Second Language Acquisition of Pseudo-VP-Ellipsis and Gapping in Korean

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ABSTRACT

Previous research shows that constructions involving missing material can pose a challenge in second language (L2) acquisition. Using Korean Pseudo-Verb-Phrase-Ellipsis and Gapping, this study examines whether L2 learners whose first language (L1) is Chinese manage to develop implicit knowledge of the two constructions' grammaticality in a conjunct clause and ungrammaticality in an adjunct clause. In the acceptability judgment task, our L2 learners as a group did not show target-like performance, but their judgment patterns revealed a proficiency effect, such that L2 learners with higher proficiency displayed target-like knowledge of the (un)grammaticality of Pseudo-Verb-Phrase-Ellipsis and Gapping in Korean, despite the absence of available sources of linguistic data (e.g., L1 transfer, negative evidence, explicit instructions). This study is significant in expanding the current body of research through its findings that support (higher-proficiency) L2 learners can acquire a complex structure that poses a challenge to them.

Keywords: Pseudo-Verb-Phrase-Ellipsis, Gapping, Korean, proficiency, second language acquisition

1. Introduction

The current study focuses on Korean Pseudo-Verb-Phrase-Ellipsis (Pseudo-VPE) and Gapping in the context of second language (L2) acquisition. As shown in (1), Pseudo-VPE involves VP deletion; this structure is different from English VP-Ellipsis (e.g., *Amy gave a gift to Tom today, and Sam gave a gift to Tom today too.*) in that the positive copula *-i* 'be' (e.g., (1a)) or the negative copula *-ani* 'not be' (e.g., (1b)) is employed in the ellipsis clause regardless of the verbs used in the antecedent clause (Goldberg, 2005; Kim, 1997; Park, 1997).

(1) a. Amy-ka   onul   Tom-eykey   senmwul-ul   cwu-ess-ko,
       Amy-NOM today Tom-DAT   gift-ACC   give-PST-and
       Sam-to   ~~onul   Tom-eykey   senmwul-ul   cwu~~ -i(-ess)-ta.
       Sam-also   today Tom-DAT   gift-ACC   give   -be(-PST)-DECL
       'Amy gave a gift to Tom today, and Sam did too.'

   b. Amy-nun   ecey   Tom-eykey   senmwul-ul   cwu-ess-ciman,
      Amy-TOP yesterday Tom-DAT   gift-ACC   give-PST-but
      Sam-un   ~~onul   Tom-eykey   senmwul-ul   cwu~~   ani(-ess)-ta.
      Sam-also today Tom-DAT   gift-ACC   give   not.be(-PST)-DECL
      'Amy gave a gift to Tom today, but Sam did not.'

In Gapping, by contrast, a verb with its neighboring element(s) is gapped as shown in (2) (Hwang, 2020; Sohn, 1999; for a different approach, see e.g., Park & Lee, 2009). This Gapping operation leaves the contrastive remnant in the gapped clause (e.g., *ecey* 'yesterday') in addition to the subject. Notably, the direction of Gapping in Korean is backward such that a verb gap precedes the verb. From this point on, the elided/gapped material will be marked with the symbol "[e]."

(2) Sam-un   ecey   [e],   kuliko/haciman
    Sam-TOP yesterday   and/but
    Amy-nun onul   Tom-eykey   senmwul-ul   cwu-ess-ta.
    Amy-TOP today   Tom-DAT   gift-ACC   give-PST-DECL
    'Amy gave a gift to Tom today, and/but Sam (gave a gift to Tom) yesterday.'

Whereas Pseudo-VPE and Gapping are grammatical in a conjunct clause, as in (1) and (2), they are both ungrammatical in an adjunct clause, as shown in (3) and (4).

(3)* Sam-to   [e]   -i-ki-ttaymwuney,
     Sam-also   -be-nm-because
     Amy-ka   onul   Tom-eykey   senmwul-ul   cwu-ess-ta.
     Amy-NOM today Tom-DAT   gift-ACC   give-PST-DECL
     'Because Sam did, Amy gave a gift to Tom today.'

(4)* Sam-un   ecey   [e]   ttaymwuney,
     Sam-TOP yesterday   because
     Amy-nun   onul   Tom-eykey   senmwul-ul   cwu-ess-ta.

