

Effects of Honorific Agreement on Null Subject Interpretation in Korean*

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Abstract

The effects of Korean honorific agreement on null subject interpretation were tested in two experiments: an off-line rating task and an on-line self-paced reading experiment. We investigated whether the subject preference found in Romance languages is present in Korean and how it interacts with honorific agreement. We investigated how speakers interpret null subjects of honorific-marked verbs. As in Romance languages, subjects were preferred over objects. In addition, honorific agreement was also shown to influence the interpretation of null subjects. When the main-clause *object*, not the subject, agreed with subordinate verb in honorification, the subject preference decreased. Honored referents (e.g., *teacher*) were also preferred over non-honored referents (e.g., *student*). Reading times indicated a rapid sensitivity to honorific marking during real-time processing.

1. Introduction

We report the findings of two experiments that tested the role of honorific agreement in the on-line and off-line interpretation of null subjects in Korean. The interpretation of phonologically overt and null pronouns has been explored to a considerable degree in various languages, including Chinese, English, Finnish, Italian, and Spanish (Alonso-Ovalle et al. 2002; Carminati 2002; Kaiser & Trueswell 2008; Kazanina et al. 2007; Sorace & Filiaci 2006; *inter alia*). Particularly, the question of how pronouns are interpreted in languages that allow both overt and null pronouns, such as Italian and Spanish, has received much attention. Existing psycholinguistic research supports the widely-held view that null pronouns in these languages tend to be interpreted differently from their overt counterparts (e.g., Alonso-Ovalle et al. 2002; Carminati 2002; Sorace & Filiaci 2006). Null pronouns are more likely to be interpreted as referring to the subject of the preceding clause, whereas overt pronouns prefer non-subject antecedents. However, research on the interpretation of null pronominals in the Korean language is very limited (see Han 2006). Unlike *pro(nominal)*-drop languages (e.g., Italian and Spanish), Korean does not have syntactically overt agreement for person, number, or gender. Korean is often regarded as a topic-drop language (Huang 1984), and verbal arguments (e.g., sentence subjects and objects) that can be easily recoverable from the discourse context are often phonologically null. Examples of null arguments in Korean are presented in (1).

(1) Examples of null subjects and objects in Korean

a. [e_{subj}] [e_{obj}] *mek-ess-ta*.
null_{subj} null_{obj} eat-PAST-DECL
'[null_{subj}] ate [null_{obj}].' ('Someone ate something.')

b. [e_{subj}] *aph-ayo*
null_{subj} sick-DECL
'I am (she/he is) sick.'

c. [e_{subj}] *phyenchanusey-yo*
null_{subj} sick (**HON**)-DECL
'Someone honorable is sick.'
'*I am sick.' or '*The baby/dog is sick.'

* This paper is based upon the first author's M.A. thesis at the University of Southern California (Kim 2009), which was directed by the second author.

Nominal arguments of verbs are often phonologically empty in Korean when they have already been mentioned in the previous discourse (i.e., discourse-old) or when they are easily accessible from the context (contextually salient). As can be seen in (1c), when an honorific verbal expression (*phyenchanusey-yo*) is used, the range of possible antecedents of the null subject is restricted to honored individuals. Although the sentences (1b) and (1c) mean basically the same thing (i.e., ‘Someone is not well’), sentence (1b) can be interpreted as ‘I’m sick’ or ‘Someone else is sick’, but the interpretation of (1c) is more constrained. The presence of the honorific expression in (1c) makes it impossible to interpret the sentence as ‘I’m sick,’ because it is inappropriate for someone to use an honorific expression to refer to himself/herself. The sentence also cannot be interpreted as ‘Someone non-honored (e.g., baby or dog) is sick.’

