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Development of English among Older Chinese Migrants in Australia: A Case of Tense and Aspect

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ABSTRACT

Language barrier among older migrants affects various areas of their life such as physical and mental well-being and participation in the community. However, little is known about their actual language attainment. This study investigates the development of tense and aspect (TA) in English through focused instructions among older Chinese migrants in Australia. TA is expressed through morphological and syntactic means in English, while in Chinese, tense is expressed lexically, and aspect via contextual cues and aspect markers. These typological contrasts create learning difficulties among Chinese learners in acquiring English TA. The Aspect Hypothesis (Andersen & Shirai, 1994) claims that the acquisition of aspect is related to verb semantics and, for instance, acquisition of progressive starts with action verbs then extends to Accomplishment and Achievement (Sugya & Shirai, 2007). From a morphosyntactic viewpoint Processability Theory (PT, Pinemann 1998) hypothesises a universal sequence of second language development where V-*ing* and V-*ed* are acquired at the category-procedure stage, followed by verb phrase agreement between auxiliary and lexical verb and finally subject-verb agreement on the verb at sentence procedure stage. We broach whether the older migrant learners would be able to learn TA in English. Seven Chinese migrants aged 60-69 who arrived in Australia at the age of between 35 and 60 participated in this study. They received four-week focused instruction on TA following the stages described in PT, and their speech production data were collected before and after the instruction. Analyses indicated that the participants improved their markings of TA after the instruction, and their PT developmental stage was a crucial factor in acquiring TA. The study emphasises the importance of continuous language training for older migrants to encourage their language development, especially for those learning a typologically different language from their first language. Thus, this paper addresses a research gap in older migrants' second language learning and highlights the importance of research with adult migrants to gain insight into their bilingualism.

Key words: English as a Second Language, Adult Learner, Aspect Hypothesis, Tense and Aspect, Processability Theory

INTRODUCTION

This study investigates the development of tense and aspect (TA) in English through focused instructions among older Chinese migrants in Australia. With increased migration to Australia in recent years, more and more Chinese migrants are calling Australia home. According to the latest 2016 Australian Census, of the estimated 6.38 million new migrants born overseas, approximately 15% speak a language other than English at home (ABS, 2016). However, many of them, especially adult migrants, have limited English proficiency (Young-Scholten, 2013). Consequently, their language barrier would create considerable difficulty accessing social services, participating in community events, securing well-paid jobs, and having a sense of belonging (Kim, Ehrich & Ficorilli, 2012; Young-Scholten, 2013). There is a research gap in English acquisition as a second language (L2) by adults: whether older learners can continue learning English L2 if we teach them. For example, are they able to learn English morphological markings relating to tense and aspect (TA)? TA is expressed differently in Chinese and English: it is expressed through morphological and syntactic means in English, while in Chinese tense, it is expressed lexically, and aspect via contextual cues and aspect markers, e.g., le (Xiao & McEnery, 2004). These typological contrasts create learning difficulties among Chinese first language (L1) learners in producing English TA (Wiedenhof, 2015). Additionally, the Aspect Hypothesis (AH) (Andersen & Shirai, 1994; Salaberry & Shirai, 2002; Shirai & Andersen, 1995) claims that the acquisition of aspect is related to verb semantics and, for instance, acquisition of progressive V-ing starts with Activity verbs (e.g., walking) then extends to

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Accomplishment (e.g., completing) and Achievement verbs (e.g., reaching).

Furthermore, in English L2, TA is acquired in the following order: Present progressive > Simple past > Past progressive > Present perfect > Past perfect (Shirai & Andersen, 1995). Also, Processability Theory (Pienemann, 1998) claims that language learning follows the universal stages of second language development. So then, is the acquisition of TA influenced by the learner's stage of language acquisition? No study, so far, has investigated whether older migrants follow such developmental paths. Many of the younger migrants from China tend to be capable of achieving high proficiency in English. Many older migrants, however, have various level of educational backgrounds in China and their proficiency in English tends to be low (Burnett, 1998, pp. 58-60; Masri, 2002). This is possibly due to their having had no English training in China, or what knowledge they possess has been forgotten due to lack of use. The current study intends to address these gaps and answer the following research questions:

1. Can older migrants develop their English TA through instruction?
2. Do the older migrants' acquisition of TA follow the Aspect Hypothesis?
3. Is the acquisition of TA influenced by the learner's current developmental stage of English as a second language?