Amy-TOP   today   Tom-DAT   gift-ACC   give-PST-DECL
'Because Sam (gave a gift to Tom) yesterday, Amy gave a gift to Tom today.'

Based on the conjunct-adjunct contrast in Pseudo-VPE and Gapping, this study investigates whether L2ers of Korean whose native language (L1) is Chinese have implicit knowledge of such a contrast. These two constructions provide an interesting probe, since they seem incomplete due to the absence of a verbal element. The successful acquisition of their grammaticality in the L2ers would therefore indicate that they have the intact ability to assign a complete structure to those constructions with an invisible element. Despite its importance, there has been no research on how L2ers acquire Pseudo-VPE (for Chinese Pseudo-VPE, see Zhang & Yuan, 2022) or Gapping in Korean as of yet (for English Gapping, see Hwang, 2020; O'Grady, 1999; for Japanese Gapping, see Kanno, 1999; O'Grady, 1999).

Furthermore, Korean and Chinese differ in that the latter lacks Gapping (Tsai, 1994). (Although Paul (1999) argued that Gapping is possible in Chinese when the object after the gapped verb is a quantified NP (e.g., *liang-wan fan*, two-bowl rice), but its acceptability shows a high degree of variation among the regions where native speakers are from.) As shown in (5) and (6), Chinese disallows Gapping both in a conjunct clause (unlike Korean) and in an adjunct clause (like Korean). One key challenge for L1-Chinese L2ers of Korean is thus to know that Gapping is grammatical in a conjunct clause.

(5)* Amy   jīntiān   gěi   le   Tom   yī   fèn   lǐwù,   Sam
     Amy   today   give   ASP   Tom   one   CL   gift   Sam
     zuótiān   [e].
     yesterday
     'Amy gave a gift to Tom today, and Sam (gave a gift to Tom) yesterday.'

(6)* Yīnwèi   Sam   zuótiān   [e],
     because   Sam   yesterday
     Amy   jīntiān   gěi   le   Tom yī   fèn   lǐwù.
     Amy   today   give   asp   Tom one   CL   gift
     'Because Sam (gave a gift to Tom) yesterday, Amy gave a gift to Tom today.'

On the other hand, Chinese has Pseudo-VPE. Although this phenomenon has

been inaccurately referred to as VPE in its early analysis, which is inspired by English (e.g., *Amy gave a gift to Tom today, and Sam did too*), there is a general consensus that it works similar to the Korean counterpart (e.g., (1a); see Cho, 2001; Cole, 1987; Huang, 1991; Otani & Whitman, 1991). As in Korean, it is grammatical in a conjunct clause (e.g., (7)), but ungrammatical in an adjunct clause (e.g., (8)).

(7) Amy   jīntiān   gěi   le   Tom   yī   fèn   lǐwù,   Sam   yě
    Amy   today   give   ASP   Tom   one   CL   gift   Sam   also
    shì   [e].
    be
    'Amy gave a gift to Tom today, and Sam did too.'

(8) * Yīnwèi   Sam   yě   shì   [e],
      because Sam   also be
      Amy   jīntiān   gěi   le   Tom   yī   fèn   lǐwù.
      Amy   today   give   ASP   Tom   one   CL   gift
      'Because Sam did, Amy gave a gift to Tom today.'

The discussed differences between Korean and Chinese in grammaticality of Pseudo-VPE and Gapping (see Table 1) allow us to see whether their acquisition is subject to an L1 effect. One possible prediction based on the L1 transfer scenario is that L1-Chinese L2ers of English will accept Pseudo-VPE in a conjunct clause and reject it in an adjunct clause; however, they will reject Gapping regardless of clause type due to the absence of Gapping in their L1. All in all, this study is expected to contribute new information to our understanding of L2 acquisition of Pseudo-VPE and Gapping in Korean, an understudied language in this regard.

Table 1. Grammaticality of Pseudo-VP-Ellipsis and Gapping in Korean and Chinese

	Korean		Chinese	
	Conjunct	Adjunct	Conjunct	Adjunct
Pseudo-VP-Ellipsis	✔	*	✔	*
Gapping	✔	*	*	*

2. Literature Review

To the best of our knowledge, no research has been conducted on L2 acquisition of Korean Pseudo-VPE. Thus, we discuss a recent L2 acquisition study done by Zhang and Yuan (2022) on Chinese, whose target constructions were Pseudo-VPE, as in (7), and vP-Ellipsis, as in (9), where the vP after the modal *will* is entirely deleted.

