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A Study of English Morpheme Acquisition Order by Chinese and Korean EFL Learners*

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Cheng, Yan & Lee, Borim (2020). A study of English morpheme acquisition order by Chinese and Korean EFL learners. *The Linguistic Association of Korea Journal, 28*(1), 79-97. The purpose of this study is to evaluate the two contrasting claims for the order of inflectional morpheme acquisition in English as L2: the natural order hypothesis and the hypothesis claiming L1 effects as a fundamental factor. This study also investigates two additional factors that may influence the acquisition of L2 English morphemes: the learner's English proficiency level and the data elicitation method. For this goal, it involves 38 Korean and 38 Mandarin Chinese learners of English in college, each group of which is in turn divided into two sub-groups according to their English proficiency level. The accuracy scores for six English inflectional morphemes are obtained from two tasks, a freewriting task through journal entries and a fill-in-the-blank type test. Then the results are compared according to the various factors using Spearman's rank-order correlations based on TLU (target-like use) scores. The results of this study indicate that different L1 groups of the same proficiency level show different acquisition orders, neither of which supports the natural order hypothesis. The data elicitation method and English proficiency, however, do not seem to significantly affect the order of English morphemes. Based on these results, this study concludes that L1 plays a major role in English inflectional morpheme acquisition by EFL learners. It is also noted that input frequency and the amount of classroom instruction can be other important factors affecting English morpheme acquisition, suggesting the need to increase the inputs of low-ranked but important morphemes in the classroom.

Key Words: morpheme acquisition studies, EFL, the natural order hypothesis, L1 influence, data elicitation method, English proficiency

1. Introduction

There have been many studies on the acquisition order of L2 morphemes. Some researchers have found that different L1 learners all follow a universal order in the L2 morpheme acquisition, suggesting no native language influences (e.g., Bailey et al., 1974; Dulay & Burt, 1974; Larsen-Freeman, 1975; Krashen, 1977). The universality of morpheme acquisition order has found its firm place in most SLA (second language acquisition) textbooks, and it still finds a strong support in the more recent studies (e.g., Ellis, 1994; Mitchell & Myles, 2004; Saville-Troike, 2006). These researchers claim that learners' native languages have a minimal effect on the acquisition order which follows internally driven acquisition processes.

However, other researchers have noted that L2 morpheme acquisition is strongly influenced by the learner's L1 by providing contradictory results to the universality hypothesis (e.g., Jarvis & Pavlenko, 2007; Odlin, 1989; Murakami & Alexopoulou, 2016). This point of view advocates that the learner's native language differences bring distinct influences to the L2 morpheme acquisition order. Murakami and Alexopoulou (2016), for example, compared morpheme accuracy orders among different L1 groups and reported that the accuracy orders showed more similarities within the same L1 group than between different L1 groups and that their results did not support the universal order hypothesis.

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More recently, on the other hand, there have been attempts to provide explanations to the morpheme acquisition orders. These so-called multi-determinant studies suggest that the acquisition order of morphemes is influenced by multiple factors including L1 influence (e.g., Goldschneider & DeKeyser, 2001; Kwon, 2005; Schenck & Choi, 2013; Seog, 2015). In this field of studies, a variety of factors that may have to do with L2 morpheme acquisition have been proposed, such as input frequency, L1 similarity, semantic complexity and morphosyntactic variability.

With this background, this study will first attempt to evaluate the two contrasting claims for the order of L2 English morpheme acquisition, namely the universal natural order hypothesis and the hypothesis claiming for a different L1 background as a crucial factor. The participants of this study are adult English learners from two different L1s learning English in a EFL environment: 38 Korean and 38 Mandarin Chinese learners of English in college.[1)]

The six most frequently studied English inflectional morphemes are used as test materials for the experiments: progressive *-ing*, possessive *'s*, regular and irregular past tense, regular plural *-s*, and the third person singular *-s*. In addition to this task, this study will also attempt to figure out if there are other significant factors that may affect the acquisition of L2 English morphemes. For this purpose, this study will contrast the participants' English proficiency levels and use two different data elicitation methods, i.e., a free writing task through journal entries and a fill-in-the-blank type test.

To provide more insight to the morpheme acquisition studies, the acquisition orders obtained from the current study will be compared with those from previous morpheme studies dealing with the same L1s as this study, but using a different setting, participants, and methodology.

2. Theoretical Background

This section will present the competing theories on the issue of L2 morpheme acquisition order, providing literature review on the previous studies. The major findings by the representative researchers belonging to each theoretical camp will be discussed along with their problems and limitations, and then the research questions of this present study will be offered at the end.

2.1. The Natural Order Hypothesis

Brown's study (1973) on three children acquiring English as L1 showed that their acquisition of 14 grammatical morphemes was in a remarkably similar order. Dulay and Burt (1973, 1974) extended this research on L1 morpheme acquisition to the domain of second language acquisition. Both studies by Dulay and Burt involved children: 151 Spanish-speaking children in their 1973 study and 55 Chinese-speaking children and 60 Spanish-speaking children in their 1974 study. Using Bilingual Syntax Measure (BSM) as an experimental method to attain speech samples, they reported that similar results were obtained irrespectively of the learners' L1 backgrounds, providing strong support for the universal child language acquisition strategies.[2)] Bailey et al. (1974) explored the acquisition order of English grammatical morphemes in adult ESL learners from different L1 backgrounds, finding a consistent acquisition order across different L1 backgrounds. Larsen-Freeman (1975) conducted a cross-sectional research on four different L1s, Arabic, Japanese, Persian, and Spanish, using various tasks such as BSM, a listening comprehension task, and a multiple-choice reading close test and reached the conclusion that L1 had no influence on the L2 morpheme acquisition order.

Krashen (1977) put forward the natural order hypothesis postulating a morpheme acquisition ranking pattern by

1) The Chinese participants are all speakers of Mandarin Chinese, and in this study we will simply refer to the language and speakers as Chinese.

2) Although Dulay and Burt (1974) reported that the acquisition orders for both groups, Spanish and Chinese as L1, were basically the same, Chinese L1 learners actually acquired plural much later (rank 5 out of 9) than the natural order of Krashen suggests (rank 1).

clustering the nine morphemes proposed by Dulay and Burt (1974) into four ranks grouping similarly-ordered morphemes at the same rank. The Krashen's acquisition pattern is illustrated below in Table 1.