TYPOLOGY OF ENGLISH AND CHINESE

We first describe the typological characteristics of two languages, English and Chinese, involved in this study. English belongs to the Indo-European language family. In terms of word order and sentence structure, English is an SVO language. English is an inflectional language where the inflections on words perform grammatical functions in terms of morphological expressions. In terms of Tense and Aspect (TA), English has three tenses, namely present, past and future tense and different aspects, present/past/future progressive, present/past/future perfective (Lock, 1996). English tense is typically expressed through the use of auxiliary verbs (*do, have*, *is*) and morphological changes to the verb ending (e.g., verb stem + suffix -*ed*), the agreement between the subject and verb (for third-person singular, -*s*). Also, it is often accompanied by a circumstantial adjunct clause such as *yesterday, one morning,* or a binding conjunctive -*when* (Declerck, 2006; Lock, 1996; Xiao & McEnery, 2004).

Chinese belongs to the Sino-Tibetan language family (Li & Thompson, 1989). In terms of word order, Li and Thompson (1989) state that it is difficult to establish a basic word order for Chinese because pragmatics play an essential role in Chinese sentence structure rather than word order. Chinese displays many characteristics of SOV languages, and the language is known for the richness of compound and polysyllabic words and "Preposition + Object + Verb construction" (Li & Thompson, 1974). However, there is some evidence that Mandarin is undergoing a gradual change from SVO to SOV word order (Li & Thomson 1989).

Table 1 compares Tense and Aspect encoding systems in English and Chinese. In English, Tense is indicated morphologically and Aspect both grammatically and morphologically. By contrast, there are no changes in verb forms in Chinese. While Chinese encodes Tense lexically, Aspect is encoded both lexically and grammatically, as shown in (1) and (2).

(1) *wo3 mai3 zhe4 ben3 shu1* ***le***
I buy this CLF book PFV
"I bought this book"

(2) *Ta1 qu4 guo4 Tai2bei3* ***le***
He/She go EXP Taipei PFV
"He/She has been to Taipei"
(Li & Thompson, 1989, p. 185)

These examples show that aspect morpheme -*le* "了" (perfective marker) is used to indicate time and aspect (Li & Thompson, 1989). The perfective marker –*le* at the end of sentence signals past action and more "salient" than experiential marker –*guo* "过" (experiential marker) (Xiao and McEnery, 2004).

LITERATURE REVIEW

This section reviews key concepts relating to the study including the Aspect Hypothesis, the Processability Theory (Pienemann 1998), and the role of instructions.

Acquisition of Tense & Aspect (TA)

The acquisition of TA is deeply relating to the semantic of the verbs. The Aspect Hypothesis (AH) (Andersen & Shirai, 1994) is based on the verb categories where the verbs were classified into Statives, Activities, Accomplishments and, Achievements. The verb categories are determined by their inherent verb aspects in terms of punctuality, telicity, and dynamics. Table 2 below shows the semantic features of the verb categories.

Statives are verbs that describe senses, mood, or feelings (e.g., *feel*, *see*), Activities are dynamic, habitual verbs and do not necessarily have an endpoint (e.g., *run*, *drive*). Accomplishments are verbs that have a duration and usually occur with an inherent endpoint (e.g., *walked one kilometre*). Achievement verbs, however, indicate a change of condition and are punctual (e.g., *graduate*). The Aspect Hypothesis (Anderson & Shirai, 1994) states that learners apply tense and aspect markings first on event-like verbs, move on to less event-like verbs and follow a set development sequence. The central claims by AH for second language acquisition are as follows:

i. Learners first use (perfective) past marking on achievements and accomplishments, eventually extending use to activities and statives.
ii. In languages that have a progressive aspect, progressive marking begins with activities and then extends to accomplishments and achievements.
iii. Progressive markings are not incorrectly over-extended to statives.

Collins (2007) investigated the acquisition of English TA among French and Japanese learners and found that learners all showed similar performances when acquiring TA

Table 1. Comparison between English and Chinese Aspect/Tense

Tense	**English**	**Chinese**
Past	Verb stem+suffix *-ed*	No change to V form. S+V+ aspect marker *(-le* "了 ", or *-guo* "过 ")
Present	Verb stem+3SGL-*s*	No change to V form.
Future	Verb stem+3SGL-*s*	No change to V form
Aspect	**English**	**Chinese**
Past progressive	Aux *BE* (Was/were) + Verb stem+suffix-*ing*	S+V+ aspect marker *(-zheng/-zheng4zai4* "正/正在")
Present progressive (continuous)	Aux (*BE*) + Verb stem+suffix-*ing*	S+aspect marker (*-zheng/-zheng4zai4*" 正/正在") + V
Past perfective	Aux (*Had*)+Verb stem + (participle)	Aspect marker *(-jiu4 yi3jing1*"就已经") + V+aspect marker (*-le* "了")
Present perfective	Aux (*has/have*) +Verb stem + (participle)	Aspect marker (*-xian4zai4 yi3jing1* "现在已经") + V+aspect marker *(-le* "了")

3SGL=3rd person singular, Aux=auxiliary verb

Table 2. Semantic features of the verb categories (Andersen and Shirai 1994, p. 134)

	Statives	**Activities**	**Accomplishments**	**Achievements**
Punctual	-	-	-	+
Telic	-	-	+	+
Dynamic	-	+	+	+

regardless of their L1. For example, French and Japanese learners had similar performances in the correct use of past tense for Accomplishment verbs (e.g., "We *sang a song*") and Achievement verbs (such as "*he recognised his old friend*"), while they used the simple present tense for Stative verbs (e.g., "*I need you*") and progressives for Activity verbs (e.g., "*a duck is swimming in the river*").

