

Errors in the Production of Adult Early and Late Bilinguals

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Abstract

This study examines the grammatical knowledge of adult second language (L2) learners and heritage speakers. Given the differences in the mode and age of acquisition between L2 learners (late bilinguals) and heritage speakers (early bilinguals), the question arises as to whether and how these groups differ from each other in their knowledge of Korean. To address this question, the present study looks at the production of Korean relative clauses by three groups of learners (26 L2 learners, 11 simultaneous bilinguals, and 38 early sequential bilinguals). The results of a written production task showed that all three groups made similar types of errors such as those involving the use of incorrect word order and case markers. Yet differences were also observed in the nature of errors made by these three groups. Based on the findings, pedagogical implications are drawn for classroom instruction.

Key words: heritage speakers, early and late bilinguals, Korean relative clauses

A heritage speaker refers to a bilingual who grew up listening to and/or speaking a family language in the home in the United States (Valdés, 2000). The use of the family/heritage language is normally reduced to the home, compared to the use of a socially dominant (majority) language. In general, the child's language subsequently shifts from the heritage language to the majority language of the wider society once schooling begins (Montrul, 2008). As the child begins to use the majority language more than the heritage language, the majority language becomes a dominant language in proficiency and use. Due to reduced input in the heritage language and limited use of it, some

features of the heritage language may not be fully acquired at an appropriate age or may have been lost when the child reaches adolescence (Montrul, 2005; Polinsky, 2011).

Heritage speakers and L2 learners differ from each other in several aspects (Montrul, 2008; Polinsky & Kagan, 2007). First, the former group learns the heritage language in the home while L2 learners normally learn the target language through (formal) instruction. Second, heritage speakers are exposed to the heritage language since birth (early bilinguals) while L2 learners are exposed to the target language after puberty (late bilinguals). Due to this difference in the onset age of exposure to the heritage language, heritage speakers have advantage over L2 learners especially when aural skills are concerned (Au, Knightly, Jun, & Oh, 2002). Many heritage speakers also develop oral fluency in the heritage language, which is normally not the case of L2 learners especially at the beginning level (Kondo-Brown, 2005).

As widely noted, heritage speakers do not form a homogenous group with regard to their linguistic knowledge, exhibiting a considerable amount of variation among them (Kondo-Brown, 2005; Montrul, 2008; Polinsky & Kagan, 2007; among others). Several studies reported on the knowledge of early and late bilinguals (exposed to English after age six or seven), the latter of whom showed advantage over the former group (Kim, Montrul, & Yoon, 2010; Lee, 2011). A study by Kim et al. (2010) examined the knowledge of Korean heritage speakers (early and late bilinguals) on Korean reflexive pronouns. The results showed that the early bilinguals (US-born and exposure to Korean in the home) produced a simplified two-way system (*caki* and *casin*), producing a system deviant from the heritage language. On the other hand, the late bilinguals (Korean-born and arrived at the US between ages 11 and 14) retained a three-way system (*caki*, *casin*, and *caki-casin*), conforming to the features of the heritage language.

Differences are also observed among early bilinguals. (Early) simultaneous bilinguals differ from early sequential bilinguals in terms of their knowledge of the heritage language (Montrul, 2008).¹ Unlike early sequential bilinguals, who are predominantly exposed to Korean until schooling begins, simultaneous bilinguals are exposed to both Korean and English since birth. Previous research has shown that simultaneous bilinguals tend to develop less competent knowledge of

the heritage language, exhibiting a more severe deviation from the heritage language, compared to early sequential bilinguals (Lee, 2013; Montrul, 2008).

The primary goal of the present study is to examine the similarities and differences in the knowledge of L2 learners (late bilinguals) and heritage speakers (early bilinguals). In doing so, the present study looks at the production of Korean relative clauses by adult L2 learners and two groups of adult heritage speakers (simultaneous bilinguals and early sequential bilinguals), all of whom were English-dominant. Examining the knowledge of L2 learners and these two types of heritage speakers would help probe further into the differences between L2 and heritage grammars. In addition, a systematic comparison of these different groups of learners could offer useful pedagogical insight into classroom instruction, given the reality that these learners are placed in the same class in many cases (Brinton, Kagan, & Bauckus, 2008). As Montrul and Ionin (2012) noted, identifying the linguistic areas in which L2 learners and heritage speakers may or may not differ would be a first step in moving forward in that direction.

Previous studies on L2 acquisition of Korean relative clause²

There are two major differences between English and Korean relative clauses. One difference is that case marking is crucial to correct interpretation of Korean relative clauses, unlike English in which no morphological marking is involved. In Korean, subject relatives are identical with direct object relatives, except for case marking on the noun (an argument of the verb) that appears inside the relative clause, as shown in (1) below. Successfully figuring out the grammatical relation of the gap (i.e., the relativized element) and the head crucially depends on the correct interpretation or utilization of case marking information.

