

Symmetrically Case-Marked Noun Phrase Coordinations are Not NP Coordinations: Evidence from the Phonetic Experiment*

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Lee, Wooseung & Oh, Young-il. 2011. **Symmetrically Case-Marked Noun Phrase Coordinations are Not NP Coordinations: Evidence from the Phonetic Experiment.** *The Linguistic Association of Korea Journal*. 19(4). 129-148. This paper revisits Yoon and Lee (2005)'s two types of NP coordination constructions (Type A and B). Type A represents sentences where Case (Nom, Acc, or Gen) is marked only on the final conjunct and non-final conjuncts carry the nominal conjunctive suffix - (k)wa. In Type B, Case-markers occur on all conjuncts and *kuliko* occurs between the conjuncts. In this paper, we propose that the symmetrically Case-marked noun phrase coordinations are not NP coordinations, contra a lexicalist approach by Cho (2008), but KP coordinations where initial conjunct licenses a null predicate. In other words, while asymmetrically Case marked NP coordinations (Type A, hereafter) are genuine NP coordinations, symmetrically Case marked coordinations (Type B, henceforth) are larger verbal/sentential coordinations. Other than syntactic and interpretive evidence already provided by Yoon and Lee (2005), we provide phonetic evidence, showing that the initial conjunct of Type B is followed by a relatively longer duration of pause than is caused by an orthographic space.

Key Words: (a)symmetrically Case-marked NP coordinations, sentential coordinations, Case phrase (KP), null predicate, pause

* This paper is an extended version of Yoon and Lee (2005) and chapter 2 of Lee (2009). We would like to thank three anonymous reviewers for their helpful comments and suggestions. All remaining errors are ours.

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1. Introduction

The earliest assumption on coordination has it that only sentences can be coordinated as constituents (Chomsky 1957, Gleitman 1965, etc.). Apparent nonsentential constituents were thus assumed to arise from Conjunction Reduction from a larger constituent. However, the sentential analysis of all non-sentential coordinations faces insurmountable problems as exemplified in (2) below. This is because the putative source of the NP coordinations in (1), that is, the sentences in (2), is not well-formed.

- (1) a. Kim and Pat are a good pair
 b. Lee, Robin and Sam like each other
(Huddleston and Pullum 2007)
- (2) a. *Kim is a good pair and Pat is a good pair
 b. *Lee likes each other, Robin likes each other and Sam likes each other

This state of affairs could be accounted for by positing that all surface NP coordinations are constituent coordinations. Nonetheless, if we should find that a surface conjunction of NPs fails to denote a plurality of entities, we could take it that the conjunction arises from an underlying sentential coordination by ellipsis. Aoun, Benmamoun, Sportiche (1994, 1999) took this position and argued that in certain Arabic dialects, VSO sentences with conjoined subjects demonstrating First Conjunct Agreement (FCA) are clausal conjunctions whose surface form is derived by PF ellipsis. We show in this paper that Arabic is not the only language that exhibits such a string of NPs. As we will see, Korean also possesses those NP conjunctions. As it turns out, one type (Type A) is a constituent NP conjunction, while the other (Type B) is an elliptical conjunction deriving from a clausal conjunction. Type B coordinations, unlike what they look like on the surface, are claimed never to form NPs, in either the underlying or the surface level of representation.

This paper revisits Yoon and Lee (2005)'s two types of NP coordination constructions (Type A and B) in Korean (cf. S-Y Cho 2008), which are distinguished by the distribution of Case-markers and conjunctive markers. Type

markers, i.e. nominative, accusative or genitive markers. To make our argument more solid, we attempt to find phonetic evidence which supports the existence of the null predicate by conducting a production experiment. Specifically, the null predicate licensed by the Case marker in each of the initial conjunct of the constructions in (3-5) above is identified by longer duration of pause, relative to the duration of other pause presumably caused by orthographic space. This undermines a lexicalist account (Cho 2008) that does not take Case-markers seriously.