In addition to verb semantics, the acquisition of TA seems to interact with the phonology of the target language. Lardiere's (1998) study on the acquisition of morphology in English L2 by a Chinese informant, Patty, a migrant in the United States, found Patty's systematic omission of *-ed* on regular verb past tense in her speech data was due to Chinese phonetic rules. The Chinese language does not allow word-final consonant clusters such as *kissed* [*sd*] and *kicked* [*kt*]. This explained why most of Patty's irregular verb past tense was correct (100%), but past tense markings on regular verbs accuracy were extremely low (35%). On the other hand, Patty's written data showed "correct past tense forms on both regular and irregular past tense in obligatory contexts 77.93% of the times" (Lardiere, 2003, p179). She concluded that Patty's omission of regular past tense marking to her speech was not attributed to a lack of tense marking in Chinese; instead, it was due to a phonological problem.

Processability Theory

The acquisition of TA may be influenced by the current stage of second language development. Processability Theory (PT) (Pienemann, 1998; Pienemann et al., 2005) is a theory of second language development. PT's theoretical base relies on Lexical-Functional Grammar (LFG) (Bresnan 2001) for grammatical formalisation and Levelt's (1989) Speech Model for language processing. PT explains that language development is constrained by learners' processing abilities, which utilised feature unification. PT claims that learners' processing ability to exchange information in language production predicts the learner's developmental stage. Table 3 presents the second language developmental stages defined by PT.

The L2 learner goes through the following stages. In Stage 1 (Lemma access), the learner produces single words and fixed expressions, and in Stage 2 (Category procedure), grammatical structures do not involve information exchange between any elements in a sentence. At this stage, the learner can add *-ed* and *–ing* to the verb and *-s* on the noun for plural (without agreement). At Stage 3 (Phrasal procedure), the learner first becomes able to encode NP agreement between modifier and noun (e.g., *many apples*) and then VP agreement between Auxiliary verb and verb (e.g., *has* + past participle). At Stage 4 (Sentence procedure), the learner becomes able to produce inter-phrasal morphology such as (3rd person singular) on verb where information exchange is required across phrases (i.e., NP Subject and VP). Stage 5 is beyond the scope of this study which mainly focuses on the development of TA. PT uses the emergence criterion to decide if the learner has acquired a particular stage. This requires lexical and form variation. For example, if the learner produced *studied* and *worked* (lexical variation) and *study* and *studied* (form variation), this learner is deemed to have acquired *–ed*.

Role of Instruction

Lenneberg's (1969) Critical Period Hypothesis claims that language learning is most productive before puberty. After puberty, the brain loses plasticity, and it becomes more challenging to learn a new language successfully. First coined by Selinker (1972), *fossilisation* refers to "linguistic items,

Table 3. Processability Hierarchy (after Bettoni & Di Biase, 2015)

	Stages	Example in English
1	Lemma access	simple word/formulaic expressions
2	Category procedure	plural *-s* (e.g., my brothers), past *-ed*, verb *-ing*
3	Phrasal procedure: NP procedure	phrasal plural marking, e.g., "two apples"
	Phrasal procedure: VP procedure	Aux+V: have+V-*ed*, Modal+V; be+V-*ing*
4	Sentence procedure	subject-verb agreement: 3rd person singular *-s*
5	Subordinate clause procedure	e.g., subjunctive marking in subordination

NP=Noun phrase, VP=Verb phrase

rules, and subsystems, which speakers of a particular native language will tend to keep in their interlanguage (IL) relative to a particular Target Language (TL), no matter what the age of the learner or amount of explanation and instruction he receives in the TL" (p. 215). Fossilisation could be phonological, such as a foreign accent, or morphological omitted or forgotten the transformation rules by Chinese learners of L2 English (Wei, 2008). There has been an ongoing debate about the existence of the fossilisation phenomena. Long (2003) argues that Selinker's definition is problematic, especially regarding the scope and definition of "discourse domains, permanence, and context." Furthermore, long (2003) argues that the results from most of the studies cannot be counted as evidence of fossilisation due to; selection of inappropriate informants, insufficient data, and inadequate analysis criteria.

