Sentence interpretation strategies by typically developing and late-talking Korean toddlers

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Introduction

• young children who are delayed in their expressive language skills despite normal nonverbal cognitive ability, adequate hearing and typical personality development.

• Unlike children with specific language impairments (SLI) who exhibit predominant impairments in acquiring grammatical morphemes, inconsistent data have been reported on the production of grammatical morphemes in late-talking toddlers (Paul & Alforder, 1993).

• Limited studies are available on their comprehension of grammatical morphemes.

• In this study, a “Who did it” task was carried out, which was developed by Bates and her colleagues (1982) to explore the cross-linguistic differences of strengths of cues in sentence comprehension in diverse populations of children and adults. In the task, the participants’ interpretation of the thematic relation of a simple active (NNV) sentence was examined based on their “act out” performance.

• The sentences were generated by factorial combination of many cues such as morphology, word-orders, stress and/or semantics. In a study on normal adults and children of different ages, Hwang & Ahn (2002) reported that, in Korean, the cue strength of grammatical morphemes (case-marker) was higher than other cues such as word-order and semantic information of words (animacy).

• While young children relied more on animacy cue, by age 6, case-markers became the strongest cue, and such tendency was greater with increasing age. In the present study, we used sentences generated by combination of case-markers and animacy, two strong cues in young children. We examined whether Korean late-talkers experience difficulty in utilizing case-marker and animacy cues compared to their typically developing peers during sentence comprehension.
Method

Participants
Nine children with delayed language expression of age ranges from 31 months to 35 months participated in the study (late talker). All late talkers scored below 1 SD from the average in the expressive language subtest and within normal range in receptive language subtest of SELSI (Sequence language scale for infant) (Kim, T. Y., et al. 2003). Nine typically developing children of same age ranges and who scored within normal range in SELSI participated as a control group. All participants’ cognitive development was within normal range.

Materials
Simple noun-noun-verb (NNV) sentences were generated by factorial combination of case-marker [nominal case-marker on the first noun and accusative on the second (C1), accusative on the first noun and nominative on the second (C2), and no case markers on both nouns (C0), and animacy of the nouns [animate-inanimate (AI), inanimate-animate (IA), animate-animate (AA)]. Thus, there were 3 types of sentences based on the arrangement of case-markers and 3 types based on the arrangement of animacy resulting in 9 types of sentences by combining the two factors. Three sentences were generated for each of the 9 types of sentences using 6 animated and 3 inanimated nouns and 5 action verbs. Example sentences are as follows.

<table>
<thead>
<tr>
<th>example sentences</th>
<th>C0-IA</th>
<th>Moza</th>
<th>doeji</th>
<th>mil-ess-da</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hat–(null)</td>
<td>pig-(null)</td>
<td>push-PAST-DECL</td>
<td></td>
</tr>
<tr>
<td>C1-AA</td>
<td>Ori-ka</td>
<td>gangaji-lul</td>
<td>mul-ess-da</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Duck-NOM</td>
<td>puppy-ACC</td>
<td>bite-PAST-DECL</td>
<td></td>
</tr>
<tr>
<td>C2-AI</td>
<td>Tokki-lul</td>
<td>sige-ka</td>
<td>cha-ss-da</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rabbit-ACC</td>
<td>clock-NOM</td>
<td>kick-PAST-DECL</td>
<td></td>
</tr>
</tbody>
</table>
Method

Procedures
The participants were given two objects before they listened to a sentence presented by the examiner. They were asked to “act out” as they interpret the given sentence. For each type of sentences the percentage of choices of the first noun as the agent was calculated.

Results
• A 3-way ANOVA of group(2) x animacy (3) x case-marker(3) revealed significant main effects of case-marker(F(2,32)=5.547, p=.009) and animacy(F(2,32)=14.998, p<.001), and significant interaction effects between group and case-marker(F(2,32)=10.458, p<.001), and between case-marker and animacy(F(4,64)=2.793, p=.033). Main effect of group and other interaction effects were not statistically significant.
• The mean percentage of first-noun choice to AA, AI, IA sentences, collapsed across case-marker conditions, were 50.6%, 71.0%, 27.2%, respectively, for late talkers, and 46.9%, 76.5%, 25.9%, respectively, for typically developing children. These results indicated that the reliance on animacy cue during sentence comprehension was similar between the two groups of children. The mean percentage of first-noun choice to C0, C1, C2, collapsed across animacy conditions, were 45.1%, 48.8%, 50.6%, respectively, for late talkers, and 50.6%, 69.1%, 29.6%, respectively, for typically developing children.
Results

The results are also shown in the following figures.

• These results indicated that the late talkers did not utilize case-marker cues during sentence comprehension as their responses did not differ across 3 case-marker conditions, while the typically developing children appeared to utilize both case-marker as well as animacy cues.
Conclusion

- The results of the present study indicated that the Korean late-talking toddlers’ abilities to utilize case-markers were limited compared to their peers. What is remarkable is the fact that the late talkers in this study were with normal levels of language comprehension, yet exhibited sentence interpretation strategies different from their normal peers. It is worthwhile to note the results of some similar studies with English speaking children. Thal & Flores (2001) found that, at the age of two-and-one-half years, late talkers did not utilized any of the two given cues, animacy and word-order, while their typically developing peers used a coalition of word-order and animacy cues. However, at three years of age, both groups of children used word order exclusively to interpret sentences. In contrast, Evans & Macwhinny (1999) found that children with expressive SLI performed similar to the normal children whereas mixed SLI relied more on animacy than on word-order. Neither of the two studies included grammatical morphemes as a cue since grammatical morphemes’ cue strength is considerably weaker than the other two cues. In a study with older Korean-speaking children with SLI, Hwang (2003) found that the SLI children utilized case-markers to the same degree as the younger LA matched children, but to a lesser degree than the CA matched children, and they utilized animacy cues significantly more than both the LA and the CA matched children.

- The results the present study indicate that Korean toddlers who appear to have only expressive language deficits may be also delayed in language comprehension skills which is pronounced in their limited ability to utilize case-marker cue, the strongest cue for Korean sentence interpretation.