(9) Mingtian   Xiaoming   hui   qu   Beijing,   Xiaoli   ye   hui [e].
     Tomorrow Xiaoming will go   Beijing   Xiaoli   also will
     'Xiaoming will go to Beijing tomorrow, and Xiaoli will, too.'

<div align="right">(adapted from Zhang & Yuan, 2022: 8, (11))</div>

Given that vP-Ellipsis is present in English but not in Korean and that Pseudo-VPE is present in Korean but not in English, Zhang and Yuan examined to what extent L1 plays a role in L2 oral production at different stages of L2 Chinese development with 45 L1-English L2ers of Chinese and 45 L1-Korean L2ers of Chinese.

The results of their elicited imitation task showed the presence of L1 influence only in the L2ers with advanced proficiency. Whereas the number of vP-Ellipsis utterances did not differ between the two L2 groups, the number of Pseudo-VPE utterances was greater in the L1-Korean L2ers than in the L1-English L2ers. Based on this result, the authors concluded that in the case of Pseudo-VPE, L1 influence remains even at advanced levels. It should be noted, however, that the presence or absence of a particular sentence in learner production does not necessarily provide evidence of its development or lack thereof. The fact that advanced L1-English L2ers did not frequently use Pseudo-VPE, as the advanced L1-Korean L2ers did, cannot be indicative of their lack of development of Pseudo-VPE. To address this issue, the current study makes use of the acceptability judgment paradigm, which may help tap into learners' development of L2 knowledge.

As for Korean Gapping, it has never received attention in an L2 context either, so here we discuss the first L2 study done on Gapping in English and Japanese. According to O'Grady's (1999) constraint building on Ross (1970) and Johannessen (1996), a language's head-complement order constrains a particular Gapping direction, as shown in (10). Whereas Verb-Object languages prohibit backward Gapping, Object-Verb languages prohibit forward Gapping.

(10) Constraint on Gapping Direction

    a. Verb-Object languages (e.g., English): *[S ··· Ø ···] [S ··· V ···]

       <u>Forward Gapping</u>: [John reads Time] and [Sue [e] Newsweek].

       <u>Backward Gapping</u>: *[John [e] Time] and [Sue reads Newsweek].

    b. Object-Verb languages (e.g., Japanese, Korean): *[S ······ V] [S ······ Ø]

       <u>Forward Gapping</u>:

     * [John-wa Time-o   yon-de]   [Sue-wa   Newsweek-o   [e]].

      [John-TOP Time-ACC read-GER] [Sue-TOP Newsweek-ACC]

      <u>Backward Gapping</u>:

      [John-wa   Time-o   [e]] [Sue-wa   Newsweek-o   yon-da].

      [John-TOP Time-ACC]   [Sue-TOP Newsweek-ACC read-PST]

                        (adapted from O'Grady, 1999: 142–143, (1), (2), (6))

O'Grady tested the Constraint on Gapping Direction with four groups of participants: (a) 34 L1-Japanese L2ers of English; (b) 75 L1-English L2ers of Japanese; (c) 10 L1-English speakers; and (d) 10 L1-Japanese speakers. In general, the pattern of L2ers' judgments on forward Gapping sentences and backward gapping sentences (e.g., (10)) in an acceptability judgment task showed a lack of their target-like knowledge of Gapping. Although the L1-Japanese L2ers of English rejected (ungrammatical) backward Gapping in English, they did not accept nor reject forward Gapping in English. On the other hand, the L1-English L2ers of Japanese favored the (ungrammatical) forward Gapping pattern in Japanese. One possible source of these results might be short exposure (O'Grady, 1999:152) or low proficiency in the tested L2ers. Due to the lack of information about the L2 participants in the study, however, it is uncertain whether either or both of two factors had an impact on the results. This study addresses this gap by factoring in proficiency as a potentially modulating variable of L2ers' acquisition of Gapping as well as Pseudo-VPE.

Motivated by the gaps discussed above, we ask the following research questions in this study:

RQ 1: Do L1-Chinese L2ers of Korean have knowledge of Pseudo-VPE and Gapping in Korean?

RQ 2: What role does L2 proficiency play?

