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# The Effect of Honorific Affix on Processing of an Attachment Ambiguity

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## 1 Introduction

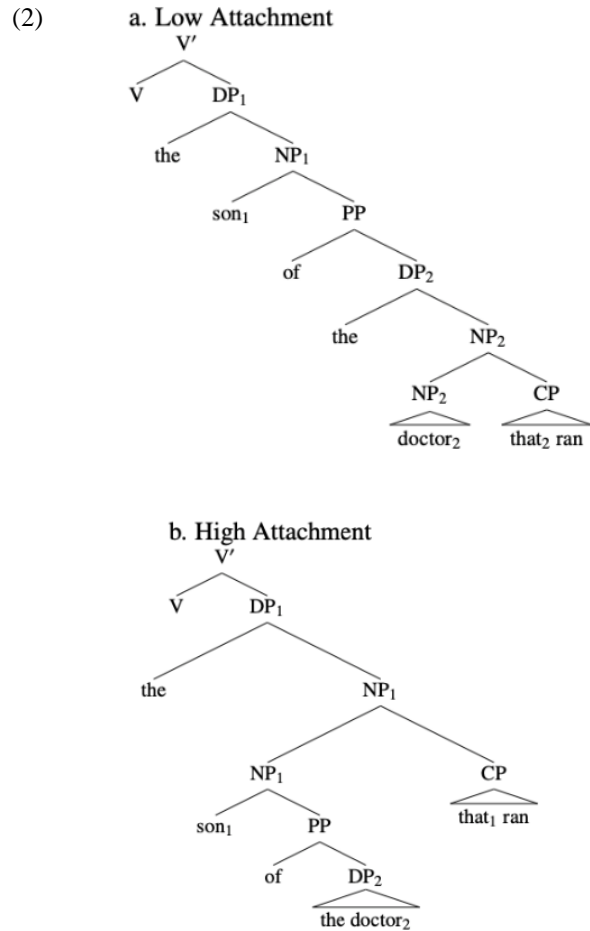
Abundant empirical studies, including Cuestos et al. (1996) and Dussias (2003), have shown that there are cross-linguistic differences in the attachment preferences of ambiguous relative clause structures, as in (1).

- (1) I saw the son of the doctor that ran.

NP1                      NP2

(Grillo and Costa 2014)

In Chinese (Shen 2006), English (Frazier and Clifton 1996), and Romanian (Ehrlich et al. 1999; Stenshoel and Vinereanu 1999), native speakers prefer to attach the relative clause to the NP2 *the doctor* over the NP1 *the son*, which is called low-attachment preference since NP2 *the doctor* is structurally lower than NP1 *the son*, as shown in (2).



However, in Dutch (Mitchell et al. 2000), French (Colonna et al. 2000), and Spanish (Gibson et al. 1999), high-attachment preference has been reported.

These results suggest that processing strategies might be language specific. Very few studies, however, have investigated whether ambiguous relative constructions are processed in the same way within a given language, and, if this is not the case, what kind of factors can affect processing. In addition, most previous studies regarding relative clause attachment ambiguity have focused on head-initial languages. This study, therefore, investigates relative clause attachment preferences in Korean, which is typologically a very different language from those studied in the previous literature.

In particular, this study aims to examine whether a syntactic/pragmatic agreement attractor (honorific affix *-si*) can affect processing of relative clause attachment ambiguity.

The rest of this paper is structured as follows. I will overview the relevant grammatical properties in section 2. The details of two experiments examining the effect of the honorific affix *-si* on processing of relative clause attachment ambiguity will be discussed in sections 3 and 4. Section 5 concludes this paper.

## 2 Relevant grammatical properties in Korean

### 2.1 Honorific affix *-si*

Korean does not have a rich morphological agreement system, so the verb in Korean does not agree with its subject in number, person, and/or gender. However, the honorific affix *-si* in Korean attaches to a verb and exceptionally agrees with a subject of higher social status than the speaker, not with a subject of low social status, as in (3).

- (3) a. *Halmeni-ka hakkyo-ey o-si-ess-ta*  
 grandma-NOM school-LOC come-HON-PAST-REL  
 ‘(My) grandmother came to (my) school.’
- b. \**Ai-ka hakkyo-ey o-si-ess-ta*  
 child-NOM school-LOC run-HON-PAST-REL  
 ‘(My) child came to (my) school.’

HON: Honorific

In other words, this honorific affix *-si* provides information on the relative social hierarchical status of the subject in relation to the speaker.

It should be noted that the honorific dependency in Korean shown in (3) is different from other grammatical dependencies such as subject–verb number agreement in English. Korean honorific dependency is based on pragmatic features signaled by pragmatic or world knowledge (Kwon and Sturt 2016). Agreement is not mandatory.