(1) a. Subject relative

↓ gap		↓ head
[_{RC} _____]	<i>yeca-lul</i>	<i>po-nun</i> <i>namca</i>
woman-ACC	see-PRES	man
“The man who looks at the woman”		

b. Direct object relative

[_{RC} *yeca-ka* _____ *po-nun*] *namca*
 woman-NOM see-PRES man
 “The man that the woman looks at”

(ACC: accusative, NOM: nominative, PRES: present tense)

The other difference has to do with word order (or the branching direction). In English, the relative clause follows the head, whereas the opposite is true for Korean relative clauses, as exemplified in (1). This difference is important to note in that it might cause trouble for the learner if the branching direction is different from his or her first language (L1). The reason is that the learner might rely on the properties of the L1 or a dominant language (i.e., English) when interpreting relative clauses in an L2 or heritage language, as reported by several studies (Kanno, 2007; Kim, 2008; Lee-Ellis, 2011).

Several L2 studies have reported two types of errors that are commonly found in the acquisition of relative clauses (Kanno, 2007; Lee, 2013; O’Grady, Lee, & Choo, 2001, 2003). One is triggered by the difference in the branching direction and word order, and the other stems from a misinterpretation of case marking information. Following the studies by O’Grady et al. (2001, 2003), the former type is referred to as *head error* and the latter type as *reversal error*. Head errors involve the erroneous selection of the first noun in a relative clause as the head, which implies that the learner had trouble correctly locating the head. On the other hand, reversal errors involve a misinterpretation of one type (e.g., subject relative) as the other (e.g., direct object relative) or vice versa.

O’Grady et al. (2001), who employed a picture-selection listening task, reported that their participants (beginning and intermediate L2 learners) made a sizable proportion (approximately one-third of the time) of head errors. The overall results showed that error rates decreased as proficiency (beginning vs. intermediate) increased. However, even the intermediate participants had difficulty correctly identifying the location of the head in Korean relative clauses, making head errors approximately one-fifth of the time. Similar results were also observed in Kim’s (2008) picture-selection listening comprehension study with heritage speakers of Korean. Kim reported that her participants in all three groups (English-dominant, Korean-English, and Korean-dominant) made a sizable number of head errors.

Taken together with the findings of O'Grady et al.'s (2001) study, those of Kim's (2008) study suggest that the difference in the branching direction and word order between Korean and English relative clauses would likely present a challenge to heritage speakers as well as L2 learners of Korean.

The findings from (listening) comprehension studies are insightful, yet production studies provide results that are more revealing about the different types of word order errors. In their oral production study of L2 learners of Korean, Jeon and Kim (2007) reported a high rate of errors involving incorrect word order. The most common error of this type involved the basic Korean word order (SOV) and the use of the bound noun *kes* "thing." The bound noun *kes* "thing" is not necessary in the relative clauses that have a gap (head-external), but a sizable number of such errors was produced.

Lee-Ellis (2011) also reported on a similar type of word order error in her oral production study with Korean heritage speakers. As in the case of Jeon and Kim's (2007) study, the most common type of word order error involved the following pattern, [_{RC} S-NOM O-ACC V] *kes*. Lee-Ellis (2011) reported another common error type, which involved basic English word order (SVO). In Korean, subject and direct object relatives have the structure of [_{RC} O-ACC V] S and [_{RC} S-NOM V] O, respectively. Errors involving basic English word order is interesting in that they reflect the influence from the dominant language in producing Korean relative clauses. Lee-Ellis (2011) also noted that some of her participants consistently used this word order pattern for both subject and direct object relatives. Error rates of these two production studies suggest that word order errors were prevalent in both studies (Jeon & Kim, 2007; Lee-Ellis, 2011).

In the next section, I will describe an experimental study carried out to examine the nature of the knowledge of L2 learners and two groups of heritage speakers.

The present study

Research questions

The present study aims to examine the similarities and differences in the grammatical knowledge of adult L2 learners and heritage speakers. Adult L2 learners (late bilinguals) start to learn Korean in a classroom setting after puberty whereas heritage speakers (early bilinguals) are exposed to Korean in the home since birth. Given these differences in the mode and age of acquisition, the question arises as to how these groups differ from each other in their knowledge of Korean.

In particular, the question concerns whether the knowledge of simultaneous bilinguals would look more similar to that of L2 learners or to that of early sequential bilinguals, as similar concerns were voiced by Montrul (2010). Simultaneous bilinguals are exposed to English since birth, like L2 learners, which gives them longer exposure to the dominant language, compared to early sequential bilinguals. Yet, simultaneous bilinguals also differ from L2 learners in that they are exposed to Korean since birth, which gives them longer exposure to the heritage language, compared to L2 learners.

