Case in Heritage Korean

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In a series of five experiments with 31 Korean heritage children, we show that knowledge of case and the ability to use it must be evaluated with careful attention to multiple factors that can influence access to morphological information in the course of comprehension and production. The first two experiments, which compared the canonical SOV pattern with the non-canonical OSV pattern, employed picture-selection comprehension tasks to assess knowledge of case. Poor performance on OSV sentences was mitigated by experimental manipulations that either enhanced the perceptual salience of case or provided felicitous conditions for the use of non-canonical word order. The next three experiments, all involving production tasks, revealed that many children who failed to demonstrate knowledge of case in the comprehension tasks actually produced nominative and accusative case correctly, thereby revealing their knowledge of this morphosyntactic system.

Keywords: heritage Korean, case, comprehension, production

1. Introduction

Korean is an SOV language with a system of nominal morphology that carries important information about grammatical relations. A typical consequence of case marking, found in Korean and many other languages, is the possibility of greater freedom in the positioning of NPs: as illustrated in (1), the identity of the subject and the direct object (DO) remains constant despite permutations in word order. (All Korean examples are transcribed using the Yale system of Romanization; acc = accusative case; dat = dative case; nom = nominative case; pst = past tense; se = sentence ender; top = topic marker.)
(1) a. Subject Object Verb (SOV)
    Namca-ka yeca-lul anacwu-eyo.
    man-NOM woman-ACC hug-se
    ‘The man is hugging the woman.’

b. Object Subject Verb (OSV)
    Yeca-lul namca-ka anacwu-eyo.
    woman-ACC man-NOM hug-se
    ‘The man is hugging the woman.’

Although not common in either speech or writing (Kwon, Polinsky, & Kluender, 2006), the scrambled OSV order exemplified in (1b) is natural when the DO is highly topical (Hwang Jackson, 2008), and is heard even in the speech of pre-school children (Cho, 1981, p. 70).

Case has been a point of entry for the study of the acquisition of Korean for many decades (Cho, 1981), and the basic developmental facts are reasonably well established (Lee & Cho, 2009). Based on a study of the spontaneous speech of five monolingual children, Kim (1997) reports that the nominative marker -i/-ka first appears around 1;8 to 2;0. The accusative marker -ul/-lul emerges slightly later: three children in Kim’s study began to produce it between 1;11 and 2;3, and the remaining two children did so between 2;6 and 2;8. Work by Cho (1981), Chung (1994), and Jin, Kim, and Song (2015) suggests that monolingual Korean children are able to use case markers to interpret scrambled OSV sentences by age three or four, depending on the task (consistent with a general observation by Golinkoff, Hirsh-Pasek, Cauley, & Gorden, 1987, that performance is better on picture-selection tasks than on act-out tasks).

The present study focuses on children who grow up exposed to Korean at home but speak mostly English in other settings. Often dubbed ‘heritage learners’ (Benmamoun, Montrul, & Polinsky, 2013), children with this kind of profile acquire a version of their home language that has only recently become the object of serious study in work on bilingualism. This paper contributes to this line of research by examining in detail the ability of heritage learners of Korean to use case in comprehension and production. The results of our study point toward a constellation of abilities and deficits that have significant implications for a more general understanding of the variety of bilingualism found in heritage learners.

Deficits in the comprehension and production of case marking by heritage learners of various languages have been routinely reported in the literature, which includes studies of the interaction of case with word order in Korean (Song, O’Grady, Cho, & Lee, 1997), case marking in Korean and Russian naturalistic

1. The nominative has two allomorphs: -i after a stem ending in a consonant and -ka after a stem ending in a vowel. The parallel allomorphs of the accusative are -ul and -lul.
speech (Polinsky, 1997, 2006, 2008a, b; Polinsky & Kagan, 2007), the existence of more pervasive deficits in nominal morphology than in verbal morphology in Hungarian (Bolonyai, 2007; de Groot, 2005; Fenyvesi, 2000) and Hindi (Montrul, Bhatt, Bhatia, & Girju, 2012), the loss of inherent dative case on subjects in Spanish (Montrul & Bowles, 2009, 2010), the production of dative case and differential object marking in Spanish (Montrul, 2013), and so on. Benmamoun et al. (2013) offer a general review. The results of our work on Korean point toward a constellation of abilities and deficits that have significant implications for a more general understanding of (the source of) heritage learners’ poor performance on case.

Our study contributes to the understanding of heritage language acquisition in other ways as well. By assessing children’s use of case in both comprehension and production, we are able to identify asymmetries between the two modes of language use (Hendriks, 2013). Moreover, we are able to demonstrate the need to draw on both types of data in assessing linguistic development and proficiency. This in turn calls into question claims about linguistic deficits that are based solely on a single type of non-target performance — a practice that is common in the literature on heritage language (as noted by Montrul, 2010 and by Kim, 2014, pp. 144–146) as well as in the literature on second language acquisition.

Our paper is organized as follows. We begin by reporting on two studies that indicate that heritage learners’ ability to make use of case in comprehending Korean OSV sentences can be enhanced by manipulating prosodic salience and contextual felicity — suggesting that case contrasts may be more available to this population of bilinguals than previously believed. The next three studies investigate this matter further by considering the ability of these same heritage learners to use case in the course of sentence production, for which an additional series of novel experiments provides quite striking evidence. The last section offers some concluding remarks.

2. The comprehension of case

Song et al. (1997) investigated the ability of 68 monolingual Korean children in Seoul (aged 2 to 8) and 28 bilingual heritage learners in the United States (aged 3 to 8) to interpret scrambled sentences such as (2) by selecting the appropriate picture in Figure 1.

(2) Oli-lul thokki-ka anacwu-eyo.
duck-ACC rabbit-NOM hug-SE
‘The rabbit is hugging the duck.’
Whereas the monolingual children in Song et al.’s study performed at above-chance levels by age 4 (a rate of success comparable to the one reported for monolinguals by Cho, 1981; Chung, 1994; Jin et al., 2015), even 8-year-old heritage children manifested a systematic disregard for case marking. (Both monolinguals and bilinguals do well when the more common canonical SOV order is used.) These findings fit well with the general observation, reported above, that case is problematic for heritage learners of various languages.

Although the results appear clear-cut, a question arises as to the precise nature of the problem exhibited by heritage learners: do they lack systematic knowledge about the role of case, or is their knowledge simply obscured by extraneous factors? We report here on a series of experiments designed to address this issue.

2.1 Study 1: Sensitivity to the nominative and the accusative

At least two factors other than a simple lack of knowledge could contribute to poor performance on a task that calls for the use of case to interpret sentences with a non-canonical word order.

