	See (27)	get (24)	Think (18)

Note Auxiliary and overused *bes* are not included. Auxiliary *haves* are not included either.

Table 9 Perfective past marking for *be* and *say*

Levels	Tokens of *be* requiring perfective past marking	Correct rate (%)	Tokens of *say* requiring perfective past marking	Correct rate
P5	337	45	389	91.4
F1	72	48.8	52	84.6
F3	170	74	129	86.6
F5	138	74	51	98
U1	274	89.5	10	90

Table 10 Distribution of different verbs in the textbooks

States	Activities	Accomplishments	Achievements
30	90	93	46

feature of states and cause the order change of activities and states in the four-stage expansion.

The second factor is the uneven distribution in classroom input. The uneven distribution of verbs in our data may be a true reflection of the language input to the students. To test this, we examined all finite verbs in one set of popular English textbooks[9] used in Hong Kong primary schools and identified the distribution patterns (Table 10):

[9] To identify the most commonly used English textbooks, we randomly selected 50 schools and phoned each of them. The results showed that all of them used one or two of the six sets of textbooks. Then one from the six sets was chosen for examination here.

Table 11 Top 8 most frequent verbs in the textbooks

Textbooks		
Verb	Frequency	Verb type
be	984	State
say	431	Achievement
go	135	Accomplishment
take	134	Accomplishment
have	105	State
get	89	Accomplishment
want	77	State
like	60	State

Similar to what was found in the participants' production data, there were also more different activities and accomplishments than different states and achievements in the textbooks. Also similar to what was found in the participants' production data, more states and achievements appeared on the list of top 8 most frequent verbs. *Be* and *say* greatly outnumbered the other verbs on the top list.

The outstanding similarities between our data and the textbooks make it reasonable to say that the verb distribution patterns in our data reflect the patterns of the classroom input. As Table 11 shows, a few states and achievements such as *be* and *say* occurred very frequently in the textbook input so that the participants might get more familiar with their different tense-aspect forms. High rates of repetition may have deeply ingrained the past tense form of these verbs (*was, were, had*, *liked*, *said*, *found*, *stopped*, etc.) in the minds of the learners. Therefore, when they write, they may provide more correct verbal marking for these familiar verbs. On the other hand, the participants might have encountered only a few times many of the larger numbers of activity and accomplishment verbs. They might have had just enough time to process the core meanings and basic forms of these verbs and so they tended to ignore the past inflections for them. We formulated this phenomenon as the Frequency Effect:

(5) A number of states and achievements such as *be* and *say* are highly frequent in language input to students; their different morphological forms may be the first thing learned by learners.

The Frequency Effect explains the higher correct rates of copula *be* and some other states and achievements. The higher correct rates may raise the overall correct rates of states and achievements to a lesser or greater extent, depending on the nature of tasks students perform. For free production, especially when learners have a limited vocabulary to manoeuvre because of low language proficiency, students may use certain familiar states and achievements frequently (like the participants of lower levels in our study), and the overall correct rates of states and achievements will rise to a greater extent. For cloze tests, if the test verbs distribute evenly across the four aspectual types, the Frequency Effect will not obtain.

Our argument here is also partially supported by Ayoun and Salaberry's (2008) findings. Their cloze test results supported the AH, but the results of their narrative

data showed that states were consistently marked with perfective past more often than even telic events. They suggested this be the result of a distributional bias in input: states were few, frequent and consistently marked with perfective past while accomplishments and achievements were more open-ended and were marked with both perfective past and progressive. However, their narrative data size was small with only 21 learners, and no detailed analysis of the input was given in their paper.

7.3 Lack of Past Marking for Modal Verbs and L1 Transfer

The correct rates for modal verbs were consistently low. Even at university level, the students did not achieve 80% of appropriate past marking for modal verbs. The Chinese perfective marker *le/jo* may be mistaken as the equivalent of the English simple past. In English, tense marking is compulsory for all finite verbs; however, in Chinese, aspect markers are grammatically optional and their use is subject to various constraints, one of which is that modal verbs never take aspect markers. The participants might have transferred this constraint from Chinese to their use of English modal verbs and therefore had persistent difficulties in appropriately marking modal verbs with past tense morphology. In past contexts, they often used *can* instead of *could*, *will* instead of *would*, etc.