This paper is organized as follows. Section 2 presents syntactic and semantic differences between two types provided by Yoon and Lee (2005). Other than syntactic and semantic differences, we offer the results of a production experiment. The syntactic, semantic and phonetic properties constitute evidence that the non-final conjunct of Type B coordination licenses a null predicate. Section 3 proposes an alternative analysis, based on ICCA (incremental c-selectional combinatoric analysis) developed by Lee (2009). We argue that Type A is a standard NP coordination while Type B is a KP coordination with a null predicate in the initial conjunct. By assigning different syntactic structures to two types of coordinations, we correctly predict all the contrastive characteristics of the two types. Section 4 concludes and discusses implications.

2. Differences between Type A and Type B

A string of NPs can be coordinated in different ways in Korean (Cho & Morgan 1986; Yu-Cho and Sells 1995), but we will focus on the two types reintroduced here in (6-8), which have received more attention recently (Yoon and Lee 2005, cf. Cho 2008).

- (6) a. John-kwa Mary-ka cip-ey ka-ss-ta (Type A)
 J-conj M-nom home-loc go-pst-decl
- b. John-i kuliko Mary-ka cip-ey ka-ss-ta (Type B)
 J-nom and M-nom home-loc go-pst-decl
 'John and Mary went home.'

- (7) a. Na-nun John-kwa Mary-lul manna-ss-ta (Type A)
 I-Top J-conj M-acc meet-pst-decl
- b. Na-nun John-ul kuliko Mary-lul manna-ss-ta (Type B)
 I-Top J-acc conj M-acc meet-pst-decl
 'I met John and Mary.'
- (8) a. John-kwa Mary-uy cakphwum (Type A)
 John-conj Mary-Gen work
 'John and Mary's work'
- b. John-uy kuliko Mary-uy cakphwum (Type B)
 John-Gen conj Mary-Gen work
 'John's and Mary's work'

Even though they are different only in the Case-marking of the initial conjunct NP, the difference brings about non-trivial contrastive syntactic, semantic and prosodic properties between the two constructions. As they are minimally different in the presence and absence of the Case-marker on the first conjunct NP, the comparison of these two constructions will contribute to finding the role of Case-markers in coordination constructions and other constructions in general in Korean. The interpretive differences were discussed a lot in previous literature (Yoon and Lee 2005, Cho 2008), but an agreement was not reached in the syntax of those two constructions. Specifically, while Yoon and Lee (2005) attribute the interpretive differences to the structural differences of the two types, Cho (2008) argues that the syntax and the semantics are independent and the interpretive differences are solely due to the meaning difference of the two conjunctors '(k)wa' and 'kuliko'. In other words, under Yoon and Lee (2005) (and Lee 2009), the two types of coordinations are represented by two different structures, Type A being NP coordination while Type B KP (sentential) coordination. On the other hand, under Cho (2008)'s lexicalist account, both types fall into the category of NP coordinations. The following subsections 2.1 and 2.2 briefly summarize Yoon and Lee (2005)'s arguments based on interpretive and syntactic differences.

2.1 Differences in Interpretation

Other than the morphological differences, the two types differ interpretively

- b. John-uy kuliko Mary-uy kwankyey (Type B)
 John-Gen conj Mary-Gen relationship
 'John's (relationship with someone) and Mary's relationship with someone'

Thus, regardless of the kinds of Case-markers attached (nominative, accusative or genitive), Type A seems to have collective readings as a primary interpretation, while Type B is never interpreted in a collective sense. Thus, one possible way to account for the differences between the two observed so far seems to be to posit that Type A is constituent NP coordination as illustrated (12a) while Type B is a clausal coordination derived from ellipsis/conjunction reduction of sentential coordination as illustrated in (12b).

- (12) a. [NP [NP]-kwa [NP]]-Case
 b. [TP NP-Case ...VP/NP] kuliko [TP NP-Case VP/NP]

Specifically, under the analysis, where Type B is considered to have been reduced from two full sentences as illustrated in (b) examples of (13-15), the distributive reading is correctly predicted because the presence of the predicate in the initial conjunct makes it impossible for the two Case-marked NPs to be construed together, banning the potential collective reading.

