On and off-line binding interpretations of multiple reflexives by heritage Korean speakers

Previous studies found that reflexives in Korean differ in terms of binding distance—caki prefers long-distance binding, caki-casin prefers local binding, while casin allows both (Lee 1988; Yoon 1989). However, these results are not necessarily replicated in other experimental studies (e.g., Kim and Yoon 2009, who showed caki-casin can be LD-bound in certain contexts). Given the need for a more systematic investigation, the present study employed both on-line and off-line measures to investigate the binding distance preference of the three reflexives. In addition, we examined whether this distinction is maintained by Korean heritage speakers with different onset age of bilingualism in both online and offline tasks.

The Korean reflexive system provides challenges for both acquisition and maintenance of the acquired knowledge since multiple reflexives have partially similar properties, leading to optionality of usage. Furthermore, both grammatical and discourse (logophoric) conditions govern the use of reflexives (Kim and Yoon 2009; Han, Storoshenko, Leung, Kim 2013). For these reasons, the system is acquired rather late, even for L1 children (Cho 1989). We can thus expect that it will be vulnerable to incomplete acquisition or L1 attrition in contexts like heritage language acquisition. Thus, the system possesses characteristics that allow us to investigate questions currently being asked in heritage language acquisition, such as the relevance of the onset age of bilingualism (Montrul 2008).

Sixteen native (NS) controls and 20 Korean heritage speakers living in the U.S. participated in an eye-tracking experiment and an offline antecedent identification task. In the eye-tracking task, participants looked at a picture array like (1) while listening to sentences like (2), in which pictures depicting the matrix and the embedded subjects served as antecedents of the reflexives. The proportions of fixations to the two subject pictures were compared from the onset of the reflexives. Results were analyzed for each reflexive at the time window, ‘reflexive+adverb’. In the offline task, participants read the same sentences used in the online task and judged whether the reflexives can refer to the matrix or the embedded subject.

(1) Visual display corresponding to (2)

(2) Example sentence (21 experimental items distributed to 3 lists + 59 fillers (Latin Square Design))

‘Peterpan said Shrek pricked self with a sharp needle by mistake.’

In the online task with NSs for caki/casin, fixations to matrix and embedded subjects did not differ (ps>.1), whereas caki-casin induced higher fixations to the embedded subject ($t$(15)=-2.999, $p$.01, $r^2$(20)=4.012, $p$.01). This suggests NSs assign an immediate (local) interpretation for caki-casin but not for caki/casin. The offline task showed a three-way distinction as in (3), but not in the way reported in the literature: for caki, local and long-distance binding did not differ ($t$(15)=.000, $p$.1, $r^2$(20)=.438, $p$.1). Casin led to a slight preference for
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local binding \((t1(15)=2.649, p<.05, t2(20)=2.642, p<.05)\), while \textit{caki-casin} showed a strong preference for local binding \((t1(15)=-8.676, p<.001, t2(20)=-11.204, p<.001)\).

Heritage speakers were divided into two groups, simultaneous (early) and sequential (late) bilinguals. Simultaneous bilinguals \((n=11)\) were either born in the U.S. or came to the U.S. before age 3, while sequential bilinguals \((n=9)\) received some schooling in Korea. The two groups were analyzed separately. The simultaneous bilinguals did not show interpretive preferences for any reflexive in the eye-tracking task \((ps>.1)\). In the offline task, they preferred local binding for all reflexives shown in (3) \((caki: t1(10)=2.035, p=.069, t2(20)=-4.656, p<.001; casin: t1(10)=-5.709, p<.001, t2(20)=-11.555, p<.001; caki-casin: t1(10)=-3.609, p<.05, t2(20)=-6.694, p<.001)\). One possible interpretation for the embedded subject preference is influence of their dominant language (English), which has only a local reflexive.

The sequential bilinguals were more similar to NSs. In the eye-tracking task results, no preference for local or long-distance interpretation for \textit{caki} or \textit{casin} emerged \((ps>.1)\), though a local binding preference surfaced for \textit{caki-casin} \((t1(8)=2.374, p<.05, t2(20)=-1.332, p>.1)\). In the offline task in (3), a three-way contrast like the pattern reported in the literature emerged—\textit{caki} preferring long-distance binding \((t1(8)=2.412, p<.05, t2(20)=3.983, p<.05), \textit{casin} showing no significant preference for either (but with a numerical preference for local binding) \((t1(8)=-1.853, p>.1, t2(20)=-3.050, p<.05)\), and \textit{caki-casin} preferring local binding \((t1(8)=-4.998, p<.05, t2(20)=-10.954, p<.001)\).

(3) Antecedent identification task results (average response scores; ‘possible’ = 1, ‘impossible’ = 0)

<table>
<thead>
<tr>
<th></th>
<th>Native speakers</th>
<th>Simultaneous bilinguals</th>
<th>Sequential bilinguals</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>caki</td>
<td>casin</td>
<td>caki-casin</td>
</tr>
<tr>
<td>Long distance binding interpretation</td>
<td>0.74</td>
<td>0.58</td>
<td>0.24</td>
</tr>
<tr>
<td>Local binding interpretation</td>
<td>0.74</td>
<td>0.82</td>
<td>0.96</td>
</tr>
</tbody>
</table>

While the difference between the two heritage groups can be attributed to dominant language influence after significant exposure to the community language (due to late onset of dominant language or schooling in the community language), what is surprising is the extent to which simultaneous bilinguals’ grammar of binding differs from those of sequential bilinguals, when binding principles in general are not susceptible to radical attrition. The answer must be that the binding system of Korean, with its rich inventory of reflexives, is not fully in place until around 10 (Cho 1989), after the early exposure of simultaneous bilinguals to the dominant language.

Another interesting result is the divergence between sequential bilinguals and native controls with respect to offline binding preference for \textit{caki}. According to Kim and Yoon (2008), the Korean reflexive system is undergoing change among younger generation of native speakers in Korea as two long-distance reflexives \((\textit{caki} \text{ and } \textit{casin})\) are in the process of merging. Our findings may reflect a tendency among the immigrant group to retain traits of older stages of the immigrant language (Korean). This too, is not surprising, in view of the overall tendency of languages of isolated groups, such as heritage speakers, to be more conservative (Aitchison 1991).