Table 1. The Natural Order of Acquisition by Krashen (1977)

Rank	1	2	3	4
Morphemes	*-ing* Plural *-s* Copula *be*	Aux *be* Articles	Irregular past	Regular past Third person *-s* Possessive *'s*

The morphemes at the top rank are the earliest or easiest morphemes for learners to acquire, which are *ing*, plural *-s*, and copula *be*. The second rank includes auxiliary *be* and articles *a* and *the*. Irregular past tense is placed at the third rank. The most difficult morphemes at rank 4 are regular past tense, third person *-s* and possessive *'s*. Krashen's assumption is that the hierarchical morpheme order clusters represent an average order of morpheme acquisition for learners of English as L2, and it is not affected by the learner's age or native language.

Since then, this natural order hypothesis on morpheme acquisition has received continuing supports from many other scholars (e.g., Dulay et al., 1982; Larsen-Freeman & Long, 1991). Mitchell and Myles (2004) in their book have stated that L2 learners are guided by internal principles that are largely independent of their L1. Saville-Troike (2006) also assumes the universality of morpheme acquisition order in her book and states that the presence of universality in the morpheme acquisition order supports claims for internal acquisition processes regardless of L1 or L2 and that this natural order concept is still very important in understanding SLA. The universal natural order hypothesis assuming a minimal effect of L1 on the morpheme acquisition is emphasized in many SLA textbooks and is sometimes considered a fundamental assumption on which SLA research is based.

2.2. L1 Influence on Morpheme Acquisition Order

As seen above, there have been many studies supporting the natural order hypothesis for L2 morpheme acquisition. However, many other researchers have claimed that the L2 morpheme acquisition is strongly influenced by learners' L1s (e.g., Akande, 2003; Andersen, 1983; Hakuta, 1976; Mohammed & Sanosi, 2018; Murakami et al., 2013; Murakami & Alexopoulou, 2016).

Hakuta (1976), in a longitudinal study with a five-year-old Japanese child, found that the subject acquired English plural morpheme *-s* relatively late but the possessive morpheme *'s* very early, which order completely contradicts the predictions of the natural order hypothesis. Hakuta explained that the lack of a plural marker in Japanese may have led to the negative transfer, but the existence of the obligatory possessive marker *-no* in Japanese may have facilitated the English possessive acquisition.

In a review article on the issue of acquisition order of grammatical morphemes, Luk and Shirai (2009) tested the effect of L1 transfer in the acquisition of English grammatical morphemes based on studies conducted with four different L1 groups: Japanese, Korean, Chinese, and Spanish. They concluded that, with the exception of Spanish L1 learners, learners from other L1s showed different morpheme orders from the order predicted by the natural order.

Pak (1987) studied 40 Korean adults and 40 Korean children in an ESL setting and reported that the acquisition orders of both groups showed significant correlation and that possessive was learned earlier and plural was learned later than the natural order predicted. Pak also noted that although the children learned through the medium of English in an ESL environment, their acquisition order deviated from that of English speaking children and therefore concluded that the L2 learning process was different from L1. Shin and Milroy (1999) conducted a morpheme acquisition study with 12 Korean ESL children, and their results were very similar to Pak's in that possessive was learned quite early and plural very late. They therefore also concluded that the learner's L1 was an important factor in the L2 morpheme acquisition.

Recently, Murakami and Alexopoulou (2016) investigated the acquisition order of six English grammatical morphemes by analyzing approximately 10,000 written exam scripts from Cambridge Learner Corpus with English learners from seven different L1 groups, Japanese, Korean, Spanish, Russian, Turkish, German, and French, across five proficiency levels. They reported that the accuracy orders showed more similarities within the same L1 group than between different L1 groups and that their results did not support the natural order hypothesis. Specifically, Korean L1 learners acquired past tense *-ed* earlier than the natural order, where it is ranked low.

2.3. Multiple Determinants Affecting Morpheme Acquisition Order

Many scholars have established L1 influence as a significant factor affecting L2 morpheme acquisition order. In addition, there have been studies that attempt to give explanations to the differences in L2 morpheme acquisition order. For instance, Larsen-Freeman (1976) reported that morpheme frequency of occurrence in native speaker speech is the key determinant for the oral production of L2 English morphemes.

Other researchers have stated that there are multiple factors affecting the acquisition order of morpheme (Goldschneider & DeKeyser, 2001; Kwon, 2005; Schenck & Choi, 2013; Seog, 2015). For example, Goldschneider and DeKeyser (2001) proposed that a combination of several factors could provide a better explanation for the prediction of morpheme acquisition order of English learners. The proposed five factors are perceptual salience, semantic complexity, morphophonological regularity, syntactic category, and frequency. Kwon (2005) examined the influence of three putative determinants on the morpheme acquisition order in English, i.e., semantic complexity, input frequency, and native language transfer.

More recently, through an extensive timed writing test with 26 Korean EFL middle school students, Schenck and Choi (2013) proposed multiple factors to explain the acquisition order differences in an EFL setting. They claimed that input frequency and L1 similarity are the most significant factors out of the six variables investigated. Seog (2015) analyzed 173 writing samples produced by Korean elementary school students and compared the resulting morpheme acquisition order to that of previous studies. She found that the acquisition order of the Korean learners from her study did not support the natural order hypothesis and that the comparison with previous studies revealed apparent disparities even in the different groups with the same Korean L1 background, which in her opinion ask for the future research exploring different methods and external factors other than L1 transfer.

2.4. Research Questions of the Current Study

As seen above, there have been quite a number of studies concerning L2 morpheme acquisition order. Some of them support the universal or natural order hypothesis regardless of L1, and some others argue for L1 influence as a major factor explaining the differences among different L1 groups. Still others propose the need for more research in order to give proper explanations to the disparities found in the results.

In view of the findings and limitations of the previous studies, the current study investigates the acquisition order of six inflectional morphemes in English with adult EFL learners from different L1 background, Korean and Chinese, both of which are linguistically quite different from English. Korean and Chinese are also different with each other in terms of word order and morphology, too. Chinese is an isolating language with no affixes, but Korean has affixes, and therefore it may be expected that the two groups will show different results in acquiring inflectional morphemes which all take the form of suffixes. Following the suggestions in Seog (2015) that future research needs to look into different methods and other factors, this study examines two other possible determinants affecting the morpheme acquisition order besides L1 effects: data elicitation method and English proficiency level.