Previous research has reported that heritage speakers would likely have advantage over L2 learners (Au et al., 2002; Kondo-Brown, 2005). It was also reported that early sequential bilinguals would likely have advantage over simultaneous bilinguals (Lee, 2013; Montrul, 2008). Yet, the picture is not clear when these three groups are compared together. If age of acquisition plays a role, both groups of heritage speakers will outperform L2 learners. Also, if early sequential bilinguals were to have advantage over simultaneous bilinguals, as previous research showed, early sequential bilinguals would outperform both L2 learners and simultaneous bilinguals, the latter of whom would outperform L2 learners.

Participants

The experiment included L2 learners and two types of heritage speakers of Korean, all of whom were dominant in English: 26 L2 learners, 11 simultaneous bilinguals, and 38 early sequential bilinguals. Participants were enrolled in a beginning-level (2nd-semester) Korean language class at a four-year university on the East Coast of the United

States at the time of experiment. The participants' ages ranged from 17 to 22 years and the mean age was 19 years. The L2 learners in the present study started to learn Korean in a classroom setting in college whereas both heritage groups were exposed to Korean since birth. The heritage speakers in the present study were placed into a first-semester beginning-level course through a placement test, which consisted of a reading/written test and an oral interview.

The early sequential bilinguals in the present study had parents who were both native speakers of Korean, and they were predominantly exposed to Korean before they started schooling in English at age 4 or 5. On the other hand, all simultaneous bilinguals had one parent speaking Korean and the other speaking English, and they were exposed to both English and Korean during early childhood. The majority of the heritage speakers were born in the US. Of the 11 simultaneous bilinguals, two were born in Korea and came to the US at age 1. Of the 38 early sequential bilinguals, six were born in Korea and came to the US at ages ranging from three months to two and half years old (four before age one and a half, one at age 2, and one at age two and a half). However, it should be noted that all three groups started schooling in English at a similar age (age 4 or 5).

According to the biographical survey, both heritage groups were dominant in English. In terms of the amount of heritage language use in the home since schooling began, the majority of the simultaneous bilinguals reported that they had conversed with their parents in English almost all the time. The majority of the early sequential bilinguals also indicated that they would speak to their parents in English more than in Korean. Interestingly, the parents of most early sequential bilinguals spoke to them mostly in Korean prior to schooling, but the majority of them greatly increased their use of English after schooling began, further limiting their heritage language use. In addition, all heritage speakers would converse with their siblings and friends mostly in English.

The majority of the heritage speakers (9 of the 11 simultaneous bilinguals and 29 of the 38 early sequential bilinguals) indicated that they had visited Korea, but mostly for a short period of time in the summer. Some participants in each heritage group (4 of the 11 simultaneous bilinguals and 28 of the 38 early sequential bilinguals) also attended Saturday or Sunday Korean schools from a week to

several months when they were young (mostly during their elementary school years), but instruction at those schools was limited to the alphabet, basic reading skills, numbers, and culture in some cases. Furthermore, many of the participants who had attended these Korean schools reported that they forgot most or all of what they had learned in those schools.

In terms of cultural exposure, some of the heritage speakers were more familiar with Korean culture including Korean drama and popular music than others. Also, there were some L2 learners who were more knowledgeable about Korean popular culture than others. Yet, none of them indicated that s/he watched Korean drama or TV on a regular basis. This suggests that target/heritage language exposure through media did not appear to be a factor that had an impact on their overall proficiency in Korean, although it might have enhanced their cultural awareness.

Experimental methods

The experiment employed the written production of Korean relative clauses, and it consisted of two tasks: translation of Korean relative clauses into English and translation of English relative clauses into Korean.³ The English-to-Korean (E-K) translation task was employed to examine participants' productive knowledge of Korean relative clauses, and the Korean-to-English (K-E) translation task was included to check participants' receptive knowledge of Korean relative clauses.

In both tasks, relative clauses were embedded in a full sentence and modified the subject of the copular sentence (e.g., *The woman [RC who is eating dinner] is my sister*). It is assumed that unlike transitive main sentences modified by a relative clause, which contain two separate propositions, copular main sentences modified by a relative clause denote a single proposition, and they are easier to process and produce (Diessel & Tomasello, 2005).

Each task included subject and direct object relative clauses. In the K-E translation task, adverbial phrases (e.g., *in the room, right now*, etc.) were added to the relative clause to make test sentences sound natural. However, no such extra grammatical elements were added to the test sentences of the E-K translation task in hopes of minimizing variables that might put an extra burden on the participants' memory.

The vocabulary items used in both tasks were taken from the textbooks and they were familiar to the participants. Korean examples are given in (2) and English examples in (3).