7.4 Developmental Stages of Tense-Aspect Acquisition

As Table 5 shows, at the lowest level (P5), a very low percentage of sentences contained temporal adverbials (9.7%). There may be two reasons for it. First, the given beginning could have reduced the chances of participants' writing an introductory sentence that contained a temporal adverbial. Second, the students relied heavily on context and chronological ordering (pragmatic devices) to locate events temporally. The fact that they created, in narrating past events, a small percentage of contexts (less than 1%, Table 2) for tense-aspect forms other than the simple past is strong evidence that they indeed relied heavily on context and chronological ordering to express temporality. Only a couple of reverse-order report sentences were found. And there were only a few complex sentences that contained adverbial clauses introduced by *when*, *while*, *before*, *after* or other kinds of subordinate clause. The rates of appropriate tense-aspect marking were low for both Type (a) and Type (b) sentences (32.5% and 45.3% respectively). In general, the participants at this level relied heavily on pragmatic devices to make temporal references.

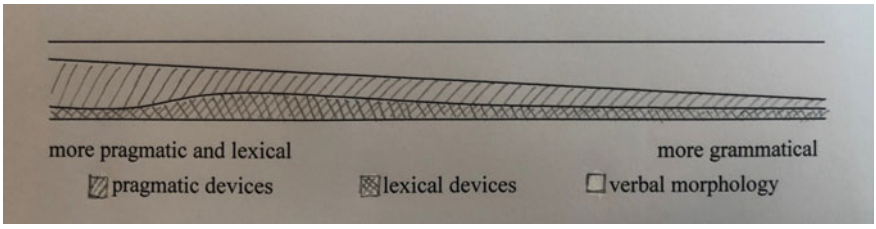
The F1 participants used more temporal adverbials (34.9% Type (a) sentences) and more finite verbs in past time contexts that required different past tense-aspect forms other than the simple past (4.9%). They produced more complex sentences containing temporal adverbial clauses or other kinds of subordinate clause. The correct past marking rates were higher, 38.4% with Type (a) sentences and 46.8%

with Type (b) sentences. Compared with the P5 students, the students at this level seemed to rely heavily on lexical means to make temporal references.

At the even higher levels, namely F3, F5 and U1, the rates of Type (a) sentences (with temporal adverbials) ranged from 21.5% to 30.9% (Table 5) and the overall rates of past marking went steadily higher: 56.7% at F3 and 67.5% at F5. At the highest level U1, the participants showed a fairly good command of the tense-aspect system with an overall past marking rate of 82.2% (Table 6), and they also created many more contexts (9.36%, Table 2) for different past tense-aspect forms other than the simple past.

The picture that emerges from the figures in Tables 2, 5 and 6 seems to match the developmental sequence from pragmatic to lexical and then to morphological devices. However, the sequence is not one of the three stages. It is more like a continuum with three parallel streams, "the stream of pragmatic devices" being the widest at the beginning; "the stream of lexical devices" being wider towards the middle, and "the stream of morphological devices' being the widest at the end, as shown in (6):

(6) Continuum of tense-aspect system acquisition



To sum up, there are no three clear stages from pragmatic to lexical and to grammatical devices. Rather, there is a slow shift from relying more on pragmatic devices to more on lexical devices and then to more on morphological devices. Our data argue strongly for a continuum description rather than a three-stage description of the tense-aspect system development.

In addition to the continuum, the results lead to three more observations. First, even at the lowest level, when the learners relied heavily on pragmatic devices to make temporal references, they also used tense morphology to mark 32.5% of the (a) type sentences and 45.3% of the (b) type sentences (Table 6). Second, the presence of temporal adverbials was related to the lower past marking rates at the lower levels (P5 and F1) and the reverse happened at the higher levels (F3, F5 and U1) (Table 6). Third, the shift from relying more on pragmatic and lexical devices to relying more on grammatical devices was very slow. There should be an extended "more pragmatic and lexical" period from P5 to F5, a span of 6 years. These special observations will be explained in the following subsections.

7.4.1 Classroom Instruction and Our Learners' Early Start in Tense-Aspect Use

Hong Kong ESL students are instructed L2 learners. Outside the classroom, they have little exposure to English. According to the *English Language Curriculum Guide* (Primary 1–6) (2004) and *English Language Education Key learning Area Curriculum Guide* (Primary 1–Second 6) (2017) published by the Curriculum Development Council of the Education Bureau in Hong Kong, the different tense-aspect forms are mostly introduced to students in the six primary school years and expected to be used by them in the following sequence:

Key stage 1 (Primary 1–3).
Simple present tense; present continuous tense; simple past tense.
Key stage 2 (Primary 4–6).
Present perfect tense; future tense; to be going to; past continuous tense.
Key stages 3 & 4 (Secondary 1–6).
A variety of tenses; the passive voice; reported speech.