### 2.2 Word order

As Korean is a head-final language, word order is very different from English. The position of a relative clause in a sentence is also different. As shown in (4), a relative clause in English is postnominal.

- (4) Mary saw **the student** [RC that was ran].

However, a relative clause in Korean is prenominal, as in (5).

- (5) *Minwu-nun* [wuntongcang-ul talli-ko iss-te-n]  
 Minwu-TOP playground-ACC run-PROG-PAST-REL
- haksayng-ul* *po-ass-ta*  
 student-ACC see-PAST-DEC

‘Minwu saw the student who was running at the playground.’

As shown in (6), the word order of a complex NP construction in Korean (6b) is a mirror image of the English complex NP construction (6a).

- (6) a. the daughter of the teacher  
           NP1                  NP2  
           (High Attachment)          (Low Attachment)
- b. *sensayngnim-uy* *ttal*  
    teacher-POSS (of) daughter  
    NP2 of NP1  
    (Low Attachment) (High Attachment)  
    ‘the daughter of the teacher’

Since the relative clause precedes its head noun, as in (5), the honorific affix *-si* may cause the attraction effect on the resolution of relative clause attachment ambiguity.

In the current study, I conducted two experiments consisting of a forced-choice task in order to examine how the honorific affix *-si* affects the disambiguation of relative clause ambiguity in Korean.

### 3 Experiment 1

Previous literature (e.g. Lee and Kweon 2004) has reported a preference for high attachment in Korean. However, the tested sentences in each study were different in terms of the complexity of the relative clause, depending on the focus of their study. In order to get a reliable baseline record, I tested Korean speakers’ preferences in relative clause attachment ambiguity in the first experiment.

### 3.1 Material

Jun (2003) and Kim (2009) reported effects of relative clause length on preferences for relative clause attachment (low attachment vs. high attachment). They showed in production (Jun 2003) and comprehension (Kim 2009) that compared to the sentences in the short relative clause condition, the sentences in the long relative clause condition resulted in a greater proportion of high-attachment preferences. In order to avoid the effects of sentence complexity, I used relative clauses with simple structures that did not include adverbs, as in (7).

(7)	<i>Minwu-nun</i>	[ <i>wuntongcang-ul</i>	<i>talli-ko iss-te-n</i> ]
	Minwu-TOP	playground-ACC	run-PROG-PAST-REL
	<i>sensayngnim-uy</i>	<i>ttal-ul</i>	<i>po-ass-ta</i>
	teacher-POSS	daughter-ACC	see-PAST-DEC

‘Minwu saw the daughter of the teacher who was running at the playground.’

In addition, I also controlled the verb type in the relative clauses. According to Kweon and Lee (2003), the stative verb in Korean shows a strong bias toward high attachment. Thus, in order to avoid the verb-type effect, action verbs such as *chengsohata* ‘clean’, *tallita* ‘run’, *kwupta* ‘grill’, and *cwupta* ‘pick-up’ were used for the relative clause verbs. As for the matrix verb, two verb types (*pota* ‘see’-state verb vs. *mannata* ‘meet’-action verb) were counterbalanced across the stimuli.

Four sentences for each verb type were created. Eight total target sentences were tested with 160 filler sentences.

### 3.2 Participants and procedure

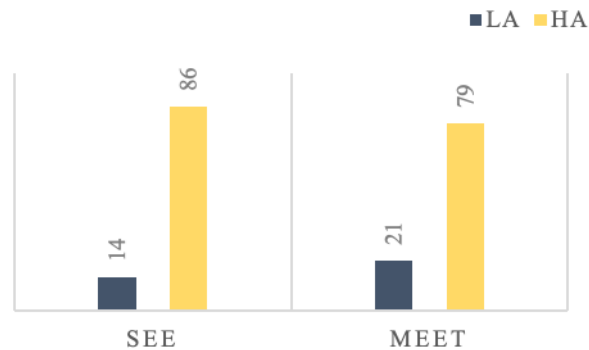
One hundred and four Korean native speakers participated in experiment 1. They read the target sentences and were asked to indicate which noun phrase (NP1 vs. NP2) was modified by the relative clause.

(8) Q.	<i>Nwu-ka</i>	<i>wuntongcang-ul</i>	<i>talli-ko iss-ess-nayo?</i>
	who-NOM	playground-ACC	run-PROG-PAST-Q?
	‘Who was running at the playground?’		
A1	<i>sensayngnim</i>	A2	<i>ttal</i>
	teacher		daughter

The order of the two noun phrases (A1 and A2) on the screen was counter-balanced. There was no time limit to answer the given questions, but the participants could not go back and change their answers to previous questions. The test was conducted over the internet by using a web survey platform, Qualtrics. The entire tests took approximately twenty minutes.