3. Method

3.1. Participants

Forty-four L1-Chinese L2ers of Korean as well as 23 L1-Korean speakers took part in this study. The L2ers were all part of the Korean Language program at a university in the Republic of Korea and were recruited from this program. At the time of testing, they received instructions on various lexical items and grammatical phenomena in Korean through the language program, although not on the target phenomena examined in this study (see Section 5). Two of the L2ers who rated all critical sentences "1" were excluded from further analysis. The remaining 42 L2ers studied Korean for 2.91 years on average (SD = 2.04), and the mean of their proficiency score, which was measured using 20 items extracted from the Test of Proficiency in Korean (see Section 3.3; www.topik.go.kr), was 12.29 (SD = 3.90). Background information of both groups of participants is summarized in Table 2.

Table 2. Participant background information

	L1-Chinese L2ers of Korean (n = 42)			L1-Korean speakers (n = 23)		
	Mean	SD	Range	Mean	SD	Range
Age (year)	25.33	2.39	21–31	32.96	5.97	26–47
Length of learning Korean (year)	2.91	2.04	0.75–7.92	NA	NA	NA
Proficiency score (out of 20)	12.29	3.90	5–20	NA	NA	NA

3.2. Stimuli

An (untimed) acceptability judgment task (AJT) was administered to the participants to test for their knowledge of Korean Pseudo-VPE and Gapping. In addition to 44 fillers, the task had 16 critical sentences distributed in a 2 × 2 Latin square design with the factors *Construction* (Pseudo-VPE; Gapping) and *Clause* (conjunct; adjunct), as shown in (1)–(4). For Pseudo-VPE sentences, the verb in the ellipsis clause was either the positive copula *-i* or the negative copula *-ani*. As for Gapping sentences, the remnant was an adverbial phrase denoting either time or

place. While conjunct clauses were introduced with *and* or *but*, adjunct clauses were introduced with *because* or *when*.

3.3. Procedure

All participants filled out a questionnaire on Google Form, which comprised 13 items inquiring about their gender, year of birth, and language background, such as the length of time they had been learning Korean. They also completed the AJT, which were designed in Ibex Farm (Drummond, 2013). In the AJT, they were asked to rate the sentence on a four-point Likert scale with 1 introduced as 'very unnatural' and 4 introduced as 'very natural'; in addition, the 'I don't know' option was made available to participants. In the case of L2ers, they additionally performed a 20-item proficiency task created on Google Form. This task was presented in a cloze format, asking participants to choose an option to fill in the blank based on their reading comprehension abilities and understanding of grammar (for a sample item, see https://osf.io/v653w/?view_only=850f913876ae4cee8b 1a9ef5e29cc1bc). The entire procedure took approximately 40 minutes for L1-Chinese L2ers of Korean and 25 minutes for L1-Korean speakers.

3.4. Data analysis

Prior to a statistical analysis, the 'I don't know' judgments were removed (1.19% of the L2 data; 0.54% of the L1 data). Next, the acceptability ratings of all critical sentences were transformed into z-scores in order to normalize the data (Casasanto et al., 2010). Then we ran a series of mixed-effects linear regression analyses to test the two research questions using the "lme4" package (Bates et al., 2015) in R (R Core Team, 2022). The model for RQ 1 included *Construction* (Pseudo-VPE; Gapping), *Clause* (conjunct; adjunct), and *Group* (L1; L2) as binary fixed effects, and *participants* and *items* as random effects. Using the L2 data only, the model for RQ2 was built with *Construction* and *Clause* as the binary fixed effects, *Proficiency* as a continuous fixed effect, and *participants* and *items* as random effects. For these analyses, all fixed effects were contrast-coded. All models were initially created with the full random-effects structure; in case the model failed to converge, we simplified it by removing random slopes associated with *participant* and/or *item* (Barr et al., 2013).

4. Results

In this section, we focus on discussing effects that reached statistical significance, while all results are provided in the tables.

4.1. Knowledge of the grammaticality of pseudo-VPE and gapping in L2ers as group

As shown in Table 3, a mixed-effects model built on the whole dataset showed a significant effect of *Clause* ($p < .001$), with higher acceptability scores for the two constructions in conjunct clauses (which are grammatical) than those in adjunct clauses (which are ungrammatical) (see Figure 1). This result suggests that as a group, L1-Korean speakers and L2ers showed implicit knowledge of the grammaticality contrast involved in Pseudo-VPE and Gapping.