Our main goal was to test how null subjects are interpreted in Korean. We were particularly interested in whether native speakers of Korean are sensitive to the (mis)match between an honorific-marked verb and the honorific status of the null subject’s referent. We conducted an off-line referent acceptability-rating task and an on-line self-paced reading experiment. Both experiments investigated a situation where two possible antecedents were mentioned in the main clause, and a null pronoun occurred with an honorific-marked verb in the subordinate clause. The results from both experiments suggest that null subjects tend to be interpreted as referring to the subject of the main clause (i.e., they exhibit a subject preference). Comprehenders were also shown to be sensitive to honorific agreement in null subject resolution. When the *object* (and not the subject) of the main clause agreed with the subordinate verb in honorification, the subject preference decreased significantly. In the on-line experiment, the time taken to choose null subject’s referent was faster when there was verbal-honorification than when there was not. This suggests that honorific agreement can facilitate null subject resolution. Reading times for the main clause subject and object suggest that comprehenders are sensitive to the presence of verbal-honorification, and tend to consider only those antecedents that are consistent with the verbal honorification.

1.1. Honorific agreement in Korean

As noted previously, there is no overt verb agreement for person, number, or gender in Korean (e.g., Kim 1999). Generally, null entities are argued to be recoverable when there is overt agreement (Chomsky 1981). However, in languages such as Korean, Japanese, and Chinese that lack overt verb agreement, null entities are believed to be licensed by “strong” contextual or discourse features (Huang 1984). The lack of verb agreement seems to have motivated the wide-spread view that the interpretation of null entities in Korean is highly context-dependent. However, the language has other agreement features, such as the honorific agreement system and subject-mood agreement markers (Park 2004). Kim (1999) observes that subject-honorific agreement is obligatory in Korean, while object-honorific agreement is quite rare, and limited to a small number of verbs. When a verb is marked for subject-honorification, it must occur with an honored subject (Choi 2003). The question of whether a particular person/entity is judged to be honored or not depends on the speaker’s relation to that person, in terms of age, kinship, and social status, and is also sensitive to the speaker’s relation to the hearer.

An example of subject-honorification is the nominal suffix *-nim*, which attaches to occupational nouns, as in *sensang-nim* (teacher-HON) and *sacang-nim* (president of a company-HON). The presence of *-nim* shows that the referent of the noun is respected by the speaker (Lee 1996). As for verbal-honorification, which is the main focus of this paper, the suffix *-(u)si-* often adjoins the verb stem, and shows that the speaker owes honor to the subject noun (Choi 2003), as in *po-si-ta* for *pota*, ‘to see’. Honorific agreement between a subject and its verb is exemplified in (2).

(2) Subject-verb honorific agreement in Korean

- a. *haksang-i* *o-ass-ta*
 student-NOM come-PAST-DECL
 ‘A/the student came.’
- b. *haksang-i* *o-si-ess-ta*.
 student-NOM come-***HON**-PAST-DECL
 ‘A/the student came-***HON**.’

c. *sensang-nim-i* *o-si-ess-ta*
 teacher-HON-NOM come-HON-PAST-DECL
 ‘The teacher-HON came-HON.’

d. # *sensang-nim-i* *o-ass-ta*.
 ‘The teacher-HON came.’

The use of the verbal honorific affix *-si-* for the subject noun *haksang* (student) in (2b) is infelicitous, because students are not considered to have an honorable status. On the other hand, the subject noun *sensang-nim* (teacher) in (2c), which is considered to have an honorable status, requires a verb with the honorific affix. Sentence (2c) is felicitous since the honorable subject noun *sensang-nim* agrees with the verbal suffix *-si-*. However, notice that the absence of *-si-* with *teacher* in (2d) is not as marked as the presence of it with *student* in (2b), suggesting that failing to use honorific verbal morphology with honorific subjects is not as marked as using honorific verbal morphology when it is not licensed. Predicates that contain *-si-* can be used only with honored subjects, whereas non-*-si-* predicates can be used with both honored- and non-honored subjects. Given these agreement relations, Choe (2004) proposes that “[i]n Korean, given a particular form of the verb, one can uniquely predict its subject with respect to honorification”. The current study adopts this view, and focuses on the asymmetry in well-formedness between (2b) and (2d). That is, the presence of verbal-honorification requires *only* an honored person to be the grammatical subject. Verbs without verbal-honorification can have either an honored- or non-honored person as the subject.