- (13) a. John-kwa Mary-ka ochen-pwul-ul pelessta
 J-conj M-nom 5000-dollars-acc made
 b. John-i ochen-pwul-ul pelessta kuliko
 J-nom 5000-\$-acc made conj
 Mary-ka ochen-pwul-ul pelessta
 M-nom 5000-dollars-acc made
 'John and Mary each made \$5000.'
- (14) a. John-i mwul-kwa kilum-ul pwunlihay-ss-ta
 J-nom water-conj oil-acc separate-pst-del
 'John separated water and oil from each other'
 b. John-i mwul-ul pwunlihay-ssta
 J-nom water-acc separate-pst-decl

- kuliko kilum-ul pwunlihay-ssta
 conj oil-acc separate-pst-decl
 'John separated water (from something) and separated oil
 (from something)'
 (15) a. John-kwa Mary-uy kwankyey (Type A)
 John-conj Mary-Gen relationship
 'Relationship between John and Mary'
 b. John-uy kwankyey kuliko Mary-uy kwankyey (Type B)
 John-Gen relationship conj Mary-Gen relationship
 'John's (relationship with someone) and Mary's relationship with
 someone'

2.2 Syntactic Differences

Based on the differences in interpretation of the two Types, we conjectured that Type A is a form of constituent NP coordination while Type B is a form of clausal coordination derived through conjunction reduction of sentential coordination. Thus, this syntactic analysis is based on the semantic facts so far.

If it is true that Type A is a coordinated plural NP and that Type B is an elliptical form of a larger sentence (form), it is predicted that Type A allows collective predicates while Type B does not. In other words, as Type A involves a single event, it is predicted to allow collective predicates. Type B, however, involves two separate events, which predicts that it disallows collective predicates. It further predicts that Type A has a standard NP distribution while Type B does not. Now we shall consider whether this prediction is borne out. Among various arguments advanced in Yoon and Lee (2005), we will present just two.

First, Type A coordinations are predicted to allow collective predicates as it involves a single event, and the prediction is borne out, as we see in the (a)-examples of (16-17). By contrast, Type B coordinations are predicted to disallow collective predicates as it involves two separate events, and the prediction is confirmed as we see in the (b)-examples of (16-17).

Collective Predicates:

- (16) a. Cheli-wa Yenghi-ka pwupwu-ya
 C-conj Y-nom couple-cop.decl
- b. *Cheli-ka kuliko Yenghi-ka pwupwu-ya
 C-nom conj Y-nom couple-cop.decl
 ‘Cheli and Yenghi are a couple.’
- (17) a. Cheli-wa Yenghi-ka heyeci-ess-ta
 C-conj Y-nom break.up-pst-decl
- b. *Cheli-ka kuliko Yenghi-ka heyeci-ess-ta
 C-nom conj Y-nom break.up-pst-decl
 ‘Cheli and Yenghi broke up.’

Second, Type A is predicted not to allow adverb insertion between the conjuncts since adverbs cannot modify NPs, while Type B is predicted to allow adverb insertion as the initial conjunct is suspected to be a reduced form of a sentence. This prediction is borne out as shown in (18a-b).

- (18) *a. Cheli-wa himtulkey Yenghi-ka swipkey il-ul ha-nta
 C-conj with.difficulty Y-nom easily work-Acc do-decl
 ‘Cheli and Yenghi do the work with a lot of effort.’
- b. [C-ka himtulkey kuliko Y-ka swipkey] il-ul ha-nta
 C-nom with.difficulty conj Y-nom easily work-Acc do-decl
 ‘Cheli does the work with difficulty and/but Yenghi does the work with ease.’

We have conjectured that Type B is derived from a sentential conjunction and tested several predictions based on the conjecture. As all the predictions are borne out, the primary conclusion is that Type A is a constituent NP coordination whereas Type B is a reduced form from a larger/sentential coordination.

Before leaving this section, we can ask why there is no constituent coordination of NPs in Korean where each conjunct is marked with Case. The answer would be that there is a very special role that is played by Case in Korean, in light of the fact that in other languages (German) this is not the Case.