Table 3. Summary of regression model for the whole dataset

	β	95% *CI*	*SE*	*t*	*p*
(Intercept)	0.003	[-0.095, 0.101]	0.050	0.054	.958
Construction	0.019	[-0.088, 0.126]	0.055	0.345	.730
Clause	**0.738**	**[0.610, 0.867]**	**0.066**	**11.254**	**< .001**
Group	-0.006	[-0.107, 0.095]	0.051	-0.113	.910
Construction × Clause	**-0.415**	**[-0.616, -0.214]**	**0.103**	**-4.038**	**< .001**
Construction × Group	**0.328**	**[0.104, 0.552]**	**0.114**	**2.867**	**.005**
Clause × Group	**-1.252**	**[-1.521, -0.983]**	**0.137**	**-9.119**	**< .001**
Construction × Clause × Group	-0.145	[-0.567, 0.277]	0.215	-0.674	.501

Notes. Effect sizes: marginal R^2: 0.258; conditional R^2: 0.336.
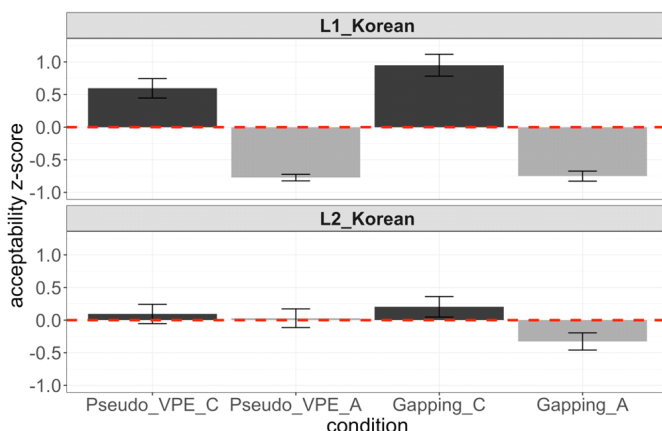
Figure 1. Acceptability z-score per condition and group

Note. Error bars indicate 95% confidence intervals.

Although there was a significant interaction between *Construction* and *Clause* (p < .001), a follow-up analysis showed similar judgment patterns for the two constructions: Acceptability ratings were higher in conjunct clauses than in adjunct clauses for both Pseudo-VPE (p < .001) and Gapping (p < .001). Importantly, there were also *Group*-related interactions between *Construction* and *Group* (p = .005) and between *Clause* and *Group* (p < .001). To examine these interaction effects further, we ran a separate mixed-effects linear regression analysis for each group.

The model for the L1-Korean speakers (see Table 4) showed a significant effect of *Clause* (p < .001). Their higher ratings for conjunct clauses than adjunct clauses across the two constructions point to their sound knowledge of Pseudo-VPE and Gapping (see Figure 1).

Table 4. Summary of regression model for the L1 dataset

	β	95% *CI*	*SE*	*t*	*p*
(Intercept)	0.004	[−0.086, 0.094]	0.046	0.086	.932
Construction	−0.188	[−0.403, 0.027]	0.110	−1.711	.103
Clause	**1.540**	**[1.369, 1.711]**	**0.087**	**17.675**	**< .001**
Construction × Clause	−0.332	[−0.777, 0.113]	0.227	−1.461	.160

Notes. Effect sizes: marginal R^2: 0.646, conditional R^2: 0.788.

The model for the L1-Chinese L2ers of Korean showed a significant effect of *Clause* ($p = .006$) and a significant *Construction*-by-*Clause* interaction ($p = .005$), as shown in Table 5. A follow-up analysis to unpack this interaction revealed that the L2ers rated Gapping in a conjunct clause higher than Gapping in an adjunct clause ($p = .005$), whereas such a conjunct-adjunct difference was absent in Pseudo-VPE ($p = .958$). More crucially, our visual inspection of Figure 1 shows that L2ers neither accepted nor rejected Pseudo-VPE in a conjunct clause (grammatical), Pseudo-VPE in an adjunct clause (ungrammatical), or Gapping in a conjunct clause (grammatical), although they rejected Gapping in an adjunct clause (ungrammatical). These results indicate a difference in judgment patterns between L1-Korean speakers and L1-Chinese L2ers of Korean when analyzed as a group.