First, it is well known that grammatical morphemes are often low in acoustic salience compared to nouns and verbs, which are typically longer and more susceptible to contrastive stress and other forms of prosodic prominence (e.g., Ellis, 2006; Goldschneider & DeKeyser, 2001; O’Grady, Kwak, Lee, & Lee, 2011). Because salience is the product of a number of variables, including a rise in fundamental frequency (F0), an increase in intensity, and an increase in duration (Ladd, 1996), we manipulated all three factors for case markers using the Praat software package (Boersma & Weenink, 2008) and Goldwave. In order to ensure that our manipulation did not produce unnatural sentences, we conducted an analysis of the speech of six native Korean adults, and elicited acceptability judgments on
various prosodic options from 94 native Korean adults. Based on these two procedures, we concluded that the most natural way to enhance the prominence of the case markers was to increase the pitch by a factor of 1.1, the intensity by a factor of 2, and the duration by a factor of 2.2

Second, Korean OSV sentences are more natural and faster to process in contexts where the fronted direct object constitutes old or given information (Hwang Jackson, 2008, p. 92). In order to accommodate this fact, we also created contexts (following Hwang Jackson, 2008) that help ensure the naturalness of OSV patterns, as exemplified in (3).

(3) Sample context and supporting picture

Na-nun cikum konghang-ey iss-eyo.
I-top now airport-at be-se
‘I am at the airport now.’

Ceki Pikpetu-nun pihayngki-eyse nayly-ess-eyo.
There Big Bird-top airplane-from get.off-pst-se
‘There, Big Bird got off the plane.’

2. The manipulated items (i.e., x1.1 pitch, x2 intensity, x2 duration) received an average rating of 4.00 on a 1–5 scale (1 = sounds bad; 5 = sounds natural), compared to 4.52 for the items with no manipulation. By contrast, filler items whose prosody had been more strongly manipulated received a much lower mean rating of 1.34. The acoustic parameters for the nominative (always -ka in this experiment) are as follows: For the items with no manipulation, mean F0 = 215.7Hz (SD = 17.1Hz), mean intensity = 74.8dB (SD = 0.8dB), and mean duration = 0.17s (SD = 0.03s); for the items with manipulation, mean F0 = 245.7Hz (SD = 17.8), mean intensity = 80.9dB (SD = 1.1dB), and mean duration = 0.35s (SD = 0.06s). The acoustic parameters for the accusative (always -lul in this experiment) are as follows: for the items with no manipulation, mean F0 = 215.2Hz (SD = 14.6Hz), mean intensity = 76.1dB (SD = 0.86dB), and mean duration = 0.19s (SD = 0.03s); for the items with manipulation, mean F0 = 246.2Hz (SD = 10.6Hz), mean intensity = 82.4dB (SD = 0.76dB), and mean duration = 0.39s (SD = 0.06s).
In the first context sentence in (3), the speaker introduces an airport setting that is relevant to an upcoming hugging event between Big Bird and Elmo. The second sentence helps make Big Bird topical, and his prominence is further enhanced by depicting him (in an accompanying picture) in his natural color and by making his head move from side-to-side; in contrast, Elmo is depicted in black and white, and remains stationary. In the subsequent pair of pictures accompanying the test sentence (as illustrated above), both Big Bird and Elmo were in their natural color.

**Participants**

Thirty-one heritage learners (aged 8–14, mean age = 11.6) and 23 monolingual Korean controls (aged 10–11, mean age = 10.9) participated in our study. Most of the heritage learners, recruited from a Saturday Korean-language school in Hawai’i, had been born in the United States and had Korean-speaking parents. Four of the heritage learners had been born in Korea and immigrated to the U.S. before age 4. One had a Japanese father who spoke to him in English. All of the heritage participants reported being more comfortable speaking English than Korean. The monolingual children were recruited from an elementary school in Daegu, South Korea; none had lived in an English-speaking country for more than three months.

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3. We also collected data from 21 younger monolingual children (ages 3;6–6;0). Those data are not reported here because our focus is on heritage children. The data from the younger monolingual children will be presented in a different paper.
Procedure and materials

Our experiment consisted of three picture-selection tasks: a baseline task with no special features or additions, a task in which prosody on case markers was enhanced as described above, and a task in which an appropriate context was added as exemplified above. There was an interval of one to two weeks between tasks, whose order of administration was randomized so that about one third of the participants started with the baseline task, about one third with the prosody task, and about one third with the context task.

Each task consisted of 28 stimuli, including 7 canonical SOV sentences, 7 scrambled OSV sentences, and 14 non-transitive filler sentences. In addition, 3 practice items were used to train the children on the task. The presentation sequence for test items was randomized within each task; however, care was taken to ensure that no two consecutive items included the same verb and that no three consecutive items manifested the same word order. Half of the participants was given the sentences in the initial randomized order, while the other half was given the sentences in reversed randomized order.

The stimuli were created using a Text-To-Speech (TTS) program with the most updated version of the TTS voice source (Yumi’s voice). The use of the TTS program helped ensure that the pronunciation was clear and of high quality, with consistent phonation and prosody. The naturalness of the pronunciation of the TTS source was confirmed by acceptability judgments elicited from native Korean adults (n = 94), as noted above (see also fn. 2).

As the participants listened to the test items, they saw slides on a computer screen, each of which presented two scenes separated by a black vertical line. As illustrated in Figure 2, the scenes differed only in the identity of the agent and the undergoer (patient/theme): Big Bird is hugging Elmo in the picture on left; Elmo is hugging Big Bird in the picture on the right.

Participants were asked to select the picture that matched the description by marking either A (for the left side) or B (for the right) on a sheet of paper. The linear position (left versus right) of the correct and incorrect pictures was counterbalanced.

If participants attend only to word order at the expense of case marking, Big Bird in Figure 2 should be regarded as the subject, leading the children to respond by (incorrectly) selecting the picture on the left, in which Big Bird hugs Elmo. In contrast, if the participants make use of case marker information, they should choose the picture on the right, in which Elmo hugs Big Bird.

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4. The following seven transitive verbs were used: anta ‘hug’, chongssota ‘shoot’, cwusanohta ‘inject’, mancita ‘touch’, masacihata ‘massage’, milta ‘push’, and pallochata ‘kick’. 

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Pikpetu-lul Eylmo-ka an-ayo.
Big Bird-acc Elmo-nom hug-se
‘Elmo is hugging Big Bird.’

Figure 2. A sample picture and test item

Results
The monolingual Korean children showed high accuracy across all three tasks, both in canonical SOV sentences and in their OSV counterparts (Table 1).

