Remarks and Replies

Null Objects in Korean: Experimental Evidence for the Argument Ellipsis Analysis

Chung-hye Han
Kyeong-min Kim
Keir Moulton
Jeffrey Lidz

Null object (NO) constructions in Korean and Japanese have received different accounts: as (a) argument ellipsis (Oku 1998, S. Kim 1999, Saito 2007, Sakamoto 2015), (b) VP-ellipsis after verb raising (Otani and Whitman 1991, Funakoshi 2016), or (c) instances of base-generated *pro* (Park 1997, Hoji 1998, 2003). We report results from two experiments supporting the argument ellipsis analysis for Korean. Experiment 1 builds on K.-M. Kim and Han's (2016) finding of inter-speaker variation in whether the pronoun *ku* can be bound by a quantifier. Results showed that a speaker's acceptance of quantifier-bound *ku* positively correlates with acceptance of sloppy readings in NO sentences. We argue that an ellipsis account, in which the NO site contains internal structure hosting the pronoun, accounts for this correlation. Experiment 2, testing the recovery of adverbials in NO sentences, showed that only the object (not the adverb) can be recovered in the NO site, excluding the possibility of VP-ellipsis. Taken together, our findings suggest that NOs result from argument ellipsis in Korean.

Keywords: null object, argument ellipsis, null pronominal, sloppy reading, Korean

1 Introduction

One of the defining grammatical properties of East Asian languages, such as Korean and Japanese, is the possibility of dropping object arguments in addition to subject arguments. This phenomenon is attested in the so-called null object construction in Korean, as exemplified in (1), where a transitive verb with no overtly expressed object (marked with **[e]** as a theory-neutral notation) appears in the second conjunct of the coordinate structure.

(1) Appa-nun sayenni-lul   coaha-yss-ciman, emma-nun **[e]** sileha-yess-ta.
    Dad-TOP   New.Sister-ACC like-PAST-CONJ   Mom-TOP   dislike-PAST-DECL
    (Lit.) 'Dad liked New Sister, but Mom disliked.'
    (https://torantoran.postype.com/post/763142)

The object of *sileha* 'dislike' is missing, but it is readily understood as corresponding to the
phonologically overt object in the first conjunct, *sayenni* 'New Sister'. This is in contrast with
English, which does not allow null objects; the literal translation of (1) is not acceptable. The
existing analyses for null object constructions in the East Asian languages can be grouped into
at least three camps: (a) the null pronominal analysis, (b) the argument ellipsis analysis, and (c)
the verb-stranding VP-ellipsis analysis.

The first analysis postulates a phonologically null pronoun (*pro*) base-generated in the object
position **[e]** (Cole 1987, Park 1994, 1997, Hoji 1998, 2003, Li 1998, Yoon 2004, Ahn and Cho
2010, 2011a,b, S.-H. Kim 2010, Moon 2010, Bae and Kim 2012). The null *pro* refers to a
contextually salient entity (e.g., New Sister in (1)), introduced into the discourse by the overt
object in the first clause, similar to the behavior of an overt pronoun such as *kunye* 'she'.

The second analysis claims that null objects are the result of an operation called argument
ellipsis (Oku 1998, S. Kim 1999, Saito 2003, 2007, Takahashi 2007, 2008, Cheng 2011, 2013,
Otaki 2011, 2014, Takita 2011, Um 2011, J.-S. Kim 2012, Park 2013, Saito and An 2014, Saka-
moto 2015, 2016, 2017). That is, a full-fledged DP constituent is constructed in the object position
in (1), but is subsequently elided under identity with an overt DP in the corresponding object
position in a preceding clause.[1]

The third analysis involves VP-ellipsis preceded by overt movement of the main verb out
of the VP to Tense (Huang 1987, 1988, 1991, Otani and Whitman 1991, Pan 2002, E.-J. Lee
2005, Funakoshi 2014, 2016, W. Lee 2016, Fujiwara 2017). In (1), for instance, all the elements
within the VP in the second conjunct, including the DP object, undergo ellipsis, while the verb,
sileha 'dislike', which has been raised to Tense, is "stranded" and thus is overtly realized. Under
the verb-stranding VP-ellipsis analysis, then, the null object site **[e]** is equivalent to an articulated
VP constituent, although it does not appear to be so on the surface.[2]

The three competing approaches can be distinguished by their assumptions regarding the
following two parameters: (a) whether null objects contain unpronounced internal structure, and
(b) whether null objects correspond to DPs or "null VPs in disguise" (as Huang (1988) terms
them), as summarized in table 1.

The primary purpose of this article is to present novel empirical data obtained from two
experimental studies demonstrating that some instances of Korean null objects should be analyzed

---

[1] Argument ellipsis has also been argued to occur in South Asian languages such as Bangla, Hindi, and Malayalam
(Simpson, Choudhury, and Menon 2013, Takahashi 2013), and in other languages such as Colloquial Singapore English
(Sato 2014, 2016), Mongolian (Takahashi 2007), Persian (Sato and Karimi 2016), Turkish (Şener and Takahashi 2010),
and Hebrew (Landau 2018).

[2] The verb-stranding VP-ellipsis analysis has also been proposed for Hebrew (Doron 1999, Goldberg 2005), Irish
(McCloskey 1991), Persian (Shafiei 2015), and Russian (Gribanova 2013a,b).

Table 1
Syntactic status of null objects

Source of null objects	(a) Internal structure?	(b) **[e]** is DP or VP?
Null pronominal	Absent	DP
Argument ellipsis	Present	DP
Verb-stranding VP-ellipsis	Present	VP

as argument ellipsis. In Experiment 1, the availability of sloppy identity readings for null objects was examined in conjunction with interspeaker variability in the interpretation of the pronoun *ku*, which offers a novel probe for diagnosing the presence of internal syntactic structure at the null object site. We demonstrate that the findings of Experiment 1 could only be obtained if the null object constructions tested result from the ellipsis of a constituent with full-fledged structure, thus undermining the view that Korean null objects are pronominal. Experiment 2 tested the recoverability of adjuncts to diagnose the size of ellipsis: whether it is a DP object (argument ellipsis) or a VP containing the DP object (verb-stranding VP-ellipsis). The findings showed that adjuncts cannot be recovered, which supports the claim that the null object in Korean results from argument ellipsis, not verb-stranding VP-ellipsis.

2 Experiment 1

2.1 Research Question and Predictions

The first and most frequently cited argument in defense of the ellipsis strategy for null objects in East Asian languages is that sloppy identity readings are available in some null object constructions, as illustrated in the Korean example in (2). Note that the antecedent sentence in (2A) has a DP object containing the long-distance anaphor *caki* 'self' as a possessor.

>(2) A: Minswu$_1$-ka caki$_1$-uy emeni-lul   piphanha-yess-ta.
>   Minswu-NOM self-GEN mother-ACC criticize-PAST-DECL
>   'Minswu$_1$ criticized his$_1$ mother.'
>   B: Cinswu-to   **[e]** piphanha-yess-ta.
>   Cinswu-also   criticize-PAST-DECL
>   (Lit.) 'Cinswu criticized, too.'
>   a. 'Cinswu criticized his own mother, too.'   [sloppy identity]
>   b. 'Cinswu criticized Minswu's mother, too.'   [strict identity]
>   (adapted from Ahn and Cho 2011b:473, (3))

The possibility of both a strict and a sloppy reading poses a nontrivial challenge to the "uniform *pro*-theory" (Sato 2014:2). If the null object argument in (2B) were simply an empty pronominal, then contrary to fact the sentence should not be able to yield the sloppy identity reading, on a par with the sentence in (3) in the same context, which contains *kunye* 'she' in the object position.

Here, the overt pronoun can only be interpreted referentially and thus only allows the strict identity reading, when preceded by (2A).