(2) a. Subject relative

[*cikum* ___ *cemsim-ul* *mek-nun*] *salam-un*
 now lunch-ACC eat-PRES person-TOPIC
cey enni-yeyo.
 my sister-sent.ender

“The person who is eating lunch now is my sister.”

b. Direct object relative

[*cikum* *cey-ka* ___ *paywu-nun*] *ene-nun*
 now I-NOM learn-PRES language-TOPIC
ilpone-yeyo.
 Japanese-sent.ender

“The language that I am learning now is Japanese.”

(NOM: nominative marker, ACC: accusative marker, TOPIC: topic marker, PRES: present tense)

(3) a. Subject relative: *The person [who is watching a movie] is my friend.*

b. Direct object relative: *The cola [that my friend drinks] is very delicious.*

It should be noted that the E-K translation task was administered prior to the K-E translation task in order to avoid a possibility of priming effects. Given the difference in the mode of the outcome language (English for the K-E task and Korean for the E-K task), a slightly different instruction was given in each task in order to properly check the participants' knowledge of Korean relative clauses. In the K-E translation task, the participants were asked to underline the relative clause in each test sentence. In the E-K translation task, the participants were asked not to delete any case markers.

At the time of testing, all three groups were enrolled in a beginning-level Korean language class, and relative clauses were introduced to them at the beginning of the 2nd semester. The experiment was conducted within several days after the introduction of relative clauses in class.

Data coding

The coding procedure for the K-E translation task was relatively simple. Each sentence was checked for the completion and accuracy of the relative clause. Each participant was given six test sentences, and all participants were successful in translating all six sentences, yielding a total of 450 relative clauses. A sentence was assigned a score of 0 if the structure of the relative clause was incorrectly changed (e.g., *the lunch that I ate* for *the person who is eating lunch*). A sentence was assigned a score of 1 if the structure of the relative clause was correct. Some of the responses included lexical errors such as replacing a lexical item (e.g., *dinner* for *lunch*) or minor grammatical errors including tense errors (e.g., *bought* for *buy*), but they were considered acceptable.

Compared to the K-E translation task, the coding procedure for the E-K translation task required a longer list of coding categories, due to the fact that more types of errors were observed in the latter task. Each participant was given six test sentences, and all participants successfully translated all six sentences, except two who missed one sentence. A total of 448 relative clauses were produced. Each translated sentence was checked for completion, and sentences with no relative clauses were considered unacceptable. Then, the accuracy of the relative clause was checked and all relative clauses were coded for error types.

The most common type of error involved the production of relative clauses with incorrect word order. In Korean, subject and direct object relatives have the structure of [RC O-ACC V] S and [RC S-NOM V] O, respectively. Relative clauses which did not conform to these respective word order patterns were coded as word order errors. Some of the examples are given in (4).

- | | | |
|-----|---|--------------------------------------|
| (4) | Correct | Incorrect |
| | a. [yonghwa-lul po-nun]
movie-ACC watch-PRES | salam person
*[salam-i person-NOM |
| | yonghwa-lul po-nun]
movie-ACC watch-PRES | |

“The person who is watching a movie”

- b. [*phithe-ka sa-nun*] *senmwul* **[senmwun-ul*
 Peter-NOM buy-PRES gift gift-ACC
phithe-ka sa-nun
 Peter-NOM buy-PRES
 “The gift that Peter is buying”

Another common type of error involved the use of an incorrect case marker on the noun that appears inside the relative clause and the head noun. An example of case error would be the use of the subject marker on the (direct object) argument inside the relative clause, as in (5a). Also, the use of the topic marker on the (subject) argument inside the relative clause in place of the subject marker, as in (5b), was coded as a case error, which is ungrammatical in Korean.

- (5) a. [*nolay-*ka/-lul tut-nun*] *namca*
 song-*NOM/-ACC hear-PRES man
 “The man who listens to a song”
 b. [*chinkwu-*nun/-ka masi-e-nun*] *cola*
 friend-*TOPIC/-NOM drink- PRES cola
 “The cola that a friend drinks”

Another error type involved errors in which the participant repeated the head, altering the word order of the relative clause. Some of the previous (oral) production studies also reported the use of a resumptive noun (Jeon & Kim, 2007; Lee-Ellis, 2011). However, unlike the previous studies, the present study did not observe the use of the bound noun *kes* “thing.” An example of head repetition error is given in (6).