By the end of Key Stage 2 (Primary 6), all major tense-aspect forms have been introduced to students in the classroom. In other words, when the students' overall knowledge of English is still at the beginning level, they have already received some formal instruction on different tense-aspect forms and have had some vague ideas about tense-aspect use. The formal instruction and the vague ideas in students' mind lead to an early start in their tense-aspect use. However, the limited language exposure (e.g. illustrative examples in texts, specially designed exercises and classroom activities) does not guarantee that students have acquired the meanings and functions of different tense-aspect forms, so they still rely heavily on pragmatic and lexical devices to locate events temporally.

7.4.2 The Function Shift of Temporal Adverbials

The fact that the presence of temporal adverbials led to the lower rates of past marking at P5 and F1 is clear evidence to support the argument that the participants of lower levels relied very much on temporal adverbials for making temporal references. Temporal adverbials at these levels were a kind of tense substitutes. From F3 up, however, the presence of temporal adverbials was related to higher rates of past marking. Temporal adverbials seemed to be gradually shedding its responsibility as tense substitutes and assuming a different function: reminders for the use of verbal morphology. This is something which has not been discussed in previous studies, and we believe that it is a special feature in the interlanguage of our instructed students.

As discussed earlier, the formal classroom introduction of different tense-aspect forms is responsible for an early start in tense-aspect use, and a particular kind of training should be the reason why temporal adverbials can function as a kind of reminder for the use of certain tense-aspect forms. Yang et al.'s (2000) examination of the Hong Kong English textbooks revealed that textbook writers depend heavily on adverbials of frequency (*every day*, *always*, *usually*) to cue the simple present,

on deictic and calendric temporal adverbials (*yesterday*, *in 1990*, *now*) to cue the simple past or the progressive, and on adverbials like *recently*, *already* to cue the present perfect form. The following sentences are typical examples taken from the textbooks.

(7) Where are Tony and Jenny **now**?

(8) Where were they **at 8:00**?

(9) Tony cleans his room **every day** but he did not clean it **yesterday**.

The dependence upon different temporal phrases to cue the use of certain tense-aspect forms could give inaccurate information to learners so that they may "under-generalise" the meanings associated with verbal morphology (Bardovi-Harlig, 1992). This kind of formal training makes students more and more conscious of the need to use certain kinds of verbal morphology in the presence of certain types of temporal adverbial, and as a result, the presence of temporal adverbials becomes a kind of reminder for tense-aspect marking. This is exactly what our data have shown: as levels increased, there was a shift in the function of adverbials from tense substitutes to reminders of tense marking.

7.4.3 The Reinforcement of the Initial Tendencies to Use Pragmatic and Lexical Devices by L1 Transfer

As discussed in Sect. 2, there was a coincidence between the learners' initial tendencies of relying on pragmatic and lexical devices and the Chinese way of expressing temporality. This coincidence was not a mere accident.

It has been assumed that "the results of language change coincide with or parallel (or are not totally unrelated to, at least) the language learning processes" (Giacalone Ramat, 1992, pp. 298–299). This assumption finds strong support in the particular semantic area of temporality. English and many other languages have gone through the historical development from "more lexical and pragmatic" to "more grammatical" (Giacalone Ramat, 1992), and learners of these languages are shown to go through the same developmental processes. However, Chinese retains the natural tendencies of using pragmatic and lexical devices to indicate deictic temporal relations, although there is grammatical aspect to indicate different ways of viewing situations. As the reliance on pragmatic and lexical devices for expressing temporality in Chinese and the learners' initial tendencies result from the same source, which is a natural pattern in the human language development, it is not surprising to find that Chinese, as L1, has a reinforcing effect on the learners' initial natural tendencies and the reinforcement results in an extended "more lexical and pragmatic" period from P5 to F5, a span of 6 years.