Table 5. Summary of regression model for the L2 dataset

	β	95% *CI*	*SE*	*t*	*p*
(Intercept)	-0.001	$[-0.109, 0.107]$	0.055	-0.013	.990
Construction	0.130	$[-0.105, 0.365]$	0.120	1.086	.291
Clause	**0.298**	**[0.098, 0.497]**	**0.102**	**2.917**	**.006**
Construction × Clause	**-0.468**	**$[-0.775, -0.162]$**	**0.156**	**-2.998**	**.005**

Notes. Effect sizes: marginal R^2: 0.043, conditional R^2: 0.202.

4.2. Proficiency effect

Table 6 shows a summary of a mixed-effects linear regression analysis for our L2 data now, with *Proficiency* added as an additional fixed effect. This analysis showed a significant effect of *Construction* ($p = .029$) with higher ratings for Gapping than for Pseudo-VPE and a significant effect of *Clause* ($p < .001$), with higher rating for conjunct clauses than for adjunct clauses. Importantly, we also found an interaction between *Clause* and *Proficiency* ($p < .001$).

To further examine the role of proficiency, we ran a simple regression analysis with *Proficiency* as the independent variable and the strength of the sensitivity to grammaticality as the dependent variable. To measure this sensitivity, we computed a z-score difference between the (grammatical) conjunct conditions and the (ungrammatical) adjunct conditions for each participant. The advantage of this score lies in its continuous nature, which effectively addresses response bias and

provides a more intuitive understanding than other sensitivity measures like *d'* scores (Hwang, 2023). A greater value of the difference score indicates stronger sensitivity to grammaticality of the target structures. A simple linear regression analysis showed a significant effect of *Proficiency* on *Sensitivity scores* (R^2 = 0.226, p < .001). As shown in Figure 2, such a *Proficiency* effect was found to be strong both when *Sensitivity* scores were computed only with Pseudo-VPE (R^2 = 0.302, p < .001) and when *Sensitivity* scores were computed only with Gapping (R^2 = 0.209, p = .002). These results indicate that L2ers come to have higher sensitivity to the grammaticality of both Pseudo-VPE and Gapping as their proficiency develops.

Table 6. Summary of regression model on the L2 dataset with the factor *Proficiency* added

	β	95% *CI*	*SE*	*t*	*p*
(Intercept)	−0.013	[−0.248, 0.223]	0.120	−0.106	.916
Construction	**0.594**	**[0.073, 1.115]**	**0.266**	**2.236**	**.029**
Clause	**−1.134**	**[−1.641, −0.627]**	**0.259**	**−4.381**	**< .001**
Proficiency	0.001	[−0.016, 0.018]	0.009	0.108	.914
Construction × Clause	−0.496	[−1.496, 0.503]	0.510	−0.974	.335
Construction × Proficiency	−0.038	[−0.076, −0.000]	0.019	−1.961	.055
Clause × Proficiency	**0.116**	**[0.077, 0.156]**	**0.020**	**5.805**	**< .001**
Construction × Clause × Proficiency	0.003	[−0.075, 0.080]	0.040	0.066	.948

Notes. Effect sizes: conditional R^2: 0.101, marginal R^2: 0.221.
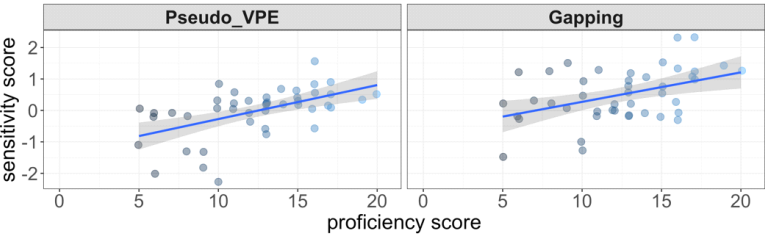
Figure 2. Relation between proficiency and sensitivity scores in L1-Chinese L2ers of Korean

Note. The shaded region indicates 95% confidence intervals.