- (6) **[i yeca-ka newspaper ilk-nun]* *salam-un* *cey*
rwummeytu-yeyo.
 this woman-NOM newspaper read-PRES person-TOPIC my
 roommate-S.ender
 “*The person who this woman is reading the newspaper”

Other types of errors included missing arguments of the relative clause, the repetition of the verb of the relative clause, failure to mark the verb with a relativizer, and missing verbs. Relative clauses were considered acceptable if none of these errors was observed. Also, there were errors that were not penalized, as similarly done by some of

the previous production studies (Jeon & Kim, 2007; Lee-Ellis, 2011): lexical errors (e.g., *salam* “person” for *yeca* “woman”) and morphological errors in case markers or adnominal verbal suffixes (or a relativizer for lack of a better term) that carry the tense of an embedded clause and signal relativization (e.g., *ilk-*nun* (read-past) for *ilk-nun* (read-present) in *the woman who reads the newspaper*).⁴

Results

Two tasks were used to probe into the knowledge of adult L2 learners, simultaneous bilinguals, and early sequential bilinguals. The first task was a written production task (E-K translation), which was to examine the productive knowledge of these three groups. The second task was a reading comprehension task (K-E translation), which was to check the participants’ receptive knowledge of Korean relative clauses. Both tasks were administered with the same pool of participants.

The comprehension (K-E) task

After coding was completed, the data were quantified and statistical analysis was performed on the number of target-like relative clauses. According to a two-way repeated measures ANOVA, no significant difference was found among the three groups. There was no main effect of Sentence Type, either. Also, there was no interaction effect between Group and Sentence Type. The results showed that the comprehension task was fairly easy for all three groups, which suggests that they all had good receptive knowledge of Korean relative clauses. Figure 1 shows each group’s accuracy rates.

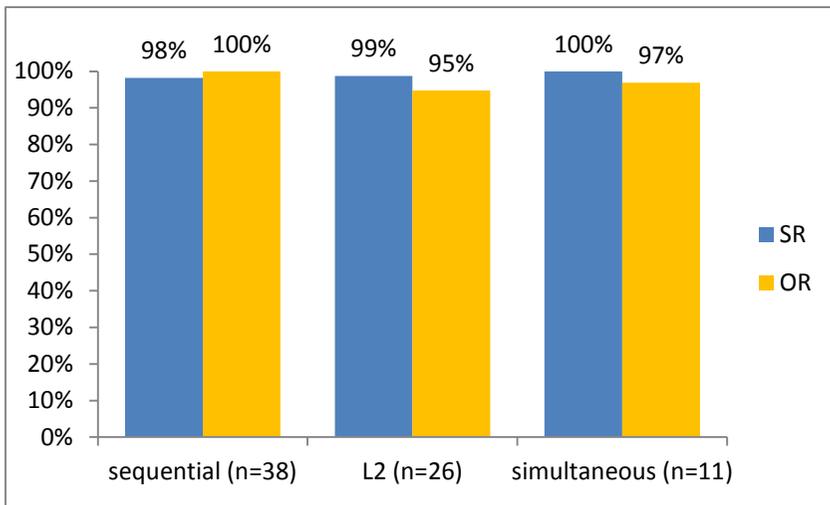


Figure 1. Accuracy rates of each group (K-E translation).

Recall that the participants were asked to underline the relative clause in each (Korean) test sentence. Most of the participants followed the instruction and only a few failed to do so. The majority of the participants correctly underlined relative clauses (32 of the 38 early sequential bilinguals, 24 of the 26 L2 learners, and 9 of the 11 simultaneous bilinguals). These results suggest that most participants had a fairly good grasp of the location of the relative clause in Korean.

The production (E-K) task

Five adult native speakers of Korean (graduate students at the same institution) also participated in this task. All five of them produced target-like relative clauses all the time, adhering to the appropriate word order of each type of relative clause and marking the noun that appears inside the relative clause and the head noun with an appropriate case marker.

After coding was completed, the data of the experimental group were quantified and statistical analysis was performed on the number of target-like relative clauses. Table 1 lists the mean accuracy scores of each group and Figure 2 presents the accuracy percentages of target-like relative clauses.

Table 1. Mean accuracy scores of the production (E-K) task.

Group	relative		Subject relative			Direct	object
	Mean	<i>n</i> SD	Count	Mean	SD*	Count	
Sequential	2.56	38 0.86	114	2.95	0.23	114	
L2 learners	1.96	26 1.15	78	2.81	0.49	78	
Simultaneous	0.64	11 1.03	33	1.91	0.94	33	

(*SD: Standard Deviation)