The research questions of the current study are summarized below, and they will be addressed in section 4 one by one with the results of this study.

A. Do the two data elicitation methods used in this study, free writing versus a test, affect the acquisition order?

B. Do different proficiency levels affect the morpheme acquisition order?

C. Do the acquisition orders of the Chinese and Korean groups support the natural order?
D. Do the Chinese and Korean EFL learners' acquisition orders show correlation with each other?
E. If there are discrepancies in the two groups, can L1 background explain them? If not, what can?

3. Method

3.1. Participants

At the beginning stage of this research, 60 students from each L1 group, Chinese and Korean, were recruited. All participants were college sophomores majoring in English in their respective countries. They were taking English writing classes during the semester when this research was being conducted. To measure the participants' level of English proficiency, a mini TOEIC type English test consisting of 25 multiple choice questions was given to the two groups to be completed within 15 minutes. In line with the purpose of the research, all questions were related to English inflectional morphemes. Following is an example from the test:

Question: Although Marla Ambers _____ difficulty adjusting at Gordem Entertainment Studios initially, she has since learned to cope with the fast-paced environment.
(A) will have had (B) is having (C) had (D) to have

The test results showed that the proficiency levels of the two groups were quite different, and there were many students, especially in the Korean group, whose scores were under 10 out of 25, accounting for less than 40% accuracy. Considering that it would be difficult to get meaningful data from those whose scores were under 10, we excluded them from the experiments. Even after that, there were still huge discrepancies in the test results of the two groups such that the scores of the Korean group ranged from 10 to 20, whereas those of the Chinese group from 15 to 25.

To divide the participants according to different L1 backgrounds and English proficiency levels, the Korean group was divided into Korean low proficiency group (KL) of 18 students who had 10 to 14 correct answers out of a total of 25 and Korean medium proficiency group (KM) of 20 students who had 15 to 20 correct answers. The Chinese group, on the other hand, was divided into Chinese medium proficiency group (CM) of 20 students who obtained 15 to 20 correct answers and Chinese high proficiency group (CH) of 18 students who obtained 21 to 25 correct answers. Unfortunately, there were not enough students who could make up Korean high proficiency group or Chinese low proficiency group. Because of the test results, the actual participants in this study were 38 Korean and 38 Chinese learners of English. None of the participants reported any experiences of studying English outside their respective countries.

3.2. Materials

The target English morphemes in this study were six inflectional morphemes in English: progressive *-ing*, possessive *'s*, irregular past tense, regular past tense *-ed*, regular plural *-s*, and third person singular *-s*. Three other morphemes that were included in earlier studies such as Dulay and Burt (1974), namely copula *be*, auxiliary *be* and articles, were excluded in this study in order to focus on the inflectional morphemes in the form of suffixes because as discussed above the presence and absence of suffixes can be one of the distinguishing factors of the two languages under investigation.

This study employed two types of tasks to elicit data, free writing and a fill-in-the-blank type test. For free writing, the participants were asked to write two journal entries a week during the semester and were also told that there will be no cuts in marks for their grammatical mistakes. That way, it was possible to elicit the more natural data and investigate the students' actual use of the target morphemes. By the end of the semester, 26 journal entries

from each student were obtained, and 15 entries out of 26 were randomly selected. Hence, a total of 1,140 (15*38*2) journal entries were obtained from Korean and Chinese participants. Assuming that there was an average of 70 words per entry, nearly 80,000 words of written data were obtained.

The other way to elicit data was a fill-in-the-blank type test. Obligatory contexts were given to examine the participants' acquisition of the six target morphemes. The questions were presented in three short paragraphs. There were three questions for each target morpheme, and some questions involving other morphemes than the target were included to distract the subjects' attention from the target. Therefore, a total of 228 tokens (3*38*2) were obtained from Korean and Chinese from this test. A sample question is illustrated below, and the correct answer that is expected is *remembered*, and the full text of the questions is provided in the appendix.

Question: At that moment, I _____ (remember) what my father once said to me.

3.3. Data Analysis and the Scoring Method

Previous studies on morpheme studies adopted either the concept of suppliance in obligatory context (SOC) in Brown (1973) or the target-like use (TLU) analysis in Pica (1983). The SOC is calculated based on the formula proposed by Brown (1973), and the TLU score is calculated by the formula proposed by Pica (1983) as follows:

$$\text{SOC score} = \frac{\text{number of suppliances} + 0.5 \times \text{number of incorrect supplicances}}{\text{number of obligatory contexts}}$$

$$\text{TLU core} = \frac{\text{number of correct suppliances}}{\text{number of obligatory contexts} + \text{number of overgeneralization errors}}$$

In the current study, TLU formula is chosen because it takes overgeneralization errors into account. For example, in *two childs (children)*, the morpheme *-s* attached to the word *child* is an error of irregular plural morpheme. It is also an overgeneralization error of regular plural morpheme *-s*. The SOC scoring method, on the other hand, ignores the possibility of overgeneralization errors (Lightbown et al., 1980; Pica, 1983).

The data analysis for journal entries was processed to calculate the accuracy rate to infer acquisition. At first, obligatory contexts in which each target morpheme should appear in the journal entries were counted. Then the numbers of correct uses of the target morphemes and the numbers of overgeneralization errors of the morphemes were counted. The analysis of the data was performed by two experts in English teaching. During the process of data analysis, if there were disagreements in the resulting numbers of obligatory contexts, correct suppliances or overgeneralization errors, the specific cases were examined again until an agreement was reached.

Regarding the fill-in-the-blank type test, there were three obligatory contexts for each target morpheme. The numbers of correct suppliances and overgeneralization errors for each target morpheme were counted to get the TLU scores. The results collected from the described tasks will be presented and discussed in the next section.

4. Results and Discussion

4.1. The Overall Results

In this section, the comprehensive results of this study based on the TLU scoring method will be presented. The four groups are represented in the tables and figures as CH, CM, KM, and KL standing for Chinese high level group, Chinese medium level group, Korean medium level group, and Korean low level group in the order given.