Though Korean honorification has been recognized as an essential part of the grammar and communication at large (Sohn 1999), Cho (1994) argues that it is too weak to identify null subjects. Furthermore, researchers disagree as to whether Korean honorific agreement is a purely pragmatic phenomenon, or whether it is also subject to syntactic constraints. Some view the honorific relation between a verb and its argument as syntactic and thus similar to the number and gender agreement in Indo-European languages (Ahn 2002; Choe 2004; Koopman 2005). Others view it as a product of constraints on the context alone (Han 1991; Kim & Sells 2007; Park 1992). It should be noted that the current paper makes no particular claim as to whether Korean honorific agreement is syntactic or purely pragmatic. Rather, our focus is on the honorific property that a subject noun carries in the presence or absence of verbal-honorification, as shown previously. In other words, the honorific verbal suffix *-si-* requires an honored subject (*teacher*), not a non-honored one (*student*). This holds independent of whether the agreement is regarded as syntactic or purely pragmatic.

2. Research questions

The two studies reported here attempt to contribute to our understanding of how null subjects are interpreted in Korean. Our experiments tested (i) whether the subject preference for the referent of a null pronoun evident in Romance languages would be present in null subject resolution in Korean (see also Han 2006), (ii) whether comprehenders make use of intra-sentential constraints, such as the honorific agreement between the subordinate verb and the subject and object of the main clause, and (iii) the way in which the hypothesized subject preference and the honorific agreement interact during the process of null subject interpretation.

3. Experiment 1: Off-line referent acceptability-rating task

In this experiment, participants were asked to rate how acceptable main-clause subjects and objects were as potential referents for a null subject in a subordinate clause. Each item consisted of a sentence followed by a question-answer pair that identified the null subject as referring to either the main clause subject or object (see (3)). The participants’ task was to rate the acceptability of the given antecedent for the null subject on a 5-point scale (1 = ‘Not at all acceptable, 5 = ‘Definitely acceptable’). Three independent variables were manipulated: (i) *Honorification* (presence or absence of the honorific suffix *-si-* on the subordinate verb, e.g., ‘drinking±HON’), (ii) *Grammatical Role of the honorable entity* in the main clause (i.e., subject vs. object), and (iii) *Referent type in the question/answer pair* (grammatical role of the null subject’s referent, i.e., subject vs. object). We will often refer to the provided answer as the *given referent* (e.g. *the child* is the ‘given referent’ in (3)). Thus, the study had a 2x2x2 design, with eight conditions in

total. The target items were bi-clausal sentences in which the subordinate clause, which included a null subject, preceded the main clause. The main clause included a subject, object, and transitive verb. Three different subordinate conjunctions (*while*, *before*, and *after*) were used. The question following each target sentence asked who the person doing the subordinate verb was (e.g., *Who is drinking water?* in (3)).

(3) Sample target item

물을 드시는 동안 목사님이 꼬마를 반기신다.
 [[\emptyset mul-ul tu-si-nun dongan] [moksa-nim-i k^homa-lul panki-si-n-ta]]
 null water-ACC eat-HON-COMP while pastor-HON-NOM child-ACC greet-HON-PRES-DECL

‘While \emptyset drinking-HON water, the pastor greets-HON the child.’

Question: Who is drinking water?

Answer:

Not at all acceptable ●-----●-----●-----●-----●-----● Definitely acceptable

3.1. Predictions

It was predicted that honorific agreement will have an effect on the resolution of null subjects in Korean. Specific predictions for each of the eight experimental conditions are provided in Table 1.