In terms of the effect of training, Xu & Lyster (2014) on Chinese university students acquiring English L2 found that explicit form-focused training on the plura *-s* and third-person-singular *-s* was effective. Additionally, Hakuta, Bialystock, and Wiley (2003) conducted a study on the critical period hypothesis (Lenneberg, 1969) among Spanish and Chinese migrants in America based on census data. Learners who were exposed to quality language immersion outperformed those who have limited language immersion and use. This study shows not only the importance of input and output in L2, but it also acknowledges that factors like cognitive aging, processing speed, and attention span will influence language learning.

Teachability Hypothesis (Pienemann 1984) states that the current ability of language processing constrains learners' L2 development. This indicates that learners cannot skip stages and that they can only acquire a higher structure once they have acquired all lower stage structures as the hierarchy is implicational. Therefore, L2 training is most beneficial when the instructions follow the developmental stages. The only known study on the acquisition of tense and aspect (TA) using PT is Mine (2015) based on existing Japanese L2 learner corpus data. Her result supported the acquisition order of Japanese TA morphemes hypothesised by Di Biase and Kawaguchi (2002) that "*-ru* (invariant form) > *-ta* (category procedure) > *-tei ru* and *–tei ta* (phrasal). Another interesting finding is that Chinese L1 learners in her study showed more omissions in past tense morpheme *–ta* than English L1 and Korean L1 learners learning Japanese L2, which may be attributed to the lack of tense morphology in their Chinese L1.

From the above literature review, we can see a research gap in the acquisition of English TA by older learners. Another gap relates to the instruction: whether adult learners can continue learning English L2 if focused training, following PT developmental stages, is provided.

RESEARCH DESIGN

The study adopted Pre-test, instruction, and Post-test design. The instruction included four-week (one hour each week) form-focused grammar lessons on English tense and aspects. Each lesson followed a set routine: the outline of the lesson, revision of previous learning points, vocabulary necessary for the new lesson, instructions on the new grammatical items, class activities, and exercises. For example, for the week teaching past tense, relevant vocabulary items such as *last week*, *yesterday* are introduced first. This was followed by instructions and examples of the tense and aspect. The instructions on tense and aspect covered the forms of sentence structures (Declarative, Interrogative, and Negation) and the context where these tense and aspect were used. The lessons followed the instruction order of Present and Future tense> Present Progressive and Past Tense > Present and Past Perfective Aspect> Revision. This order was decided to follow PT stages: Stage 1 (Word)> Stage 2 (Category procedure)> Stage 3 (Phrasal procedure)> Stage 4 (Sentence procedure).

Informants: Seven participants, aged 61-65, were recruited for the study. Their code names are J, S, H, P, W, B, and T. A common characteristic about these participants is that they are from the generation that experienced the Cultural Revolution in China. All participants share similar life experiences during the Cultural Revolution. Their age of arrival in Australia is between 35 and 60, and they stayed there between seven and 26 years. All of them are retired and no particular health problems, including memory loss at the time of data collection. Table 4 summarises participants' information, education level in China, self-proclaimed English level, and language environment.

Data and data analysis: Various tasks, such as semi-structured interviews and story-telling tasks, were used to elicit oral productions from the participants at pre-test and post-test before and after the instruction. The pre-test aimed to identify participants' baseline on their use of English tense and aspect in English L2 and PT stages through elicited speech samples. The interview was structured in such a way as to create obligatory contexts to describe past, present, and future events. The data collection session took approximately 15-20 minutes each and was completed on an individual basis. The post-test followed the same structure as the pre-test. Participants' speech productions were transcribed, and markings of TA were examined according to the verb category. Further, their PT stages in English L2 were analysed.

Table 4. Summary of participant biodata

Participant	Age	Age of arrival	Year of Arrival	Years of Residence	Highest education Level	Job in China	Jobs in Australia
J	65	55	2008	10	Technical College	Engineer	None
S	60	48	2005	12	MBA	Textile machinery engineer	None
H	61	35	1991	26	High School	None	Sewing factory worker, owned Chinese Restaurant, Chicken shop
P	65	42	2005	13	Technical College	Accounts	Chinese Restaurant, sewing factory
W	65	39	1992	26	Vocational School	None	Sewing factory, Chinese grocery store
B	67	60	2001	7	Technical College	Factory clinician	None
T	65	39	1991	26	Technical College	Registered Nurse	Sewing factory, tile factory, nursing home assistant nurse

RESULTS

This section presents the results of the data analysis, first with the participants' performances of TA before and after the instruction. This is followed by the examinations of their English L2 developmental stages, defined by PT, to seek possible explanations for their performances with TA.