(3) Cinswu-to   **kunye-lul** piphanha-yess-ta.
    Cinswu-also she-ACC   criticize-PAST-DECL
    'Cinswu criticized her, too.'   [*sloppy identity, ✓ strict identity]

To accommodate the availability of sloppy interpretation in null object constructions, a number of syntacticians have argued that the relevant null objects should be analyzed as resulting from some kind of ellipsis operation, which might be either argument ellipsis (Oku 1998, S. Kim 1999, Saito 2003, 2007, Takahashi 2007, 2008, 2013, Sakamoto 2015, 2016) or verb-stranding VP-ellipsis (Huang 1987, Otani and Whitman 1991, E.-J. Lee 2005, Funakoshi 2014, 2016). On either ellipsis approach, the null object sentence in (2B) would involve a DP with internal syntactic structure that includes the possessive anaphor *caki-uy* 'self-GEN', elided under identity with its overt antecedent. The sloppy identity reading would then be attributed to standard mechanisms, in which the elided anaphor is bound by its clausemate subject, *Cinswu.*

Another representative argument made to substantiate the ellipsis analysis is based on the observation that some null objects yield "quantificational readings" (as Takahashi (2008) terms them). Consider the Korean null object construction in (4B). The antecedent sentence in (4A) contains a nominal object modified by the numeral quantifier *sey myeng(-uy)* 'three CL(-GEN)'.

(4) A: Minswu-ka   sey   myeng-uy kaswu-lul coaha-n-ta.
       Minswu-NOM three CL-GEN   singer-ACC like-PRES-DECL
       'Minswu likes three singers.'
    B: Cinswu-to   **[e]** coaha-n-ta.
       Cinswu-also   like-PRES-DECL
       (Lit). 'Cinswu likes, too.'
       a. 'Cinswu likes three singers, too.'   [quantificational]
       b. 'Cinswu also likes the three singers that Minswu likes.'   [E-type]

As indicated above, the null object sentence in (4B) has two interpretations: the quantificational reading, in which the set of singers that Cinswu likes does not need to be identical to the set that Minswu likes, and the "E-type reading" (e.g., Evans 1980), in which the singers that Cinswu likes must be the same as the ones that Minswu likes. Now compare (4B) with (5), where the object argument site is filled with an overt pronominal.

(5) Cinswu-to   **kutul**-ul coaha-n-ta.
    Cinswu-also they-ACC like-PRES-DECL
    'Cinswu likes them, too.'   [*quantificational, ✓ E-type]

When (5) is preceded by (4A), the pronoun *kutul* 'they' can only be anaphorically linked to the singers that Minswu likes. Thus, the sentence yields only the E-type reading. Given this, the fact that (4B) *does* allow the quantificational reading (as well as the E-type reading) would be mysterious if a null pronoun occupied the object argument position. On the other hand, the ellipsis

analysis can easily capture the availability of the quantificational reading of the null object. Under either the argument ellipsis analysis or the verb-stranding VP-ellipsis analysis, (4B) involves an (indefinite) object DP containing *sey myeng*(-*uy*) 'three CL(-GEN)', which undergoes ellipsis under identity with its overt antecedent. The quantificational reading arises quite simply because there is an elided quantifier in the null object sentence.

However, the ellipsis analyses discussed so far have been rejected by Hoji (1998, 2003) and subsequent researchers (Li 1998, Tomioka 1998, 2003, 2014, Kurafuji 1999, Ahn and Cho 2010, 2011a,b, Moon 2010, Bae and Kim 2012, Kasai 2014), who have argued that the examples can all be accounted for by a null pronominal analysis. Hoji (1998) argues that null pronominals in East Asian languages, including Korean, can be construed as indefinite as well as definite (cf. Jaeggli 1986, Rizzi 1986). According to Hoji, the null object position **[e]** in (2B) is occupied by a *pro* that can be anaphorically linked to an indefinite argument, *emeni* 'mother', which corresponds to the noun head of the full DP object in the antecedent sentence in (2A). Under this "indefinite *pro* analysis," then, the null object sentence in (2B) is taken to be semantically equivalent to the sentence in (6) containing the lexically overt object, *emeni* 'mother'.

(6) Cinswu-to   emeni-lul   piphanha-yess-ta.
    Cinswu-also mother-ACC criticize-PAST-DECL
    (Lit.) 'Cinswu criticized a mother, too.'

As noted by Saito (2007:206), the interpretation of the sentence in (6) is not exactly identical to the sloppy identity reading given in (2), 'Cinswu criticized his own mother, too'. Nevertheless, this sentence is (pragmatically) consistent with a sloppy identity reading and can thus be truthfully uttered in such a situation or discourse context. Hoji (1998) concludes that the availability of the sloppy identity reading (in his terms, the "sloppy-like reading") for the null object sentence in (2B) can be analyzed in terms of *pro*, without recourse to an elided structure embedding the bound variable element *caki-uy* 'self-GEN'.

As for the quantificational readings for null objects introduced in (4), Ahn and Cho (2011a,b) suggest that (4B) involves an indefinite *pro* and thus is equivalent to the sentence in (7), where the object position is filled with the indefinite nominal *kaswu* 'singer'; the quantificational reading in (4B) is then generated via pragmatic inference.

(7) Cinswu-to   kaswu-lul   coaha-n-ta.
    Cinswu-also singer-ACC like-PRES-DECL
    (Lit.) 'Cinswu likes a singer, too.'

As it stands, then, both the ellipsis and the null pronominal approaches can account for the availability of the sloppy reading in the null object construction. In what follows, we present novel empirical data from our Experiment 1 that support the ellipsis analysis for Korean. We use the availability of sloppy readings to identify the syntactic nature of Korean null objects, with the aid of the overt third person pronoun *ku* 'he'. The fundamental logic of Experiment 1 is based on the discovery about *ku* in K.-M. Kim, Han, and Moulton 2015 and K.-M. Kim and Han 2016 that there exists substantial interspeaker variation in the bindability of *ku*. That is, with regard to

the interpretation of quantificational sentences such as (8), an individual Korean speaker will either consistently allow a bound variable reading for *ku* or consistently not allow such a reading.

(8) Motwu-ka   **ku**-uy cim-ul   nalu-ess-ta.
     everyone-NOM he-GEN stuff-ACC move-PAST-DECL
     'Everyone moved his stuff.'
     a. 'Each person moved his own stuff.'
     b. 'Everyone moved one particular person's stuff.'

For a referential interpretation of *ku*, there is no interspeaker variation: *ku* can readily take as its antecedent a referential matrix subject (e.g., *Minswu* in (9)) as long as a relevant context is provided, although it often prefers to have a discourse antecedent.

(9) Minswu-ka **ku**-uy cim-ul   nalu-ess-ta.
     Minswu-NOM he-GEN stuff-ACC move-PAST-DECL
     'Minswu moved his stuff.'
     a. 'Minswu moved his own stuff.'
     b. 'Minswu moved one particular person's stuff.'

In Experiment 1, we use the interspeaker variation for bound *ku* as a probe into the correct representation of null objects. If null objects involve the ellipsis of syntactic structure that matches an antecedent, we would expect that when the pronoun *ku* is elided, it will have the same interpretive options as unelided *ku* for any given speaker. It is standardly assumed that sloppy pronouns in ellipsis contexts and bound variable pronouns in quantificational contexts are subject to the same λ-binding mechanism (Heim and Kratzer 1998, Büring 2005). Therefore, we expect to find interspeaker variation in the acceptance of sloppy readings just as in the acceptance of bound variable readings in quantificational sentences. Crucially, we should be able to observe a correlation between the distribution of the two readings: an individual speaker's acceptance of the sloppy reading in null object sentences should be predictable from his or her acceptance of the bound variable reading in quantificational sentences (and vice versa). That is, speakers who allow the bound variable reading of *ku* in quantificational sentences would be expected to accept the sloppy reading in null object sentences, while speakers who do not allow the bound variable reading would be expected to reject the sloppy reading. Alternatively, if null objects are simply null elements without internal, elided structure, we do not expect such a correlation. In the latter case, sloppy readings might arise for all speakers via a mechanism unrelated to the bindability of *ku*—Hoji's "sloppy-like" interpretations, for instance. The central research question is summarized in (10).

(10) *Research question*
      Does the distribution of sloppy readings of null objects follow from the distribution of quantified bound variable pronouns in Korean?

To answer this research question, we examined the availability of sloppy identity readings in null object constructions such as (11) in comparison with the availability of bound variable readings in quantificational sentences such as (8).