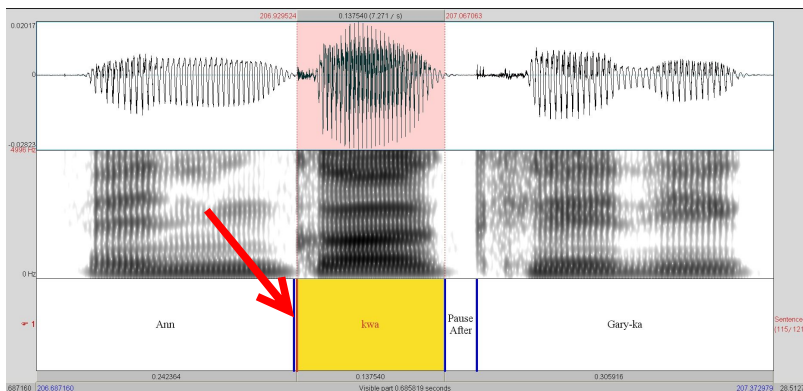
-- i.e., when we have ‘verbal’ Case-markers, then a ‘verbal’ constituent must follow it combinatorically, and that is why the two types of coordinations differ the way they do.

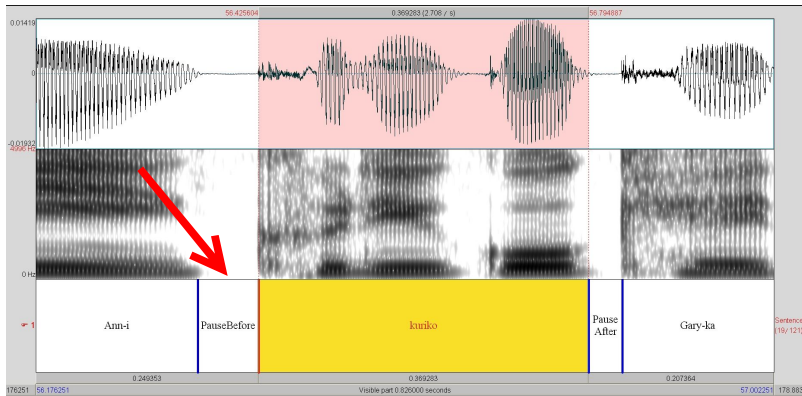
So far we have discussed interpretive and syntactic differences between the two Types based on previous work (Yoon and Lee 2005). Next sub-section 2.3 presents phonetic differences between these two constructions, which further support syntactic findings made in Yoon and Lee (2005).

2.3 Phonetic Differences

As mentioned above, Cho (2008) argues that both Type A and Type B fall into the same category of NP coordinations. Under Cho (2008)’s account, it could be expected that the pause (and/or devoicing) duration after the first conjunct in Type A would not be different from that after the first conjunct in Type B. Orthographically, however, there is no space between the first conjunct and the conjunctive suffix *-kwa* in Type A, while there is one space between the first conjunct and the conjunction *kuliko* in Type B. Thus, that kind of comparison in duration between Type A and B is meaningless because it is quite obvious that the duration of one space is longer than that of no space as in Figure 1 below.

Figure 1. Pause durations in the first conjunct before *-kwa* (above) and *kuliko* (below)





We thus seek for another indirect comparison of durations between Type A and Type B. Under Cho (2008)'s lexicalist account, the pause before *kuliko* in Type B would be not different from the pause after *kuliko* since Type B is considered as an NP coordination. Under our approach, however, the pause before *kuliko* in Type B would be longer than the pause after *kuliko* because Type B is considered as a KP (sentential) coordination. To put it differently, the pause observed in the initial conjunct of Type B is due to a null (verbal or nominal) predicate by ellipsis, but not due to the orthographic space which is observed after *kuliko*. To see if these predictions are borne out, a production test was carried out with the following experimental design.

2.3.1 Participants

Fifteen Korean university students with self-reported normal speech and hearing participated in the experiment. Five participants were females and ten participants were males.

2.3.2 Stimuli

There were five sentences in each case of Type B. The full list of sentences is as follows.