Table 1. Proportion of correct responses by monolingual children: Baseline, prosody, context

<table>
<thead>
<tr>
<th></th>
<th>SOV</th>
<th>OSV</th>
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<tbody>
<tr>
<td>Baseline</td>
<td>93.8% (SD = 0.10)</td>
<td>82.6% (SD = 0.24)</td>
</tr>
<tr>
<td>Prosody</td>
<td>95.7% (SD = 0.08)</td>
<td>87.6% (SD = 0.18)</td>
</tr>
<tr>
<td>Context</td>
<td>96.9% (SD = 0.06)</td>
<td>88.2% (SD = 0.19)</td>
</tr>
</tbody>
</table>

As the results summarized in Table 2 document, the heritage learners also showed high accuracy on the SOV sentences in all three tasks, but their rate of success plummeted to 28.6% in the baseline OSV condition. Crucially, however, their performance on OSV was notably better in the prosody task (48.4%) and in the context task (42.9%).
Table 2. Proportion of correct responses by heritage learners: Baseline, prosody, context

<table>
<thead>
<tr>
<th></th>
<th>SOV</th>
<th>OSV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>98.6% (SD = 0.04)</td>
<td>28.6% (SD = 0.38)</td>
</tr>
<tr>
<td>Prosody</td>
<td>97.7% (SD = 0.05)</td>
<td>48.4% (SD = 0.39)</td>
</tr>
<tr>
<td>Context</td>
<td>97.7% (SD = 0.05)</td>
<td>42.9% (SD = 0.41)</td>
</tr>
</tbody>
</table>

The differences in the mean scores across the three tasks (baseline vs. prosody vs. context) and between the two word orders (SOV vs. OSV) were analyzed in a series of repeated-measures analyses of variance (ANOVA) with post-hoc Bonferroni adjustments for multiple comparisons (alpha level = .05). For the monolingual children, we found a main effect of word order \( [F_1(1, 22) = 5.961, p < .03, \eta^2 = .136; F_2(1, 6) = 18.134, p < .01, \eta^2 = .374] \), a (marginal) main effect of task type \( [F_1(2, 44) = 3.003, p < .06, \eta^2 = .022; F_2(2, 12) = 5.099, p < .03, \eta^2 = .105] \), and no interaction effect between word order and task type \( [(F_1(2, 44) = .346, p = .710, \eta^2 = .003; F_2(2, 12) = .074, p = .929, \eta^2 = .003)] \). The heritage learners showed a main effect of word order \( [F_1(1, 30) = 78.261, p < .001, \eta^2 = .637; F_2(1, 6) = 811.660, p < .001, \eta^2 = .938] \), a main effect of task type \( [F_1(2, 60) = 8.431, p < .01, \eta^2 = .012; F_2(2, 12) = 14.600, p < .01, \eta^2 = .019] \), and an interaction between word order and task type \( [F_1(2, 60) = 8.785, p < .001, \eta^2 = .015; F_2(2, 12) = 16.366, p < .001, \eta^2 = .021] \).

A multiple comparisons test (the post-hoc Bonferroni adjustments) revealed that the heritage learners performed significantly better on OSV in the prosodic and context tasks relative to the baseline task, but that there was no significant difference in (SOV or OSV) performance between the prosody and context tasks. The improvement, moreover, occurred no matter the order of tasks: to test whether there is an effect of task order in the heritage learners \( (n = 31) \), a 2 (word order) x 3 (task type) x 6 (task order) repeated-measures ANOVA was conducted (within group factors = word order and task type; between group factor = task order). This analysis yielded no main effect of task order \( (F(5, 25) = 1.316, p = .289) \), nor did the factor of task order interact with either of the two other factors (i.e., word order and task type).

Discussion

The performance of heritage learners on SOV sentences was comparable to that of monolingual native children. In contrast, their performance on the baseline OSV condition appeared to reflect a reliance on word order at the expense of case marking: OSV test items were interpreted as if they were SOV more than 70% of the time, leaving a mean success rate of just 28.6%. However, their OSV accuracy
increased to 48.4% in the version of the task that enhanced the acoustic salience of the case markers and to 42.9% in the version that provided a felicitous context — both significant improvements.

Although the improved OSV mean scores appear to fall within the range of random performance, the success rate differences between the baseline task and the prosody and context tasks both show that case is having an effect on comprehension. Whereas word order was the overwhelming determinant of a sentence’s interpretation in the baseline task, in which more than 70% of OSV sentences were misanalyzed as SOV, prosodic enhancement and presence of a felicitous context each enhanced the effect of case, pitting it against word order and thereby reducing the number of erroneous responses.

It is instructive to consider in this regard the performance of individual heritage participants on our three tasks. In order to do this, we divided the heritage learners into three groups based on their overall proficiency in Korean. Following Song and Schwartz (2009), we elicited narratives with the help of pictures depicting a series of events, and then, for each participant, calculated a score for complexity (the total number of words divided by the total number of T-units) and a score for accuracy (the number of error-free T-units divided by the total number of T-units), which were combined to obtain an overall individual proficiency score; see Kim (2014) for a detailed discussion. This led to the creation of three proficiency groups: Low (8 males and 2 females; mean age = 12.0; range = 9–14), Mid (6 males and 5 females; mean age = 10.9, range = 8–13), and High (2 males and 8 females; mean age = 11.9, range = 10–14).

Table 3 reports the proficiency group results on OSV sentences for each task, while Figure 3 presents the OSV accuracy rates for individual participants within each proficiency group.

Table 3. Proportion of correct responses on OSV sentences by heritage learners: Baseline, prosody, context

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Prosody</th>
<th>Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-proficiency</td>
<td>0.0%</td>
<td>11.4%</td>
<td>15.7%</td>
</tr>
<tr>
<td>(SD = 0)</td>
<td>(SD = 0.19)</td>
<td>(SD = 0.30)</td>
<td></td>
</tr>
<tr>
<td>Mid-proficiency</td>
<td>14.3%</td>
<td>46.8%</td>
<td>29.9%</td>
</tr>
<tr>
<td>(SD = 0.21)</td>
<td>(SD = 0.32)</td>
<td>(SD = 0.30)</td>
<td></td>
</tr>
<tr>
<td>High-proficiency</td>
<td>72.9%</td>
<td>87.1%</td>
<td>84.3%</td>
</tr>
<tr>
<td>(SD = 0.33)</td>
<td>(SD = 0.17)</td>
<td>(SD = 0.27)</td>
<td></td>
</tr>
</tbody>
</table>
All the participants in the high-proficiency group performed well, correctly responding to at least 5 of the 7 OSV items in at least one of the three tasks — an indication that they are to some degree sensitive to case and its function. In contrast, all but one of the participants (P9) in the low-proficiency group performed at less than 30% accuracy on OSV in all the tasks, suggesting a general insensitivity to the role of case in comprehension.