First, the results on journal entries by the four groups are shown in Table 2. In the table, TN represents the

total number of obligatory contexts and overgeneralization errors, CN the number of correct suppliances, and % TLU scores.

Table 2. The Results of Journal Entries by Four Groups

Morphemes	CH		CM		KM		KL	
	TN/CN	%	TN/CN	%	TN/CN	%	TN/CN	%
Progressive *ing*	72/71	98.6	98/96	98.0	86/73	84.9	62/56	90.3
Possessive *'s*	93/90	96.8	107/105	98.1	108/92	85.2	108/88	81.5
Irregular past	728/689	94.7	979/864	88.3	1413/1231	87.1	1128/968	85.8
Regular past	309/290	93.9	350/305	87.1	392/343	87.5	349/316	90.5
Plural *s*	971/815	83.9	929/775	83.4	771/592	76.8	609/423	69.5
Third singular *s*	191/159	83.2	168/116	69.0	120/87	72.5	84/58	69.0

For the analysis of the test results, the number of obligatory contexts for each target morpheme was first calculated. Each target morpheme had three obligatory contexts in the test, so CH and KL groups had a total of 54 obligatory contexts (18*3) for each target morpheme; CM and KM groups had a total of 60 obligatory contexts (20*3). Then the correct suppliances for each morpheme were calculated, and finally the number of overgeneralization errors for each target morpheme was counted. The test results of the four groups are illustrated in Table 3.

Table 3. The Results of Test by Four Groups

Morphemes	CH		CM		KM		KL	
	TN/CN	%	TN/CN	%	TN/CN	%	TN/CN	%
Progressive *ing*	55/53	96.4	62/56	90.3	69/53	76.8	60/40	66.7
Possessive *'s*	36/35	97.2	40/36	90.0	40/26	65.0	36/19	52.8
Irregular past	54/50	92.6	62/53	85.5	60/48	80.0	55/37	67.3
Regular past	56/53	94.6	64/57	89.1	66/54	81.8	69/47	68.1
Plural *s*	59/50	84.7	69/52	75.4	79/48	60.8	74/28	37.8
Third singular *s*	54/46	85.2	60/42	70.0	60/34	56.7	58/21	36.2

It is noted that the numbers of possessive *'s* for the four groups in Table 3 are far less than those of the other target morphemes. For example, Chinese high level group (CH) is supposed to have 54 or more for the combined number for obligatory contexts and overgeneralization errors because the number of obligatory contexts is 54, but the actual number provided in Table 3 is only 36. This problem was caused by one of the three questions provided in the test for the possessive *'s* morpheme. That particular question turned out an inappropriate question, and therefore it was taken out of the calculations. The question is provided below, and the expected answer is *father's*.

Question: They are old friends of my _____ (father).

This question was inappropriate because of two reasons. First, *father's* is the grammatically correct answer, but many native English speakers accept *father* as a good answer and often use it in their usual conversation. The second and more important reason is that the expected answer *father's* is not a possessive adjectival morpheme but a possessive pronoun. For these reasons, this specific question was excluded from TLU calculations, resulting in a skewed distribution in the statistics.

The results of this question, however, offer an unexpected but very interesting insight in SLA. The two language groups actually provided extremely different results for this specific question. Out of the 38 Chinese subjects, a majority of them gave the expected, grammatically correct answer, that is, 34 students gave the answer *father's*. By

contrast, 36 out of the Korean group provided the acceptable but technically incorrect answer *father*.[3)]

A possible answer for this big difference between the two groups can be found in the input frequency. In the English instruction environment, Chinese teachers in the classroom always emphasize the use of the possessive pronoun when teaching a structure like *old friends of my father's*. When Chinese students come across this language structure, therefore, they almost automatically provide the right answer. On the other hand, emphasis on this structure involving the possessive pronoun is not a very prominent feature in the Korean classroom.

Indeed, input frequency is a popular putative factor in the L2 morpheme acquisition order, and it suggests that the more frequently L2 learners are exposed to a grammatical morpheme, the faster and more easily they can acquire it. Many studies (e,g, Goldschneider & DeKeyser, 2001; Kwon, 2005; Larsen-Freeman, 1976) mentioned the role of input frequency in morpheme acquisition. In this study also, input frequency is proved to be a major factor in the learners' morpheme acquisition through the case of Chinese students who had been exposed to this structure frequently in the classroom.

Based on the general results of this study provided in this section, the significances of the results will be discussed according to the research questions raised above.

4.2. Is Data Elicitation Method an Important Factor?

Two elicitation methods were chosen in this study, free writing and a fill-in-the-blank type test, to test the influence of different methods on the morpheme acquisition order. The results between the methods based on TLU scores are provided for comparison in Table 4.

Table 4. TLU Score Comparison between Data Elicitation Methods

Morphemes	CH		CM		KM		KL	
	Journal	Test	Journal	Test	Journal	Test	Journal	Test
Progressive *ing*	98.6	96.4	98.0	90.3	84.9	76.8	90.3	66.7
Possessive *'s*	96.8	97.2	98.1	90.0	85.2	65.0	81.5	52.8
Irregular past	94.7	92.6	88.3	85.5	87.1	80.0	85.8	67.3
Regular past	93.9	94.6	87.1	89.1	87.5	81.8	90.5	68.1
Plural *s*	83.9	84.7	83.4	75.4	76.8	60.8	69.5	37.8
Third singular *s*	83.2	85.2	69.0	70.0	72.5	56.7	69.0	36.2

An overall comparison of the two methods shows that test scores tend to be lower than the journal scores, and this tendency is more prominent in the lower level groups, especially Korean low level group. Chinese high level group, on the other hand, performs equally well in the two methods, which proves their high level of English proficiency. The gap in the lower level groups' scores can be easily explained: In free writing, they may choose what they are know for sure and avoid what they are not sure about, but in a test they cannot resort to this strategy.