Table 1. Predictions on the referent acceptability-rating scores

Conditions	Sample item	Given referent	
		subject	object
YESVHON-SHON-S YESVHON-SHON-O	잠바를 입으시는 동안 할머니가 손녀를 안으신다. While \emptyset is wearing-HON a coat, the grandmother hugs-HON the granddaughter.	5	1
YESVHON-OHON-S YESVHON-OHON-O	잠바를 입으시는 동안 손녀가 할머니를 안는다. While \emptyset is wearing-HON a coat, the granddaughter hugs the grandmother.	1+	5-
NOVHON-SHON-S NOVHON-SHON-O	잠바를 입는 동안 할머니가 손녀를 안으신다. While \emptyset is wearing a coat, the grandmother hugs-HON the granddaughter.	3+	3-
NOVHON-OHON-S NOVHON-OHON-O	잠바를 입는 동안 손녀가 할머니를 안는다. While \emptyset is wearing a coat, the granddaughter hugs the grandmother.	3+	3-

Note: 1=Not at all acceptable, 5=Definitely acceptable.

We first consider the conditions where the verb in the subordinate clause is marked with the honorification suffix (YESVHON). In the YESVHON-SHON-S condition – where the subordinate verb has honorification (YESVHON), the main clause subject is honored (SHON) and the question asks about the subject referent (S) – we predict that participants will rate the subject referent (given in the question-answer pair) as a very acceptable antecedent for the null subject (close to 5 on the scale), since the subject agrees with the verb’s honorification. In contrast, in the YESVHON-SHON-O condition (subordinate verb has the honorific affix, YESVHON; matrix subject is honored, SHON; the question asks about the matrix object, O), the given object referent is expected to receive a low rating (close to 1) since the matrix *subject* is the one that matches the verbal-honorification, not the object.

In the YESVHON-OHON-S condition, where the matrix *object* is the honored referent, we predicted that the non-honored *subject* given in the question will trigger low ratings, since the honorification on the subordinate verb matches the object in the main clause. However, if null pronouns prefer subjects, we predict that the ratings in this condition will nevertheless be higher than those in the YESVHON-SHON-O condition, where the referent in the question-answer pair is the *object*.

In the YESVHON-OHON-O condition, where the object agrees with the verbal-honorification and it is also the referent given in the question-answer pair, high acceptability ratings are expected. However, if null pronouns prefer subjects over objects, we predict that the ratings in this ‘object-agreeing’ condition will be lower than those in the ‘subject-agreeing’ YESVHON-SHON-S condition, where the subject

agrees with the verbal-honorification and is given in the question. In other words, in the YESVHON-OHON-O condition, we may find that the subject preference interferes when the comprehender is trying to associate the null subject of the honored subordinate verb with the main clause object.

For the conditions where the verb in the subordinate clause has no honorific marking (NOVHON, the second half of Table 1), we expected both the subject and object of the main clause to be plausible referents for the null pronoun. However, if null pronouns have a subject preference, we expect that the ratings for the conditions where the referent in the question/answer pair is the main-clause subject (NOVHON-SHON-S and NOVHON-OHON-S) will be higher than the ratings for the conditions where the main-clause object is the referent in the question/answer pair (NOVHON-SHON-O and NOVHON-OHON-O).

3.2. Results

As Table 2 shows, the overall trends in the rating scores were as predicted. Participants' ratings were higher when the given referent agreed with the subordinate verb in honorification (YESVHON-SHON-S and YESVHON-OHON-O) than when it did not (YESVHON-SHON-O and YESVHON-OHON-S). In the absence of verbal-honorification, the differences in the rating scores between the subject and object referents were not as large as those in the conditions with verbal-honorification. This indicates that, in the absence of verbal-honorification, both the subject and object are considered as possible referents for the null subject. However, participants gave higher ratings for the subject referents than the object referents, indicating a subject preference.