It is the performance of the mid-proficiency group that is particularly worthy of attention, as becomes evident when we focus on the improvement made by individual participants on one or the other of the non-baseline conditions. These improvements are plotted in Figures 4 and 5, in which positive scores indicate gains in accuracy.
Figure 5. Context – baseline differences on OSV for the mid-proficiency heritage learners

As can be seen here, seven of the 11 participants in the mid-proficiency group responded correctly on at least 3 additional OSV test items out of 7 (an improvement on the order of 42.9%) in either the prosody task (P11, P15, P17, P20, P21) or the context task (P18, P19). This points to a greater (implicit) awareness of the function of case than indicated by performance on the baseline condition. Indeed, only one participant (P12) had better performance on the baseline task compared to the prosody task, and only three participants (P12, P13, P14) had better performance on the baseline task compared to the context task. (In both cases, the advantage on the baseline task was slight, consisting of a single additional correct response.)

The role of prosodic salience in children’s sensitivity to case marking in our study raises a further question: might factors other than just prosody contribute to the perceptibility of case suffixes, thereby further strengthening support for the idea that comprehension difficulty in heritage learners does not necessarily reflect deficits in grammatical knowledge? One such factor, which has not previously been studied, involves morpheme length, as measured in syllables. We turn to this matter next.

2.2 Study 2: Sensitivity to the dative case

The Korean nominative and accusative markers each consist of just one syllable, but the dative marker -hanthey contains two syllables. Corpus data show that the dative occurs about 15 times less frequently in speech than the accusative suffix (National Institute of the Korean Language, 2002), and that its primary function is to mark indirect objects, which are usually interpreted as recipients, as in the following example.

(4) Meyli-ka Con-hanthey senmwul-ul cwu-ess-eyo.
    Mary-nom John-dat gift-acc give-pst-se
    ‘Mary gave John a gift.’
However, as illustrated in (5), the dative can be used to mark the DO in certain [noun – light verb] constructions, entering into direct competition with accusative -(l)ul.

(5) a. SOV pattern
   Pikpetu-ka   Eylmo-lul/-hanthey masaci-hay-yo.
   Big Bird-nom Elmo-ACC/DAT massage-do-se
   ‘Big Bird is massaging Elmo.’

   b. OSV pattern
   Eylmo-lul/-hanthey Pikpetu-ka masaci-hay-yo.
   Elmo-ACC/DAT Big Bird-nom massage-do-se
   ‘Big Bird is massaging Elmo.’

If mono-syllabicity is a key factor in the low salience of case markers, Korean heritage learners should be more successful at interpreting non-canonical OSV sentences in which the DO is marked by -hanthey. We explored this possibility in an experiment.

Participants
All 10 heritage learners from the low-proficiency group and 10 of 11 members from the mid-proficiency group (P14 was not available) participated in this study. The high-proficiency group was not included because they had shown good performance in Study 1.

Procedure and materials
Drawing on the methodology employed in our first study, we conducted two tasks to assess the effect of the dative marker on the comprehension of transitive sentences. In one task, the direct object was marked by accusative case; in the other, it was marked by the dative (-hanthey). Five native Korean adults confirmed the naturalness of the test items, including the sentences with a dative-marked DO. Neither task included a prosodic or contextual enhancement.

Each task was made up of 28 stimuli consisting of 7 canonical SOV sentences, 7 scrambled OSV sentences, and 14 non-transitive filler sentences, in addition to 3 practice items. The items were all counterbalanced as in the first study, and each task was administered first to half the participants. The two tasks took place one to two weeks apart, about three months after the comprehension tasks described in Study 1.

5. The following seven transitive verbs were used: chacakata ‘find’, chingchanhata ‘praise’, chongssota ‘shoot’, cwusanohita ‘inject’, masacihata ‘massage’, pallochata ‘kick’, and yatanchita ‘scold’.
Results
Table 4 reports the group results for these two tasks, while Figure 6 summarizes the performance of individual participants on the two OSV conditions.

Table 4. Proportion of correct responses by heritage learners: SOV and OSV Accusative DO vs. SOV and OSV dative DO

<table>
<thead>
<tr>
<th></th>
<th>SO\text{\textsubscript{ACC}} V</th>
<th>SO\text{\textsubscript{DAT}} V</th>
<th>O\text{\textsubscript{ACC}} SV</th>
<th>O\text{\textsubscript{DAT}} SV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-proficiency</td>
<td>100%</td>
<td>97.1%</td>
<td>10.0%</td>
<td>40.0%</td>
</tr>
<tr>
<td>(n = 10)</td>
<td>(SD = 0)</td>
<td>(SD = 0.06)</td>
<td>(SD = 0.17)</td>
<td>(SD = 0.40)</td>
</tr>
<tr>
<td>Mid-proficiency</td>
<td>100%</td>
<td>100%</td>
<td>34.3%</td>
<td>68.6%</td>
</tr>
<tr>
<td>(n = 10)</td>
<td>(SD = 0)</td>
<td>(SD = 0)</td>
<td>(SD = 0.29)</td>
<td>(SD = 0.30)</td>
</tr>
</tbody>
</table>

Figure 6. Individual performance of the two heritage groups on the two OSV patterns in Study 2

All participants performed at ceiling on the canonical SOV pattern, regardless of how the DO was marked (Table 4). However, a sharp difference arose in the two OSV patterns: whereas the rate of success for the low-proficiency group was a dismal 10.0% when the DO was marked by the accusative, it rose to 40.0% when the dative was used. Five low-proficiency participants (P4, P5, P6, P7, P9) responded correctly at least 5 times out of 7 in the OSV dative condition, whereas none did so in the accusative condition.

A sharp contrast can also be observed in the performance of the mid-proficiency group, whose OSV success rate (Table 4) with an accusative-marked DO was 34.3%, compared to 68.6% with a dative-marked DO. Seven of the ten participants in this group (P11, P13, P17, P18, P19, P20, P21) responded correctly to at least 5 of the 7 OSV test items in the dative condition, whereas only two (P18, P21) did so in the accusative condition.

The differences in the mean scores between the accusative and dative tasks for SOV and OSV word order were analyzed in a repeated-measures ANOVA...
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(alpha level = .05). The 20 heritage learners showed a main effect of word order \[F_1(1, 19) = 89.336, p < .001, \eta^2 = .685; \] 
\[F_2(1, 6) = 279.373, p < .001, \eta^2 = .839\], a
main effect of task type \[F_1(1, 19) = 24.212, p < .001, \eta^2 = .043; \] 
\[F_2(1, 6) = 21.172, p < .01, \eta^2 = .053\], and an interaction between word order and task type \[F_1(1, 19) = 24.247, p < .001, \eta^2 = .052; \] 
\[F_2(1, 6) = 31.861, p < .01, \eta^2 = .063\].