Development of Tense and Aspect (TA)

This section is organized to answer the first two research questions, which ask if older migrants develop their English TA through instruction and if the older migrants' acquisition of TA follows the Aspect Hypothesis.

Participants' use of different verb categories at pre-test and post-test are shown in Figures 1 and 2. The majority of verb categories used by all participants at the pre-test were Activity and Statives verb. Similar distribution patterns were observed at Post-test. Participants W, S, and H had the most Activity verbs (40, 34, and 23 tokens, respectively), and participants B, S, and W had the most Statives (50, 36 and 28 tokens, respectively). Again, there was minimal usage of Accomplishment and Achievement verbs for all participants, except for participant S, who had 12 Accomplishment and 10 Achievement verb tokens.

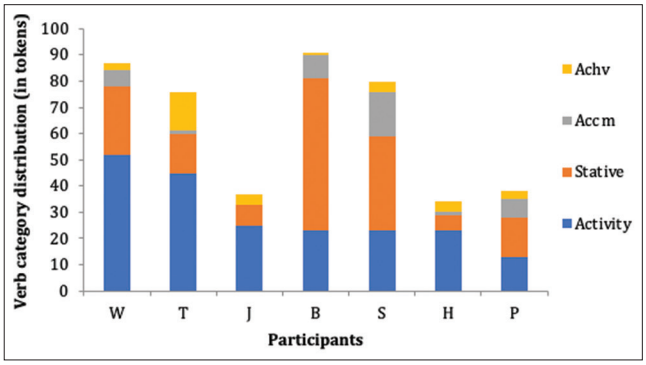

Figure 1. Participants' use of verb category at pre-test

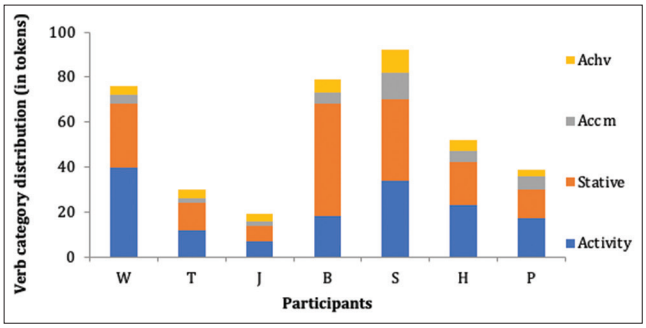

Figure 2. Participants' use of verb category at post-test

The progressive -ing

In terms of the inherent verb aspects, Tables 5 and 6 show the progressive *–ing* produced by each participant according to the inherent verb category at Pre-test and Post-test. Again, the numbers before the slash ("/") are the *–ing* tokens; the numbers after the slash are the total tokens for that verb category.

In the pre-test, all participants used progressive marking *-ing* once or more. Interestingly, this inflection was applied exclusively to Activity verbs by all participants. None of them marked *-ing* on different verb categories. At post-test, all participants added *-ing* predominantly on Activity verbs again. However, some learners also marked *-ing* on other verb categories: two learners, H, and S, marked *-ing* on Accomplishment verbs multiple times. The learner S also marked *-ing* on Achievement verb. Both in pre-test and post-test, none of the participants used *–ing* marking on Stative verbs. These results support Andersen and Shirai's (1994) claim that "learners first apply progressive inflections to Activity verbs, then extend to Achv verbs… learners do not mistakenly use progressive inflections on Stative verbs" (p136).

The past/perfective -ed

The past/perfective *–ed* marking results at pre-test and post-test are presented in Tables 7 and 8, respectively.

Table 5. Frequency of *–ing* markings at pre-test

Pre-test (total)	Activity	Stative	Accm	Achv
J (13)	13/25	0/8	0	0/4
W (18)	18/52	0/26	0/6	0/3
P (4)	4/13	0/15	0/7	0/3
T (9)	9/45	0/15	0/1	0/15
H (2)	2/23	0/6	0/1	0/4
B (2)	2/23	0/58	0/9	0/1
S (1)	1/23	0/36	0/17	0/4
Total (49)	49/181	0/164	0/41	0/34

Table 6. Frequency of *–ing* markings at post-test

Post-test (total)	Activity	Stative	Accm	Achv
J (1)	1/7	0/7	0/2	0/3
W (9)	9/40	0/28	0/4	0/4
P (4)	4/17	0/13	0/6	0/3
T (3)	3/12	0/12	0/2	0/4
H (15)	11/23	0/19	4/5	0/5
B (4)	4/18	0/50	0/5	0/6
S (37)	28/34	0/36	7/12	2/10
Total (73)	60/151	0/165	11/36	2/35