The reinforcing effect of [-tense] L1 Chinese on our learners' acquisition of the English temporal system can be seen more clearly in light of the studies on learners whose L1 and L2 are both [+tense] languages. Although it is not possible for us to find studies directly comparable to the present one in terms of sampling methods and learning environment, some relevant studies can provide us with valuable references. In the classroom environment investigated by Salaberry (1999), one semester

of intensive training produced tremendous improvement in students' use of tense-aspect morphology. In the natural learning environment investigated by Andersen (1991), the two learners progressed from stages 2 and 4 to stages 6 and 8 respectively within a period of two years. In Housen's (2000) longitudinal study of instructed L2 acquisition, the learner made great progress within the period of three years. In sharp contrast to the participants of these studies, it took much longer for the participants of our study to make progress in tense-aspect development. They had 8–9 English lessons (an average of 4.5 h) per week in primary schools and 8–10 English lessons (an average of 5 h) per week in secondary schools. In the period of 6 years from P5 to F5, after about 1200 h of English lessons, their acceptable past marking rates for verbs in past contexts only rose from 44% to 67.5%. Only at university level, our learners can be said to have basically acquired the norms of English tense-aspect use.

8 Pedagogical Implications

8.1 Teachers and Textbook Writers Need to Be Aware of Verb Classes

The results of the study suggest that students' appropriate past marking rates for accomplishments and achievements are higher than those for states and activities. To counterbalance this effect of lexical aspect, it is necessary to enhance teachers' and textbook writers' awareness of aspectual verb classes. In writing textbooks or designing exercises, more deliberation is needed to include more different states and activities in past time contexts. More importantly, more texts should contain scenarios which require the use of different tense-aspect forms on different types of verb so that teachers could use them to illustrate and compare the meanings of tense-aspect forms.

8.2 Some Measures Should Be Taken to Mitigate Negative L1 Transfer

The results of the study suggest that L1 transfer manifests in two ways: (1) the lexical constraints on the use of the Chinese perfective aspect marker strengthen the association between past tense marking and telic events, thus delaying the spread of past tense marking to atelic verbs; and (2) the Chinese ways of expressing temporality reinforce learners' tendency to rely on pragmatic and lexical devices. These two ways of L1 influence work together, leading to a prolonged non-acquisition period of the English tense-aspect system. Some measures could be taken to overcome the problems of L1 transfer. First, a comparison of the Chinese perfective marker *le/jo* and the English simple past could be done to let students understand the different

functions of *le/jo* and the English simple past. Second, different narrative orders, such as chronological order, reverse order and juxtaposition, could be used in narrative texts to let students understand that past contexts require past tense-aspect forms regardless of narrative order. Third, different types of adverbial could be included in the same past time contexts to show that temporal adverbials cannot substitute tense marking.

8.3 More Balanced Classroom Input is Needed

As discussed in Sect. 7, uneven distribution of verbs across different aspectual classes and the frequent repetitions of a few states and achievements, such as *be*, *have* and *say*, in the classroom input have negative impacts on the spread of the perfective past within the [+telic] group and [-telic] group of verbs. To mitigate the impact, more deliberation is needed to include more different states and achievements and reduce the number of repetitions of certain highly frequent states and achievements in texts and exercises.

It has also been argued that students' tendency of using certain tense-aspect forms in the presence of certain types of temporal adverbial could result from classroom training. To avoid the negative effect of this tendency, contexts rather than individual sentences with temporal adverbials should be used to elicit the use of different morphological forms.

9 Conclusion

The results of the present study showed that more [+telic] verbs (i.e. accomplishments and achievements) were appropriately tense-aspect marked than [-telic] verbs (i.e. states and activities). This basically supports the AH. However, the four-stage expansion path of the perfective past should be modified. A new expansion path (Achievements $\geq$ Accomplishments) > (Activities $\geq$ States) was proposed, and how L1 morphological structure and/or input pattern might affect the expansion order within the [+telic] group and the [-telic] group was explained. The results of the study also indicate that learners' shift from relying more on pragmatic to more on lexical and then to more on grammatical devices of temporality is a continuum rather than a three-stage process, and the prolonged non-acquisition period comes from the reinforcing effect of L1 transfer. The implications of the findings have also been discussed.

The present large-scale study has produced some original findings which have pedagogical implications. However, further research is needed to make up for its limitations. First, in addition to cross-sectional design, a longitudinal study could be done to clearly delineate the developmental path of Hong Kong ESL learners' tense-aspect system. Second, cloze test data could be coupled with production data

to counterbalance the problem of biased verb distribution across different aspectual types.

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