Put succinctly, the heritage learners did significantly better on OSV with dative marking than on OSV with accusative marking. Moreover, no participant did better on accusative-marked OSV than on dative-marked OSV. In fact, as shown in Figure 6, all participants who responded correctly on even one OSV test item had better performance on OSV with a dative-marked DO than on OSV with an accusative-marked DO.

Discussion
The contrast in the salience of the Korean accusative and dative markers provides an opportunity to examine the role of this property in heritage learners’ sensitivity to case markers. Tellingly, accuracy on OSV in which the direct object is marked by the bi-syllabic dative (-hanthey) was significantly higher than when it is marked by the mono-syllabic accusative (-ul/-lul). Indeed, the dative marker has roughly the facilitative effect that was brought about in our earlier experiment that enhanced the prosodic profile of accusative case marking via the manipulation of increased pitch, intensity and duration. This result confirms the importance of perceptibility to heritage learners’ use of case markers in interpreting non-canonical word order while at the same time identifying bi-syllabicity as a likely contributor to this effect.6

2.3 General discussion
The results of Study 1 and Study 2 reported above suggest that Korean heritage learners’ difficulty in interpreting OSV does not necessarily reflect an ignorance of case or its function in Korean. While a small number of participants, mostly in the low-proficiency group, fare poorly on OSV sentences regardless of the task, there was an overall improvement in OSV performance when case is made acoustically more salient and when test items are embedded in a felicitous context. These findings point toward a greater grasp of case and its relevance

6. An anonymous referee suggests that the interpretive advantage associated with -hanthey might also be due in part to the fact that it is ‘semantically heavier’ than -ul/-lul and signals the animate patient/theme of an action. This possibility is certainly worth exploring, perhaps with the help of a comparative study involving the dative marker -ni in Japanese, which is mono-syllabic.
for the interpretation of grammatical relations than previously thought for heritage learners.7

This conclusion raises the question of whether other tasks might uncover an even deeper and more general knowledge of case on the part of Korean heritage learners. In the next section, we report on three experiments that we conducted on the production of case by Korean heritage learners in naturalistic and experimental settings.

3. The production of case

If Korean heritage learners’ use of case in the course of comprehension is impeded primarily by extraneous factors such as an insufficiency in acoustic prominence and/or in contextual felicity, it is possible that their ability to produce case might actually be quite advanced, despite the familiar adage that comprehension precedes production in language acquisition (Clark & Hecht, 1983; Hendriks & Koster, 2010). If this turns out to be right, it will provide strong support for our thesis that Korean heritage learners have a deeper understanding of the function of case than may be indicated by their performance on (non-manipulated) comprehension tasks. In order to investigate this matter, we devised a production experiment to elicit the use of case in transitive sentences.

3.1 Study 3: Case on NPs with contrastive focus

A signature feature of Korean case is its susceptibility to ellipsis (i.e., case-drop), especially when an NP’s referent has canonical semantic properties (e.g., animate and specific for subjects; inanimate and non-specific for direct objects — Lee, 2006a, b) or is not focused (Kwon & Zribi-Hertz, 2008). This fact dramatically reduces the proportion of case-marked NPs to which children are exposed in the early years of life. Indeed, based on longitudinal data from three mother–child dyads, Cho (1981) reported that mothers use nominative case marking on subjects a little more than half the time (56.8%), while accusative case marking is used for DOs a scant 10.0% of the time.

The possibility of ellipsis complicates the study of children’s production of case markers, as the failure to produce a case suffix need not signal a grammatical

7. As a reviewer correctly pointed out, perceptibility is important generally, not only in heritage language acquisition. Unfortunately, only a handful of studies have discussed the role of perceptibility in language acquisition (e.g., Love, Walenski, & Swinney, 2009; Sundara, Demuth, & Kuhl, 2011).
deficit; to the contrary, case ellipsis could actually be a sign of grammatical sophistication. From a methodological perspective, then, it is vital to focus on contexts where case is typically called for. One such context involves the contrastive focus that arises when a constituent of a previously spoken (or written) sentence must be corrected due to a truth-related inaccuracy. We exploited this fact to elicit the production of patterns in which case is strongly called for.

Participants
All 31 heritage learners who were involved in the comprehension experiments described in Study 1 took part in the case production task. Fifteen native Korean children (ages 10–11), recruited from an elementary school in Daegu, South Korea, also participated. (These children had not participated in the earlier comprehension study.)

Procedure and materials
In order to elicit case-marked NPs, the experimenter offered a description of a picture, deliberately misidentifying the referent of either the subject or the DO. For example, while looking at a picture of Big Bird pushing Elmo, the experimenter might produce either (6a) or (6b).

(6) a. Misidentified subject
   Khwukhimonsuthe-nun Eylmo mil-eyo.
   Cookie Monster-top Elmo push-se
   ‘Cookie Monster is pushing Elmo.’

   b. Misidentified direct object
   Pikpetu-nun Khwukhimonsuthe mil-eyo.
   Big Bird-top Cookie Monster push-se
   ‘Big Bird is pushing Cookie Monster.’

The participant’s job was simply to remedy any inaccuracy by correctly describing the picture. Thus in response to (6b), she or he might produce (7), with an accusative case marker on the DO, consistent with the presence of contrastive focus.

(7) Pikpetu-nun Eylmo-lul mil-eyo.
    Big Bird-top Elmo-acc push-se
    ‘Big Bird is pushing Elmo.’

In order to avoid biasing the participant’s response in favor of a nominative or an accusative, neither case marker appeared in the experimenter’s initial description, which contained a topic-marked subject and a bare DO, as illustrated in (6) above. Three pictures were used to elicit subject markers, and another three for DO markers.
The task took place approximately one week before the comprehension task described in Study 2 in which the heritage children’s sensitivity to accusative and dative case was tested and compared. As reported there (see Table 4), the heritage learners showed little sensitivity to accusative case in that task — the mean success rate on accusative-marked OSV was just 10.0% for the low-proficiency group and 34.3% for the mid-proficiency group. If comprehension is an accurate indicator of development, we would therefore expect comparably poor performance in production.

Results and discussion

Tables 5 and 6 present our results for the marking of subjects and DOs, respectively. In the contexts used in this task, the topic marker (ṭ-nun) is an acceptable option for subjects (but not DOs), and information about its use is therefore included in Table 5 (and Figure 7).