(19) Type B examples with nominative

- a. Ann-i kuliko Gary-ka kohyang-ey ka-ss-ta
Ann-nom conj Gary-nom hometown-to go-pst-decl
'Ann and Gary went to hometown.'
- b. Ann-i kuliko Gary-ka kosi-lul thongkwahay-ss-ta
Ann-nom conj Gary-nom exam-acc pass-pst-decl
'Ann and Gary passed the exam.'
- c. Ann-i kuliko Gary-ka kyosil-ey tuleo-ss-ta
Ann-nom conj Gary-nom classroom-to enter-pst-decl
'Ann and Gary entered the classroom.'
- d. Ann-i kuliko Gary-ka keceyto-lo ttena-ss-ta
Ann-nom conj Gary-nom keceyto -for leave-pst-decl
'Ann and Gary left for Keceyto.'
- e. Ann-i kuliko Gary-ka kapang-ul sa-ss-ta
Ann-nom conj Gary-nom bag -acc buy-pst-decl
'Ann and Gary bought a bag.'

(20) Type B examples with accusative

- a. Younghi-ka Ann-ul kuliko Gary-lul kaluchi-ess-ta
Younghi-nom Ann-acc conj Gary-acc teach-pst-decl
'Younghi taught Ann and Gary.'
- b. Younghi-ka Ann-ul kuliko Gary-lul kochi-ess-ta
Younghi-nom Ann-acc conj Gary-acc heal-pst-decl
'Younghi healed Ann and Gary.'
- c. Younghi-ka Ann-ul kuliko Gary-lul koyonghay-ss-ta
Younghi-nom Ann-acc conj Gary-acc employ-pst-decl
'Younghi employed Ann and Gary.'
- d. Younghi-ka Ann-ul kuliko Gary-lul kuli-ess-ta
Younghi-nom Ann-acc conj Gary-acc draw-pst-decl
'Younghi draw (a picture of) Ann and Gary.'
- e. Younghi-ka Ann-ul kuliko Gary-lul koylophi-ess-ta
Younghi-nom Ann-acc conj Gary-acc bully-pst-decl
'Younghi bullied Ann and Gary.'

(21) Type B examples with genitive

- a. Chelswu-ka Ann-uy kuliko Gary-uy kulim-ul po-ass-ta
 Chelswu-nom Ann-Gen conj Gary-Gen picture-acc see-pst-decl
 'Chelswu saw Ann's and Gary's picture'
- b. Chelswu-ka Ann-uy kuliko Gary-uy
 Chelswu-nom Ann-Gen conj Gary-Gen
 kohyang-ul pangmwunhay-ss-ta
 hometown-acc visit-pst-decl
 'Chelswu visited Ann's and Gary's hometown.'
- c. Chelswu-ka Ann-uy kuliko Gary-uy kwankyey-lul
 Chelswu-nom Ann-Gen conj Gary-Gen relationship-acc
 molu-n-ta
 be.ignorant-pres-decl
 'Chelswu is ignorant of Ann's and Gary's relationship.'
- d. Chelswu-ka Ann-uy kuliko Gary-uy kapang-ul sa-ss-ta
 Chelswu-nom Ann-Gen conj Gary-Gen bag-acc buy-pst-decl
 'Chelswu bought Ann's and Gary's bag.'
- e. Chelswu-ka Ann-uy kuliko Gary-uy komin-ul a-n-ta
 Chelswu-nom Ann-Gen conj Gary-Gen problem-acc
 know-pres-decl
 'Chelswu knows Ann's and Gary's problem.'