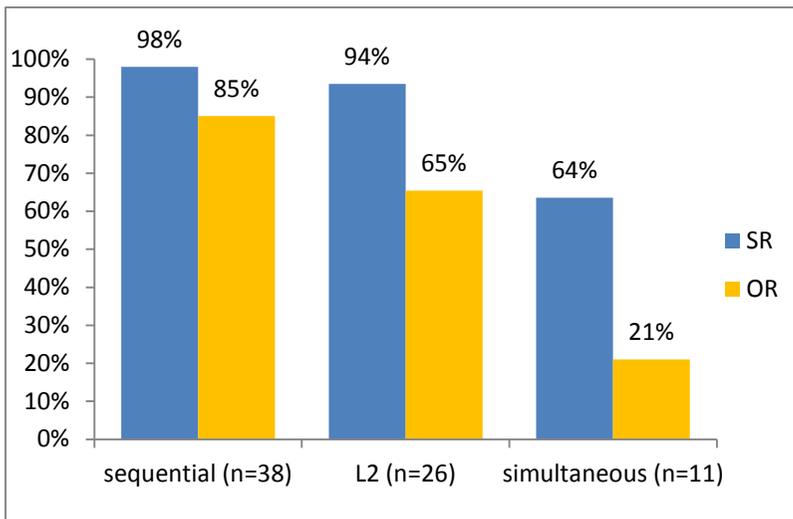


Figure 2. Accuracy rates of each group (E-K translation)

As seen in Table 1 and Figure 2, the early sequential bilinguals were most successful in producing target-like relative clauses, followed by the L2 learners and the simultaneous bilinguals in that order. A two-way repeated measures ANOVA was performed on the number of target-like relative clauses with Group and Sentence type as variables. There was a significant main effect of Group ($F(2,72) = 23.78, p < 0.00001$), Sentence Type ($F(1,72) = 46.64, p < 0.00001$), and the interaction between the two variables ($F(2,72) = 4.41, p = 0.0156$).

Given the significant interaction effect, further analysis was performed with regard to each variable.

Post-hoc analyses (Welch's Two-Sample *t*-tests) revealed that the early sequential bilinguals differed from the L2 learners ($t(38.27) = 2.24, p = 0.031$) and the simultaneous bilinguals ($t(11.90) = 5.74, p = 0.0001$). The latter two groups also differed from each other ($t(17.29) = 3.89, p = 0.0011$). As for subject relative clauses, the early sequential bilinguals and the L2 learners did not perform differently from each other ($t(32.32) = 1.35, p = 0.185$). However, the early sequential bilinguals were significantly more accurate than the simultaneous bilinguals ($t(10.34) = 3.62, p = 0.0045$), who were significantly less accurate than the L2 learners ($t(12.36) = 2.99, p = 0.0109$). When it came to direct object relative clauses, the early sequential bilinguals performed significantly better than the other two groups ($t(43.56) = 2.23, p = 0.0309$ for the L2 learners; $t(14.32) = 5.64, p < 0.0001$ for the simultaneous bilinguals). The L2 learners and the simultaneous bilinguals also differed from each other ($t(12.02) = 3.46, p = 0.0023$), the former group performing significantly better than the latter.

Turning now to errors produced by each group, major error types relevant to relativization in Korean included the use of incorrect word order, the repetition of the head, and the use of incorrect case markers. Table 2 lists the total number of errors by group in each of these categories.

Table 2. Rates of major error types by group.

	Sequential (n=38)	L2 learners (n=26)	Simultaneous (n=11)
Total count	228	156	66
Word order	3 (1.3%)	19 (12.2%)	26 (39.4%)
Head repetition	1 (0.4%)	3 (1.9%)	4 (6.1%)
Incorrect case markers	9 (3.9%)	13 (8.3%)	13 (19.7%)

As seen in Table 2, the simultaneous bilinguals produced relative clauses with incorrect word order most often. The L2 learners also had trouble producing relative clauses with appropriate word order, but not as much as the simultaneous bilinguals did. Compared to these two groups, the early sequential bilinguals did not exhibit much difficulty producing target-like relative clauses. A similar trend was observed

with head repetition and case errors. Overall, the simultaneous bilinguals had the most difficulty correctly producing target-like Korean relative clauses, among the three groups.

Focusing on the most common error type, the total number of word order errors by group was compared. Instances of head repetition errors were added to the total number, given that such error would alter the word order of the relative clause. It should be noted that the head was always repeated to the right of the relative clause, the location for the head in Korean, except for one instance. The early sequential bilinguals made the fewest errors, followed by the L2 group. The simultaneous bilinguals made the most errors, as seen in Table 3.

Table 3. Word order error rates by group and sentence type.