Table 7. Frequency of *–ed* markings at pre-test

Pre-test (total)	Activity	Stative	Accm	Achv
J (1)	0/25	0/8	0	1/4
W (1)	0/52	0/26	1/6	0/3
P (4)	0/13	0/15	3/7	1/3
T (0)	0/45	0/15	0/1	0/15
H (2)	1/23	0/6	0/1	1/4
B (3)	0/23	0/58	3/9	0/1
S (5)	0/23	2/36	2/17	1/4
Total (16)	1/181	2/164	9/41	4/34

Table 8. Frequency of *–ed* markings at post-test

Post-test (total)	Activity	Stative	Accm	Achv
J (4)	1/7	0/7	2/2	1/3
W (0)	0/40	0/28	0/4	0/4
P (4)	2/17	0/13	0/6	2/3
T (0)	0/12	0/12	0/2	0/4
H (1)	0/23	1/19	0/5	0/5
B (3)	1/18	1/50	1/5	0/6
S (8)	1/34	0/36	3/12	4/10
Total (20)	5/151	2/165	6/36	7/35

At pre-test, the number of *-ed* used by each participant was small. T did not use it at all; J and W used it only once. The other four participants used it between two and five times. Unlike *-ing*, more participants used *-ed* with Accomplishment and Achievement verbs. For example, four participants, W, P, T, and S, used *-ed* multiple times with the Accomplishment verb and four participants, J, P, H, and S, with Achievement verb. On the other hand, only H marked *-ed* with Activity verb and only S with Stative verb.

At post-test, not much progress was observed, and the number of-*ed* used by each participant was again small. W and T did not use it at all. H used it once. J and S were the only two participants who used *-ed* more frequently after the training at the post-test. The most notable difference between pre-test and post-test was that more participants, J, P, B, and S, added *-ed* on Activity verbs. Examples (3a) is an example of *–ed* used on the Accomplishment verb, and examples (3b) on Achievement verb.

(3) a. S *the frog climbed out from the glass jar*
b. P *to the cliff they stopped*

Past–ed was used mostly on Accomplishment verbs, followed by Achievement and Activity verbs among our pre-test and post-test participants. This finding supports the Aspect Hypothesis (Andersen & Shirai, 1994). Post-test results also showed that many participants failed to supply *–ed* in the obligatory context despite the instruction. The result is consistent with the literature that Chinese English L2 learners tend to omit *-ed* (e.g., Jia & Fuse, 2007; Lardiere, 2003). On the other hand, Chinese learners improved *-ing* marking quite well through the instruction in our study. Why *-ed* is so difficult for Chinese learners to learn? One reason may be due to the typology of Chinese. In Chinese past tense, lexically and temporal adverbs are expressed but not morphologically (Comrie, 1985; Li & Thompson, 1989). Another reason may be the effect of phonetic rules on participants' Chinese L1. According to Lardiere (1998), Chinese L1 phonetic rules do not allow consonant clusters (double consonants such as [td], [kd], [zd] and [pt], for example, *skipped, kicked*). On the other hand, "Chinese Mandarin does have final syllable consonant ending with [ŋ], as well as nasal [n]" (Li & Thompson, 1989, p. 6), which is similar to English *–ing*. Therefore, it is easy for Chinese learners to pronounce, thus facilitating English *–ing* forms. We analysed the phonetic factors using participants' data for *–ed*. The following is a tally of all the *–ed* forms both supplied and omitted in obligatory context in Pre-test and Post-test. The *–ed* forms that were supplied were for consonants [vd], [nd], [id], [rd], [pt] and [t͡ʃd] in examples as in (4 a-g). However, not for consonants [d͡ʒd], [kt], [td] and [ʃd] exemplified in (5 a-e).

(4) a. H leaned
b. H moved
c. H opened
d. J *catched
e. P stopped
f. S worried
g. T retired

(5) a. B *migrate ()*
b. B *I want () to study*

c. B *graduate ()*
d. H *push ()*
e. W *pick () up*

The above findings support Lardiere's (2003) claim that Chinese learners tend to fail to pronounce *–ed* that has consonant clusters, especially the ones ending with [d͡ʒd], [kt], [td] and [ʃd].

Developmental Stages in PT and TA

This sub-section presents PT stages achieved by the participants at pre-and post-test to investigate if TA acquisition is relating to their current stages of English L2. This analysis aims to answer the third research question of whether the acquisition of TA is influenced by the learner's current developmental stage of English as a second language.

The seven participants' morphological stages in PT at pre-test are presented in Table 9. The first column shows the PT stages, from the lowest at the bottom to the highest at the top and their specific processing procedure. The top row lists the informants' code names. The number showing in each cell with "+" represents correctly supplied forms in obligatory context. The number with "-" in front are for any non-suppliance of the structure in obligatory context, and ">" are the forms participants oversupplied in a non-obligatory context. Thus, for example, "-1/+3>1" can be interpreted as the participant having one non-suppliance of a structure in obligatory context, three correct suppliance, and one oversuppliance in non-obligatory context. Note that as all participants produced many words, "+" was simply placed at Stage 1 (Lemma) in the table.