The purpose of this study was not to evaluate the subjects' absolute achievement of L2 morphemes but to figure out their morpheme acquisition order through their accuracy scores. For this purpose, we adopted the statistical technique of Spearman's rank-order correlation, which is a very commonly used method in morpheme acquisition order studies. The results of Spearman's rank-order correlation based on TLU scores indicated that the acquisition order of all four groups showed significant correlations between the two tasks. The accuracy orders of the CH group in two tasks revealed a correlation with values of r_s=.829; p=.042 and those of the CM group a correlation with values of r_s=.886; p=.019. The accuracy orders of the KM group in two tasks presented a correlation with values of r_s=.943; p=.005 and those of the KL group a correlation with values of r_s=.943; p=.005. All p values are less than .05, which means that there exist significant correlations between the two data elicitation methods in all four groups. It is therefore concluded that the two tasks for data elicitation did not cause any significant differences

3) Only one Korean student provided the right answer, *father's*, and the other student's answer was *fathers*. As for Chinese students, three of them provided *father*, and one *fathers*.

in the morpheme accuracy orders.

4.3. Is English Proficiency an Important Factor?

As seen above, the two elicitation methods turned out to show significant correlation on the accuracy orders in all four groups. Therefore, the data obtained from the two tasks were combined when examining the effects of other variables to make comparisons simple.

The second research question was to see whether English proficiency level affects the morpheme acquisition order. Table 5 presents the integrated TLU scores of the four groups.

Table 5. TLU Scores of Four Groups

Morpheme	CH	CM	KM	KL
Progressive *ing*	97.6	95.0	81.3	78.7
Possessive *'s*	96.9	96.0	79.7	74.3
Irregular past	94.5	88.1	86.8	85.0
Regular past	94.0	87.4	86.7	86.8
Plural *s*	84.0	82.9	75.3	66.0
Third singular *s*	83.7	69.3	67.2	55.6

As discussed above, English proficiency levels were divided only in the same L1 groups, so the morpheme accuracy scores between different proficiency levels were compared within each language group: CH with CM, and then KM with KL.

To facilitate the comparison, accuracy scores and orders of CH and CM are provided in Figure 1. Expectedly, the absolute TLU scores show that the high level group performed better than the lower level group on all six morphemes. However, the acquisition orders of the two groups show a very similar tendency. The acquisition order of CH from the highest to the lowest is as follows: progressive *–ing*, possessive *'s*, irregular past tense, regular past tense *–ed*, regular plural *–s* and third person singular *–s*. The CM group shows almost the same order except for a small difference between progressive *–ing* and possessive *'s*, that is, possessive *'s* ranks highest.

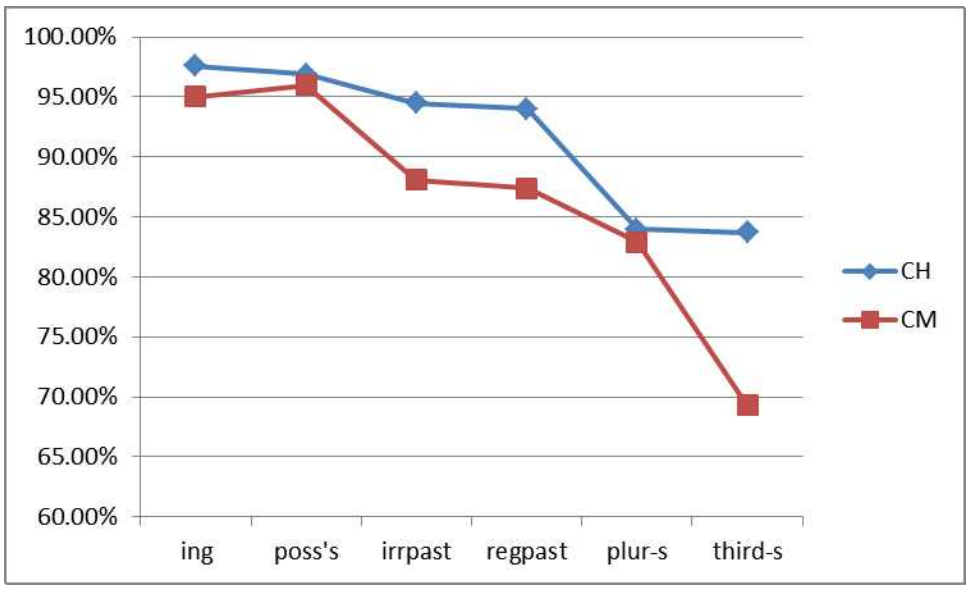

Figure 1. Comparison of Morpheme Accuracy Scores and Orders by CH and CM

The morpheme accuracy scores and orders between the two Korean groups are presented in Figure 2. Just like the Chinese groups, Korean medium level group performed better than the low level except for one morpheme, regular past tense. The two groups' scores on regular past was almost the same: 86.7 for KM and 86.8 for KL, where the difference is only 0.1 and thus negligible.

The comparison of the two groups for morpheme acquisition orders, however, shows that the two Korean groups illustrate very similar orders regardless of their proficiency level. The acquisition order by KM from the highest to the lowest is as follows: irregular past tense, regular past tense *-ed*, progressive *-ing*, possessive *'s*, regular plural *-s* and third person singular *-s*, where the difference between the first two morphemes is almost non-existent (86.8 for irregular past and 86.7 for regular past). The order for KL is the same except that their score for regular past tense morpheme slightly exceeds that for irregular past tense, 86.8 and 85.0.