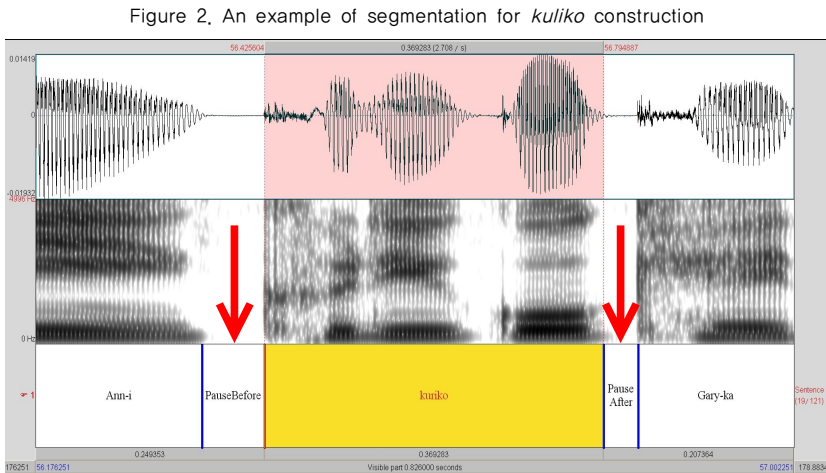
2.3.3 Procedure

Participants were given the list of test sentences and were asked to go over the sentences briefly to familiarize themselves with the stimuli. The 15 sentences were randomly presented on a computer screen one by one and the participants read them aloud. Their production was digitally recorded in a sound attenuated room with a sample rate of 44.1 kHz and 16-bit accuracy.

2.3.4 Acoustic Measurements

Praat 5.2.42 (Boersma and Weenink 2011) was used for annotating the recorded speech and extracting pause durations before and after *kuliko*. To measure the pause durations before and after *kuliko* (and *-kwa*), 1) vowel (sonorant) offsets were marked at the end point of high amplitude periodicity in

the waveform with reference to formant changes in the spectrogram and 2) the beginning of a stop was marked at the point of stop release. A representative example of segmentation is provided in Figure 2.



2.3.5 Statistical Analyses

The total number of tokens in the experiment was 450 (15 subjects x 15 sentences x 2 conditions). The mean value of pause durations was coded by subject and condition. A paired samples t-test was used to compare before-*kuliko* condition with after-*kuliko* condition in terms of pause duration.

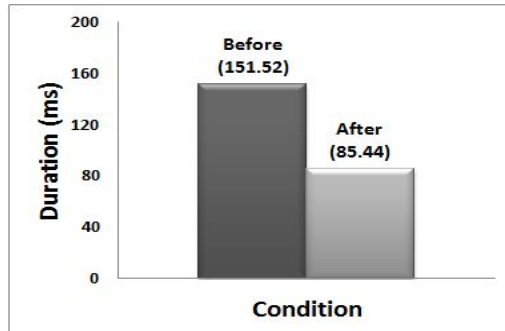
2.3.6 Results

In Table 1, descriptive statistics of pause duration means and standard deviations are given for the two conditions: before- and after-*kuliko*. The bar graph in Figure 3 also presents the mean pause durations for the two conditions. As seen in Table 1 and Figure 3, the pause before *kuliko* is longer than that after *kuliko*.

Table 1. Pause duration means and standard deviations for the two conditions

		Before	After	T-test
All	Mean	151.52	85.44	t (1,14) = 3.769 p = .002
	Std. Dev	90.69	51.02	

Figure 3. Bar graph of pause duration means for the two conditions



A paired samples t-test revealed that the mean difference for the pause duration between before-*kuliko* and after-*kuliko* was highly significant ($t(1, 14) = -3.769$, $p = .002$).

Table 2 shows descriptive statistics and t-test results of pause duration depending on case-marker (Nom, Gen, Acc). It also revealed that the pause duration before *kuliko* is significantly longer than that of after *kuliko*.

Table 2. Pause duration means and standard deviations for the two conditions depending on case marker and their t-test results between the two conditions

Case		Before	After	T-test
Nom.	Mean	170.15	86.15	$t(1,14) = 3.495$ $p = .004$
	Std. Dev	123.78	66.50	
Gen.	Mean	135.32	94.77	$t(1,14) = 2.207$ $p = .045$
	Std. Dev	74.97	69.41	
Acc.	Mean	149.07	89.67	$t(1,14) = 2.715$ $p = .017$
	Std. Dev	96.43	62.72	

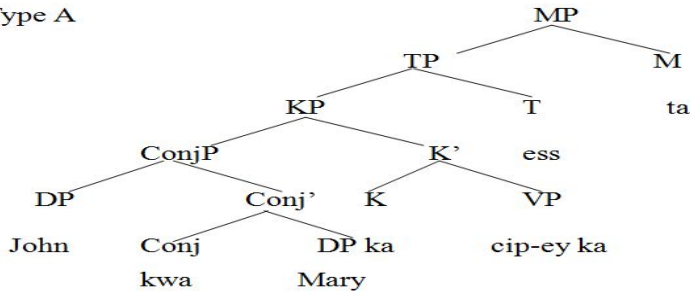
All these results suggest that the pause observed in the initial conjunct of Type B is not due to the orthographic space. Its pause duration is much longer than the duration of just the orthographic space. To put it another way, Type B is not an NP coordination structure of Type A, but a KP sentential coordination structure. Thus, we can argue that a null predicate [e] is posited in the initial conjunct of Type B coordinations, which again constitutes a direct evidence for taking Type B coordinations as sentential coordinations.