(11) Minswu-ka **ku**-uy cim-ul nalu-ess-ko,   Kiswu-to [e] nalu-ess-ta.
     Minswu-NOM he-GEN stuff-ACC move-PAST-CONJ Kiswu-also   move-PAST-DECL
     (Lit.) 'Minswu moved his stuff, and Kiswu moved, too.'
     a. 'Minswu moved Minswu's stuff, and Kiswu moved Kiswu's stuff, too.'

                                    [sloppy identity]
     b. 'Minswu moved Minswu's stuff, and Kiswu moved Minswu's stuff, too.'

                                    [strict identity]

Given a context where the first conjunct in (11) is understood as 'Minswu moved Minswu's stuff', the ellipsis and null pronominal analyses make different predictions regarding the relation between the distribution of the sloppy identity readings for the null object constructions and the quantificational binding of *ku*. This is so since the ellipsis analysis assumes the null object to have syntactically represented internal structure while the null pronominal analysis does not.[3]
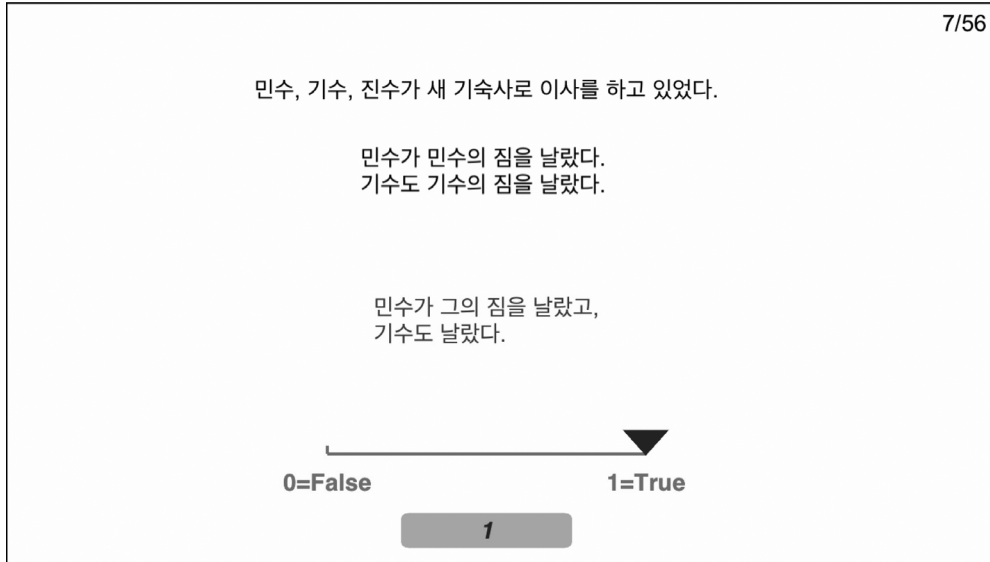
2.2 Methodology

2.2.1 Participants
Forty adult native speakers of Korean participated in the experiment. Most were university students in South Korea. They were paid $10 (Canadian) each as compensation for participating.

2.2.2 Task
A truth-value judgment task (Crain and Thornton 1998) was employed. On a computer screen, participants were presented with sentences describing a context, followed by a target sentence. They were then asked to judge whether the target sentence truthfully described the given context by clicking 1 for True and 0 for False (see figure 1).

2.2.3 Design and Materials
Each target sentence was either a null object construction such as (11) or a quantificational sentence such as (8), and each context was biased toward a bound or referential reading in the quantificational sentences, and a sloppy (i.e., bound) or strict reading in the null object sentences. Thus, two factors were crossed to create four experimental conditions: Sentence Type (null object vs. quantificational) × Context Type (bound vs. referential). A sample set of test items is given in (12)–(15). For space reasons, the context sentences are given in English.

(12) *Null object–bound (sloppy identity reading) condition*
     Minswu, Kiswu, and Cinswu were moving to a new dorm. Minswu moved Minswu's stuff. Kiswu also moved Kiswu's stuff.

     Minswu-ka ku-uy cim-ul nalu-ess-ko,   Kiswu-to [e] nalu-ess-ta.
     Minswu-NOM he-GEN stuff-ACC move-PAST-CONJ Kiswu-also   move-PAST-DECL
     'Minswu moved his stuff, and Kiswu moved, too.'

---

[3] The strict identity reading in (11b) would be expected to be available to all Korean speakers under either the ellipsis or the null pronominal analysis. Under the ellipsis analysis, *ku* in the null object site **[e]** would readily serve as a coreferential pronoun, which has been standardly assumed to be the source of strict identity readings under ellipsis. Under the null pronominal analysis, the strict identity reading would be generated if the postulated null pronoun is coreferential with the object in the antecedent clause.

7/56

민수, 기수, 진수가 새 기숙사로 이사를 하고 있었다.

민수가 민수의 짐을 날랐다.
기수도 기수의 짐을 날랐다.

민수가 그의 짐을 날랐고,
기수도 날랐다.

0=False   1=True

1

Figure 1
Screenshot of a test trial in Experiment 1

(13) *Null object–referential (strict identity reading) condition*
Minswu, Kiswu, and Cinswu were moving to a new dorm. Minswu moved Minswu's stuff. Kiswu also moved Minswu's stuff.

Minswu-ka   ku-uy cim-ul   nalu-ess-ko,   Kiswu-to   **[e]** nalu-ess-ta.
Minswu-NOM he-GEN stuff-ACC move-PAST-CONJ Kiswu-also   move-PAST-DECL
'Minswu moved his stuff, and Kiswu moved, too.'

(14) *Quantificational-bound condition*
Minswu, Kiswu, and Cinswu were moving to a new dorm. Minswu moved Minswu's stuff. Kiswu also moved Kiswu's stuff. Cinswu also moved Cinswu's stuff.

Motwu-ka   ku-uy cim-ul   nalu-ess-ta.
everyone-NOM he-GEN stuff-ACC move-PAST-DECL
'Everyone moved his stuff.'

(15) *Quantificational-referential condition*
Minswu, Kiswu, and Cinswu were moving to a new dorm, waiting for Thayswu to come. Minswu moved Thayswu's stuff. Kiswu also moved Thayswu's stuff. Cinswu also moved Thayswu's stuff.

Motwu-ka   ku-uy cim-ul   nalu-ess-ta.
everyone-NOM he-GEN stuff-ACC move-PAST-DECL
'Everyone moved his stuff.'

In (12), the context is consistent with the sloppy identity reading for the target null object construction, which would arise, according to the ellipsis analysis, from elided *ku* being a bound pronoun,

while in (13), the context is consistent with the strict identity reading for the target null object construction, which would be attributed to *ku* serving as a referential pronoun. In (14), the context is consistent with the bound variable reading for *ku* in the target quantificational sentence, while in (15), the context is consistent with the referential reading for *ku* in the target quantificational sentence.

Following the pattern illustrated in (12)–(15), 16 sets of test items were constructed, resulting in 64 test items (16 items for each of the four experimental conditions). These items were then assigned to four presentation lists according to a Latin square design, such that each list contained four items in each condition. The same 40 filler items (some of which are given in (16)–(18)) were then added to each list.

(16) *Referential filler*
Minswu, Kiswu, and Cinswu were taking a rest after exercising. Minswu drank Minswu's beverage.

Minswu-ka   ku-uy   umlyoswu-lul masi-ess-ta.
Minswu-NOM he-GEN beverage-ACC drink-PAST-DECL
'Minswu drank his beverage.'

(17) *Null object–"object mismatch" filler*
Minswu, Kiswu, and Cinswu were taking a rest after exercising. Minswu drank a beverage. Kiswu drank water.

Minswu-ka   umlyoswu-lul masi-ess-ko,   Kiswu-to   **[e]** masi-ess-ta.
Minswu-NOM beverage-ACC drink-PAST-CONJ Kiswu-also   drink-PAST-DECL
'Minswu drank a beverage, and Kiswu drank, too.'
(constructed on the basis of J.-S. Kim's (2012:38–39) examples)

(18) *Null object–"modifier mismatch" filler*
Minswu, Kiswu, and Cinswu were taking a rest after exercising. Minswu drank a cold beverage. Kiswu drank a warm beverage.