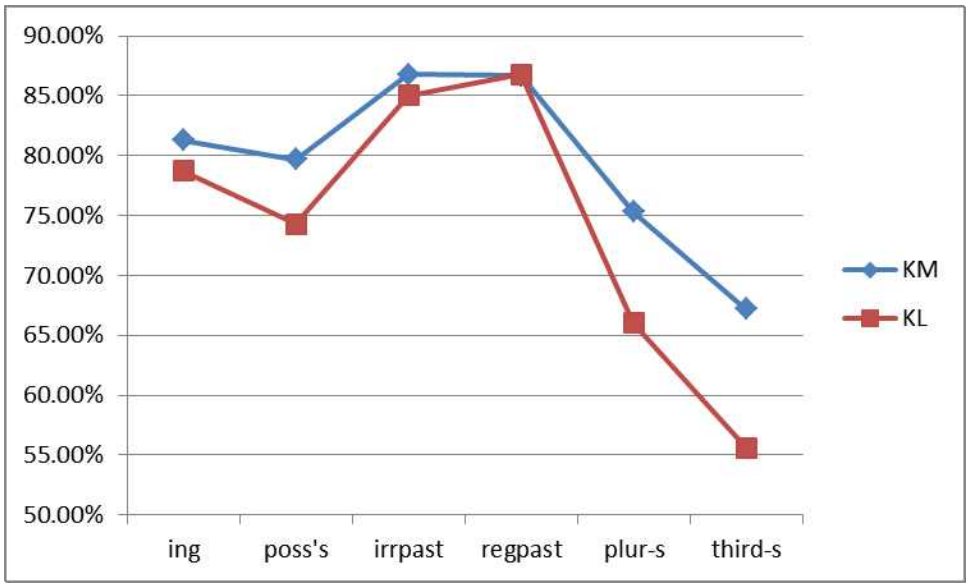

Figure 2. Comparison of Morpheme Accuracy Scores and Orders by KM and KL

Spearman's rank-order correlations were conducted to check the correlations of acquisition orders between the two different proficiency levels in each language group, CH and CM on one hand and KM and KL on the other. The results were exactly the same for both cases (r_s=.943; p=.005), and they indicated that there was significant correlation between the two subgroups in each L1 group. This means that the two different proficiency level groups of the same L1 show the same order in English morpheme acquisition. Therefore, English proficiency level also turns out not to be an important factor in the order of English morpheme acquisition.

4.4. Do the Results of the Current Study Support the Natural Order?

The next question was to compare the acquisition orders of Chinese and Korean learners with Krashen's natural order (1977) to see if any one group shows significant correlation with it. For this comparison, we combined two subgroups which belong to each of the same L1s into one because previous results proved that the morpheme orders between them were consistent in both L1s. In Table 6, the TLU scores for each target morpheme and their ranking are provided for the two language groups: CG stands for the Chinese group which combines CH and CM, and KG the Korean group which combines KM and KL.

Table 6. TLU Scores and Acquisition Orders by CG and KG

Morphemes	CG		KG	
	Score %	Rank	Score %	Rank
Progressive *ing*	96.2	2	80.1	3
Possessive *'s*	96.4	1	77.1	4
Irregular past	90.8	3	86.0	2
Regular past	90.5	4	86.8	1
Plural *s*	83.4	5	71.2	5
Third singular *s*	76.7	6	62.1	6

As shown in Table 6, the TLU scores have slightly changed because of the combination of subgroups, but the overall morpheme orders stay just the same. A closer examination on the TLU score distributions reveals that the ranking tends to form clusters in the two languages. In the Chinese group, we can put the progressive and possessive morphemes together at the top rank, the regular and irregular past tense morphemes at the next, and then plural and third person singular *−s* at the lowest. In the Korean group, on the other hand, the regular and irregular past tense morphemes are clustered together at the top rank, followed by progressive and possessive at the next, and then followed by plural and third person singular *−s* at the lowest. Table 7 summarizes the clustered ranking for the Chinese and Korean groups.

Table 7. The Clustered Morpheme Acquisition Ranking by CG and KG

Morphemes	CG		KG	
	Score %	Rank	Score %	Rank
Progressive *ing*	96.2	1	80.1	2
Possessive *'s*	96.4	1	77.1	2
Irregular past	90.8	2	86.0	1
Regular past	90.5	2	86.8	1
Plural *s*	83.4	3	71.2	3
Third singular *s*	76.7	4	62.1	4

Now we compare these results from the present study with the natural order by Karashen (1977) to see if any one of the two language groups will show correlation with the natural order. The comparison of the acquisition orders of the Chinese and Korean groups against the natural order is illustrated in Table 8.

Table 8. Comparison of Acquisition Orders of CG and KG with the Natural Order

Morphemes	CG	KG	Natural Order (Krashen, 1977)[4]
	Rank	Rank	Rank
Progressive *ing*	1	2	1
Possessive *'s*	1	2	3
Irregular past	2	1	2
Regular past	2	1	3
Plural *s*	3	3	1
Third singular *s*	4	4	3

4) As discussed in section 3.2, this study uses only six of the morphemes from Krashen's work, so his natural order has been adjusted accordingly.

Table 8 shows that neither CG nor KG shows significant correlation with Krashen's natural order. A closer look at the results reveals that there are three morphemes that show main inconsistencies with the natural order: plural *–s*, possessive *'s*, and the regular past *–ed*. Specifically, the regular plural suffix is one morpheme that is supposed to be acquired earliest according to the natural order. However, it is very low ranked in both CG and KG.

The possessive *'s* and the regular past *–ed* illustrate a completely opposite behavior. In the natural order, these two morphemes and the third person singular *–s* are placed at the lowest rank in the acquisition order. In both Chinese and Korean groups, however, they are ranked in the high ranked clusters, ranked 1 or 2. More specifically, CG has the highest score on the possessive morpheme, while KG performs best with the regular past. Some possible explanations to these discrepancies will be discussed in the next subsection.

Based on the comparison between the morpheme orders obtained from the present study and the natural order, it is concluded that neither of the morpheme acquisition orders by Chinese and Korean learners supports the natural order.

4.5. Do L1 Effects Explain the Morpheme Acquisition Orders in Chinese and Korean?

We have seen above that neither acquisition order of EFL groups supports the natural order. Let us now focus on the acquisition orders of the two language groups and attempt to provide explanations for the specific results in each language group.

In order to place the focus of comparison on the L1 difference, the two language groups of the same proficiency level, CM and KM, were chosen for comparison. Figure 3 provides the results, and they indicate that the acquisition orders of the two groups are very distinct. To prove this tendency statistically, Spearman's rank correlation coefficient was conducted between the acquisition orders of the two groups. The results indicate that there is no significant correlation between the orders of CM and KM (r_s=.489, p=.329), which means that the two native language groups have distinct morpheme acquisition orders.