Table 2. Mean rating scores in the eight conditions (1=Not at all acceptable, 5=Definitely acceptable)

Conditions	Sample item	Given referent	
		subject	object
YESVHON-SHON-S YESVHON-SHON-O	잠바를 입으시는 동안 할머니가 손녀를 안으신다. While Ø is wearing-HON a coat, grandmother hugs-HON granddaughter.	4.20	1.81
YESVHON-OHON-S YESVHON-OHON-O	잠바를 입으시는 동안 손녀가 할머니를 안는다. While Ø is wearing-HON a coat, granddaughter hugs grandmother.	2.36	3.42
NOVHON-SHON-S NOVHON-SHON-O	잠바를 입는 동안 할머니가 손녀를 안으신다. While Ø is wearing a coat, grandmother hugs-HON granddaughter.	3.56	2.44
NOVHON-OHON-S NOVHON-OHON-O	잠바를 입는 동안 손녀가 할머니를 안는다. While Ø is wearing a coat, granddaughter hugs grandmother.	3.35	2.09

Participants' ratings revealed significant main effects of *Referent type* ($p < .0001$) and the *Grammatical role of the honored person* ($p = .001$). More specifically, participants' ratings were higher (i) when the null referred to the subject of the main clause than when it referred to the object (*subject preference*), and (ii) when the subject of the main clause was an honorable individual than when the object was an honorable individual. We interpret this as an indication that *honorable entities are more salient*. In addition, there was a significant interaction between *Referent type* and *Grammatical role of the honorable person*. When the honored entity (e.g., *grandmother*) was in subject position, the null subject's preference for that subject was stronger than when the honored entity was in object position.

The subject preference signaled by the significant effect of *Referent type* was further tested by comparing the mean rating scores across the conditions. The mean rating of the YESVHON-SHON-S condition was significantly higher than that of the YESVHON-OHON-O condition ($p < .0001$). In other words, when the verbal honorification agreed either with the honored subject or object of the main clause, participants gave significantly higher ratings for the subject referent than the object referent. We also found that the mean rating of the YESVHON-OHON-S condition was significantly higher than that of the YESVHON-SHON-O condition ($p < .001$). This shows that when the verbal honorification did *not* agree with either the non-honored subject or object of the main clause, the ratings were still higher for the subject referent than the object referent. In the absence of verbal-honorification, the ratings for the honored person were higher when it was in subject position (NOVHON-SHON-S) than when it was in

object position (NOVHON-OHON-O) ($p < .0001$). The ratings for the non-honored person were also higher when it was in subject position (NOVHON-OHON-S) than when it was in object position (NOVHON-SHON-O) ($p < .0001$).

The effects of honorific agreement were further assessed by comparing the mean ratings of the YESVHON-SHON-S condition and the YESVHON-OHON-S condition. Both conditions probed the acceptability of the subject antecedent, but in the YESVHON-SHON-S condition, the honorable entity was in subject position, and in the YESVHON-OHON-S condition, it was in object position. If honorific agreement plays no role and subjecthood is all that matters, the ratings for the subject referent in these conditions should not differ significantly. However, participants gave significantly higher ratings in the YESVHON-SHON-S condition than in the YESVHON-OHON-S condition ($p < .0001$). When the honorification on the subordinate verb clashed with the given antecedent as in the YESVHON-OHON-S condition, ratings decreased. Likewise, if honorific agreement has no effect, the object referents should receive low ratings regardless of honorific agreement. However, ratings for the object referent increased when it matched the subordinate verb in honorification than when it did not. That is, the mean rating of the YESVHON-OHON-O condition was significantly higher than that of the YESVHON-SHON-O condition ($p < .0001$). The mean rating of the YESVHON-OHON-O condition was higher than that of the NOVHON-OHON-O condition ($p < .0001$).

4. Experiment 2: On-line self-paced reading experiment

The 24 target sentences used in Experiment 1 were modified slightly to make them suitable for the self-paced reading methodology of Experiment 2. To allow time for potential late effects to be detected, an additional clause was added after the main clause (see (4)). The main clause (i.e., the second clause of the sentence) included a subject and an object separated by an adverbial phrase, as well as a transitive verb ending with the coordinating particle *-ko* ('and,' e.g., *cheers-and*).

(4) Sample target sentence used in the on-line experiment

이사를 가시기 전에 할아버지가 매우 따뜻하게 손자를 위로하시고 시간이 빠르게 흐르고 있다.