	Sequential (n=38)		L2 learners (n=26)		Simultaneous (n=11)	
	Total	# of errors	Total	# of errors	Total	# of errors
Subject RC	114	0	78	2	33	11
Object RC	114	4	78	20	33	19

A two-way repeated measures ANOVA revealed a significant main effect of Group ($F(2,72) = 23.84, p < 0.00001$), Sentence Type ($F(1,72) = 30.46, p < 0.00001$), and the interaction between the two variables ($F(2,72) = 6.83, p = 0.00192$). Further analysis showed that the three groups differed from one another. According to Welch's Two-Sample *t*-tests, the early sequential bilinguals performed differently from both the L2 learners ($t(29.73) = -2.95, p = 0.006$) and the simultaneous bilinguals ($t(10.27) = -4.11, p = 0.002$), making significantly fewer word order errors than the latter two groups. As for the latter two groups, the L2 group's error rate was significantly lower than that of the simultaneous bilingual group ($t(12.96) = -2.78, p = 0.016$).

Discussion

The purpose of the present study was to examine the similarities and differences in the knowledge of adult L2 learners (late bilinguals), simultaneous bilinguals, and early sequential bilinguals in their production of Korean relative clauses. Given the difference in the

age of acquisition of Korean, the present study aimed to see whether both heritage groups would outperform the L2 learners. Also, extrapolating from the previous findings on the comparison between simultaneous bilinguals and early sequential bilinguals (Lee, 2013; Montrul, 2008), it was hypothesized that the early sequential bilinguals would outperform both the L2 learners and the simultaneous bilinguals, the latter of whom would outperform the L2 learners if age of acquisition was a factor.

Performance of the three groups

The results of the production task showed that the early sequential bilinguals outperformed both the simultaneous bilinguals and the L2 learners, as predicted. However, the results also revealed that the L2 learners outperformed the simultaneous bilinguals, opposite of our prediction. The early sequential bilinguals successfully produced target-like relative clauses most of the time (92%). The L2 learners did so 80% of the time while the simultaneous bilinguals were accurate only 43% of the time.

In terms of word order errors made by the three groups, the early sequential bilinguals' rate (4 word order errors of the 228 tokens total) was quite minimal. Yet, it should be noted that they still made word order errors. Compared to them, the other two groups made the substantial number of word order errors. The simultaneous bilinguals made errors more often than the L2 learners. Specifically speaking, the L2 learners made 22 errors of the 156 tokens and the simultaneous bilinguals made 30 errors of the 66 tokens. Interesting to note is that the simultaneous bilinguals made word order errors significantly more often than the L2 learners, despite their early exposure to Korean. This finding is interesting for the following reason. It is assumed that L2 learners (late bilinguals) might be more prone to dominant language influence than heritage speakers (early bilinguals) if age of acquisition was a factor (Montrul & Ionin, 2012). Given that the error rate of the simultaneous bilinguals was significantly higher than that of the L2 learners, the results of the present study do not seem to provide support for this assumption.

However, a close examination of word order errors revealed some differences in the nature of the knowledge of these two groups. It was hypothesized that the learner would rely on the word order that

reflects the features of English relative clauses if s/he was affected by the dominant language. The results showed that both groups produced Korean relative clauses, utilizing the English word order. Yet, the L2 group (six instances) made such errors slightly more often than the latter group (three instances), which suggests that the L2 learners might be more prone to relying on the features of English in producing Korean relative clauses than the simultaneous bilinguals.

Another noticeable difference was found in the number of errors that reflect the word order of Korean simple sentences. These errors were produced in the following pattern, [_{RC} S-NOM O-ACC V]. As noted earlier, similar observations were made by oral production studies on L2 Korean (Jeon & Kim, 2007; Lee-Ellis, 2011). Both Jeon and Kim (2007) and Lee-Ellis (2011) reported that some of their participants produced several instances of the [_{RC} S-NOM O-ACC V] pattern. In the present study, both groups produced errors involving the SOV word order, but the simultaneous bilinguals did so much more often than the L2 learners. The L2 learners produced only three instances of the [_{RC} S-NOM O-ACC V] pattern out of the 22 word order errors whereas the simultaneous bilinguals produced twenty instances out of the 30 word order errors. These results suggest that the simultaneous bilinguals more easily relied on the basic Korean word order in their production of Korean relative clauses.

Although not as prevalent as word order errors, a brief remark on case errors is in order. It should be noted that case errors were produced by all three groups although the early sequential bilinguals made the fewest errors among the three groups. This suggests that the correct use of case markers was problematic even to those who were exclusively exposed to Korean during early childhood.

Pedagogical implications for classroom instruction

The present study also included a reading comprehension task, which was to check the receptive knowledge of the three groups. The results showed that all three groups, were successful in correctly translating Korean relative clauses into English most of the time (95% or higher) and no significant difference was found among them. Also, more than two-thirds of the participants in each group correctly identified the relative clause. In other words, all three groups successfully comprehended Korean relative clauses and correctly

identified the location of the relative clause most of the time, which suggests that all three groups had good receptive knowledge of Korean relative clauses.