### 3.3 Results

In experiment 1, high attachment (NP2) was significantly preferred over low attachment (NP1), as shown in Figure 1. Although the percentage of high-attachment answers was slightly higher in the state verb condition (86%) than the action verb condition (79%), the difference was not statistically significant (logistic regression model:  $p > 0.11$ ). Regardless of the main verb type, strong high-attachment preference was observed.



**Figure 1.** The results of experiment 1

These results confirm the strong high-attachment preference in Korean that has been reported in the previous literature.

## 4 Experiment 2

To investigate the effect of the honorific affix *-si*, the second experiment consisting of a forced choice task was conducted.

### 4.1 Material

In experiment 2, the presence or absence of the honorific affix *-si* was controlled as in (9).

- (9) a. *Minwu-nun* [wuntongcang-ul talli-ko iss-te-n]  
 Minwu-TOP playground-ACC run-PROG-PAST-REL
- sensayngnim-uy ttal-ul po-ass-ta*  
 teacher-POSS daughter-ACC see-PAST-DEC

‘Minwu saw the daughter of the teacher who was running at the playground.’

- b. *Minwu-nun* [wuntongcang-ul talli-ko kyey-si-te-n]  
 Minwu-TOP playground-ACC run-PROG-HON-PAST-REL
- sensayngnim-uy ttal-ul po-ass-ta*  
 teacher-POSS daughter-ACC see-PAST-DEC

‘Minwu saw the daughter of the teacher who was running at the playground.’

In the stimuli, the two noun phrases for the complex NP were related to each other semantically in terms of social status, such as *sensayngnim* ‘teacher’ vs. *ttal* ‘(her/his) daughter’. The socially higher NPs were located at the low-attachment positions (NP2), in order to prime low-attachment interpretation. Since no significant difference was found in terms of the verb type, only the stative verb *poassta* ‘saw’ was used. Eight total target sentences were created.

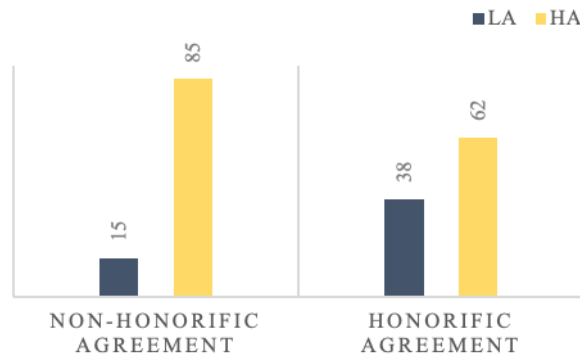
#### 4.2 Participants and procedure

One hundred and four Korean native speakers participated in experiment 2. The procedure of experiment 2 was the same that of experiment 1. Participants were asked to read the target sentences and indicate which noun phrase (NP1 vs. NP2) was modified by the relative clause. The order of the two noun phrases (two answers) on the screen was counterbalanced. There was no time limit to answer the given questions, but the participants could not go back and change their answers to previous questions. The experiment was conducted using the online survey tool, Qualtrics.

#### 4.3 Results

In experiment 2, it was expected that the appearance of the honorific affix *-si* on the verb would lead to a priming effect through honorific agreement and encourage a low-attachment preference. Surprisingly, we still

found that more participants reported a high-attachment interpretation (62%) than a low-attachment interpretation (38%), as shown in Figure 2.



**Figure 2.** The results of experiment 2

However, comparison between the non-honorific agreement bias condition and the honorific agreement bias condition showed that an honorific agreement bias toward a low-attachment interpretation increased low-attachment interpretation responses from 15% to 38%. The difference between the two conditions is very significant (logistic regression:  $p < 0.001$ ).

## 5 Conclusion

The current study investigated the attraction effect of honorific affix *-si* on processing of relative clause attachment ambiguity in Korean. We observed a strong high-attachment preference from experiment 1. Even though the honorific affix *-si* was not strong enough to cancel the high-attachment preference, a great proportion of high-attachment preference was reduced when the honorific affix *-si* appeared in a relative clause.

As mentioned earlier in this paper, the honorific affix *-si* agreement in Korean is different from other syntactic agreements (number, gender, and person) in that the honorific agreement between subject and verb in Korean is not grammatically motivated. Thus, both high-attachment interpretation and low-attachment interpretation are available even when the honorific



affix *-si* is present. As a result, the honorific agreement could not induce low-attachment preference over high-attachment preference.

However, this study still provides evidence that a priming effect of syntactic/pragmatic cues (i.e. honorific agreement) for resolving relative clause attachment ambiguity exists in Korean. This implies that relative clause processing strategies may not only show variation across languages, as shown in previous studies, but also variation within a language. Whether the priming effect appears in online processing or not remains for future research.

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