[[[\emptyset isa-lul ka-(si)-ki ceney] [halapeci-ka maywu ttatushakey sonca-lul wilohasi-ko],
[[[\emptyset move-ACC go-(HON)-COMP before] [grandfather-NOM very warmly grandson-ACC cheer-and]
[sikan-i ppalukey huluko i-ss-ta]]]
[time-NOM quickly running be-PRES-DECL]]]

'Before \emptyset moving away, the grandfather very warmly cheers the grandson, and time is running out quickly.'

Two independent variables were manipulated in the on-line study: (i) the presence and absence of the honorific verbal affix *-si-* on the subordinate verb (*Honorification*, [YESVHON] and [NOVHON]) and (ii) the *Grammatical role of the honored person* in the main clause (*Gram-role*, [SHON] vs. [OHON]). *Honorification* and *Gram-role of the honored person* were crossed to create four conditions: YESVHON-SHON, NOVHON-SHON, YESVHON-OHON, and NOVHON-OHON. Table 3 presents a sample target sentence in each of the four conditions. Our analyses focused on three dependent variables: (i) *Referent choice*: Do participants interpret the null subject as referring to the main clause subject or object? (ii) *Response time (RST)*: How quickly do participants select one of the two referents? and (iii) *Reading Times* for the main clause subject and object.

An on-line, non-cumulative, self-paced reading experiment (Just et al. 1982) was administered using *Linger* (Rohde 2001). Participants silently read sentences word by word at their own pace, and moved on to the next word by pressing the space bar. Before reading each sentence, they saw a line in the center of the screen covering the words in the sentence. With every press of the space bar, a new word in the sentence appeared, and the previous word disappeared. *Linger* recorded the time between each press of the space bar (i.e., the time spent reading each word) in milliseconds. When participants finished reading the sentence, a question appeared on a new screen, probing the referent of the null subject (e.g. "*Who is moving away?*" for the items in Table 3). Two answer choices were presented: the main-clause subject or the main-clause object. The left/right order of referents was counterbalanced. Participants were instructed to select the referent that they felt was the best answer for the question.

Table 3. Sample target sentence in each of the four conditions

Conditions	Sample item
YESVHON-SHON	이사를 가시기 전에 할아버지가 매우 따뜻하게 손자를 위로하시고 시간이 빠르게 흐르고 있다. Before Ø moving- HON away, the grandfather very warmly cheers- HON the grandson, and time is running out quickly.
NOVHON-SHON	이사를 가기 전에 할아버지가 매우 따뜻하게 손자를 위로하시고 시간이 빠르게 흐르고 있다. Before Ø moving away, the grandfather very warmly cheers- HON the grandson, and time is running out quickly.
YESVHON-OHON	이사를 가시기 전에 손자가 매우 따뜻하게 할아버지를 위로하고 시간이 빠르게 흐르고 있다. Before Ø moving- HON away, the grandson very warmly cheers the grandfather, and time is running out quickly.
NOVHON-OHON	이사를 가기 전에 손자가 매우 따뜻하게 할아버지를 위로하고 시간이 빠르게 흐르고 있다. Before Ø moving away, the grandson very warmly cheers the grandfather, and time is running out quickly.

4.1. Results

This section is divided into three sub-sections based on the data types: (i) referent choice, (ii) time taken to make the referent choice, and (iii) reading times for the main clause subject and object.

Choice of referent: As predicted, participants tended to choose the subject referent in YESVHON-SHON condition (81%) and the object referent in the YESVHON-OHON condition (62%). The (honored) subject referent was also preferred in NOVHON-SHON condition (71%), despite the absence of verbal honorification. In contrast, when the object was honored and the subordinate verb had no honorific marking (NOVHON-OHON), both the subject and object were found to be plausible referents (58% and 42%, respectively). Table 4 presents the percentages of the subject and object responses in each condition.