Minswu-ka   chaka-wun umlyoswu-lul masi-ess-ko,   Kiswu-to   **[e]**
Minswu-NOM cold-ADN   beverage-ACC drink-PAST-CONJ Kiswu-also
masi-ess-ta.
drink-PAST-DECL
'Minswu drank a cold beverage, and Kiswu drank, too.'
(constructed on the basis of J.-S. Kim's (2012:38) examples)

2.2.4 Procedure   The experiment was administered using PsychoPy (Peirce 2007). Sixteen test trials (four trials per condition) and 40 filler trials were presented to the participants in a uniquely generated random order.

2.2.5 Findings   Figure 2 summarizes mean acceptance rates (assignment of 1, True) by condition: 33% in the quantificational-bound condition, 31% in the null object–bound (sloppy identity reading) condition, 82% in the quantificational-referential condition, and 79% in the null object–referential (strict identity reading) condition. A generalized linear mixed-effects model
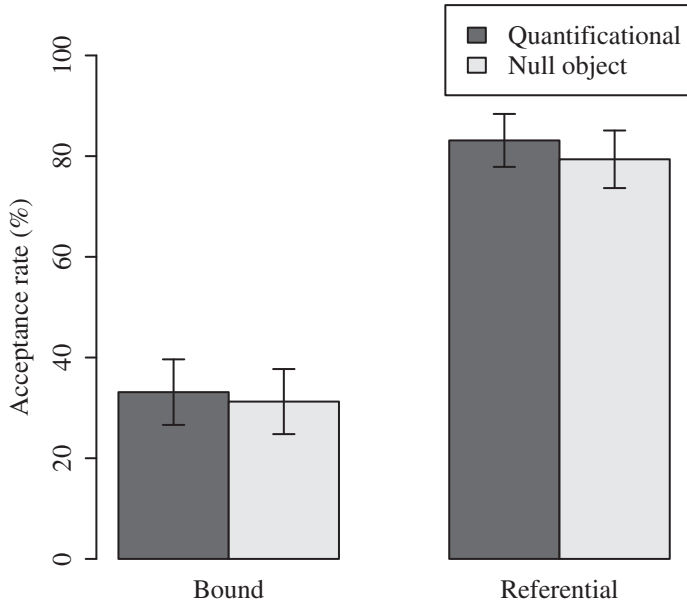
Figure 2
Mean rates of acceptance and standard errors in Experiment 1

(logistic/binomial regression model) was fit to the data using the "glmer" function of the "lme4" package (Bates, Maechler, and Bolker 2012) in R (R Development Core Team 2012), to analyze participants' responses as a function of sentence type and context type, with participant and item included as random effects. The random effects structure specified only random intercepts. The analysis revealed a main effect of context type (coefficient estimate = 2.46, SE = .29, z = 8.44, p < .001): regardless of sentence type, speakers were significantly more likely to accept the referential reading than the bound reading. However, the analysis revealed no main effect of sentence type, and no interaction between context type and sentence type: speakers were equally likely to accept bound readings for the quantificational sentences and the null object constructions; speakers were also equally likely to accept referential readings for both sentence types.

To understand the distribution of responses in the bound conditions, we assigned each participant to one of three groups on the basis of his or her mean individual acceptance rates in the quantificational-bound condition and the null object–bound (sloppy identity reading) condition: *accept* (≥ 75% acceptance: assignment of 1 to three or four target sentences), *ambivalent* (= 50% acceptance: assignment of 1 to two target sentences), and *reject* (≤ 25% acceptance: assignment of 1 to zero or one target sentence). A bimodal distribution of the participants' responses was observed in each bound condition, as illustrated in figure 3: participants tended to either always accept or always reject the quantificational binding interpretation for *ku*; participants also tended to either always accept or always reject the sloppy readings for the null object constructions.

Given that interspeaker variation was found in the quantificational-bound condition and the null object–bound condition, a linear regression analysis was carried out to examine the correlation
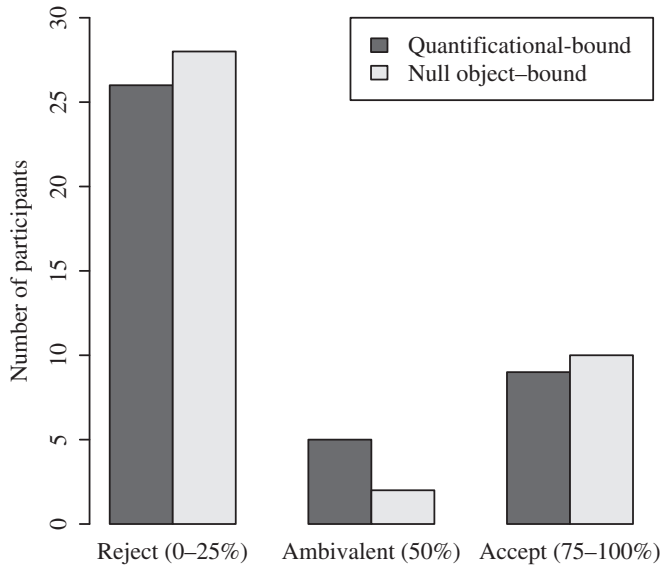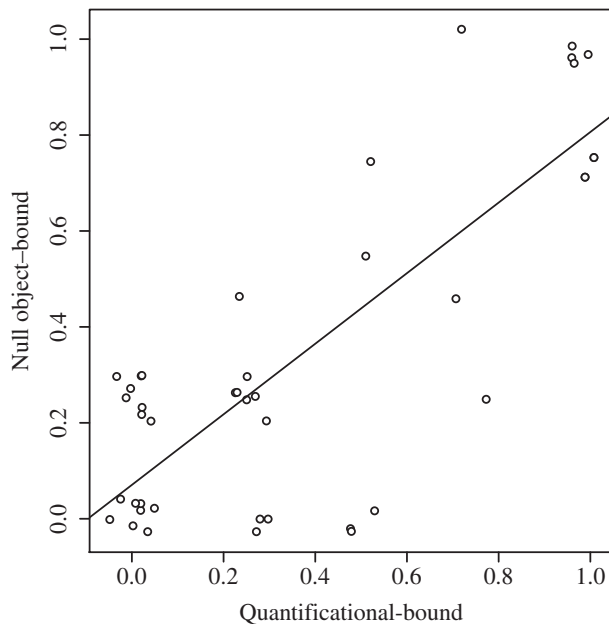
Figure 3
Distribution of responses in the quantificational-bound and null object–bound (sloppy identity reading) conditions in Experiment 1

between the participants' mean acceptance rates in the two bound conditions. The analysis revealed a strong correlation ($R^2 = .62$, $t = 7.93$, $p < .001$), as illustrated in figure 4. This result indicates that an individual speaker's acceptance of the sloppy readings for the null object constructions is predictable from his or her acceptance of the bound variable readings for the quantificational sentences (and vice versa).[4] Taken together, these results suggest that participants who allowed the quantificational binding of *ku* accepted the sloppy identity readings for the null object constructions, and those who did not allow the quantificational binding of *ku* rejected the sloppy identity readings.[5]

---

[4] A reviewer observes that the correlation between the acceptance rates in the null object–bound and quantificational-bound conditions could simply reflect response biases of individuals, rather than telling us anything about the grammar. To rule out this interpretation, as suggested by the same reviewer, we examined null object–bound and null object–referential acceptance rates, a pair of conditions where correlation is not theoretically expected. We found no correlation whatsoever between the two null object conditions ($R^2 = .0003$, $t = 0.11$, $p = .92$). The same reviewer was concerned about the power of the correlation reported, and suggested that we use a bootstrap procedure to calculate a 95% confidence interval for the R^2 value. Using the "boot" package (Canty and Ripley 2017), we generated the bootstrapped 95% confidence interval, [0.36, 0.78], for R^2 in the linear regression of null object–bound and quantificational-bound on the basis of 1,000 replications. This confidence interval does not include 0, and the lower bound is far from 0, so our conclusion is supported that the correlation between the acceptance rates of the null object–bound and the quantificational-bound conditions is significant.
[5] The mean acceptance rates in the quantificational-referential and null object–referential (strict identity reading) conditions are uniformly high, as predicted by both the ellipsis and null pronominal analyses (see section 2.1). These results thus confirm the accuracy and reliability of the results obtained in the quantificational-bound and null object–bound (sloppy identity reading) conditions, which are the key test conditions of the experiment.