5. Discussion and Conclusion

The current study found that unlike L1-Korean speakers, L1-Chinese L2ers of Korean "as a whole" do not have implicit knowledge of the grammaticality of Pseudo-VPE and Gapping. They did not show clear sensitivity to the contrast between Pseudo-VPE in a conjunct clause and that in an adjunct clause. As for Gapping, although their judgment patterns resembled the L1-Korean speakers', the degree of the difference in acceptability ratings between Gapping in a conjunct clause and Gapping in an adjunct clause was not as great as that observed from the L1-Korean speakers (see Figure 1). In particular, the acceptability rating of our L2ers as a group for this construction in a conjunct clause is around the midpoint of the scale, which is consistent with O'Grady's (1999) results for both L2 English and L2 Japanese. All these results thus suggest that L2 acquisition of Pseudo-VPE and Gapping is indeed challenging.

Notably, the fact that our L2ers treated Pseudo-VPE and Gapping differently in their judgment suggests that they did not rely on an analogy between the two constructions, which are ostensibly similar with an invisible verbal element. L1 influence cannot explain their performance either. If their L1 Chinese grammar had transferred to their L2 Korean grammar, they should have shown (a) target-like performance on Pseudo-VPE because the two languages work the same with respect to its (un)grammaticality in conjunct and adjunct clauses, but (b) non-target-like performance on Gapping because this construction is absent in Chinese. However, our L2ers did not show such patterns indicating L1 transfer (White, 2003). This result seems to be inconsistent with the finding of Zhang and Yuan (2022), which showed evidence for L1 transfer in their advanced L1-Korean L2ers of Chinese. As a way to identify the source of these mixed results, future work should use a mirror-image design that includes both L1-Korean L2 learners of Chinese and L1-Chinese L2 learners of Korean at diverse proficiency levels.

Another major finding of this study pertains to a proficiency effect: The L1-Chinese L2ers of Korean with higher proficiency showed target-like performance on Pseudo-VPE and Gapping in the acceptability judgment task. This indicates that they have managed to develop target-like grammatical knowledge of the two constructions. This result from higher-proficiency L2ers is distinct from O'Grady's (1999) result, where L1-Japanese L2ers of English and L1-English L2ers of Japanese failed to show target-like knowledge of the grammatical direction of Gapping. Some may argue that the discrepancy between the two studies comes

from the target languages tested in each study. However, we consider this possibility unlikely given that Japanese and Korean are similar in how Gapping works (O'Grady, 1999; see also (10)). A more plausible explanation could only come from a high level of proficiency in some of our L2ers.

Importantly, target-like knowledge of the grammaticality of Pseudo-VPE and Gapping in our higher-proficiency L2ers cannot be attributable to (a) target language input or (b) explicit instruction (Schwartz & Sprouse, 2000). To illustrate, no positive evidence is available for L2ers, which would prevent them from accepting (ungrammatical) Pseudo-VPE or Gapping in adjunct clauses. More specifically, there is no evidence in the input that could indicate to the L2ers the ungrammaticality of the two constructions in adjunct clauses. These constructions are not taught in the L2 classroom, either; the analysis of Korean textbooks (e.g., Cho et al., 2019) did not reveal an instance of Pseudo-VPE or Gapping. Furthermore, knowledge of the grammaticality contrast involved in these constructions cannot come from L1 grammar or general learning principles, such as analogy, as discussed above. All in all, our findings are consistent with the possibility that a domain-specific mechanism is operative in L2 acquisition as in L1 acquisition (Kim & Schwartz, 2022; Schwartz & Sprouse, 1996).

Directions for future research include comparing L1-Chinese L2ers and L1-English L2ers in terms of how they acquire Korean Pseudo-VPE and Gapping along the lines of proficiency development. Because English differs from Korean and Chinese in that it lacks Pseudo-VPE and the direction of its Gapping is forward, looking at how L1-English L2ers compare to L1-Chinese L2ers would reveal interesting developmental patterns, thereby offering valuable insights into L2 acquisition of the understudied phenomena.

References

Barr, D. J., Levy, R., Scheepers, C., & Tily, H. J. (2013). Random effects structure for confirmatory hypothesis testing: Keep it maximal. *Journal of Memory and Language*, *68*, 255–278.

Bates, D., Maechler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software*, *67*, 1–48.

Casasanto, L. S., Hofmeister, P., Sag, I. A., Ohlsson, S., & Catrambone, R. (2010). Understanding acceptability judgments: Additivity and working memory effects.