Table 4. Proportions of the subject and object responses

Conditions	Responses (%)	
	Subject	Object
YESVHON-SHON	81	19
NOVHON-SHON	71	29
YESVHON-OHON	38	62
NOVHON-OHON	58	42

There was a main effect of the *grammatical role of the honored person* on the choice of referent ($p < .0001$). Regardless of whether the verb had honorification marking or not, when the main-clause subject was honored ({YES/NO}VHON-SHON conditions) participants were more likely to choose the subject as the referent (76% subject choices on average), as compared to when the honored person was in object position ({YES/NO}VHON-OHON, 48% subject choices on average).

Paired samples T-tests revealed a significant difference in the referent choices across all conditions except for a marginally significant difference between the YESVHON-SHON condition and the NOVHON-SHON condition ($p = .069$). Crucially, the subject responses in the YESVHON-SHON condition were significantly higher than in the YESHON-OHON condition ($p < .0001$). When there was honorific agreement between the subordinate verb and the main-clause subject (YESVHON-SHON condition), participants tended to choose the main clause subject as the referent (81% subject responses). However, when the main clause *object* agreed with the subordinate verb in honorification (YESVHON-OHON condition), they tended to choose the main-clause *object* as the referent (62% object responses) – in other words, honorification can trigger increased object choices. In the absence of an honorific cue, we found a significant subject preference: The rate of subject responses in the NOVHON-SHON condition (71%) was significantly higher than the rate of subject responses in the NOVHON-OHON condition (58%) ($p < .05$). Thus, although both the subject and object of the main clause could be regarded as

possible referents in these conditions, our results show that when the honored person was in subject position (in the NOVHON-SHON condition), the number of subject choices increased.

Response Times (RSTs): Participants responded fastest in the YESVHON-SHON condition, and slowest in the NOVHON-OHON condition (Table 5). Note that NOVHON-OHON is the condition with the smallest difference between the proportion of the subject and object responses (58% and 42% respectively). This suggests that when comprehenders judged both the subject and object to be plausible referents for the null subject, they were slower to respond, presumably due to competition between the two possibilities.

Table 5. Time taken to select the referent in each condition

conditions	Response time (ms)	Subject responses (%)
YESVHON-SHON	2658	81
NOVHON-SHON	3131	71
YESVHON-OHON	3049	38
NOVHON-OHON	3309	58

Response times also show a marginally significant main effect of *Honorification* ($p = .061$). That is, response times were marginally longer when there was *no* honorific marking on the subordinate verb (NOVHON, Mean RST = 3220 ms) than when there was (YESVHON, Mean RST = 2853ms). The response times in the YESVHON-SHON condition were marginally shorter than those in the NOVHON-SHON condition ($p = .076$), and those in the NOVHON-OHON condition ($p = .065$). Importantly, however, the Mean response time of the YESVHON-SHON condition did not differ significantly from that of the YESVHON-OHON condition. The fact that there was no significant time difference in choosing the referent from these two distinctive grammatical roles suggests that making a referential connection between the main clause object and the null was not cognitively any more demanding than associating the null with the main clause subject when there is agreement in honorification.

Response-contingent analyses: We also analyzed the response times separately for the subject responses and the object responses (Table 6). Analyzing the response times in relation to each response type was important as the preference for the subject and object referents were expected to differ across the conditions. For example, in the YESVHON-SHON condition, the main-clause subject was the only plausible referent of the null, and in the YESVHON-OHON condition, the main-clause object was the only plausible referent. If we focus on those conditions where participants chose the subject as the antecedent of the null, the shortest response time was observed in the YESVHON-SHON condition, and the longest in the YESVHON-OHON condition. On the trials where participants chose the object, a very different pattern was observed: now, the response time was shortest in the YESVHON-OHON condition.

Table 6. The response times in relation to each response type across the four conditions

Conditions	Subject responses (%)	Overall	Response Times (ms)	
			Subject responses	Object responses
YESVHON-SHON	81	2658	2539	3189
NOVHON-SHON	71	3131	2926	3651
YESVHON-OHON	38	3049	3731	2610
NOVHON-OHON	58	3309	3049	3673

Reading Times (RTs): Reading times for the main clause subject and object were analyzed separately by response type as well (see Table 7).