Figure 4
Correlation between mean acceptance rates in the quantificational-bound and null object–bound (sloppy identity reading) conditions in Experiment 1

2.3 Discussion

The findings of Experiment 1 present empirical evidence that is inconsistent with the view that null objects in Korean are all instances of phonologically empty pronominals. As discussed in section 2.1, if the null object in sentences such as (11) were indeed a base-generated (indefinite) *pro*—an atomic element without the internal structure to host the pronoun *ku*—then the availability of the relevant sloppy identity readings would not be expected to correlate with the availability of the bound variable construal of *ku* in sentences such as (8). Contrary to the prediction of the null pronominal analysis, however, Experiment 1 found a strong correlation between the distribution of the sloppy identity readings and the quantificational binding of *ku*. It was demonstrated that native speakers of Korean sort into two distinct groups: those who allow both the sloppy identity readings for null objects (as in (11a)) and the quantificational binding of *ku* (as in (8a)), and those who do not allow either. This correlation follows from an ellipsis account, where the sloppy reading is derived by the binding of an elided *ku*; that option, however, depends on the speaker's grammar for *ku*, something that is independently verified by the speaker's ability to use *ku* as a quantifier-bound pronoun.[6]

---

[6] The results obtained from the participants' responses on the null object–"modifier mismatch" fillers further support the idea that some cases of Korean null objects should be analyzed as involving ellipsis, not *pro*. As noted by J.-S. Kim (2012:42–43), the ellipsis and null pronominal analyses yield different predictions regarding the truth value of the target sentence in (18). Under the argument ellipsis analysis or verb-stranding VP-ellipsis analysis, the null object site **[e]** in

Our claim that the correlation between the bindability of *ku* and the availability of a sloppy reading can be used to diagnose ellipsis is corroborated by the results from the studies in K.-M. Kim, Han, and Moulton 2015 of the nonelliptical VP anaphor in Korean, *kuleha* 'do so', illustrated in (19).

(19) Minswu-ka **ku**-uy cim-ul nalu-ess-ko, Kiswu-to **kuleha**-yess-ta.
   Minswu-NOM he-GEN stuff-ACC move-PAST-CONJ Kiswu-also so.do-PAST-DECL
   (Lit.) 'Minswu moved his stuff, and Kiswu did so, too.'
   a. 'Minswu moved Minswu's stuff, and Kiswu moved Kiswu's stuff, too.'

[sloppy identity]

   b. 'Minswu moved Minswu's stuff, and Kiswu moved Minswu's stuff, too.'

[strict identity]

Those studies confirm that *kuleha* does not involve ellipsis but is an (overt) VP proform: in contrast to what would be expected of ellipsis, constructions like (19) do not allow extraction from within the anaphor site. Further, the availability of the sloppy reading in these VP anaphora constructions is not correlated with the availability of the quantificational binding interpretation for *ku*, unlike the case of null objects shown in Experiment 1. Results reported in K.-M. Kim, Han, and Moulton 2015 show that while considerable interspeaker variation existed in the acceptance of the quantificational binding of *ku*, just as in Experiment 1, (nearly) all participants unequivocally accepted the sloppy readings for the VP anaphors. Given these findings, if null objects were indeed instances of empty pronouns, then uniform and high acceptance of the sloppy readings for the null object constructions in Experiment 1 would have been expected, just as in the VP anaphora sentences in K.-M. Kim, Han, and Moulton 2015. However, this expectation was not borne out by the results of Experiment 1, which revealed a 31% acceptance rate in the null object–bound (sloppy reading) condition and a 33% acceptance rate in the quantificational-bound condition, derived from about one-third of the participants who consistently accepted the target sentences in the two conditions. This further supports the claim that the null object constructions tested in Experiment 1 involve ellipsis for the most part, not *pro*.[7]

---

the second conjunct involves a full-fledged structure containing *chakawun umlyoswu* 'cold beverage', which is elided under identity with its antecedent in the first conjunct. Therefore, the whole target sentence should be judged false, since it is not compatible with the given context where Minswu drank a cold beverage, but Kiswu drank a warm beverage. According to the null pronominal analysis, on the other hand, the null object site **[e]** corresponds to the head noun of the full DP object in the first conjunct, *umlyoswu* 'beverage'. Thus, the whole target sentence should be taken to truthfully describe the given context, since it is true that both Minswu and Kiswu drank a beverage, although the beverages consumed were of different temperatures. The results revealed that the participants rejected "modifier mismatch" target sentences 93% of the time, indicating that they interpreted the null object site as involving the same full DP objects as in the first conjuncts and thus supporting the ellipsis analysis.

[7] As a reviewer observes, speakers might still be using the *pro* analysis in some cases. A few participants who consistently rejected the sloppy reading accepted the quantificational bound reading at least once, and a few participants who consistently rejected the quantificational bound reading accepted the sloppy reading at least once. These participants might be resorting to the *pro* strategy in analyzing some instances of null objects. Our main point, however, is that the correlational distribution of the two readings that we found supports the claim that the analysis of null objects tested in Experiment 1 involves ellipsis for the most part, and is incompatible with the view that all instances of null objects in Korean are instances of *pro*.

3 Experiment 2

3.1 Research Question and Predictions

In section 2, we provided novel empirical evidence that some cases of null objects in Korean should be attributed to the ellipsis of a constituent with full-fledged internal syntactic structure. However, a crucial question remains unanswered: is the elided element a DP object (argument ellipsis) or a VP containing the DP object (verb-stranding VP-ellipsis)?

A well-known diagnostic for identifying the "size" of ellipsis is the (un)availability of the "null adjunct reading" (as Hayashi (2015) terms it) for null object constructions such as (20), where the antecedent sentence in (20A) contains an adverb and the null object sentence in (20B) is negated.

(20) A: Minho-ka   ppali   mwul-ul   masi-ess-ta.
          Minho-NOM quickly water-ACC drink-PAST-DECL
          'Minho drank water quickly.'
      B: Kiho-nun [e] masici-an-ass-ta.
          Kiho-TOP   drink-NEG-PAST-DECL
          (Lit.) 'Kiho did not drink.'
          (constructed on the basis of Oku's (1998:172) Japanese examples)

The verb-stranding VP-ellipsis analysis and the argument ellipsis analysis make different predictions with respect to the "recovery" of an adjunct in the Korean null object construction in (20). Under the verb-stranding VP-ellipsis analysis, the null object sentence in (20B) should mean that Kiho did not drink water quickly (thus implying that Kiho drank water, but he did not do so quickly). This is so since the elided element in **[e]** would correspond to a VP structure (after the verb raises out of the VP to Tense), which contains the manner adverb *ppali* 'quickly' as well as the DP object *mwul* 'water', as represented in (21).[8]

(21) Kiho-TOP [$_{VP}$ ~~quickly~~ [$_{DP}$ ~~water ACC~~] t_v](= **[e]**) drink$_v$-NEG-PAST-DECL

According to the argument ellipsis analysis, on the other hand, such a null adjunct reading should not be available, because only the DP object *mwul* 'water' (not the adverb *ppali* 'quickly') would undergo ellipsis in **[e]**, as in (22); thus, the whole null object sentence in (20B) should receive the object-only reading that Kiho did not drink water at all.

(22) Kiho-TOP [$_{DP}$ ~~water ACC~~](= **[e]**) drink-NEG-PAST-DECL

---

[8] As Oku (1998:173) discusses, the verb-stranding VP-ellipsis analysis assumes that ("low") adverbs are adjoined to VP (Ko 2007, Lasnik 2003). It is possible that the ellipsis site could be just an unmodified VP, something that Moulton (2007) shows is possible for VP ellipses in English. However, Moulton (2007) also shows that this possibility arises only in subordinated clauses, and that modified antecedents for ellipsis are chosen when the clause containing the ellipsis is a main clause, as in the cases we tested in Korean.