In S. Ohlsson & R. Catrambone (Eds.), *Proceedings of the 32nd annual conference of the Cognitive Science Society* (pp. 224–229). Austin, TX: Cognitive Science Society.

Cho, S. W. (2001). *Missing objects and the semantic representation in Korean discourse*. Talk presented at the Ninth Harvard International Symposium on Korean Linguistics, Harvard University, Cambridge, Massachusetts.

Cho, Y., Lee, H. S., Shulz, C., Sohn, H., & Sohn, S.-O. (2019). *Integrated Korean: Beginning 1* (3rd ed.). Honolulu, HI: University of Hawai'i Press.

Cole, P. (1987). Null objects in universal grammar. *Linguistic Inquiry*, *18*, 597–612.

Drummond, A. (2013). Ibex farm. Available at http://spellout. net/ibexfarm

Goldberg, L. M. (2005). V*erb-stranding VP ellipsis: A cross-linguistic study* (Unpublished PhD dissertation). McGill University, Quebec, Canada.

Huang, C. ‑T. J. (1991). Remarks on the status of the null object. In R. Freidin (Ed.), *Principles and parameters in comparative grammar* (pp. 56–76). Cambridge, MA: MIT Press.

Hwang, H. (2020). *A contrast between VP-ellipsis and Gapping in English: L1 acquisition, L2 acquisition, and L2 processing* (Unpublished PhD dissertation). University of Hawai'i, Honolulu, USA.

Hwang, H. (2023). Wanna contraction in first language acquisition, child second language acquisition, and adult second language acquisition. *Bilingualism: Language and Cognition*. Advance online publication.

Johannessen, J. (1996). Partial agreement and coordination. *Linguistic Inquiry*, *27*, 661–675.

Kanno, K. (1999). Acquisition of verb gapping in Japanese by Mandarin and English speakers. In K. Kanno (Ed.), *The acquisition of Japanese as a second language* (pp. 159–173). Amsterdam, Netherlands: John Benjamins.

Kim, J.-S. (1997). What syntactic focus movement tells about VP Ellipsis in Korean and Japanese. *Ene [Language]*, *22*, 433–452.

Kim, K., & Schwartz, B. D. (2022). Learnability in the acquisition of the English tough construction by L1-Korean adult and child L2 learners. *Second Language Research*, *38*, 259–287.

O'Grady, W. (1999). Gapping and coordination in second language acquisition. In K. Kanno (Ed.), *The acquisition of Japanese as a second language* (pp. 141–157). Amsterdam, Netherlands: John Benjamins.

Otani, K., & Whitman, J. (1991). V‑raising and VP‑ellipsis. *Linguistic Inquiry*, *22*, 345–358.

Park, M.-K. (1997). The syntax of VP ellipsis in Korean. *Ehakyenkwu [Language*

Research], *33*, 629–648.

Park, M.-K., & Lee, W. (2009). A 'RNR' analysis of Left Node Raising constructions in Korean. *Studies in Generative Grammar*, *19*, 505–528.

R Core Team. (2022). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. http://www.R-project.org/

Ross, J. R. (1970). Gapping and the order of constituents. In M. Bierwisch & K. E. Heidolph (Eds.), *Progress in linguistics* (pp. 249–259). The Hague, Netherlands: Mouton.

Schwartz, B. D., & Sprouse, R. A. (1996). L2 cognitive states and the Full Transfer/Full Access model. *Second Language Research*, *12*, 40–72.

Schwartz, B. D., & Sprouse, R. A. (2000). When syntactic theories evolve: Consequences for L2 acquisition research. In J. Archibald (Ed.), *Second language acquisition and linguistic theory* (pp. 156–186). Malden, MA: Blackwell.

Sohn, H. M. (1999). *The Korean language*. Cambridge, UK: Cambridge University Press.

Tsai, W-T. D. (1994). *On economizing the theory of A-bar dependencies* (Unpublished doctoral dissertation). Massachusetts Institute of Technology, Cambridge, MA.

Zhang, L., & Yuan, B. (2022). The role of L1 in L2 speech production at different stages of L2 development: Evidence from L2 Chinese oral production of verb-phrase ellipsis by English and Korean speakers. *Frontiers in Psychology*, *13*, 954217.

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