3. The Proposal

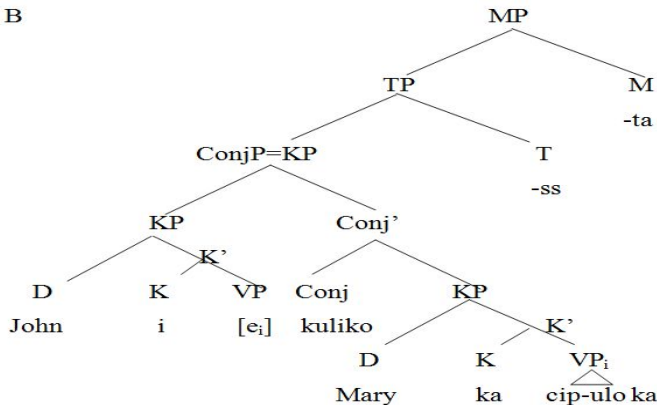
Based on all the evidence in section 2, we present an alternative analysis for Type A and B. As Yoon and Lee (2005) provided an analysis of nominative Case marked coordination constructions only, we will present accusative and genitive Case marked constructions in addition to nominative Case marked ones. Specifically, we present an alternative analysis, where Type A is represented by NP coordinations while Type B is a KP coordination where the initial conjunct licenses a null predicate. As this paper is mainly concerned with providing phonological evidence for the presence of the null predicate in the initial conjunct of Type B coordinations, we will not go into details on how the system works in this KP proposal. (See Lee (2009) for details of the syntactic system). Under the proposed system, two Types of coordination constructions in previous (3) are analyzed as follows (22):

(22)