To the best of our knowledge, the dominant view in the literature of East Asian languages has been that null object sentences such as (20B) are acceptable only under the interpretation in which the DP object alone is semantically "recovered" in **[e]** (e.g., Park 1997, Oku 1998, Takahashi 2008, Cheng 2011, J.-S. Kim 2012), thus supporting the argument ellipsis analysis. However, the verb-stranding VP-ellipsis analysis has been revitalized by Funakoshi (2016:119), who argues that the null adjunct reading becomes much more available, at least for some speakers, if the antecedent clause and the null object clause are combined by a contrasting conjunction connective, as illustrated in the following Japanese example:

(23) Taroo-wa teineini kuruma-o arat-ta   **kedo**, John-wa **[e]** araw-anak-atta.
     Taroo-TOP carefully car-ACC   wash-PAST **but** John-TOP   wash-NEG-PAST
     (Lit.) 'Taroo washed the car carefully, **but** John did not wash.'
     (adapted from Funakoshi 2016:119, (16))

According to Funakoshi, the null object clause in (23) has the meaning 'John washed the car, but not in a careful manner', which can be derived if the adverb *teineini* 'carefully' is recovered in **[e]**, along with the object *kuruma* 'car'. Funakoshi also observes that the null adjunct reading is available even without the conjunction connective, if a context makes the null adjunct reading appropriate. He provides the following Japanese example to illustrate this point:

(24) Taroo and Hanako washed their parents' cars to get allowance. Taroo was thorough in his work while Hanako was not.
     A: Taroo-wa teineini   kuruma-o arat-ta.
        Taroo-TOP carefully car-ACC   wash-PAST
        'Taroo washed the car carefully.'
     B: Hanako-wa **[e]** araw-anak-atta. Hanako-ga   arat-ta   ato-no   kuruma-wa
        Hanako-TOP   wash-NEG-PAST Hanako-NOM wash-PAST after-GEN car-TOP
        kitanak-atta.
        dirty-PAST
        (Lit.) 'Hanako did not wash. The car that Hanako washed was dirty.'
        (Funakoshi 2016:119, (17))

Funakoshi claims that the null object sentence in (24B) can mean that Hanako did not wash the car carefully, with the aid of the context and the follow-up sentence that promotes the null adjunct reading.

Building upon Funakoshi's insights and arguments, we conducted an experimental study to address the following research question, in order to investigate the size of ellipsis involved in Korean null object constructions:

(25) *Research question*
     Does the null object construction in Korean allow the null adjunct reading?

The verb-stranding VP-ellipsis analysis predicts that the null object sentences will allow the null adjunct reading because the VP structure containing an adverb, created after verb raising, can be recovered. In contrast, the argument ellipsis analysis predicts that the null adjunct reading will be unavailable because only the object, and nothing else, can be recovered.

3.2 Methodology

3.2.1 Participants
Thirty adult native speakers of Korean, none of whom participated in Experiment 1, participated in Experiment 2. Most were university students in South Korea. They were paid $10 (Canadian) each as compensation for participating.

3.2.2 Task
A truth-value judgment task was employed, as in Experiment 1. Participants were presented with sentences describing a context, along with images matching the description; these were followed by a target sentence. As in Experiment 1, participants clicked on 1 for True and 0 for False to indicate whether the target sentence truthfully described the given context.

3.2.3 Design and Materials
A target sentence was presented in a context in which two animal characters are in a contest with different prizes, performing the same action in different manners, as illustrated in (26). The target sentence contained a clause describing the action of one of the animals, a contrasting conjunction connective, and a second clause describing the action of the other animal. The second clause of each target sentence contained a verb that is obligatorily transitive in Korean and was formed with either a null object (26a), an object (26b), or an object and an adverb (26c). The experiment thus tested one factor, sentence type, with three levels, creating three conditions: NO (test sentences have no object and no adverb), object (test sentences have an object but no adverb), and object-adverb (test sentences have an object and an adverb).

(26) Dog and Lion were in a sweeping contest! If they swept the floor quickly, they'd win a big toy car. If they didn't sweep the floor quickly, they'd only win a small toy car. Dog started sweeping the floor very quickly. Lion decided he didn't like cleaning, and he was going to go to one of the other contests instead. Soon, Dog finished sweeping quickly and won a big toy car! When Lion saw this, he decided he wanted a big toy car too, so he started sweeping the floor. Lion really didn't like to clean, so he swept the floor very slowly. When Lion was done, he got the small toy car.

    a. Kay-nun patak-ul ppalukey ssul-ess-ciman, saca-nun an   ssul-ess-supnita.
       dog-TOP floor-ACC quickly   sweep-PAST-but lion-TOP NEG sweep-PAST-DECL
       'Dog swept the floor quickly, but Lion didn't sweep.'   [NO]

    b. Kay-nun patak-ul ppalukey ssul-ess-ciman, saca-nun patak-ul   an
       dog-TOP floor-ACC quickly   sweep-PAST-but lion-TOP floor-ACC NEG
       ssul-ess-supnita.
       sweep-PAST-DECL
       'Dog swept the floor quickly, but Lion didn't sweep the floor.'   [object]

    c. Kay-nun patak-ul ppalukey ssul-ess-ciman, saca-nun patak-ul   ppalukey an
       dog-TOP floor-ACC quickly   sweep-PAST-but lion-TOP floor-ACC quickly   NEG
       ssul-ess-supnita.
       sweep-PAST-DECL
       'Dog swept the floor quickly, but Lion didn't sweep the floor quickly.'

                                                  [object-adverb]
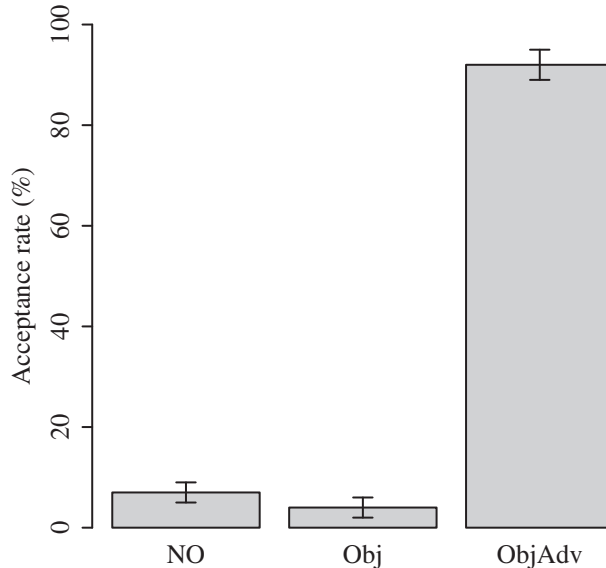
Figure 5
Mean rates of acceptance and standard errors in Experiment 2 (NO = no object and no adverb, Obj = object, ObjAdv = object and adverb)

3.2.4 Procedure   Like Experiment 1, Experiment 2 was administered using PsychoPy. Twelve test trials (four trials per condition) were presented to the participants, in accordance with a Latin square design, in a uniquely generated random order.

3.2.5 Findings   The verb-stranding VP-ellipsis analysis predicts NO sentences like (26a) to be as felicitous in the given context as object-adverb sentences like (26c) because the VP structure containing *ppalukey* 'quickly', created after verb raising, can be recovered in the null object site. In contrast, the argument ellipsis analysis predicts NO sentences like (26a) to be as infelicitous as object sentences like (26b) because only the object *patak-ul* 'floor-ACC', and nothing else, can be recovered. These would both then be judged false, since Lion *did* do some sweeping. We found that NO sentences predominantly patterned with object sentences and not object-adverb sentences, as can be seen in figure 5, which summarizes acceptance rates by condition: NO = 7%, object = 4%, and object-adverb = 92%.

   A generalized linear mixed-effects model (logistic/binomial regression model) fitted to the data, with sentence type as a fixed effect and participant and item as random effects (whose structure was specified with random intercepts) revealed a main effect of sentence type: while the acceptance rates in the object and NO conditions did not differ, the acceptance rate in the object-adverb condition was significantly higher than the acceptance rate in the NO condition (coefficient estimate = 6.67, $SE = .87$, $z = 7.65$, $p < .001$). Pairwise comparison using Tukey's test also revealed that while speakers were equally unlikely to accept sentences in the NO and object conditions, they were significantly more likely to accept sentences in the object-adverb than the NO ($p < .001$) or the object ($p < .001$) condition.