Table 5. Marking on contrastive subjects

<table>
<thead>
<tr>
<th>Group</th>
<th>Nominative or Topic</th>
<th>No suffix</th>
<th>Other&lt;sup&gt;8&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-proficiency (n = 10)</td>
<td>70.0% (46.7% Nom)</td>
<td>30.0%</td>
<td>0%</td>
</tr>
<tr>
<td>Mid-proficiency (n = 11)</td>
<td>90.9% (69.7% Nom)</td>
<td>6.1%</td>
<td>3.0%</td>
</tr>
<tr>
<td>High-proficiency (n = 10)</td>
<td>100% (83.3% Nom)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Native children (n = 15)</td>
<td>100% (80.0% Nom)</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Note. Proportion of correct responses on OSV in the baseline condition of the comprehension task of Study 1: 0% for the low-proficiency group, 14.3% for the mid-proficiency group, 72.9% for the high-proficiency group, and 82.6% for the native controls.

As Tables 5 and 6 reveal, the performance of the most advanced group of heritage learners matched the performance of child native speakers, who correctly provide

Table 6. Marking on contrastive direct objects

<table>
<thead>
<tr>
<th>Group</th>
<th>Accusative</th>
<th>No suffix</th>
<th>Other&lt;sup&gt;9&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-proficiency (n = 10)</td>
<td>30.0%</td>
<td>56.7%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Mid-proficiency (n = 11)</td>
<td>69.7%</td>
<td>0%</td>
<td>30.3%</td>
</tr>
<tr>
<td>High-proficiency (n = 10)</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Native children (n = 15)</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Note. Proportion of correct responses on OSV in the baseline condition of the comprehension task of Study 1: 0% for the low-proficiency group, 14.3% for the mid-proficiency group, 72.9% for the high-proficiency group, and 82.6% for the native controls.

<sup>8</sup> In Table 5 (and Figure 7), “Other” in the mid-proficiency group (i.e., 3.0% (1/33)) consisted of Accusative case only.

<sup>9</sup> In Table 6 (and Figure 8), “Other” consisted of only Dative (i.e., 13.3% (4/30)) in the low-proficiency group and both Dative (27.3% (9/33)) and Nominative (3.0% (1/33)) in the mid-proficiency group.
an appropriate marker (nominative or topic for subjects; accusative for DOs) 100% of the time. The use of markers by heritage children in the mid-proficiency group was somewhat less successful, but was still impressive — with an accuracy rate of 90.9% for subjects and 69.7% for DOs. Especially worthy of note is the performance of children in the low-proficiency group, who successfully produced nominative case in 46.7% of the subject contrastive-focus test items (with another 23.3% of subject NPs having the topic marker) and accusative case in 30.0% of the object contrastive focus test items, despite a success rate of zero on scrambled OSV in the baseline condition of the comprehension task reported in Study 1 (see Table 3). Indeed, four participants in this group (P3, P4, P5, P9) used the nominative correctly in all the subject contrastive-focus items, and two of these participants (P3, P5) used the accusative correctly in all the object contrastive-focus items.

Figures 7 and 8 summarize the performance of individual heritage participants on contrastive subjects and contrastive DOs, respectively.

![Figure 7](image1)

**Figure 7.** Subject-marking on contrastive subjects by individual heritage learners

![Figure 8](image2)

**Figure 8.** Object-marking on contrastive objects by individual heritage learners
Only 15 case substitution errors occurred in the speech of the low- and mid-profi-
ciency groups, out of 186 responses. One of these errors involved use of the accusa-
tive where the nominative was called for, and another involved use of the nomi-
native where the accusative was required; the remaining 13 errors reflected use of
the dative case where native speakers would employ the accusative (compare with
Study 2). These are striking results. Not only do they confirm that many heritage
learners have a solid grasp of the function of case, they underline the danger of
drawing conclusions about grammatical deficits based on poor performance on
comprehension tasks alone.

These findings fit well with the observation that language learners tend
to do better on production tasks than on comprehension tasks when the latter
impose a heavy cognitive load (see Hendriks, 2013, for a review). For example,
Unsworth (2007) reported that child second language learners of Dutch showed
more target-like performance in production than comprehension in the domain
of direct object scrambling, a property of Dutch that requires syntactic, semantic,
and discourse knowledge. Recall in this regard that children’s difficulty with com-
prehension in our study was restricted to scrambled sentences, whose OSV word
order is not only infrequently encountered but also associated with special con-
textual circumstances — factors that are known to cause interpretive difficulties in
a variety of languages (Bader & Bayer, 2006; Hopp, 2009; Hwang Jackson, 2008;
Sekerina, 2003). A further challenge for heritage learners of Korean in the United
States is that their dominant language (English) relies almost solely on word or-
der to distinguish subjects from direct objects (the distinction between nomina-
tive and accusative is seen only in pronouns), inviting a parallel strategy for their
heritage language.

The success of heritage learners in producing case to signal contrastive fo-
cus raises questions about their ability to employ case in other speech production
contexts. We explore this matter in our next study, which examines their use of
case in narratives.

3.2 Study 4: Case in narratives

The production of a narrative places particular demands on the speaker, as it re-
quires the planning and production of multiple utterances, which should be or-
ganized and structured in a manner that creates a coherent discourse. In order to
determine whether heritage learners are able to produce case under these condi-
tions, we conducted an experiment that elicited multi-sentence narratives. This
task was administered about one month after the contrastive-focus production
task reported in the previous section (and about three weeks after Study 2, the
comprehension task that compared sensitivity to accusative vs. dative case).
Participants
Again, all 31 heritage learners who were involved in Studies 1 and 3 participated in the narrative task. Twenty-five native Korean children (ages 10–11), recruited from an elementary school in Daegu, South Korea, served as a control group. (These children had not participated in any of the previous tasks.)

Procedure and materials
Participants were presented with three sets of four pictures depicting a series of events (from Song & Schwartz, 2009), as exemplified in Figure 9.

![Figure 9. A sample set of pictures for the narrative task](image)

The participants were asked to tell the story depicted by the pictures; they were encouraged as they went along by the experimenter, who provided prompts and asked questions (in Korean) such as “And what happened next?,” following the practice recommended by Unsworth (2008, p. 311).

Results
Unlike the experiment in Study 3, in which the design ensured that each participant produced the same number of subjects and DOs, the results in this narration task revealed great variation in the number of subjects and DOs produced by participants. For instance, despite their membership in the same (low-proficiency) group, P1 produced only one subject NP while P8 produced 11 subject NPs.

The native children ($n = 25$) produced a total of 276 overt subjects and 196 overt DOs, while the heritage learners ($n = 31$) produced a total of 204 overt subjects (45, 87, and 72 for the low-, mid-, and high-proficiency groups, respectively) and 205 overt DOs (58, 78, and 69 for the low-, mid-, and high-proficiency groups,
respectively). Tables 7 and 8 summarize the marking of overt subjects and overt DOs, respectively.