At pre-test, participant H was at Stage 2 (Category procedure), participant P achieved Stage 3 (NP procedure), and participants W, T, J, S, and B achieved Stage 3 (VP procedure). In addition, most informants produced *-ing*, but it marked the verb category (Stage 2) rather than *Be* + *Verb-ing* (Stage 3, VP agreement) to mark progressive aspect as predicted by PT. Some of the examples produced by the participants at pre-test are shown in (6 a&b).

(6) a. T **I hospital working*
b. K**I coming Australia*

Another morphological structure placed at Stage 2 is past *-ed* on the verb. Five participants, H, P, T, S, and B, produced *-ed* to mark past tense. Also, W and H failed to mark *-ed* or three times each where it is required. See examples in (7 a&b) for suppliance and non-suppliance of *-ed*, respectively.

(7) a. C *opened the business*
b. B **graduate() after graduate() go to the Shanghai Shanghai clinic*

The Verb Phrase stage's next stage involves Aux + V, including *Be* + V-*ing, Have* + V-*ed*, and *MOD +V*. Only W and T produced *Be+V-ing* twice and once as in (8). Participants T, J, S, and B produced modal *verb +V*, but the modal verb was limited to *can* as in (9). None of the participants produced past perfective form (*Have+V-ed*).

(8) W **I'm living in Burwood*
(9) S *she can speak Mandarin*

According to PT, participants do not have to produce all subset forms claimed to acquire a particular stage, as long as they can produce lexical and form variations in obligatory context. Therefore, we can say that all participants except P and H attained the Verb Phrase procedure at pre-test. However, as for the sentence procedure (Stage 5), none of the participants could produce 3SGL *–s* despite the required context(s).

After the four-week instruction of TA in English, a post-test was conducted. Table 6 summarises the post-test results. The format of Table 10 follows the same structure as Table 5 above.

Two participants improved their English L2 stages at post-test: W moved up to Stage 4 and S Stage 5. The other

Table 9. PT stages at pre-test

	PT Stages		H	P	W	T	J	S	B
4	S-Procedure (Inter-phrasal)	3SGL-*s*	-1	-1	-2		-2	-2	-2
3	Phrasal Procedure (VP)-with agreement	Modal+V	+1			+2	+3	+3	+4
		Be+V *-ing*			+2	+1			
		Have+V *-ed*							
		Be+V-*ed*		+1				+1	
	Phrasal Procedure (NP)-with agreement	Possessive *-s*		-2			-1	+3	
		plural-*s* (with agreement)	-1	+3	-1/+3>1	-2/+3>1	+3	-1/+3	+3
2	Category Procedure	*-ing*	+2	+4	+3>3	+4>2	+4	+2	+3>1
	(No agreement)	Past *-ed*	+2	+2	-3	+3		+3	-3/+3
		plural *–s* (without agreement)			+2		>1	+1	+1
1	Lemma	word	+	+	+	+	+	+	+

OC=Obligatory context; "-"=not supplied in OC, "+"= supplied in OC, and ">"=over-supplied in non-OC 3SGL=third person singular

Table 10. PT stages at post-test

	PT Stages		H	P	W	T	J	S	B
5	S-Procedure (Inter-phrasal)	3SGL -*s*	-3	-4	-3/+1	+1		-2	-1/+3>1
4	Phrasal Procedure (VP)-with agreement	Modal+V			+2			+1	
		Be+V -ing			+4			+4	+2
		Have+V -ed						+1	+3
		Be+V-ed	+1		+1				
3	Phrasal Procedure (NP)-with agreement	Possessive -*s*		-3			-1	+3	+1
		plural-s (without agreement)	-2/+1	-1/+3	-2/+2	-2/+1	+3	+2	+3
2	Category Procedure	-*ing*	+3	+1	+3	+4	+2	+2>1	+3
	(No agreement)	Past -ed	-1	+3	-1		-2/+3	+3	+2
		plural –*s* (without agreement)	+1	+1	-1	+1	+1	+1	
1	Lemma	word	+	+	+	+	+	+	+

OC=Obligatory context; "-"=not supplied in OC, "+"= supplied in OC, and ">"=over-supplied in non-OC 3SGL=third person singular

five participants remained at the same stage as at the pre-test. However, detailed analyses revealed some improvements were identified among most participants. Stage 4 Phrasal verbal agreement is most relevant to progressive and perfect aspects, including *Be + V–ing/Have + V-ed* forms. At pre-test, most participants used -*ing* to mark verb category rather than progressive aspect. At that time, W and T were the only participants who used -*ing* for progressive aspect, although with small numbers. At post-test, participants, S and B, also started to use *Be+V-ing* as in (10). Additionally, none of the participants used past perfect form, namely *Have + V-ed,* at pre-test. At Post-test, two participants, S and B, produced this form multiple times (11 a&b).