Table 7. Reading times for the main clause subject and object by response types

Conditions	Subject responses		Object responses		Subject responses (%)
	RT-subject	RT-object	RT-subject	RT-object	
YESVHON-SHON	702	658	781	646	81
NOVHON-SHON	802	626	897	583	71
YESVHON-OHON	704	692	766	865	38
NOVHON-OHON	734	667	738	789	58

The reading times for the main clause subject were longer in the NOVHON-SHON condition than in the YESVHON-SHON condition regardless of which referent participants chose.

A slow-down in reading time occurred at the main-clause subject when it was honored but the subordinate verb did not have honorific marking (NOVHON-SHON), relative to the condition where the verb had honorific marking (YESVHON-SHON). However, when the main-clause subject was not honored and the subordinate verb *had* honorific marking (YESVHON-OHON), *no slow-down was observed* at the non-honored subject relative to the condition where the verb did not have honorific marking (NOVHON-OHON). This finding is similar to what has been observed in backward anaphora resolution in sentences with structural constraints, such as Principle C violations (Kazanina et al. 2007). In Kazanina et al.'s study, when a pronoun was followed by a gender-mismatching subject (e.g. *she – quarterback*), no slow-down was observed if the noun was not a syntactically-accessible antecedent for the pronoun. The fact that we found *no honorific-mismatch effect* at the main-clause subject in the YESVHON-OHON condition suggests that comprehenders were very sensitive to the *presence* of verbal honorification. In other words, it seems that verbal honorification on the subordinate verb strongly constrains on-line reference resolution, signaling that non-honored entities are not potential antecedents.

When the subject was honored and the verb had no honorific marking (NOVHON-SHON), a *slow-down occurred only at the main-clause subject*, not the object, relative to the condition where the verb had honorific marking (YESVHON-SHON). However, in the condition where the object was honored and the verb had honorific marking (YESVHON-OHON), a slow-down occurred *only at the object*, not the subject, relative to the condition where the verb did not have honorific marking (NOVHON-OHON). The slow-down at the object position arose primarily on trials where participants chose the object as the referent. We take this slowdown as an indication that comprehenders were establishing a coherence relation at that point. This is also the condition where the object responses (62%) were more frequent than subject responses (38%).

5. Conclusions

The studies reported here attempted to contribute to our understanding of how native speakers of Korean interpret phonologically null subjects. The off-line referent acceptability-rating task and the on-line self-paced reading experiment tested whether the interpretation of null subjects is guided by intra-sentential constraints, such as honorific agreement. In particular, if the processing of null subjects in Korean is guided by a subject preference that interacts with honorific agreement, we expected to see a preference to interpret the main-clause subject as the referent over the object, but only when there was no violation in honorific agreement. We were especially interested in testing the effects of honorification when it conflicts with subjecthood. So, when the honorification on the subordinate verb agrees with the *object* of the main clause, and not the subject, what happens to the hypothesized subject preference? Furthermore, we also tested how honorific marking constrains the real-time resolution of null subjects. In relation to the reading times for the two potential referents in the main clause (i.e., subject and object), comprehenders were expected to be sensitive to verbal-honorification and thus consider only those referents that agree in honorification. The results from our off-line and on-line experiments showed that honorific agreement *does* guide null subject resolution in Korean, and that it interacts with a subject preference. More specifically, we found that (i) null subjects in Korean prefer subjects over objects as the referent, resembling null pronouns in Romance languages and supporting the corpus results of Han (2006), and that (ii) null subjects prefer honored individuals over non-honored ones. In light of these results, we suggest that in addition to grammatical subjects being discourse-prominent, honored individuals are regarded as being more salient than non-honored ones. Based on the on-line reading times, we further suggest that the language processing system uses verbal honorification as a strong cue to restrict the set of potential antecedents to honored entities, and that as a result, comprehenders tend to consider only those referents that match in honorification, regardless of grammatical role.

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