Table 7. Marking of subjects in the narrative task

<table>
<thead>
<tr>
<th>Group</th>
<th>Nominative</th>
<th>Topic</th>
<th>No suffix</th>
<th>Accusative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-proficiency</td>
<td>42.9%</td>
<td>19.5%</td>
<td>35.9%</td>
<td>1.7%</td>
</tr>
<tr>
<td>(n = 10)</td>
<td>(13)</td>
<td>(12)</td>
<td>(19)</td>
<td>(1)</td>
</tr>
<tr>
<td>Mid-proficiency</td>
<td>77.5%</td>
<td>5.9%</td>
<td>14.6%</td>
<td>2.0%</td>
</tr>
<tr>
<td>(n = 11)</td>
<td>(67)</td>
<td>(6)</td>
<td>(12)</td>
<td>(2)</td>
</tr>
<tr>
<td>High-proficiency</td>
<td>85.5%</td>
<td>10.8%</td>
<td>2.5%</td>
<td>1.3%</td>
</tr>
<tr>
<td>(n = 10)</td>
<td>(64)</td>
<td>(6)</td>
<td>(1)</td>
<td>(1)</td>
</tr>
<tr>
<td>Native children</td>
<td>97.1%</td>
<td>2.9%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>(n = 25)</td>
<td>(268)</td>
<td>(8)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Note. Number in parentheses = Raw number of the given type produced by all participants in the given proficiency group (see fn. 10)

Table 8. Marking of direct objects in the narrative task

<table>
<thead>
<tr>
<th>Group</th>
<th>Accusative</th>
<th>No suffix</th>
<th>Topic</th>
<th>Nominative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-proficiency</td>
<td>25.3%</td>
<td>69.7%</td>
<td>5.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>(n = 10)</td>
<td>(17)</td>
<td>(39)</td>
<td>(2)</td>
<td>(0)</td>
</tr>
<tr>
<td>Mid-proficiency</td>
<td>63.4%</td>
<td>35.7%</td>
<td>0.0%</td>
<td>0.9%</td>
</tr>
<tr>
<td>(n = 11)</td>
<td>(47)</td>
<td>(30)</td>
<td>(0)</td>
<td>(1)</td>
</tr>
<tr>
<td>High-proficiency</td>
<td>65.0%</td>
<td>30.9%</td>
<td>4.2%</td>
<td>0.0%</td>
</tr>
<tr>
<td>(n = 10)</td>
<td>(49)</td>
<td>(18)</td>
<td>(2)</td>
<td>(0)</td>
</tr>
<tr>
<td>Native children</td>
<td>99.5%</td>
<td>0.0%</td>
<td>0.5%</td>
<td>0.0%</td>
</tr>
<tr>
<td>(n = 25)</td>
<td>(195)</td>
<td>(0)</td>
<td>(1)</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Note. Number in parentheses = Raw number of the given type produced by all participants in the given proficiency group (see fn. 10)

Although, in principle, the subject could occur with either a nominative marker or a topic marker, the child native speakers used nominative almost exclusively — at a rate of 97.1%. The heritage learners produced acceptable subject-marking (i.e., either nominative case or topic marker) at rates varying from 62.4% (42.9% Nom) in the low-proficiency group to 83.4% (77.5% Nom) and 96.3% (85.5% Nom) in

10. The group means in Tables 7 and 8 were calculated by means of by-participant analyses (i.e., means of means). We tallied how each participant marked subjects and DOs (in percentage, as in Figure 10 and Figure 11), calculated their individual means and then, per group, averaged those means. Calculating the means based on the aggregated absolute numbers per proficiency group would have misleadingly reflected the data of the few participants who produced far more NPs than their peers did. We provide the raw numbers in Tables 7 and 8 just to give readers a sense of the absolute frequencies involved.
the mid- and high-proficiency groups, respectively. We return to heritage learners’ use of topic marking on subjects in Study 5 below.

Matters are somewhat different for direct objects, which permit only the accusative marker in the context used in our experiment — or no case marking at all (a common option in, e.g., casual mother – child conversation, as Cho (1981) has documented; see Section 3.1 above). In the particular narrative context created by our experiment, however, child native speakers produced accusative case on 99.5% of all DOs. In contrast, accusative production rates among heritage learners ranged from 25.3% in the low-proficiency group to 65.0% in the high-proficiency group. Virtually all other responses involved bare DOs.11

Further insights come from an examination of the individual results, as summarized in Figures 10 and 11.

Two matters are particularly worthy of note. First, despite the low-proficiency group’s abysmal performance on comprehension tasks requiring successful parsing of case in Study 1, only two members of this group (P1, P2) failed to produce case at least once in the narrative task, and three (P4, P5, P9) used nominative with 100% accuracy. Second, as in the preceding sentence production task (Study 3), case substitution errors were uncommon. Only once (out of 205 overt DOs) did a heritage learner use nominative in place of accusative, and on only four occasions (out of 204 overt subjects) was accusative used in place of nominative. When Korean heritage learners produce overt case in the narrative task, they evidently do so in a systematic manner, reserving the nominative for subjects and the accusative for DOs.

Figure 10. Subject-marking in the narrative task by individual heritage learners12

11. All instances of case omission in the narration data of the heritage children were carefully checked for appropriateness: the object NPs with case-drop were appropriate; the subject NPs with case-drop, however, were typically inappropriate.

12. All instances of “Other” for subject-marking were accusative markers.
Figure 11. Object-marking in the narrative task by individual heritage learners

Discussion

Subjects and direct objects appeared with acceptable marking at somewhat lower rates in the narrative task (Study 4) than in the single-sentence contrastive-focus task (Study 3). The difference in performance between the two tasks is significant for DOs ($t(30) = −2.039, p = .050$) and marginally significant for subjects ($t(30) = −1.733, p = .093$). That the success rates in the narrative task were lower is not surprising, given the additional challenges associated with producing discourse. Nonetheless, it is important not to lose sight of the fact that the heritage learners made use of case in a highly systematic fashion. Even the low-proficiency group correctly marked subjects more than 60% of the time, and there were very few errors of commission of any sort: when case marking was used, it was almost always correct. These results undermine the idea that Korean heritage learners are typically ignorant of the function of case.

An anonymous reviewer asked whether the heritage learners’ better performance observed in the production tasks had anything to do with the repetition of similar items (e.g., verbs) and/or the time delay between comprehension tasks and production tasks. Neither possibility can account for our results. First, we found good performance in the production task in Study 4, which included no items similar to any of those in the comprehension tasks. Second, the production task in Study 3 — for which even the low-proficiency group produced acceptable nominative (46.7%) or topic (23.3%) marking on contrastive subjects 70.0% of the time and accusative on contrastive objects 30.0% of the time — took place approximately one week before the comprehension task described in Study 2; yet the low-proficiency learners showed poor performance — 10.0% comprehension accuracy — in the OaccSV condition of Study 2.