3.3 Discussion

In Experiment 2, we presented test sentences in contexts favoring the null adjunct reading, heeding suggestions by Funakoshi (2016). Nonetheless, the findings show that in interpreting null object sentences in Korean, while the object argument is easily recovered, an adjunct is nearly impossible to recover—that is, the null adjunct reading is unavailable. Thus, the findings verify the predictions of the argument ellipsis analysis, but are incompatible with those of the verb-stranding VP-ellipsis analysis.

A question remains: namely, why the null adjunct reading becomes available to some speakers in similarly constructed null object sentences in Japanese, as reported by Funakoshi (2016), unlike in Korean, as shown by the findings in Experiment 2. While we must leave this question for future research, one possibility is that potential differences in the position of the verb in the clause structure in the two languages play a major role in whether the verb-stranding VP-ellipsis analysis is available. Alternatively, there might be variation in the extent to which a language elides structures with traces.

4 Conclusion

In this article, we have presented two experiments designed to determine the correct analysis for null objects in Korean along two parameters: do they involve ellipsis or not, and if they involve ellipsis, is an argument or a VP remnant elided? Our findings suggest that null objects are elided arguments. As evidence that null objects in Korean involve argument ellipsis, and not VP-ellipsis, we found that null object constructions cannot be construed as involving the elision of a VP adjunct.

The evidence for ellipsis came from a novel use of interspeaker variation to probe for the existence of elided syntactic structure. We found a correlation between a speaker's acceptance of quantifier-bound *ku* and his or her acceptance of sloppy readings for null objects with antecedents containing *ku*. This correlation is expected if null objects contain complex internal syntactic structure with an elided *ku* that has the same grammatical properties, for any given speaker, as the overt *ku*. The correlation is not expected if null objects are atomic, unanalyzable null proforms, whose sloppy readings arise in a way that does not depend on a given speaker's interpretation of *ku*. While explorations of "microparametric" variation in the domain of morphosyntax have been fruitful for syntactic theory (see Brandner 2012 for an overview), the present study shows how interspeaker semantic variation can be profitably exploited to address theoretical questions.

References

Ahn, Hee-Don, and Sungeun Cho. 2010. More on the absence of CP ellipsis. *Studies in Generative Grammar* 20:137–148.

Ahn, Hee-Don, and Sungeun Cho. 2011a. Notes on apparent DP ellipsis. *Korean Journal of Linguistics* 36: 457–471.

Ahn, Hee-Don, and Sungeun Cho. 2011b. On sloppy-like interpretation of null arguments. *Linguistic Research* 28:471–492.

Bae, Eun-Gyeong, and Jeong-Suk Kim. 2012. On missing objects: Model-interpretive anaphora or ellipsis. *Studies in Modern Grammar* 70:49–71.

Bates, Douglas, Martin Maechler, and Ben Bolker. 2012. lme4: Linear mixed-effects models using S4 classes. R Package Version 0.999999-0. https://CRAN.R-project.org/package=lme4.

Brandner, Ellen. 2012. Syntactic microvariation. *Language and Linguistics Compass* 6:113–130.

Büring, Daniel. 2005. *Binding theory.* Cambridge: Cambridge University Press.

Canty, Angelo, and Brian Ripley. 2017. boot: Bootstrap functions. R Package Version 1.3–20. https://CRAN.R-project.org/packages/boot/index.html.

Cheng, Hsu-Te. 2011. Argument ellipsis, classifier phrases, and the DP parameter. In *Proceedings of the 23rd North American Conference on Chinese Linguistics*, ed. by Jing-Schmidt Zhuo, 224–240. Eugene: University of Oregon. https://naccl.osu.edu/proceedings/naccl-23.

Cheng, Hsu-Te. 2013. Argument ellipsis, classifier phrases, and the DP parameter. Doctoral dissertation, University of Connecticut, Storrs.

Cole, Peter. 1987. Null objects in Universal Grammar. *Linguistic Inquiry* 18:597–612.

Crain, Stephen, and Rosalind Thornton. 1998. *Investigations into Universal Grammar: A guide to experiments on the acquisition of syntax and semantics.* Cambridge, MA: MIT Press.

Doron, Edit. 1999. V-movement and VP ellipsis. In *Fragments: Studies in ellipsis and gapping*, ed. by Shalom Lappin and Elabbas Benmamoun, 124–140. Oxford: Oxford University Press.

Evans, Gareth. 1980. Pronouns. *Linguistic Inquiry* 11:337–362.

Fujiwara, Yoshiki. 2017. V-stranding VP-ellipsis in child Japanese. In *Proceedings of the 41st annual Boston University Conference on Language Development*, ed. by Maria LaMendola and Jennifer Scott, 224–240. Somerville, MA: Cascadilla Press.

Funakoshi, Kenshi. 2014. Syntactic head movement and its consequences. Doctoral dissertation, University of Maryland, College Park.

Funakoshi, Kenshi. 2016. Verb-stranding verb phrase ellipsis in Japanese. *Journal of East Asian Linguistics* 25:113–142.

Goldberg, Lotus M. 2005. Verb-stranding VP ellipsis: A cross-linguistic study. Doctoral dissertation, McGill University, Montreal.

Gribanova, Vera. 2013a. A new argument for verb-stranding verb phrase ellipsis. *Linguistic Inquiry* 44:145–157.

Gribanova, Vera. 2013b. Verb-stranding verb phrase ellipsis and the structure of the Russian verbal complex. *Natural Language and Linguistic Theory* 31:91–136.

Hayashi, Shintaro. 2015. Head movement in an agglutinative SOV language. Doctoral dissertation, Yokohama National University.

Heim, Irene, and Angelika Kratzer. 1998. *Semantics in generative grammar.* Oxford: Blackwell.

Hoji, Hajime. 1998. Null object and sloppy identity in Japanese. *Linguistic Inquiry* 29:127–152.

Hoji, Hajime. 2003. Surface and deep anaphora, sloppy identity, and experiments in syntax. In *Anaphora: A reference guide*, ed. by Andrew Barss, 172–236. Oxford: Blackwell.

Huang, C.-T. James. 1987. Remarks on empty categories in Chinese. *Linguistic Inquiry* 18:321–337.

Huang, C.-T. James. 1988. Comments on Hasegawa's paper. In *Proceedings of the Workshop on Japanese Syntax: Issues on empty categories*, ed. by Wako Tawa and Mineharu Nakayama, 77–93. New London: Connecticut College.

Huang, C.-T. James. 1991. Remarks on the status of the null object. In *Principles and parameters in comparative grammar*, ed. by Robert Freidin, 56–76. Cambridge, MA: MIT Press.

Jaeggli, Osvaldo. 1986. Arbitrary plural pronominals. *Natural Language and Linguistic Theory* 4:43–76.

Kasai, Hironobu. 2014. On the nature of null clausal complements in Japanese. *Syntax* 17:168–188.

Kim, Jin-Sook. 2012. Comprehension of elided phrases in Korean and English: VP-ellipsis, null object constructions, and *one*-substitution. Doctoral dissertation, University of Hawai'i, Mānoa.

Kim, Kyeong-min, and Chung-hye Han. 2016. Inter-speaker variation in Korean pronouns. In *The impact of pronominal form on interpretation*, ed. by Patrick Grosz and Pritty Patel-Grosz, 349–373. Berlin: Mouton de Gruyter.

Kim, Kyeong-min, Chung-hye Han, and Keir Moulton. 2015. Syntax of the Korean VP anaphor: An experimental study. Paper presented at the 19th International Circle of Korean Linguistics Conference, University of Chicago.

Kim, Soowon. 1999. Sloppy/Strict identity, empty objects, and NP ellipsis. *Journal of East Asian Linguistics* 8:255–284.

Kim, Sun-Hee. 2010. Null arguments and the theory of *pro*. *Korean Journal of Linguistics* 35:563–590.

Ko, Heejeong. 2007. Asymmetries in scrambling and cyclic linearization. *Linguistic Inquiry* 38:49–83.

Kurafuji, Takeo. 1999. Japanese pronouns in dynamic semantics: The null/overt contrast. Doctoral dissertation, Rutgers University, New Brunswick, NJ.