It should be emphasized that the L2 learners did not differ from the early bilinguals when (reading) comprehension was concerned, although they started to be exposed to Korean after puberty, unlike the early bilinguals. This is worth noting in that it adds support to the observation that L2 learners may not differ from heritage speakers, depending on the structures tested, the tasks that require different skills (listening vs. speaking or listening vs. reading), and proficiency levels (Montrul, 2008). As previous studies noted, heritage speakers might have advantage over L2 learners in the tasks involving aural and oral skills (Au et al., 2002; Kondo-Brown, 2005). However, the advantage heritage of speakers may not be evident when reading comprehension is concerned, as shown in this study.

The overall finding of the present study was that the three groups did not differ in the reading comprehension task, while a significant difference was observed in the written production task. This suggests that there was a discrepancy between the receptive and productive knowledge of the three groups, which has pedagogical implications for classroom instruction. In recent years, there has been an increasing trend of heritage speakers being placed together with L2 learners in foreign language classrooms (Brinton, Kagan, & Bauckus, 2008), which seems to be more evident in the case of less commonly taught languages. These two groups of learners bring to class different language backgrounds and experiences, among other things. Also, they exhibit a different range of ability in different language skills, areas (listening, reading, speaking, and writing), as shown in the present study. Coupled with differences in language backgrounds and experiences, a discrepancy in proficiency between these two groups presents a daunting challenge to the teacher.

In addition, the heterogeneous nature of heritage speakers adds more variables, making the teacher's job even more challenging. Heritage speakers include a wide range of subgroups (e.g., early and late bilinguals, simultaneous and early sequential bilinguals, etc.) and variation is observed even within each subgroup (Lee, 2011, 2013; Montrul, 2008). Several studies have compared the knowledge of L2 learners (late bilinguals) and heritage speakers (early or late sequential

bilinguals) (Kim et al., 2010; Montrul, 2010; O'Grady et al., 2001). However, only few studies examined the knowledge of simultaneous bilinguals, who also deserve attention. As Montrul and Ionin (2012) pointed out, a prerequisite to achieving more effective instruction (especially in mixed classrooms) would be to precisely pinpoint the linguistic areas in which various types of learners may or may not differ, by examining their knowledge in various linguistic areas and utilizing different experimental methodologies in doing so.

In this respect, the findings of the present study provide a useful reference point. In particular, the findings of the production task not only showed that there was a difference in the overall performance of the three groups, but they also revealed subtle differences in their error patterns. Although the L2 learners outperformed the simultaneous bilinguals, the error analysis revealed that the former group was more easily influenced by their knowledge of the dominant language than the latter group. Also, it was revealed that the correct use of case markers was problematic to all three groups, despite a visible difference in their overall performance. These insights can be very useful for classroom instruction in that they can provide the basis for the instruction that needs to be tailored to address each group's instructional needs.

Conclusion

The present study examined the similarities and differences in the knowledge of adult L2 learners, simultaneous bilinguals, and early sequential bilinguals in their production of Korean relative clauses. It was found that the three groups did not differ when reading comprehension was involved. Yet, a significant difference was found in their performance when productive skills were involved. Also, the error analysis revealed that there were some differences in the knowledge of the three groups. The findings of the present study need to be corroborated with the inclusion of more simultaneous bilinguals and more tokens of test items, yet they provide useful insight into the nature of the knowledge of each group, which in turn provides useful pedagogical information for classroom instruction.

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Notes

1. The term “early” is used to distinguish those who started to be exposed to Korean (an L2 or a heritage language for that matter) before age 6 from those who started to be exposed to Korean after age 6 (late bilinguals). This distinction has relevance to sequential bilinguals, but the term “early” is implied in the classification of simultaneous bilinguals, as an anonymous reviewer pointed out.
2. This section focuses on previous research on the acquisition of Korean relative clauses, pertinent to the topic of the present study. However, it should be noted that the role of the onset age of bilingualism has been examined in other grammatical constructions including the interpretation of reflexives and floating quantifiers (Kim et al. 2011; Lee, 2011). Also, other languages have been investigated (Montrul, 2010; Montrul & Ionin, 2012; also see Montrul, 2008 for an extensive list of references). Across languages examined, it has been reported that the onset age of bilingualism are likely to have differing effects on L2 and heritage learners, in particular with regard to dominant language influence.
3. To date, just a few written production studies exist. One such example is Lee (2001), who examined the L2 acquisition of Korean relative clauses in free composition. Yet, elicited written production studies are very scarce, including even those utilizing translation tasks.
4. Case markers in Korean involve allomorphic variations. There are two allomorphs (*-i* and *-ka*) for a subject marker and two allomorphs (*-ul* and *-lul*) for an object marker. Allomorphic variations are also found with some of the verbal suffixes (relativizers): *-n/-un* (past), *-nun* (present), and *-ul/-lul* (future or unrealized).

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