a. Type A

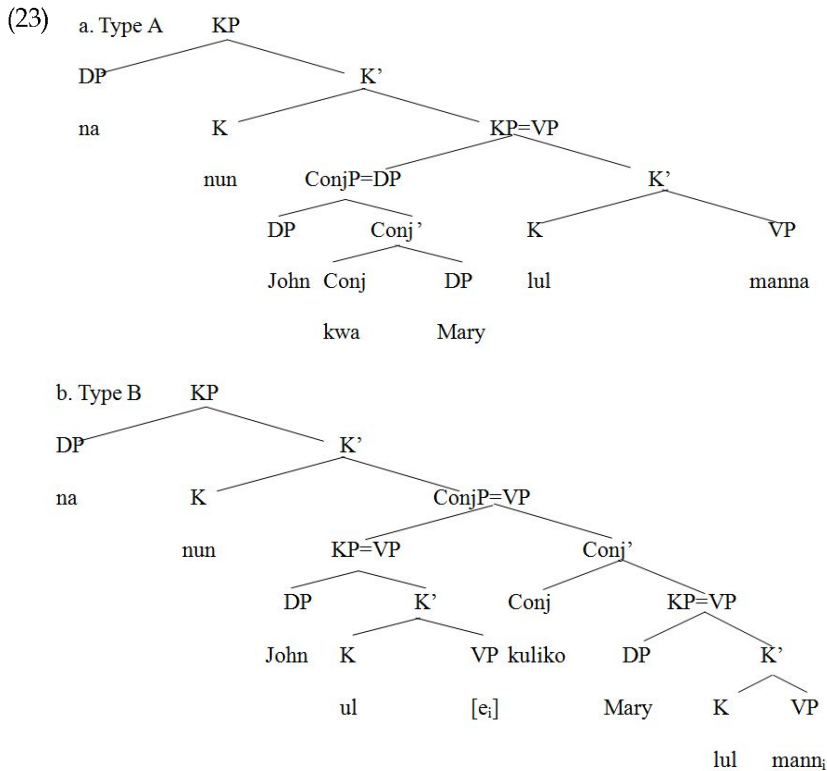


b. Type B



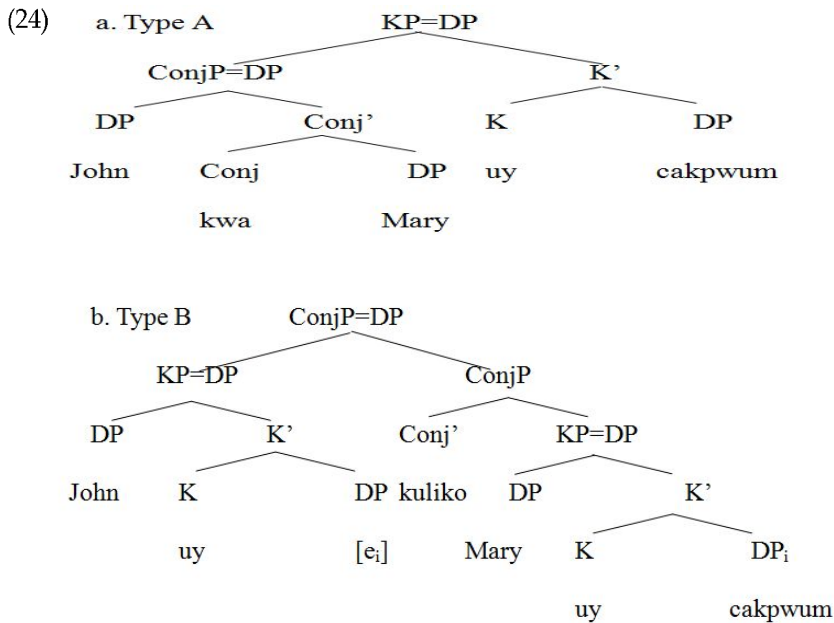
Comparison of the structures of the two types of coordinations shows why they behave the way they do. Specifically, as shown in the structures, Type B coordinations are not NP coordinations and accordingly do not exhibit NP distribution syntactically. Since the structure involves a predicate in each conjunct, Type B coordinations interpretively differ from Type A coordinations. Specifically, the structure in (22b) shows that in Type B coordinations, two separate events of 'John's going home' and 'Mary's going home' are involved, each of which is marked with a separate predicate. Finally, as the subject of each conjunct has its own predicate, covert or overt, collective predicates cannot occur in Type B coordinations.

Let us now consider examples involving object positions in the two types of coordination. As we see in (23), this is the same as (22) except that the Case marker involved here is an accusative marker, as opposed to a nominative Case.



Again, Type B coordinations are not NP coordinations and accordingly do not have NP distribution syntactically. The structure involving a predicate in each conjunct makes Type B coordinations differ interpretively from Type A coordinations. Specifically, the structure for Type B coordinations shows that the events of ‘meeting John’ and ‘meeting Mary’ took place separately. Finally, as the object of each conjunct has a predicate, either being covert or overt, collective predicates cannot occur in Type B coordinations.

Type A and B contrasts shown by genitive-marked NP are not that much different from the nominative- or accusative-marked examples, except that the initial Case-marked conjunct licenses a null NP/DP, not a null VP. This is depicted in (24). Again, in this case as well, Type B involves two nominal predicates, which means that there are two different pieces of art work, one created by John and the other by Mary.



So far we have seen two different structures of Type A and B coordinations. Type A is a standard NP coordination while Type B, irrespective of the type of Case marker, always licenses a null predicate in non-final conjuncts.

4. Conclusion

This research adds one more piece of evidence to previous syntactic findings (Yoon and Lee 2005, Lee 2009). Based on the phonetic analysis, we have observed that a pause is detected in the initial conjunct of Type B due to the presence of the null predicate, while it is not observed in the initial conjunct of Type A. It has also been observed that the pause before *kuliko* in Type B is longer than the pause after *kuliko*; that is, the relatively longer duration of pause observed in the initial conjunct of Type B is due to the null predicate licensed in the initial conjunct but not due to the orthographic space. A lexicalist account (Cho 2008, among others) viewing both Type A and Type B as NP coordinations fails to explain these findings.

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