(10) S *Bees are flying from the beehive*

(11) a. S *They have arrived at cliff*

b. B *She he has realized*

As for the sentence procedure, third-person singular (3SGL) is relevant. It requires participants to produce the subject and verb agreement *–s* (3SGL-*s*). At pre-test, no one produced this structure despite obligatory contexts. This tendency continued at post-test. For example, H and P participants had non-suppliance of 3SGL *–s* three times and four times, respectively, in obligatory contexts. However, there were some improvements with other participants: W and B produced 3SGL-*s* once and three times, respectively. See (12 a-c) examples of non-suppliance, suppliance, and over suppliance of -*s* on the verb at post-test. Only the participant, B, has attained Stage 5 at the post-test because she produced both lexical and form variations of 3SGL *–s*.

(12) a. H *she get () the boot*

b. B *he carries a little frog*

c. B **some little frogs comes from the pond*

In summary, only two participants improved their PT stages from pre-test to post-test: H moved from Stage 2 to Stage 3 and B from Stage 4 to Stage 5. However, the participants improved their morphological markings within the same stage after the instruction. Also, the acquisition of TA went hand-in-hand with the learners' PT developmental stages. The learners at Stage 2 (category procedure) mainly marked -*ing* for the verb category rather than progressive aspect. The learners at Stage 3 became able to encode progressive aspects using *Be+V-ing* and perfective aspect with *Be+V-ed*. In terms of tense, past tense marking -*ed* (Stage 2) appeared much earlier than present tense subject-verb agreement -*s* on verb (Stage 5) as predicted by PT.

CONCLUSION

This is the first study of language development among older Chinese learners within the two frameworks: Processability Theory and Aspect Hypothesis. The study focused on tense and aspect among older Chinese migrants in Australia. These migrants in the study arrived in Australia between 35 and 60 years of age and stayed there for 7-26 years. Despite their extended stay in Australia, their acquisition of TA markings at the beginning of the study was not advanced. First two research questions asked whether older migrants could develop their English TA through instruction and whether their development supports the Aspect Hypothesis. Our participants' use of -*ing* was limited to the Activity verb at the pre-test, but they became able to apply this inflection to other verb categories after the instruction. Our analysis supported the Aspect Hypothesis in that learners apply progressive morphology first to Activity verbs, then extend to Accomplishment and Achievement verbs (Andersen & Shirai, 1994), which is similar to first language acquisition. However, our participants never applied progressive *–ing* inflection on Stative verbs, consistent with Andersen & Shirai (1994). As for -*ed* marking, there was not much improvement after the instruction. However, two participants learned to use it for perfect aspect through Pre-test and Post-test. Additionally, our findings supported Lardiere's (2003) claim that Chinese learners tended to omit *–ed* that has consonant

clusters, especially the ones ending with [d͡ʒd], [kt], [td] and [ʃd]. Thus, acquisition of *-ed* involves the morphology-phonology interface.

The third research question asked whether the acquisition of TA is influenced by the learner's current developmental stage of English L2. Our results on the learners' developmental stages in PT predicted that participants could only process and produce forms in a higher stage when they have acquired all the lower stages. The analysis suggested that most participants used *-ing* to mark verb category rather than marking progressive aspect in the pretest. This finding supports and provides empirical evidence to Processability Theory which claims that the L2 morphological stage starts with marking lexical category. From a PT development perspective, both *-ing* and *-ed* belong to the category procedure stage. Our older learners were able to learn *-ing* to mark progressive aspect through the instruction. However, applications of *-ed* on past tense did not show much progress after the training, which may be due to Chinese phonological constrains rather than a lack of morphological development.

This study has theoretical implications as the study was able to show connections between PT and the Aspect Hypothesis. This study also contributes to theory construction in PT by testing its applicability to older learners using empirical data. As for a practical implication, we showed the importance of continuous, focused instruction for older language learners since they can incorporate language instruction into their interlanguage system. In conclusion, our study threw a new light on L2 learnability in older learners, which is understudied to date. The findings from the current study suggest that older learners whose L1 is typologically distant from English can continue learning and improving on their English L2 via training. The study, however, has some limitations. The training was short; a more extended period of instruction could be beneficial to achieve a lasting effect of training. Also, the sample size is relatively small. Further studies are necessary to generalise the results gained from our study.

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