13. All instances of “Other” for object-marking were topic and nominative markers.
3.3 Study 5: The production of the topic marker

The contrast between the nominative marker and the topic marker is among the subtlest in Korean (e.g., Choo & Kwak, 2008, pp. 243ff.), and has received a great deal of attention both in the technical literature and in pedagogical materials. Matters are complicated by the fact that there are a number of contexts, including those in our previous two production experiments, in which the topic marker may alternate with the nominative marker (and on some other occasions with the accusative marker), yielding subtle differences in meaning. Fortunately for our purposes, there are simple contexts in which only the topic marker is allowed. One such context involves so-called ‘contrastive topicalization,’ in which the activity of one referent differs from that of other referents. We take advantage of this fact to assess the sensitivity of heritage learners to this aspect of the topic – nominative distinction.

Participants
Seventeen of the heritage learners who were involved in our previous experiments participated in the task: 5 from the low-proficiency group, 7 from the mid-proficiency group, and 5 from the high-proficiency group. Also participating were 23 of the 25 native Korean children who took part in Study 4, the narrative production experiment.

Procedure and materials
In order to create a situation in which the subject of a sentence should carry the topic marker rather than nominative case, the experimenter described a series of pictures depicting a similar activity — for example, Elmo eating ramen, Big Bird eating ramen, and Bert eating ramen. The participant was then asked to describe a fourth picture, in which someone is doing something different: Cookie Monster eating sushi. This calls for the pattern in (8), with the topic marker rather than nominative on the subject NP.

(8) Khwukhimonsuthe-nun/*-ka kimpap-ul mek-eyo.
   Cookie Monster-TOP/*-NOM  sushi-ACC  eat-SE
   ‘Cookie Monster is eating sushi.’

The task included three test items, all of this type. The experiment was conducted about 10 months after the narrative task described in the preceding section.

Results and discussion
Table 9 summarizes our results.
Table 9. Production of the topic marker and nominative case in contrastive topicalization

<table>
<thead>
<tr>
<th>Group</th>
<th>Topic suffix</th>
<th>Nom Case</th>
<th>No suffix</th>
<th>Other suffix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-proficiency ($n = 5$)</td>
<td>46.7%</td>
<td>13.3%</td>
<td>40.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Mid-proficiency ($n = 7$)</td>
<td>23.8%</td>
<td>71.4%</td>
<td>4.8%</td>
<td>0.0%</td>
</tr>
<tr>
<td>High-proficiency ($n = 5$)</td>
<td>73.3%</td>
<td>20.0%</td>
<td>0.0%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Native children ($n = 23$)</td>
<td>95.7%</td>
<td>1.4%</td>
<td>0.0%</td>
<td>2.9%</td>
</tr>
</tbody>
</table>

Only the native Korean children showed full command of the topic – nominative contrast in the context employed in our task, correctly using the topic marker almost 100% of the time. In contrast, accurate performance by the advanced group of heritage learners was in the 70% range, and the two less proficient heritage groups were successful less than half the time.\textsuperscript{14} Moreover, as can be seen in Figure 12, four participants (P10, P12, P15, P16) did not produce a topic marker on even one occasion.

Discussion

The heritage children’s relatively poor performance on the use of the topic marker (in an obligatory context) parallels the results reported by Laleko and Polinsky (2016) for adult heritage speakers of Korean. As Laleko and Polinsky note, the problems that heritage learners have with topic marking may reflect a more general difficulty with ‘interface phenomena’ (e.g., Sorace, 2011) implicating pragmatics/discourse. Whereas the contrast between the nominative and the accusative is largely a matter of sentence-internal morphosyntax (one marker for subjects and

\textsuperscript{14} For reasons that we do not understand, the low-proficiency group produced topic-marked subjects at a higher rate than the mid-proficiency group. Interestingly, a similar tendency can be observed in the results of Studies 3 and 4, where a topic marker is allowed but not required.
the other for DOs), choosing between the nominative marker and the topic marker requires considerable sensitivity to pragmatics and discourse. So even if heritage children grasp the basis of the topic – nominative distinction, making the choice in the course of real-time production presumably places additional demands on processing resources (e.g., Reinhart, 2006), limiting the ability of inexperienced speakers to track and express the contrast.

4. Conclusion

Case is the key to decoding Korean sentence structure. Without a grasp of its function, a learner would be hard pressed to comprehend and produce non-canonical word order, passives, relative clauses, and countless other constructions that rely on case marking to signal basic grammatical relations. Early reports that heritage learners of Korean were typically ignorant of the function of case, as evidenced by their poor comprehension of OSV sentences, implied a grammatical deficit with far-reaching consequences for our understanding of an important type of bilingualism. However, the studies on which these reports were based ignored production in favor of (a single test of) comprehension, and made no systematic attempt to control for factors such as acoustic salience and context. In the current study, we conducted a suite of five experiments, whose results suggest that heritage learners have a far better handle on case and the conditions under which it is used than early work led us to think. More specifically, there is now reason to believe that for all but the least proficient heritage learners of Korean, case-related difficulties are largely restricted to two areas.

First, there are genuine difficulties attending to (or parsing) case in the course of comprehending non-canonical patterns, such as the OSV sentence type. As our first series of experiments reveals (Studies 1 and 2), however, these difficulties can be significantly mitigated by manipulating factors such as acoustic salience and contextual felicity, suggesting that basic knowledge of case and its use is obscured rather than entirely absent in many Korean heritage learners. Indeed, under enhanced conditions, many Korean heritage learners exploit the information conveyed by case markers at a level comparable to that achieved by their Korean monolingual peers. Further work is clearly called for in this regard. Of special relevance are other relatively infrequent patterns whose interpretation is heavily dependent on case, including passives and relative clauses.

Second, there are signs of difficulty coordinating the use of the topic marker with the use of the nominative marker in the course of production (Study 5). This is perhaps not surprising, given the role of pragmatic and discourse factors in contrasts of this kind and the familiar challenges created by such interface phenomena.
for various types of learner populations, including bilinguals (of whatever sort). However, these difficulties should not obscure the fact that Korean heritage learners often used case correctly in elicited production tasks involving both isolated sentences and narratives (Studies 3 and 4). Indeed, despite their poor sensitivity to case in the baseline comprehension task (in Study 1), many of the participants in the mid- and high-proficiency heritage groups produced case at a rate indistinguishable from that of Korean monolingual children of the same age.

Taken together, our results from Korean heritage children suggest that multiple factors contribute to their apparent failure to exploit the information carried by case. As these factors are manipulated and teased apart, we see a level of success on the part of these heritage learners that substantially changes our estimation of their level of attainment and, therefore, our understanding of the character of their bilingualism as well.

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