Landau, Idan. 2018. Missing objects in Hebrew: Argument ellipsis, not VP ellipsis. *Glossa* 3(1):76.

Lasnik, Howard. 2003. *Minimalist investigations in linguistic theory.* London: Routledge.

Lee, Eun-Ji. 2005. The status of the null object in the VP ellipsis context. *Studies in Generative Grammar* 15:609–629.

Lee, Wooseung. 2016. Argument ellipsis vs. V-stranding VP ellipsis in Korean: Evidence from disjunction. *Language Research* 33:1–20.

Li, Grace. 1998. Null object and VP ellipsis in Chinese. In *Proceedings of the 9th North American Conference on Chinese Linguistics*, ed. by Lin Hua, 155–172. Los Angeles: University of Southern California, Graduate Students in Linguistics.

McCloskey, James. 1991. Clause structure, ellipsis and proper government in Irish. *Lingua* 85:259–302.

Moon, Gui-Sun. 2010. Null arguments redux. *The Linguistic Association of Korea Journal* 18:67–92.

Moulton, Keir. 2007. Small antecedents: Syntax or pragmatics? In *NELS 37: Proceedings of the 37th Annual Meeting of the North East Linguistic Society*, ed. by Martin Walkow and Emily Elfner, 1:45–58. Amherst: University of Massachusetts, Graduate Linguistic Student Association.

Otaki, Koichi. 2011. Argument ellipsis arising from non-fusional case morphology. In *Online Proceedings of GLOW in Asia Workshop for Young Scholars*, ed. by Koichi Otaki, Hajime Takeyasu, and Shin-ichi Tanigawa, 247–261. Mie, Japan: Mie University.

Otaki, Koichi. 2014. Ellipsis of arguments: Its acquisition and theoretical implications. Doctoral dissertation, University of Connecticut, Storrs.

Oku, Satoshi. 1998. A theory of selection and reconstruction in the Minimalist perspective. Doctoral dissertation, University of Connecticut, Storrs.

Otani, Kazuyo, and John Whitman. 1991. V-raising and VP-ellipsis. *Linguistic Inquiry* 22:345–358.

Pan, Haihua. 2002. Null object constructions, VP-ellipsis, and sentence interpretation. In *Linguistics by heart: Webfest for Horst-Dieter Gasde*, ed. by Daniel Hole, Paul Law, and Niina Zhang, 1–9. Berlin: ZAS.

Park, Myung-Kwan. 1994. A morpho-syntactic study of Korean verbal inflection. Doctoral dissertation, University of Connecticut, Storrs.

Park, Myung-Kwan. 1997. The syntax of VP ellipsis in Korean. *Language Research* 33:629–648.

Park, Myung-Kwan. 2013. Debunking null objects in Korean: From *pro* to DP/NP ellipsis. *Studies in Modern Grammar* 72:41–66.

Peirce, Jonathan. 2007. PsychoPy–Psychophysics software in Python. *Journal of Neuroscience Methods* 162:8–13.

R Development Core Team. 2012. *R: A language and environment for statistical computing.* Vienna: R Foundation for Statistical Computing. https://www.r-project.org.

Rizzi, Luigi. 1986. Null objects in Italian and the theory of *pro*. *Linguistic Inquiry* 17:501–557.

Saito, Mamoru. 2003. On the role of selection in the application of Merge. In *NELS 36: Proceedings of the 33rd Annual Meeting of the North East Linguistic Society*, ed. by Shigeto Kawahara and Makoto Kadowaki, 323–345. Amherst: University of Massachusetts, Graduate Linguistic Student Association.

Saito, Mamoru. 2007. Notes on East Asian argument ellipsis. *Language Research* 43:203–227.

Saito, Mamoru, and Duk-Ho An. 2014. A comparative syntax of ellipsis in Japanese and Korean. In *Japanese syntax in comparative perspective*, ed. by Mamoru Saito, 117–138. Oxford: Oxford University Press.

Sakamoto, Yuta. 2015. Disjunction as a new diagnostic for (argument) ellipsis. In *NELS 45: Proceedings of the 45th Annual Meeting of the North East Linguistic Society*, ed. by Thuy Bui and Deniz Özyıldız, 15–28. Amherst: University of Massachusetts, Graduate Linguistic Student Association.

Sakamoto, Yuta. 2016. Phases and argument ellipsis in Japanese. *Journal of East Asian Linguistics* 25: 243–274.

Sakamoto, Yuta. 2017. Escape from silent syntax. Doctoral dissertation, University of Connecticut, Storrs.

Sato, Yosuke. 2014. Argument ellipsis in Colloquial Singapore English and the anti-agreement hypothesis. *Journal of Linguistics* 50:365–401.

Sato, Yosuke. 2016. Remarks on the parameters of argument ellipsis: A new perspective from Colloquial Singapore English. *Syntax* 19:392–411.

Sato, Yosuke, and Simin Karimi. 2016. Subject-object asymmetries in Persian argument ellipsis and the anti-agreement theory. *Glossa* 1(1):8.

Şener, Serkan, and Daiko Takahashi. 2010. Ellipsis of arguments in Japanese and Turkish. *Nanzan Linguistics* 6:79–99.

Shafiei, Nazila. 2015. Ellipsis in Persian complex predicates: VVPE or something else. In *Proceedings of the 2015 Annual Conference of the Canadian Linguistic Association*, ed. by Santa Vinerte, 1–15. Ottawa: Canadian Linguistic Association.

Simpson, Andrew, Arunima Choudhury, and Mythili Menon. 2013. Argument ellipsis and the licensing of covert nominals in Bangla, Hindi and Malayalam. *Lingua* 134:103–128.

Takahashi, Daiko. 2007. Argument ellipsis from a crosslinguistic perspective: An interim report. Paper presented at GLOW in Asia VI, Chinese University of Hong Kong.

Takahashi, Daiko. 2008. Quantificational null objects and argument ellipsis. *Linguistic Inquiry* 39:307–326.

Takahashi, Daiko. 2013. Argument ellipsis in Japanese and Malayalam. *Nanzan Linguistics* 9:173–192.

Takita, Kensuke. 2011. An argument for argument ellipsis from *-sika* NPIs. In *NELS 39: Proceedings of the 39th Annual Meeting of the North East Linguistic Society*, ed. by Suzi Lima, Kevin Mullin, and Brian Smith, 771–784. Amherst: University of Massachusetts, Graduate Linguistic Student Association.

Tomioka, Satoshi. 1998. The laziest pronouns. In *Japanese/Korean linguistics 7*, ed. by Noriko Akatsuka, Hajime Hoji, Shoichi Iwasaki, and Susan Strauss, 515–532. Stanford, CA: CSLI Publications.

Tomioka, Satoshi. 2003. The semantics of Japanese null pronouns and its cross-linguistic implications. In *The interfaces: Deriving and interpreting omitted structures*, ed. by Kerstin Schwabe and Susanne Winkler, 321–339. Amsterdam: John Benjamins.

Tomioka, Satoshi. 2014. Remarks on missing arguments in Japanese. In *Proceedings of FAJL 7: Formal Approaches to Japanese Linguistics*, ed. by Shigeto Kawahara and Mika Igarashi, 251–264. MIT Working Papers in Linguistics 73. Cambridge, MA: MIT, MIT Working Papers in Linguistics.

Um, Hong Joon. 2011. The nature of the null arguments in Korean. *Studies in Modern Grammar* 63:73–93.

Yoon, James. 2004. On the treatment of empty categories in topic prominent languages. Ms., University of Illinois, Urbana.

(Han)
Department of Linguistics
Simon Fraser University
8888 University Drive
Burnaby, British Columbia V5A 1S6
Canada

chunghye@sfu.ca

(Kim)
Department of Linguistics
Simon Fraser University
8888 University Drive
Burnaby, British Columbia V5A 1S6
Canada

kyeongmin_kim@sfu.ca

(Moulton)
Department of Linguistics
University of Toronto
100 St. George Street
Toronto, Ontario M5S 3G3
Canada

keir.moulton@utoronto.ca

(Lidz)
Department of Linguistics
University of Maryland
College Park, MD 20742

jlidz@umd.edu