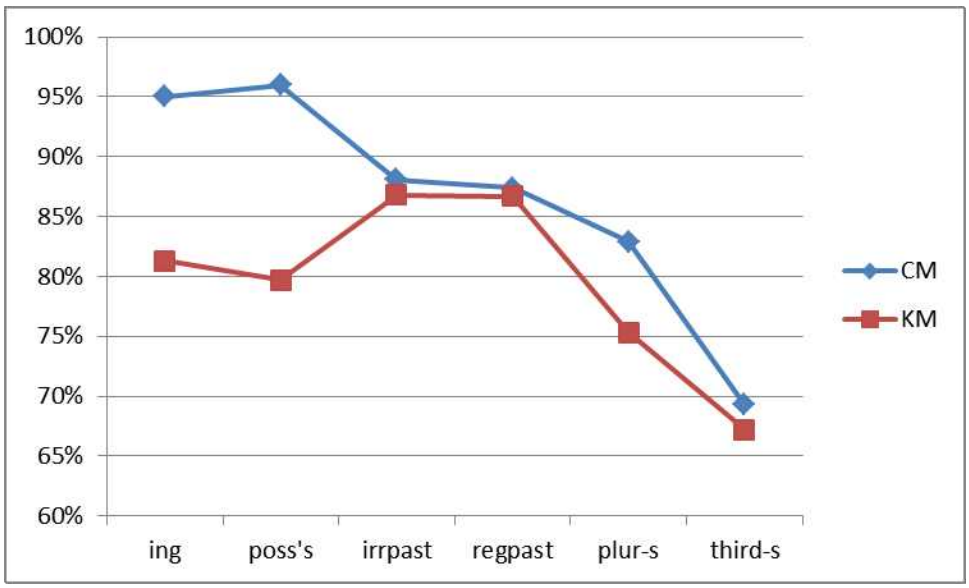

Figure 3. Comparison of Morpheme Accuracy Scores and Orders by CM and KM

The results presented in Figure 3 point out a salient disparity between the two groups: CM greatly outperforms KM in all six target morphemes. The highest TLU score of CM is 96%, while that of KM is only 86.7%. A partial explanation for this disparity could be found in the fact that all Chinese students take an English test in their sophomore year.[5] Being sophomores, the Chinese participants of this study had been spending four weeks in preparation for the test, receiving intensive tutoring from their English instructors. During the process, the Chinese

participants must have received more grammar instructions than the Korean participants, and it may have been reflected in their better performance with English morphemes. It is noted that this is another piece of evidence supporting input frequency and amount of instruction as a major factor affecting L2 morpheme acquisition, suggesting meaningful implications in the second language classroom and teaching.

Although it is clear that the Chinese group outperforms the Korean group in all morphemes, it is also noticeable from Figure 3 that there are interesting tendencies in the overall acquisition orders between the two language groups. First, the morphemes placed at the top ranks are exactly reversed in Chinese and Korean groups. Specifically, Chinese learners performed best with the progressive and possessive morphemes, while Korean learners with the past tense morphemes.

For the rest of the morphemes, plural and third person singular suffix, the two groups show consistent ranking: these two morphemes are the weakest points for both groups. Some explanations for the most difficult morphemes in both groups are available from the native language background of the participants of the current study.

First, let us begin with the morpheme plural *-s*. Chinese is an isolating language, which means that there are no morphological inflections or derivations. Therefore, in Chinese each word is considered a morpheme. Furthermore, Chinese does not have a plural marker, and it plays a negative role in the acquisition of English plural morpheme.

On the other hand, Korean has a plural marker, *-teul*, but the use of the plural morpheme in Korean is not as strict as in English. Especially when a modifier implying a plural is used with a noun, the plural marker is rarely used. If a plural marker is used together with such a modifier, it sounds somewhat unnatural. An example is provided below, and both sentences mean the same and are acceptable in Korean, but the sentence in (2) with a specific plural marker sounds a bit unnatural.

(1) sakwa-ga mantha 'There are many apples.'
apple-subject marker many are

(2) sakwa-**teul**-i mantha 'There are many apples.'
apple-pl-subject M many are

It is suggested that the grammatical differences in plural formation in Chinese and Korean interfere with English plural morpheme acquisition. It has been claimed by many researchers (e.g., Hakuta, 1976; Luk & Shirai, 2009; Murakami et al., 2013; Murakami & Alexopoulou, 2016) that morphemes with no similar forms in the learners' L1s interfere with their L2 morpheme acquisition, and those with congruent forms in the learners' L1s facilitate the L2 morpheme acquisition. Likewise, the impact of L1 on L2 acquisition as a dominant factor has been documented in many SLA studies (e.g., Jarvis & Pavlenko, 2007; Odlin, 1989).

The possessive *'s* and the regular past *-ed* illustrate a completely opposite behavior. In the natural order, these two morphemes and the third person singular *-s* are placed at the lowest rank in the acquisition order. In both Chinese and Korean groups, they are placed in the high ranked clusters. More specifically, CG has the highest score on the possessive, while KG performs best on the regular past. The learners' L1 again can provide some answers to these discrepancies. Both Chinese and Korean have the corresponding possessive markers, *de* in Chinese and *-uy* in Korean, which helps them acquire the English possessive morpheme more easily (Luk & Shirai, 2009). Past tense also needs to be specifically marked in both Chinese and Korean.

It was noted above that there exists a strong correlation between the subgroups belonging to the same L1 irrespectively of the group's English proficiency level. If the acquisition order shows much more similarities within the same L1 groups than those between different L1 groups, it can be reasonably assumed that L1 effects indeed exist in English morpheme acquisition.

5) It is called Test for English Majors-Band 4 (TEM-4), which is a test of English language comprehensive ability for English majors in China.

To delve into this issue, the results of this study were compared with those of previous studies dealing with the same L1 participants. First, morpheme acquisition orders for Korean learners are illustrated in Table 9.[6)]

Table 9. Acquisition Order Comparison for Korean Learners

Morphemes	ESL			EFL
	Pak (1987)		Shin & Milroy 12 Children (1999)	Current Study 38 Adults
	40 Children	40 Adults		
Progressive	1	1	1	3
Plural	5	5	6	5
Irregular past	4	3	4	2
Regular past	3	4	3	1
Third singular	6	6	5	6
Possessive	2	2	2	4

Pak (1987) conducted a morpheme study on 40 adults and 40 children in ESL setting using BSM and reported that the acquisition order of the adults and children groups showed significant correlation but that the L2 learning process is somewhat different from L1. Shin and Milroy (1999) collected data from recording of three activities in classroom with 12 Korean children in New York City. Their results showed significant correlation those of Pak (1987), and they concluded that the acquisition order is affected by the learners' L1 knowledge.

Compared with the results from Pak (1987) and Shin and Milroy (1999), however, the results of the current study with the same L1 group turn out quite different, and the differences may be attributed to the different settings, i.e., ESL versus EFL. In the ESL context, progressive *–ing* is one of the first morphemes to appear, whereas it emerges later in the EFL context. On the other hand, regular and irregular past morphemes are ranked higher in the EFL setting than in ESL.

Now the morpheme acquisition orders for Chinese learners are illustrated in Table 10. Dulay and Burt (1974) conducted a morpheme acquisition study using BSM with 55 Chinese-speaking and 60 Spanish-speaking children in the ESL context. They reported that the results of the two groups were similar, thus providing strong support for the existence of universal child language acquisition strategies.

Table 10. Acquisition Order Comparison for Chinese Learners

Morphemes	ESL	EFL
	Dulay and Burt (1974) 55 Children (Chinese)	Current Study
Progressive	1	2
Plural	2	5
Irregular past	4	3
Regular past	3	4
Third singular	6	6
Possessive	5	1

Just like the Korean learners' case, the results of the current study with the Chinese L1 group show more disparities with those of Dulay and Burt (1974). Especially, the acquisition order between the plural morpheme and the possessive morpheme is almost completely reversed in the two studies. In Dulay and Burt (1974), the plural is ranked second, but it is ranked almost lowest in the current study. On the other hand, the possessive *'s* is ranked

6) Tables 9 and 10 are the modified versions of the tables provided in Luk and Shirai (2009).

highest in the current study, but almost lowest in Dulay and Burt (1974). Although much more research is needed, partial reasons of the differences may be due to the different contexts, ESL versus EFL as in the Korean case, different methodology, or different participants, only children in Dulay and Burt's study and only adults in this study.

5. Conclusion

The current study investigated the acquisition order of English inflectional morphemes with Chinese and Korean EFL learners. The acquisition orders obtained from the study were compared with the natural order, and the results turned out not to support the natural order hypothesis described in Krashen (1977). Two additional factors that may affect the English morpheme acquisition order of EFL learners were explored, i.e., data elicitation method and English proficiency. First, the results of the current study showed that the data elicitation method was not an influential factor for the acquisition order of English inflectional morphemes. Second, this study results indicated that English proficiency level did not significantly affect the acquisition order, either.

L1 effects as a major factor influencing the morpheme order were investigated in depth. It was found that there existed significant correlation between the same L1 groups irrespectively of data elicitation method or English proficiency level, and it was true in both Korean and Chinese groups. Therefore, it was assumed that L1 plays a strong role in the acquisition order of English morphemes.

To explore the effects of L1 more closely, we compared the current research results with those of the previous studies dealing with the same L1 participants. From the comparisons, it was found that the EFL and ESL settings can make big differences in the results even if the participants are of the same L1. Furthermore, the type of participants, whether they are children or adults and the methodology, whether the data are obtained from written materials or from speaking activities, can contribute to the discrepancies in the results.

During the process of this study, the importance of input frequency ad the amount of instruction was highlighted. Input frequency was proved to play a major role in the learner's morpheme acqusition through the case of Chinese students who had been exposed to a certain grammatical structure frequently in the classroom. Also, through the excellent performance of the Chinese learners who had been receiving extensive English training to prepare for a very important English test, it was noted that the amount of instruction in classroom is very important in second language teaching environment.

The results of this study also provide some suggestions for future research. First, this study involves three levels of English proficiency, i.e., low, medium and high levels, but only the medium level subjects could be secured from both language groups. More reliable results may be obtained if all the corresponding subgroups for all levels can be supplied in the future research. Second, two different data elicitation tasks were adopted in this study to collect materials, and both of the tasks involve writing. In the future research, the tasks can be diversified so that writing tasks are compare with oral tasks, for example. Finally, far more future research involving a multi-determinant approach is needed.

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Appendix

Directions: Please complete these questions within 15 minutes. The following three paragraphs contain two types of questions:
1. Choose the correct answer from the parentheses.
For example: *Yesterday I met* ***an*** *(a, an, the, ¢) old friend.* (¢: this symbol indicates that no words need to be filled in the blank).
2. Fill in the blanks with the correct form of the words in parentheses.
For example: *Jim's mother* ***planted*** *(plant) trees yesterday.*

Paragraph 1
Now, my father _____ (work) in a men's clothing store from Monday to Friday, and he is my best friend. During my last winter holiday, we went to the countryside to visit John and Mary. They are old friends of my _____ (father). I _____ (find) a big change there. The first time I went there, they were living _____ (in, on, of, ¢) a small house with dogs, ducks, and _____ (sheep). _____ (fill) with many animals, the house was crowded. Last winter when I went there again, they had a big separate house to raise dozens of _____ (chicken). They also had ____ (a, an, the, ¢) small pond in which they raised fish. John said last summer they earned quite a lot by _____ (sell) the fish. I felt happy that their life had improved. At the end of our trip, I told my father that I planned to return every two years, and he _____ (agree). Actually, now I'm _____ (talk) to my father about the time to go there again.

Paragraph 2
When I was little, Friday night was our family game night. After supper, we would play card games of all _____ (sort) in the sitting room. As ___ (a, an, the, ¢) kid, I loved to watch cartoons as much as other _____ (child), but when I was _____ (watch) cartoons, they would stop me. No matter how many times I asked to watch them, I was not ____ (allow) by my parents. They would say to me that _____ (play) card games would help my brain. Still I was unwilling to play the games with them sometimes. I didn't realize how right my parents were until I _____ (enter) high school. The games my parents _____ (teach) me when I was a child turned out to be very ____ (use, using, useful, ¢) in my life. My ____ (parents) words were very helpful to me. My son ____ (play) card games with me every Friday night now, just like my parents played card games with me when I was a kid.

Paragraph 3
We study quite a few _____ (subject), such as math and English. Monday morning is Miss ____ (Amy) writing class, and the writing class had just ____ (begin). Miss Amy said: "Who is _____ (go) to raise hand and share your own paragraph?" Everyone was silent, ____ (wait) to see who would be called upon to read his and her paragraph aloud. Some of us were confident or eager to take part in ____ (a, an, the, ¢) class activity, but others _____ (become) nervous and anxious. I had done my homework, but I was shy. I was afraid ____ (of, to, in, ¢) speak in front of so many ____ (people). At that moment, I _____ (remember) what my father once said to me."The classroom is a place for learning and that _____ (include) learning from textbooks and mistakes as well." _____ (Immediate), I raised my hand.

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